Foldables

- Label the front of your folder
  - Think Smart
- Label the Tabs
  - Day, 1, 2, 3, 4, 5

- On the inside of each tab
- At the top, summarize the Big Idea and WHY it's important.
- List 3-5 facts you want to remember
- Note at least three take away strategies or ideas you plan to use in your work with students.

LEARNING & the BRAIN®

conclusions

1

Think Smart : Using Mindsets and Metacognition for Student Success – DAY 2: Mindsets + Skillsets = Results

Jack A. Naglieri, Ph.D.
Research Professor, University of Virginia & Devereux Center for Resilient Children

Kathleen M. Kryza, MA
International Educational Consultant, Infinite Horizons

LEARNING & the BRAIN®

conclusions

2

Culture Clash

Here's Where We're Going…

- Today's Introduction and Review
- PASS Deeper Treatment
- Mindsets + Skill Sets = Results
- Planning
- Skills Sets and Metacognition

Messages that Support a Safe Classroom Environment

Fair is not everybody getting the same thing…fair is everybody getting what they need to be successful!

THIS IS A RISK-TAKING, MISTAKE MAKING CLASSROOM

LEARNING & the BRAIN®

Core Groups

- Groups of 3-4
- Establish roles:
  - **C**oach
  - **O**rganizer/Time Keeper
  - **R**ecorder
  - Energizer

Pg. 3

LEARNING & the BRAIN®

Review Norms for Today

LEARNING & the BRAIN®

www.kathleenkryza.com

conclusions

Chat Chum Mindset Check in…

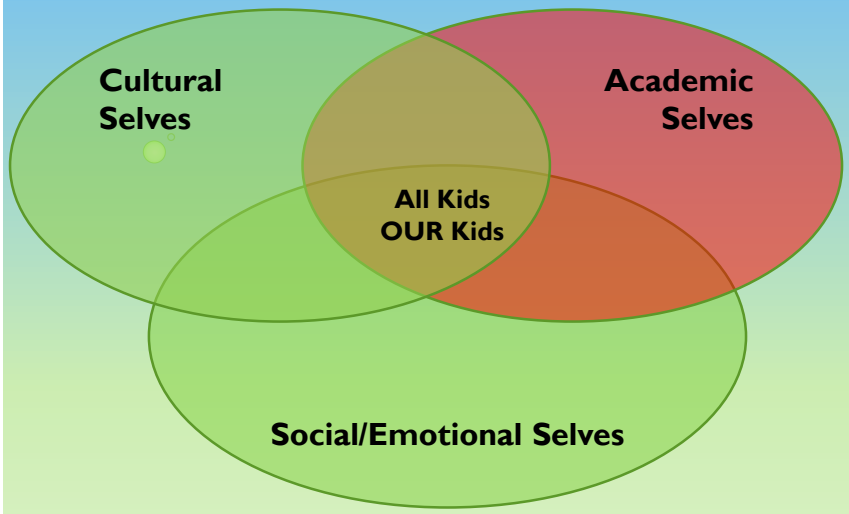
- How are you feeling today?
  - I am feeling…
- What "weight" are you carrying with you today that you need to let go of so you can stay present.
  - For today, I am letting go of…
- What word or phrase summarizes your intention for today?
  - Say your word. (Ex: Open Mind, Deep Thinker)

LEARNING & the BRAIN®

conclusions

8

CREATING A SAFE CLASSROOM FOR THINKING SMART

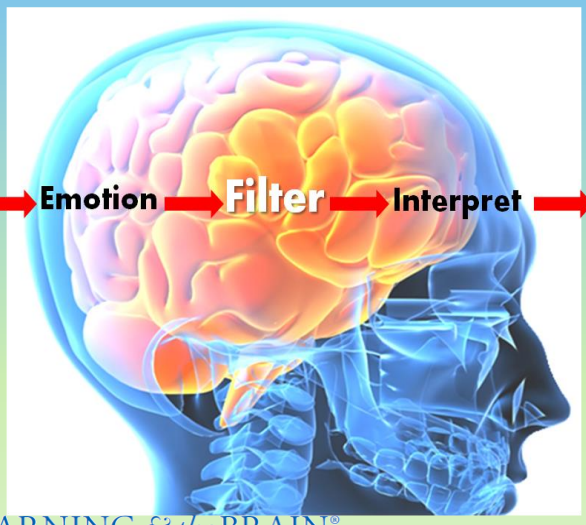


LEARNING & the BRAIN®

conclusions

9

Our Emotional Brains



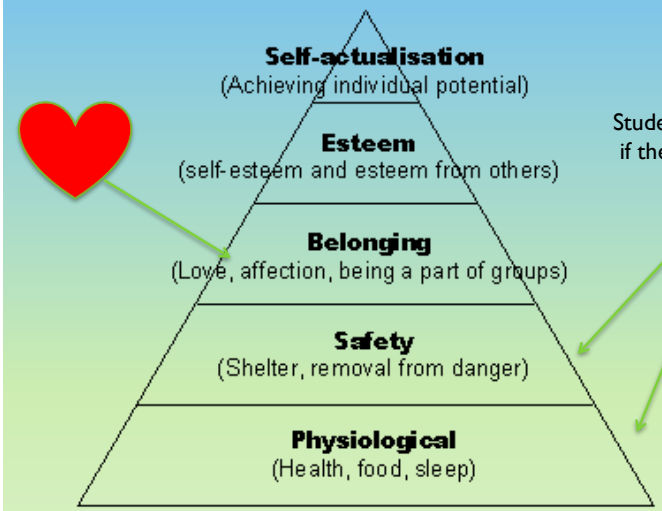
Stimulus → Emotion → Filter → Interpret → Behavior

LEARNING & the BRAIN®

conclusions

10

Maslow Was Right On!



Students Can't Learn if they are stuck here

LEARNING & the BRAIN®

conclusions

11

Students don't care what you know, Until they know that you care

LEARNING & the BRAIN®

conclusions

12

Our Cultural Brains

13

Transform Your Teaching Big Idea About Culture

- **Collectivist Cultural Values**
  - Emphasis is on groups as the primary entity
  - Choices are made with consideration of the group
  - Interactions are interdependent based on the role a person plays in the group
  - Individuals always seen as a part of the collective.
- **Individualistic Cultural Values**
  - Emphasis is placed on the needs, ideas and development of the individual.
  - A person's actions are his or her own,
  - Choices are based on personal concerns
  - Interacting in a group they do so as an individual.

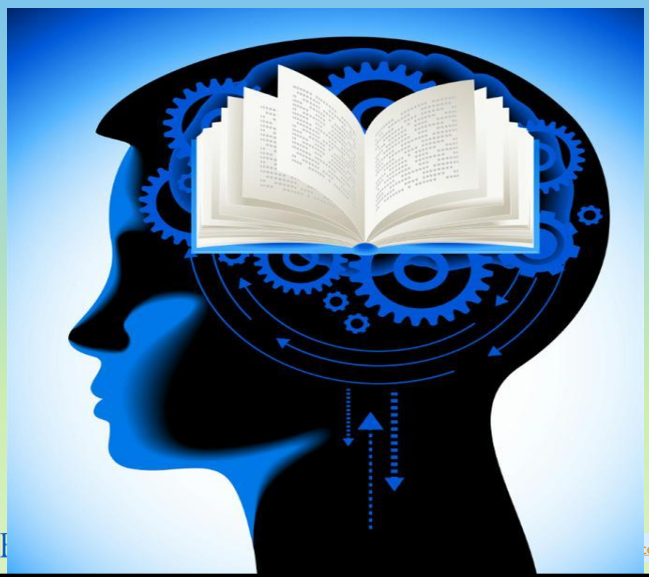
LEARNING & the BRAIN®

Pg. 2

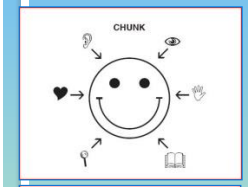
conclusions

14

Our Academic Brains

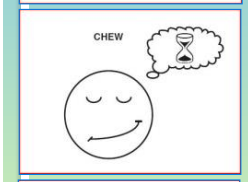


Differentiating for ALL Learners



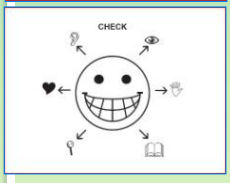
CHUNK – Acquire/Input

***Chunk**: how students acquire/take in new information*



CHEW – Process

***Chew**: how students make sense of information*



CHECK – Show What You Know/Output

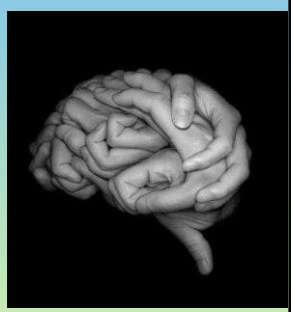
***Check**: how students demonstrate their understanding*

CHANT IT, REMEMBER IT!

- For every 10 minutes you teach something new…
- The brain needs one to two minutes to chew!

The Brain and Making Learning Stick

- **PRACTICE MAKES PERMANENT: Review material using multiple sensory lessons so different neural networks store the knowledge in multiple brain regions. Their brains will build multiple pathways leading to the stored memory, which makes retrieval more efficient. When a memory has been recalled often, their repeated activation strengthens its neuronal circuits - like exercising a muscle**
- **Dr. Judy Willis**



Teaching for Transfer

If we want learning to stick, we have to make it sticky.

ILS Make Learning Stick!

LEARNING & the BRAIN®

www.kathleenkryza.com

conclusions

Six Learning Foundations that Work for ALL Learners

- Safe Environment
- Routines and Procedures
- Growth Mindsets
- Student Talk
- Student and Teacher Self Reflection
- Mindfulness

LEARNING & the BRAIN®

conclusions

20

Let's Unpack the Day

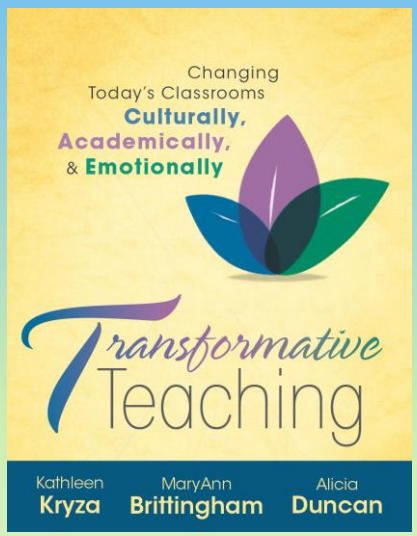
How have we addressed the 6 Foundations in today's workshop?

LEARNING & the BRAIN®

conclusions

21

Creating a ACE Classroom…



LEARNING & the BRAIN®

conclusions

22

Let's Take a Mindful Moment or Brain Break (or Syn-nap)

The brain needs time **process!**

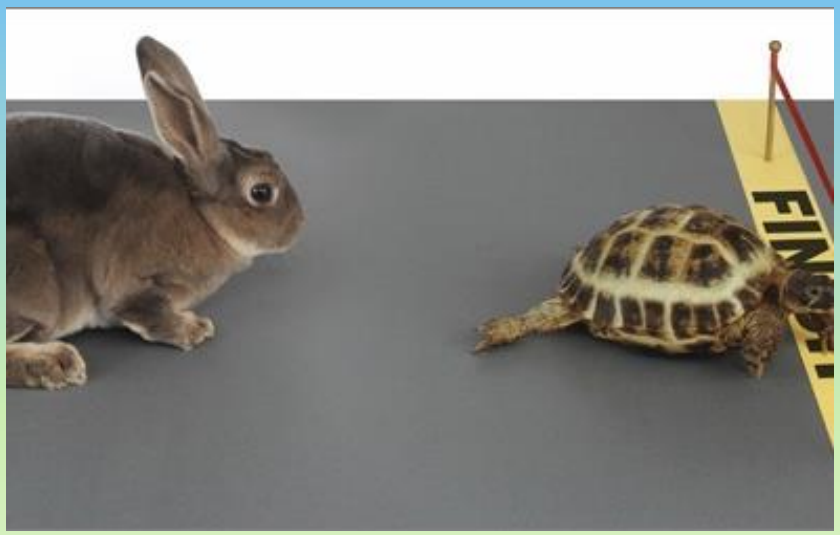
- **Stretch**
- Cross Laterals
- Walk and Talk
- Energizers
- Relaxers

The Brain and Learning

In the classroom, the more ways the materials in the are introduced to the brain and reviewed, the more dendritic pathways of access will be created. There will be more cell-to-cell bridges and these pathways will be used more often, become stronger and remain safe from pruning.

-- Dr. Judy Willis, Neurologist, 2006.

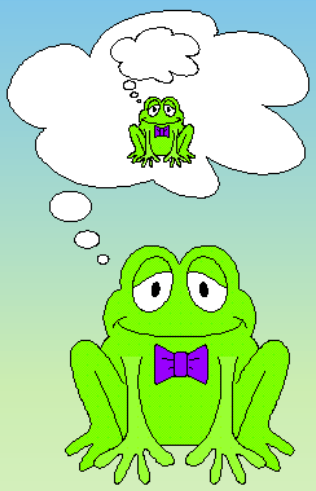
Go Slow to Go Fast!



LEARNING & the BRAIN®

conclusions

Want Kids to Think Smart? Make Thinking Visible



LEARNING & the BRAIN®

conclusions

Intentional & Transparent

Want Students to OWN their Learning?

BIG IDEA

LEARNING & the BRAIN®

conclusions

Intentional and Transparent

- Intentional: ***YOU*** Know why you're doing what you're doing.
- Transparent - ***THEY*** know why you're doing what you're doing.

LEARNING & the BRAIN®

conclusions

Brain Rule #4 - Medina
"We need to repeat to remember"

Talking
about an event immediately after is has occurred
enhances memory
for that event

LEARNING & the BRAIN®

conclusions

Litmus Test of Transparency

- If someone came into your class and asked your students ***what they are learning and why it's important to learn***, could most of them give a clear and specific answer
  - We are doing a KWL because good readers predict and ask questions
  - We are making graphic organizers to connect our thoughts and ideas
  - We are singing a song to help us see how pioneers in the past had to live and entertain themselves.
  - I am using a mentor text as I write the lead for my piece because I learn from my favorite authors
  - I am helping to put things away because it's my responsibility to keep our community clean.

LEARNING & the BRAIN®

conclusions

Or…

- Would they simply tell what they are doing?
  - We are doing a KWL.
  - I am writing a story about my dad's birthday?
  - I am drawing a picture of girl from Japan.
  - We are making a graphic organizer for our project? (Why? Cause Ms. K likes them)
  - We are doing the worksheets (Why? What kind of thinking is required?)

LEARNING & the BRAIN®

conclusions

&

- How does becoming more Intentional and Transparent help students "Think Smarter"

WALK AND TALK: Movement and Talk helps cement learning

LEARNING & the BRAIN®

www.kathleenkryza.com

conclusions

Learners retain 50% of what they learn through talk
Movement helps cement memory

ILS: Walk and Talk
Done Intentionally and Transparently

- Walk and find a partner. (Same/opposite eye, hair, clothes)
- Talk for 2 minutes about a prompt
- Teachers float and listen for *quality* talk
- Whole group share

LEARNING & the BRAIN®

www.kathleenkryza.com conclusions

Clock Partners

LEARNING & the BRAIN®

conclusions

If Researched-Based Strategies aren't working…

- I and T = Be intentional and transparent. Tell students ***WHY*** these strategies work for the learning brain. (Simultaneous and Attention)
- R and P = Have clear and focused routines and procedures (Successive)
- Model and Scaffold = Breaking the task into smaller steps and modeling (Planning and Attention)
- P3 = Practice, Practice, Practice (PASS)
- Collaborative Partners can remind each other to check for these issues when trying new strategies

LEARNING & the BRAIN®

conclusions

Adjust

Apply

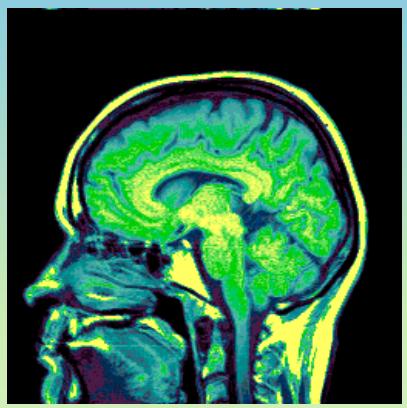
Adapt

LEARNING & the BRAIN®

www.kathleenkryza.com

conclusions

INTELLIGENCE CONCEPTUALIZED AS BRAIN FUNCTION

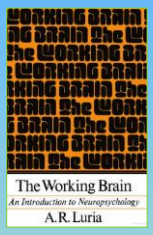


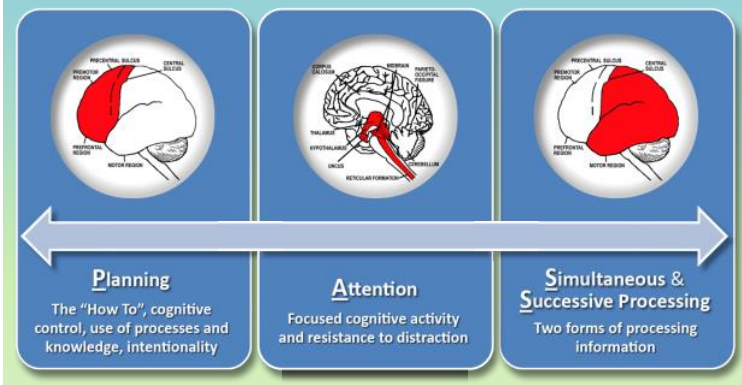
LEARNING & the BRAIN®

conclusions

PASS: A neurocognitive approach

Three Functional Units - A. R. Luria





LEARNING & the BRAIN®

conclusions

PASS Neurocognitive Theory

- **P**lanning = THINKING ABOUT HOW YOU DO WHAT YOU DECIDE TO DO
- **A**ttention = BEING ALERT AND RESISTING DISTRACTIONS
- **S**imultaneous = GETTING THE BIG PICTURE
- **S**uccessive = FOLLOWING A SEQUENCE

- **PASS theory** is a way to measure neuro-cognitive abilities related to brain function

LEARNING & *the* BRAIN®

conclusions

39

Move it to Learn It!

LEARNING & *the* BRAIN®

conclusions

More on PASS and the CAS

The Cognitive Assessment System

Jack A. Naglieri, Cara Conway

THEORY UNDERLYING THE CAS

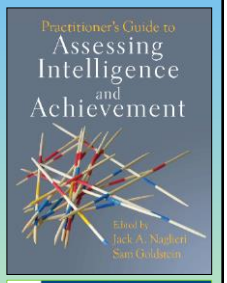
The *Cognitive Assessment System (CAS)* (Naglieri & Das, 1997a) is a multidimensional measure of ability based on a cognitive and neuropsychological processing theory called *Planning, Attention, Simultaneous, and Successive (PASS)* (Naglieri, 1999a, 2005). The PASS theory described by Naglieri and Das (1997b, 2005) is a reconceptualization of intelligence largely, but not solely, based on the neuropsychological work of A. R. Luria (1966, 1973, 1980, 1982). The four processes that make up the PASS theory represent a blend of cognitive and neuropsychological constructs, such as executive functioning (Planning) and selective attention (Attention), including tests that in the past were often arguably described as nonverbal/visual-spatial (Simultaneous) and sequencing/memory (Successive) (Naglieri & Das, 2002).

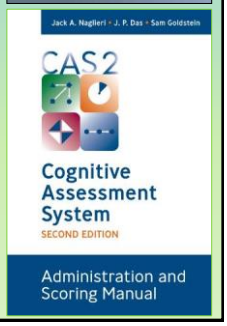
The PASS theory is a different approach to understanding intelligence that not only the theory may have its roots in neuropsychology, "its branches are spread over developmental and educational psychology" (Varnhagen & Das, 1986, p. 130). Thus, with its connections to developmental and cognitive processing, the PASS theory offers an advantage in explanatory power over the notion of traditional general intelligence (Naglieri & Das, 2002).

PASS Defined

The four cognitive processes that make up the PASS theory are each associated with different brain regions, cognitive abilities, and behaviors (Naglieri, Conway, & Goldstein, 2007). The four processes of the PASS theory are described more fully below.

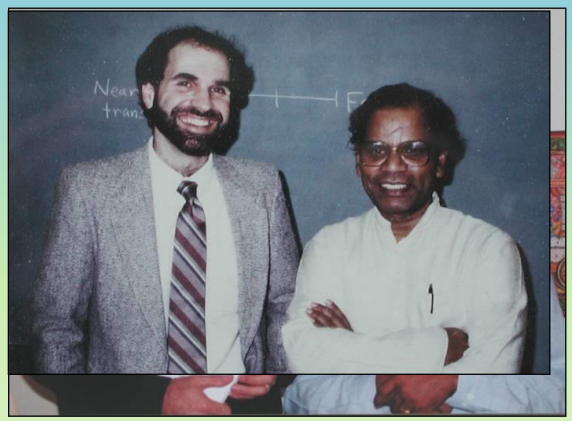
Planning is a mental activity that provides cognitive control, intentionality, organization, self-regulation and use of processes, knowledge, and skills. This includes self-monitoring and impulse control as well as generation, evaluation, and execution of a plan. This process may involve control over the other three processes, as well as





PASS For Teachers (www.kathleenkryza.com)

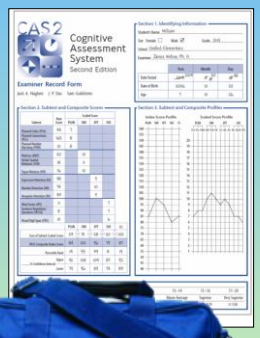
Operationalizing PASS Theory

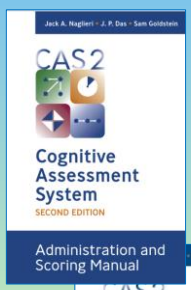


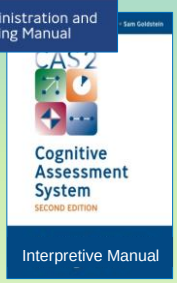
LEARNING & the BRAIN®

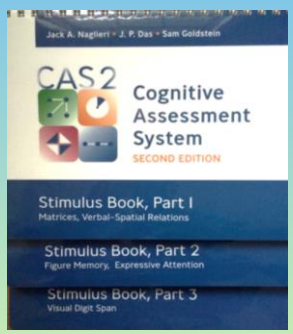
conclusions

CAS2 (Ages 5-18 yrs.)







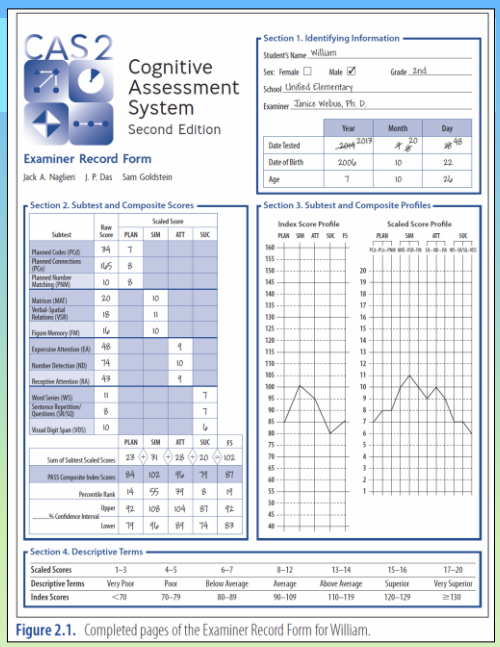


LEARNING & the BRAIN®

conclusions

CAS2

- 8 (40 minutes) or 12 (60 minutes) subtest versions
- PASS and Full Scales provided (100 & 15) subtests (10 and 3)



CAS2 Cognitive Assessment System Second Edition

Examiner Record Form

Jack A. Naglieri J. P. Das Sam Goldstein

Section 1. Identifying Information

Student's Name William

Sex: Female ☐ Male ☑ Grade 2nd

School Unified Elementary

Examiner Janice Webus, Ph. D.

	Year	Month	Day
Date Tested	2014	05	18
Date of Birth	2006	10	22
Age	7	10	26

Section 2. Subtest and Composite Scores

Subtest	Raw Score	Scaled Score PLAN	SIM	ATT	SUC
Planned Codes (PCd)	34	7			
Planned Connections (PCn)	165	8			
Planned Number Matching (PNM)	10	8			
Matrices (MAT)	20		10		
Verbal-Spatial Relations (VSR)	18		11		
Figure Memory (FM)	16		10		
Expressive Attention (EA)	48			9	
Number Detection (ND)	74			10	
Receptive Attention (RA)	49			9	
Word Series (WS)	11				7
Sentence Repetition/Questions (SR/SQ)	8				7
Visual Digit Span (VDS)	10				6

	PLAN	SIM	ATT	SUC	FS
Sum of Subtest Scaled Scores	23	31	28	20	102
PASS Composite Index Scores	84	102	96	79	97
Percentile Rank	14	55	39	8	19
90% Confidence Interval Upper	92	108	104	87	92
90% Confidence Interval Lower	79	96	89	74	89

Section 3. Subtest and Composite Profiles

Index Score Profile

Scaled Score Profile

Section 4. Descriptive Terms

Scaled Scores	1–3	4–5	6–7	8–12	13–14	15–16	17–20
Descriptive Terms	Very Poor	Poor	Below Average	Average	Above Average	Superior	Very Superior
Index Scores	<70	70–79	80–89	90–109	110–119	120–129	≥130

Figure 2.1. Completed pages of the Examiner Record Form for William.

LEARNING & the BRAIN®

conclusions

CAS2

- Supplementary Scales: Executive Function, Working Memory, Verbal, Nonverbal
- Added: A Visual and Auditory comparison

Visual–Auditory Comparison

	Scaled Score
Word Series	_____
Visual Digit Span	_____
Difference (ignore sign)	_____
Circle one: .05 .10 NS	

Supplemental Composite Scores

Subtest	Scaled Score EF w/o WM	EF w/ WM	WM	VC	NvC
Planned Codes					7
Planned Connections	8	8			
Matrices					10
Verbal-Spatial Relations		11	11	11	
Figure Memory					10
Expressive Attention	9	9			
Receptive Attention				9	
Sentence Repetition/Questions		7	7	7	
	EF w/o WM	EF w/ WM	WM	VC	NvC
Sum of Subtest Scaled Scores	17	35	18	27	27
Composite Index Scores	91	91	94	93	92
Percentile Rank	27	27	34	32	30
90% Confidence Interval Upper	101	99	101	101	99
90% Confidence Interval Lower	84	85	88	87	86

Note: EF w/o WM = Executive Function without Working Memory; EF w/WM = Executive Function with Working Memory; WM = Working Memory; VC = Verbal Content; NvC = Nonverbal Content.

LEARNING & the BRAIN®

conclusions

CAS2 Online Score & Report

- Narrative report can be obtained in Word or PDF

CAS2 Cognitive Assessment System
Second Edition

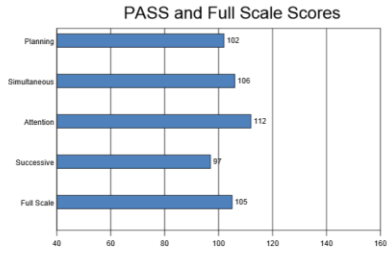
Scoring and Interpretive Report
Jack A. Naglieri

Name: Jack Nag
Age: 8
Gender: Male
Date of Birth: 07-12-2005
Grade: 5
School: East Lake

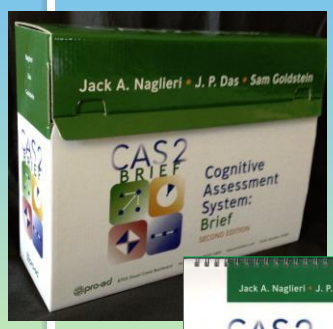
This computerized report is intended for use by qualified individu
information can be found in the CAS2 Interpretive Manual.

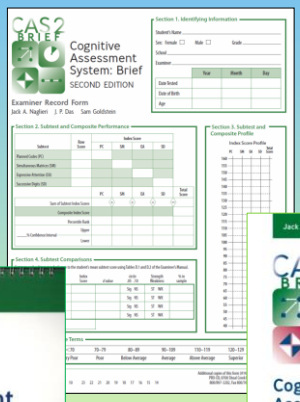
FULL SCALE

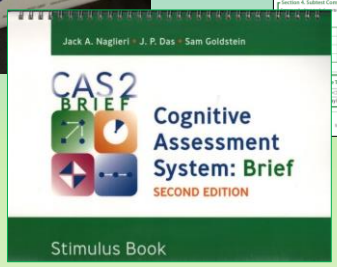
Jack earned a Cognitive Assessment System, Second Edition (CAS2) Full Scale score of 105, which is within the Average classification and is a percentile rank of 63. This means that his performance is equal to or greater than that of 63% of children his age in the standardization group. There is a 90% probability that Jack's true Full Scale score falls within the range of 101 to 109. The CAS2 Full Scale score is made up of separate scales called Planning, Attention, Simultaneous, and Successive cognitive processing. Because there was significant variation among the PASS scales, the Full Scale will sometimes be higher and other times lower than the four scales in this test. The Attention Scale was found to be a significant cognitive strength. This means that Jack's Attention score was a strength both in relation to his average PASS score and when compared to his peers. This cognitive strength has important implications for instructional and educational programming.

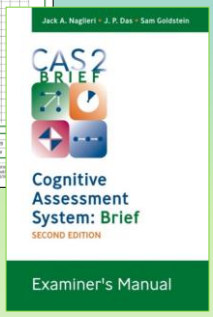


CAS2: Brief for Ages 4-18 years







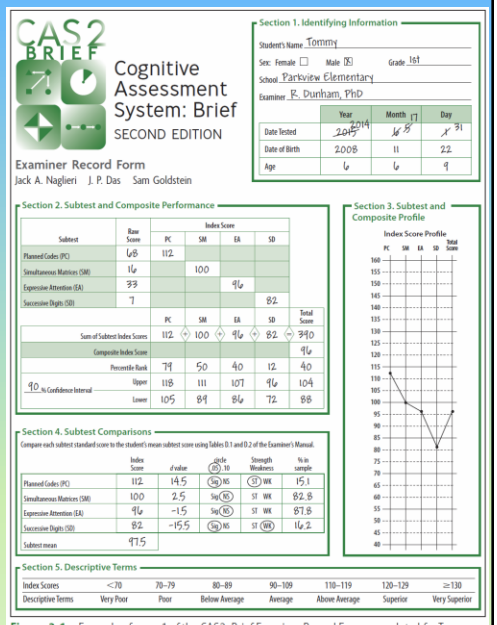


LEARNING & the BRAIN®

conclusions

CAS2: Brief

- Give in 20 minutes
- **Good for reevaluations**
- Yields PASS and Total standard scores (Mn 100, SD 15)
- All items are different from CAS2
  - Planned Codes
  - Simultaneous Matrices
  - Expressive Attention
- New Subtest
  - Successive Digits (forward only)


CAS2 BRIEF
Cognitive Assessment System: Brief
SECOND EDITION
Examiner Record Form
Jack A. Naglieri J. P. Das Sam Goldstein

Section 1. Identifying Information
Student's Name Tommy
Sex: Female ☐ Male ☒ Grade 1st
School Parkview Elementary
Examiner R. Dunham, PhD

	Year	Month	Day
Date Tested	2014	5	31
Date of Birth	2008	11	22
Age	6	6	9

Section 2. Subtest and Composite Performance

Subtest	Raw Score	Index Score PC	SM	EA	SD
Planned Codes (PC)	68	112			
Simultaneous Matrices (SM)	16		100		
Expressive Attention (EA)	33			96	
Successive Digits (SD)	7				82

	PC	SM	EA	SD	Total Score
Sum of Subtest Index Scores	112	100	96	82	390
Composite Index Score					96
Percentile Rank	79	50	40	12	40
90 % Confidence Interval Upper	118	111	107	96	104
Lower	105	89	86	72	88

Section 3. Subtest and Composite Profile
Index Score Profile

Section 4. Subtest Comparisons
Compare each subtest standard score to the student's mean subtest score using Tables D.1 and D.2 of the Examiner's Manual.

	Index Score	d value	Circle .05 or .10	Strength Weakness	% in sample
Planned Codes (PC)	112	14.5	Sig NS	ST WK	15.1
Simultaneous Matrices (SM)	100	2.5	Sig NS	ST WK	82.8
Expressive Attention (EA)	96	-1.5	Sig NS	ST WK	87.8
Successive Digits (SD)	82	-15.5	Sig NS	ST WK	14.2
Subtest mean	97.5				

Section 5. Descriptive Terms

Index Scores	<70	70–79	80–89	90–109	110–119	120–129	≥130
Descriptive Terms	Very Poor	Poor	Below Average	Average	Above Average	Superior	Very Superior

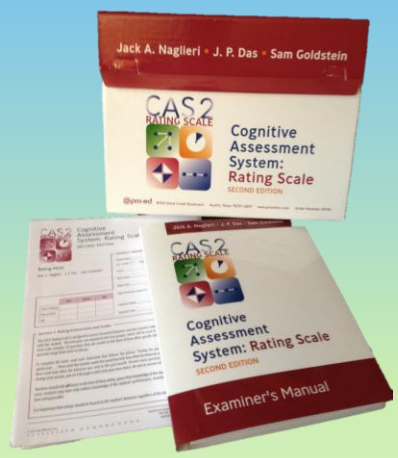
Figure 3.1. Example of page 1 of the CAS2: Brief Examiner Record Form, completed for Tommy.

LEARNING & the BRAIN®

conclusions

CAS2 Rating Scales (Ages 4-18 yrs.)

- The CAS2: Rating measures behaviors associated with PASS constructs
- Normed on a nationally representative sample of 1,383 students rated by teachers

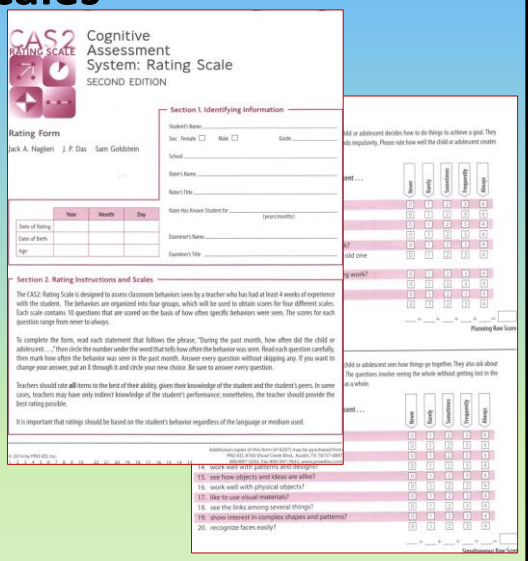


LEARNING & the BRAIN®

conclusions

CAS2 Rating Scales

- The CAS2: Rating form contains 40 items
- 10 items for each PASS scale
- PASS and Total scales are set to have a mean of 100 and standard deviation of 15



LEARNING & the BRAIN®

conclusions

CAS2 Rating Scales

- The rater is given a description of what each scale is intended to measure.
- This informs teachers about PASS

Directions for Items 1–10. These questions ask how well the child or adolescent decides how to do things to achieve a goal. They also ask how well a child or adolescent thinks before acting and avoids impulsivity. Please rate how well the child or adolescent creates plans and strategies to solve problems.

Directions for Items 11–20. These questions ask how well the child or adolescent sees how things go together. They also ask about working with diagrams and understanding how ideas fit together. The questions involve seeing the whole without getting lost in the parts. Please rate how well the child or adolescent visualizes things as a whole.

Directions for Items 21–30. These questions ask how well the child or adolescent pays attention and resists distractions. The questions also ask about how well someone attends to one thing at a time. Please rate how well the child or adolescent pays attention.

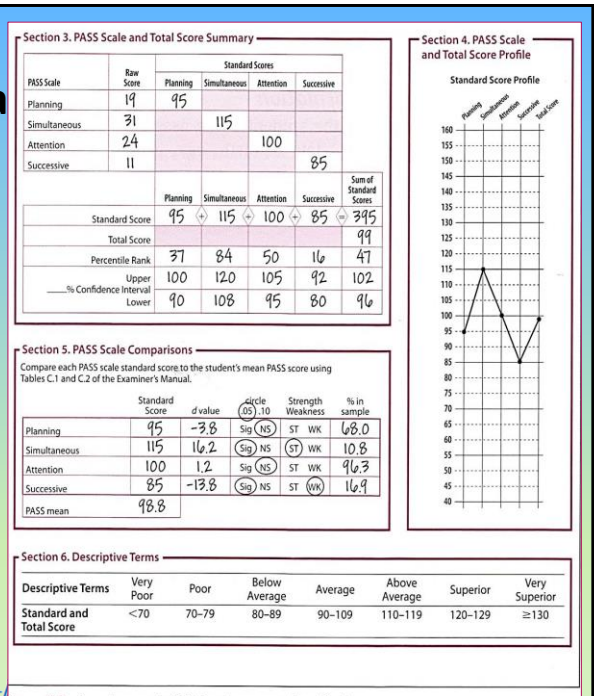
Directions for Items 31–40. These questions ask how well the child or adolescent remembers things in order. The questions ask about working with numbers, words, or ideas in a series. The questions also ask about doing things in a certain order. Please rate how well the child or adolescent works with things in a specific order.

LEARNING & the BRAIN®

conclusions

CAS2 Rating Sca

- The CAS2: Rating Scale scores can be used as part of a larger comprehensive evaluation or for instructional planning



Section 3. PASS Scale and Total Score Summary

PASS Scale	Raw Score	Standard Scores: Planning	Simultaneous	Attention	Successive
Planning	19	95			
Simultaneous	31		115		
Attention	24			100	
Successive	11				85

	Planning	Simultaneous	Attention	Successive	Sum of Standard Scores
Standard Score	95	115	100	85	395
Total Score					99
Percentile Rank	37	84	50	16	47
Upper 90% Confidence Interval	100	120	105	92	102
Lower	90	108	95	80	96

Section 4. PASS Scale and Total Score Profile

Standard Score Profile

Section 5. PASS Scale Comparisons

Compare each PASS scale standard score to the student's mean PASS score using Tables C.1 and C.2 of the Examiner's Manual.

	Standard Score	d value	Circle .05 .10	Strength Weakness	% in sample
Planning	95	-3.8	Sig (NS)	ST WK	68.0
Simultaneous	115	16.2	(Sig) NS	(ST) WK	10.8
Attention	100	1.2	Sig (NS)	ST WK	96.3
Successive	85	-13.8	(Sig) NS	ST (WK)	16.9
PASS mean	98.8				

Section 6. Descriptive Terms

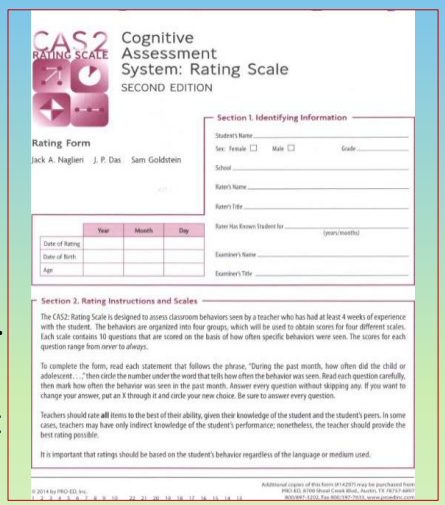
Descriptive Terms	Very Poor	Poor	Below Average	Average	Above Average	Superior	Very Superior
Standard and Total Score	<70	70–79	80–89	90–109	110–119	120–129	≥130

LEARNING & the BRAIN®

Figure 2.3. Sample page 4 of Rating Form, completed for Tommy.

PASS Rating Scale

- Think of someone you would like to rate based on a PASS scale.
- Answer the questions
- Determine the score.
- What did you learn. Share with your Chat Chum.



CAS2 RATING SCALE

Cognitive Assessment System: Rating Scale

SECOND EDITION

Rating Form

Jack A. Naglieri J. P. Das Sam Goldstein

Section 1. Identifying Information

Student's Name

Sex: Female ☐ Male ☐ Grade

School

Rater's Name

Rater's Title

Rater Has Known Student for (years/months)

	Year	Month	Day
Date of Rating			
Date of Birth			
Age			

Examiner's Name

Examiner's Title

Section 2. Rating Instructions and Scales

The CAS2: Rating Scale is designed to assess classroom behaviors seen by a teacher who has had at least 4 weeks of experience with the student. The behaviors are organized into four groups, which will be used to obtain scores for four different scales. Each scale contains 10 questions that are scored on the basis of how often specific behaviors were seen. The scores for each question range from *never* to *always*.

To complete the form, read each statement that follows the phrase, "During the past month, how often did the child or adolescent . . ," then circle the number under the word that tells how often the behavior was seen. Read each question carefully, then mark how often the behavior was seen in the past month. Answer every question without skipping any. If you want to change your answer, put an X through it and circle your new choice. Be sure to answer every question.

Teachers should rate **all** items to the best of their ability, given their knowledge of the student and the student's peers. In some cases, teachers may have only indirect knowledge of the student's performance; nonetheless, the teacher should provide the best rating possible.

It is important that ratings should be based on the student's behavior regardless of the language or medium used.

Additional copies of this form (#14297) may be purchased from PRO-ED, 8700 Shoal Creek Blvd., Austin, TX 78757-6897 800/897-3202, Fax 800/397-7633, www.proedinc.com

LEARNING & the BRAIN®

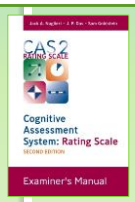
conclusions

54

PASS Comprehensive System

(Naglieri, Das, & Goldstein, 2014)

CAS2 Rating Scale (4 subtests)	**CAS2 Brief** (4 subtests)	**CAS2 Core** (8 subtests)	**CAS2 Extended** (12 subtests)
Total Score Planning Simultaneous Attention Successive	Total Score Planning Simultaneous Attention Successive	Full Scale Planning Simultaneous Attention Successive	Full Scale Planning Simultaneous Attention Successive Supplemental Scales Executive Function Working Memory Verbal / Nonverbal Visual / Auditory



LEARNING & the BRAIN®

conclusions

55

Our Goal – Think Smart!

➢ **EMPOWER**

NOT

LEARNING & the BRAIN®

conclusions

A Nation of Adults Like This?

LEARNING & the BRAIN®

conclusions

A New View

Planning and Attention = Executive Function

LEARNING & the BRAIN®

conclusions

58

Self Regulation/Executive Function

- Self Regulation is a deep, internal mechanism that enables children to engage in mindful, intentional and thoughtful behaviors.
  - Elena Bodrvoa and Deborah J. Leong
- Self-Regulation is a Skill that is Taught, it does not emerge naturally.

LEARNING & the BRAIN®

conclusions

Students Can Do MORE Than We Think…

- When children are constantly regulated by adults, they may appear to be self-regulated, but they are actually "teacher regulated."
- If our goal is to…
- **EMPOWER**

NOT

LEARNING & the BRAIN®

conclusions

Winning Formula to *Think Smart!*

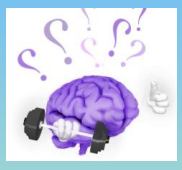
Mindsets

+

Skill Sets

=

RESULTS!



LEARNING & the BRAIN®

conclusions PG. 12

Mindsets + Skillsets = Results

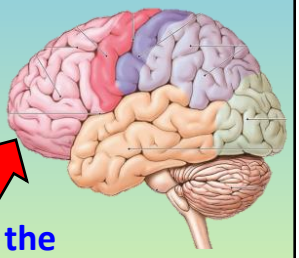
- Mindsets
  - Willingness to grow or acceptance of limitations
  - Willingness to put forth the effort needed to develop skills sets and utilize knowledge
- Skillsets
  - Using what is known
  - Being so fluent with knowledge that it is easily accessed and used
  - Using strategies, paying attention, seeing the big picture, and working with information that is in a sequence

LEARNING & the BRAIN®

conclusions 62

Mindsets + Skillsets = Results

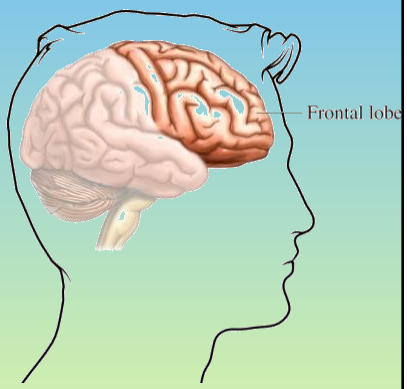
- Mindsets & Skillsets include
  - Brain-based concepts such as
    - Executive Function
    - Metacognition
    - Self-Regulation



- **These concepts are all closely related to the FRONTAL LOBES of the brain, what A. R. Luria described as PLANNING and ATTENTION**

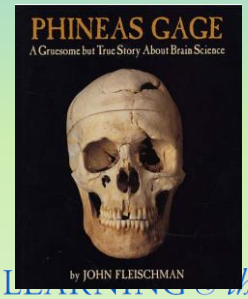
Executive Function/Frontal Lobe

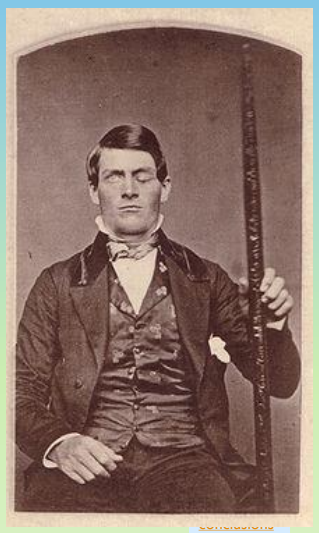
- Frontal Lobe function impacts both students *social-emotional* and *academic* success.
- We (have been) and will be weaving in ways to promote development of *social-emotional* and *academic* Executive Function throughout the week.



The Curious Story of Phineas Gage

John Fleischman's "Phineas Gage: A Gruesome but True Story About Brain Science" about September 13, 1848 & 26 year old Phineas Gage



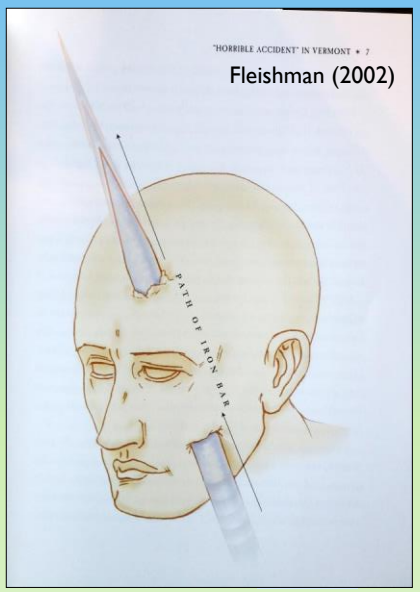


LEARNING & *the* BRAIN®

65

Fleishman (2002, p 70)

- From Damaiso (1994) article in *Science*
- The rod passed through the left frontal lobe, between the two hemispheres, then to left hemisphere
- The damage was to the front of the frontal cortex more than the back, and the underside more than the top



Fleishman (2002)

LEARNING & *the* BRAIN®

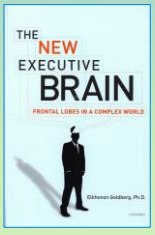
Before . . . & . . . After

- **Before** the accident 'he possessed a well-balanced mind, was seen as a shrewd, smart business man, very energetic and persistent in executing all his plans of operation' (p 59)
- **After** the accident his ability to direct others was gone, he had considerable trouble making decisions
- Impairment in
  - (1) intellect
  - (2) behavior
  - (3) Social/emotional
  - (4) work

LEARNING & the BRAIN®

Goldberg (2009, p. 4)

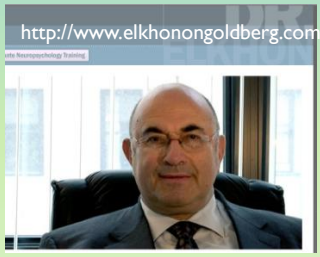
- "The frontal lobes … make us human, and as Luria stated, are they are the organ of civilization"
- Frontal lobes provide…"
- leadership, motivation, drive, vision, self-awareness, and awareness of others, creativity, sex differences, social maturity, cognitive development and learning…"
- They make each one of us unique

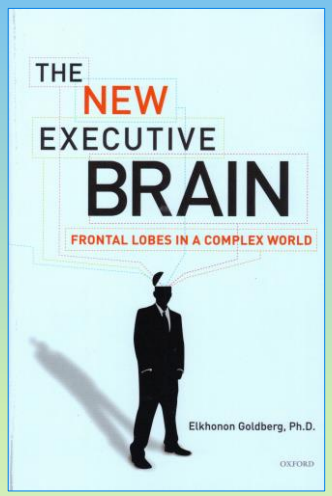


LEARNING & the BRAIN®

Executive Functions

- Elkhonon Goldberg provides a valuable review of what the frontal lobes do
- Describes EF as the orchestra leader





LEARNING & the BRAIN®

conclusions 69

What is Executive Function(s)

There is no formal excepted definition of EF

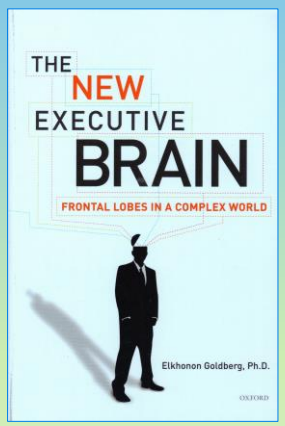
- We typically find a vague general statement of EF (e.g., goal-directed action, cognitive control, top-down inhibition, effortful processing, etc.).
- Or a listing of the constructs such as
  - Inhibition,
  - Working Memory,
  - Planning,
  - Problem-Solving,
  - Goal-Directed Activity,
  - Strategy Development and Execution,
  - Emotional Self-Regulation,
  - And more…but OVERALL…

LEARNING & the BRAIN®

conclusions 70

Frontal Lobes and Emotion

- Goldberg (2011, p 116-117)
  - the "emphasis in the classic studies of frontal lobe syndromes was on cognition [intelligence] rather than on affect [social emotional]"
  - 'very few researchers have attempted to merge cognitive and emotional aspects of frontal lobe dysfunction'



Phineas had a Social Emotional deficit

- Phineas had profound social emotional problems after his injury to the frontal lobes
- Phineas is
  - insulting
  - impulsively say things
  - uses vulgar language
  - can't manage his emotions
  - inconsistent in social situations
  - doesn't recognize he is offensive
  - looses control in interactions with others

Take Away Message

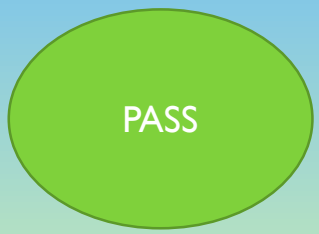
- Social Emotional competence is the result of the interaction between the brain (EF) and in all aspects of the environment
- Children CAN BE TAUGHT good, or bad, social emotional skills

Building the Big Picture

Big Idea :PASS

Subheadings:

- Planning
  - Mindsets
  - Skill Sets
- Attention
- Successive
- Simultaneous



You will be capturing the big idea of each key part of PASS on your organizer after we teach each section.

Planning (or lack of it!)

PASS Theory: Planning

- **Planning** is a neurocognitive process that a person uses to determine, select, and use efficient solutions to problems
  - problem solving
  - developing plans and using strategies
  - retrieval of knowledge
  - impulse control and self-control
- These can also be described as executive function, metacognition, strategy use

Which Lemming has good Planning?

LEARNING & the BRAIN®

CAS2: Rating Scale Planning

Directions for Items 1–10. These questions ask how well the child or adolescent decides how to do things to achieve a goal. They also ask how well a child or adolescent thinks before acting and avoids impulsivity. Please rate how well the child or adolescent creates plans and strategies to solve problems.

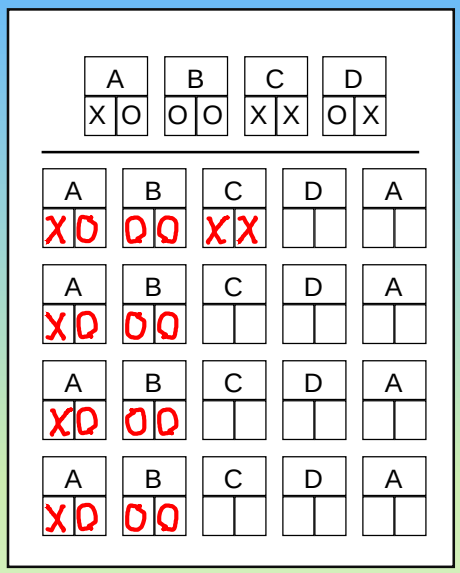
During the past month, how often did the child or adolescent . . .	Never	Rarely	Sometimes	Frequently	Always
1. produce a well-written sentence or a story?	0	1	2	3	4
2. evaluate his or her own actions?	0	1	2	3	4
3. produce several ways to solve a problem?	0	1	2	3	4
4. have many ideas about how to do things?	0	1	2	3	4
5. have a good idea about how to complete a task?	0	1	2	3	4
6. solve a problem with a new solution when the old one did not work?	0	1	2	3	4
7. use information from many sources when doing work?	0	1	2	3	4
8. effectively solve new problems?	0	1	2	3	4
9. have well-described goals?	0	1	2	3	4
10. consider new ways to finish a task?	0	1	2	3	4

___ + ___ + ___ + ___ + ___ = ☐

Planning Raw Score

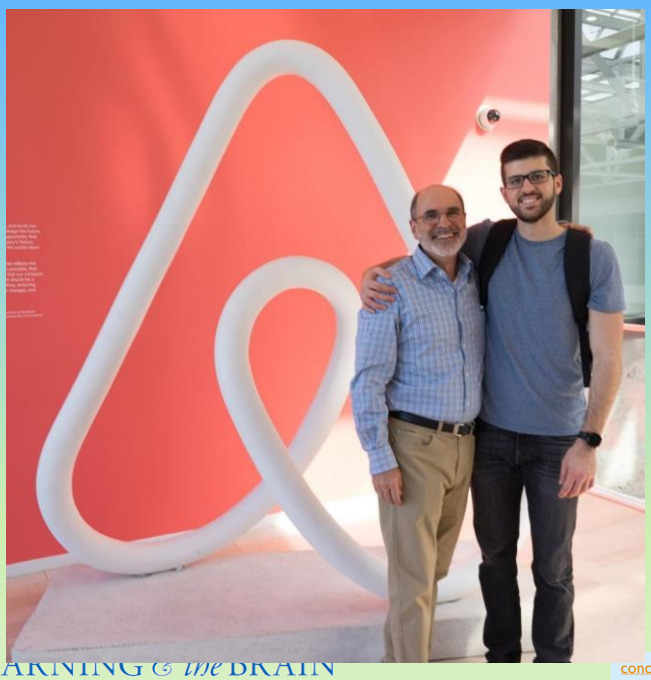
Planned Codes 1

- Child fills in the codes in the empty boxes
- Children are encouraged to think of a good way to complete the page



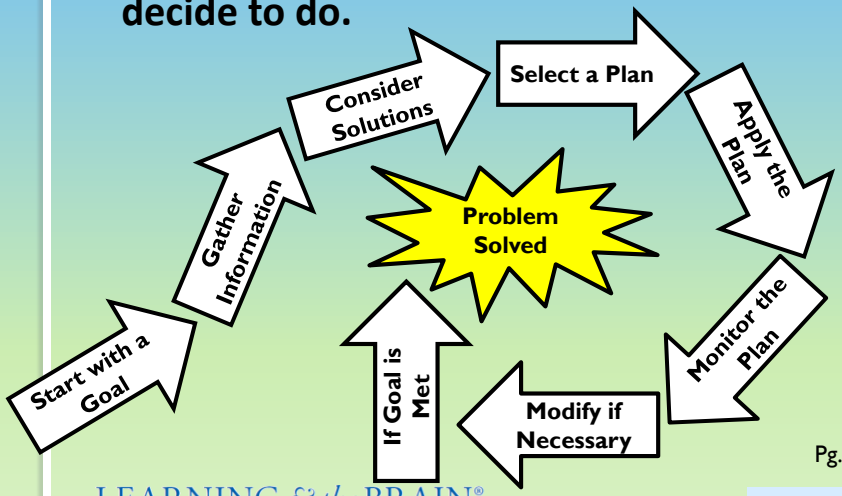
Planned Codes 1

Planned Codes Page 2



PASS Abilities: Planning

- Planning Ability is: ***how*** **you do what you decide to do.**



Pg. 9-10

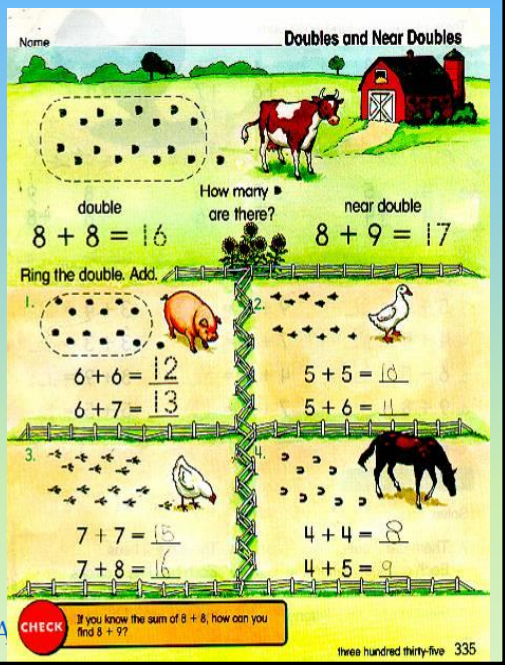
LEARNING & the BRAIN®

conclusions

83

Math Strategies

Note to the Teacher:
When we teach children skills by helping them use strategies and plans for learning, we are teaching both knowledge and processing. Both are important.


Name _____ Doubles and Near Doubles

double
8 + 8 = 16

How many are there?

near double
8 + 9 = 17

Ring the double. Add.

1. 6 + 6 = 12
   6 + 7 = 13

2. 5 + 5 = 10
   5 + 6 = 11

3. 7 + 7 = 15
   7 + 8 = 16

4. 4 + 4 = 8
   4 + 5 = 9

CHECK If you know the sum of 8 + 8, how can you find 8 + 9?

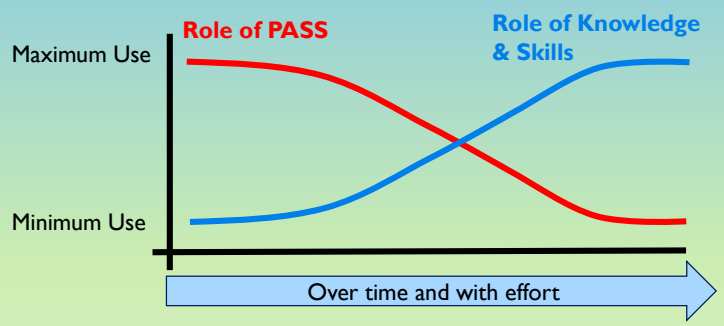
three hundred thirty-five 335

LEARNING & the BRA

The Role of PASS and Learning

Planning Learning Curves

- Learning depends upon many factors especially PASS
- At first, PASS plays a major role in learning
- When a new task is learned and practiced it becomes a skill and execution requires less thinking



Note: A **skill** is the ability to do something well with minimal effort (thinking)

Does a13 month old have EF?

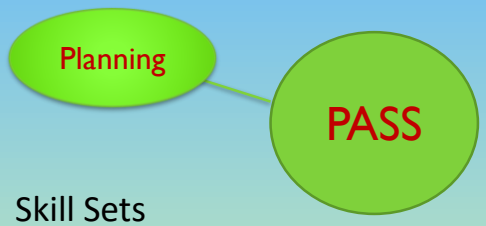
Age 19 mos: Knowledge & Planning

Building the Big Picture

Big Idea :PASS

Subheadings:

- Planning
  - Mindsets & Skill Sets
- Attention
- Successive
- Simultaneous



You will be capturing the big idea of each key part of PASS on your organizer after we teach each section.

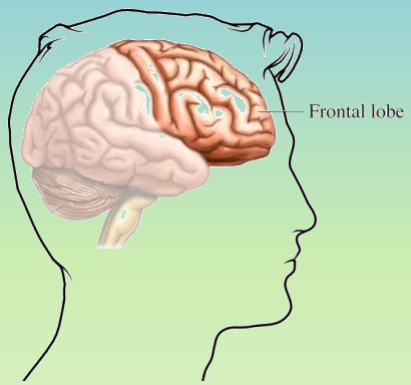
LEARNING & the BRAIN®

conclusions

89

Instructional Implications for Planning

Engaging the FRONTAL LOBES



LEARNING & the BRAIN®

conclusions

90

Planning

Planning Facilitation for Math Calculation

Math calculation is a complex activity that involves recalling basic math facts, following procedures, working carefully, and checking one's work. Math calculation requires a careful (i.e., planful) approach to follow all of the necessary steps. Children who are good at math calculation can move on to more difficult math concepts and problem solving with greater ease than those who are having problems in this area. For children who have trouble with math calculation, a technique that helps them approach the task planfully is likely to be useful. Planning facilitation is such a technique.

Planning facilitation helps students develop useful strategies to carefully complete math problems through discussion and shared discovery. It encourages students to think about how they solve problems, rather than just think about whether their answers are correct. This helps them develop careful ways of doing math.

How to Teach Planning Facilitation

Planning facilitation is provided in three 10-minute time periods: 1) 10 minutes of math, 2) 10 minutes of discussion, and 3) 10 more minutes of math. These steps can be described in more detail:

Step 1: The teacher should provide math worksheets for the students to complete in the first 10-minute session. This gives the children exposure to the problems and ways to solve them. The teacher gives each child a worksheet and says, "Here is a math worksheet for you to do. Please try to get as many of the problems correct as you can. You will have 10 minutes." Slight variations on this instruction are okay, but do not give any additional information.

91

HAMMILL INSTITUTE ON DISABILITIES

Journal of Learning Disabilities
44(2) 184–195

DOI: 10.1177/0022219410391190
http://journaloflearningdisabilities.sagepub.com
SAGE

A Cognitive Strategy Instruction to Improve Math Calculation for Children With ADHD and LD: A Randomized Controlled Study

Jackie S. Iseman[1] and Jack A. Naglieri[1]

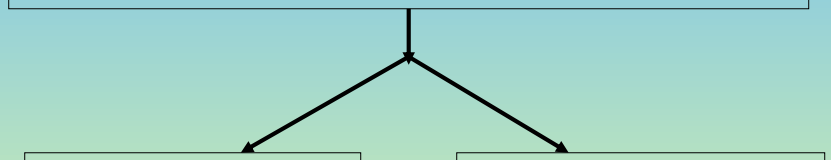
Abstract

The authors examined the effectiveness of cognitive strategy instruction b
Successive) given by special education teachers to students with ADHD
experimental group were exposed to a brief cognitive strategy instructi
development and application of effective planning for mathematical comp
standard math instruction. Standardized tests of cognitive processes a
students completed math worksheets throughout the experimental ph
Johnson Tests of Achievement, Third Edition, Math Fluency and *Wechsle*
Numerical Operations) were administered pre- and postintervention, a
follow-up. Large pre–post effect sizes were found for students in the exp
math worksheets (0.85 and 0.26), Math Fluency (1.17 and 0.09), and Nu
At 1 year follow-up, the experimental group continued to outperform t
students with ADHD evidenced greater improvement in math worksh
(which measured the skill of generalizing learned strategies to other sin
when provided the PASS-based cognitive strategy instruction.

Design of the Study

Experimental and Comparison Groups

7 worksheets with Normal Instruction



Experimental Group

19 worksheets with Planning Facilitation

Comparison Group

19 worksheets with Normal Instruction

LEARNING & the BRAIN®

conclusions

93

Instructional Sessions

- Math lessons were organized into "instructional sessions" delivered over 13 consecutive days
- Each instructional session was 30-40 minutes
- Each instructional session was comprised of three segments as shown below

10 minutes	10-20 minutes	10 minutes
10 minute math worksheet	Planning Facilitation or Normal Instruction	10 minute math worksheet

LEARNING & the BRAIN®

conclusions

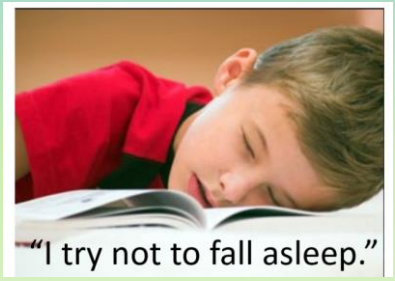
94

Planning (Metacognitive) Strategy Instruction

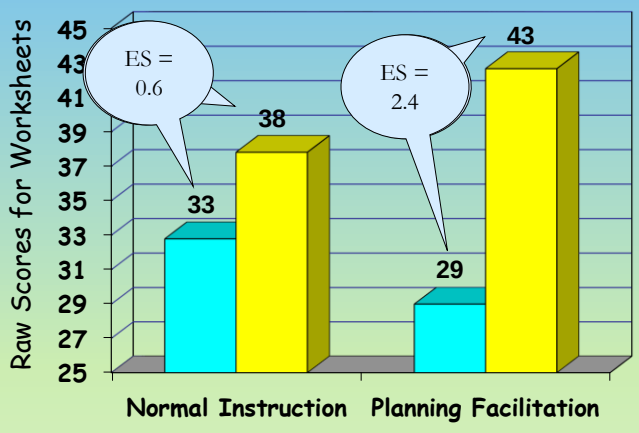
- Teachers *facilitated* discussions to help students become more self-reflective about use of strategies
- Teachers asked questions like:
  - What was your goal?
  - Where did you start the worksheet?
  - What strategies did you use?
  - How did the strategy help you reach your goal?
  - What will you do again next time?
  - What other strategies will you use next time?

Student Plans

- "My goal was to do all of the easy problems on every page first, then do the others."
- "I do the problems I know, then I check my work."
- "I do them (the algebra) by figuring out what I can put in for X to make the problem work."
- "I did all the problems in the brain-dead zone first."



Classroom Worksheets Pre-Post



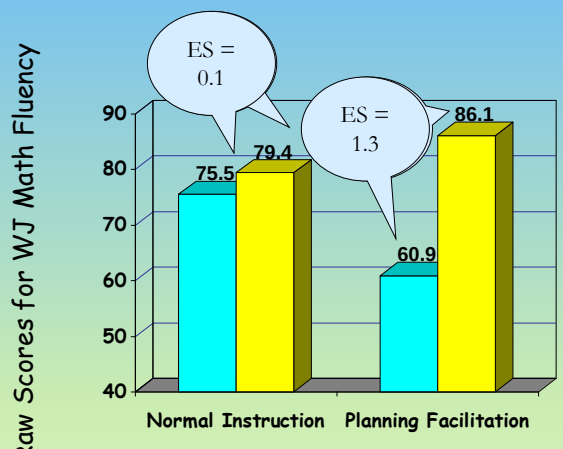
Reminder
< .2 = no effect
.2 - .5 = small
.6 - .8 = medium
> .8 = large

LEARNING & the BRAIN®

conclusions

97

Woodcock-Johnson Math Fluency



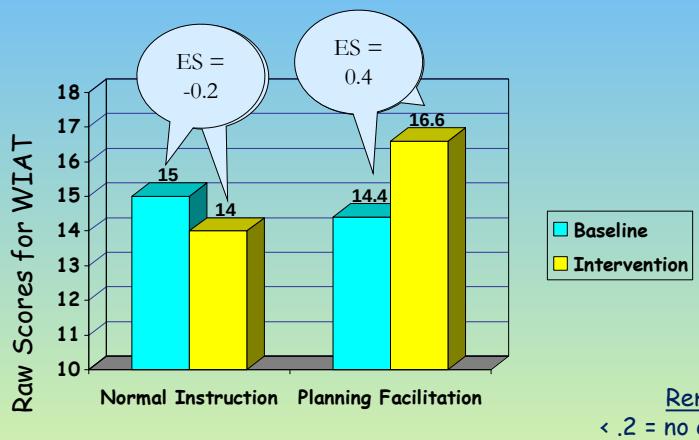
Reminder
< .2 = no effect
.2 - .5 = small
.6 - .8 = medium
> .8 = large

LEARNING & the BRAIN®

conclusions

98

WIAT Numerical Operations



Reminder
< .2 = no effect
.2 - .5 = small
.6 - .8 = medium
> .8 = large

LEARNING & the BRAIN®

conclusions

99

One Year Follow-up

At 1-year follow-up, 27 of the students were retested on the WJ-III ACH Math Fluency subtest as part of the school's typical yearly evaluation of students. This group included 14 students from the comparison group and 13 students from the experimental group. The results indicated that the improvement of students in the experimental group ($M = 16.08$, $SD = 19$, $d = 0.85$) was significantly greater than the improvement of students in the comparison group ($M = 3.21$, $SD = 18.21$, $d = 0.09$).

LEARNING & the BRAIN®

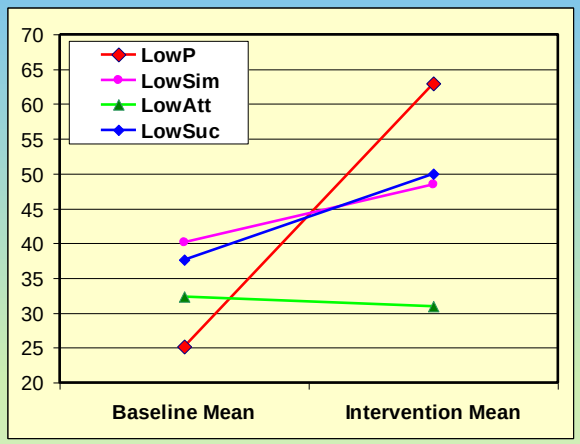
conclusions

100

Iseman (2005)

Cognition (Planning scores) predicted response to intervention

- Baseline Intervention means by PASS profile
- Different response to the same intervention



Results

- The experimental group did better than the control on math taken from the curriculum on standardized math tests
- A year later the experimental group still outperformed the control group.
- ***Mindsets Plus Skill Sets Equals Results!***

&

Discuss: What does this mean for our work as psychs, teachers, speech path, etc

LEARNING & the BRAIN®

conclusions

Don't Commit Assumicide

-Kelly Gallagher

- Assuming that someone else has taught students the skills they need to learn effectively in your classroom.
- Assuming that students will transfer skills they learned in someone else's class into your classroom without helping them transfer the skills.

LEARNING & the BRAIN®

conclusions

Let's Take a Break!

LEARNING & the BRAIN®

conclusions

3 Minute Body Scan

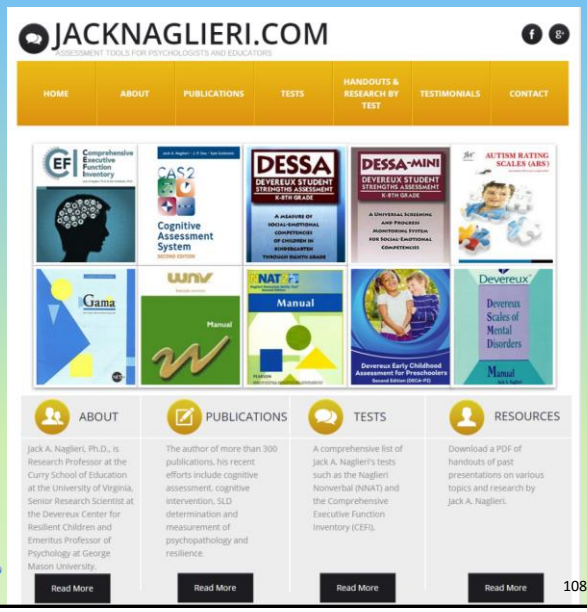
LEARNING & the BRAIN®

conclusions

106

www.jacknaglieri.com

- General information
- Copies of presentations, research and book chapters
- To ask a question



LEARNING &

kathleenkryza.com

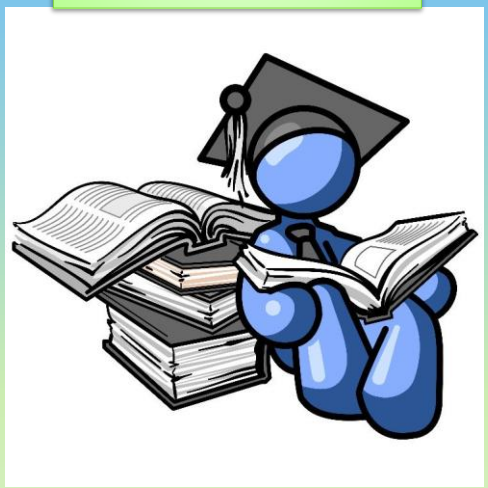
- Newsletter
- Free Resources
- Books
- Contact me or book me for your school
- Don't forget to like me on Facebook or Follow me on Twitter!

LEARNING & the

Edu-Venture In Belize

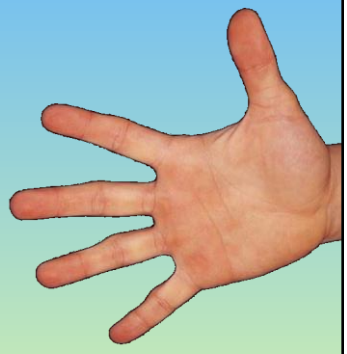
differentiation, experience it to embrace it!

Skill Sets



Metacognition

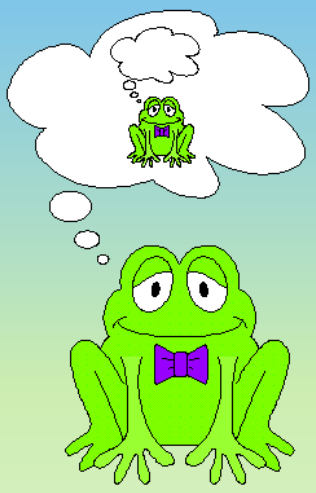
- On a scale of 1-5 fingers, how well do you think you know and apply the concept of metacognition in your classroom/school?



LEARNING & the BRAIN®

conclusions

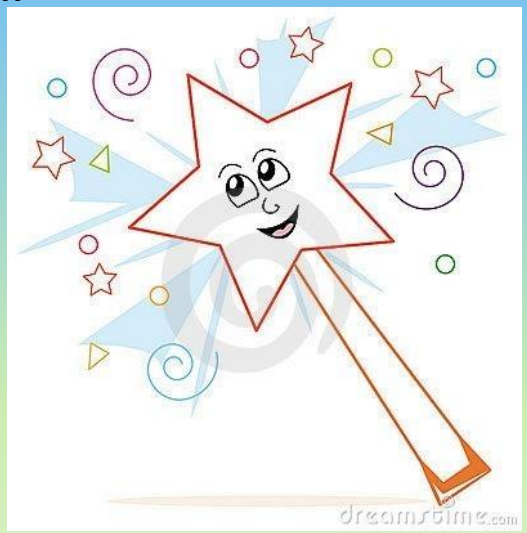
Make Metacognition Visible



LEARNING & the BRAIN®

conclusions

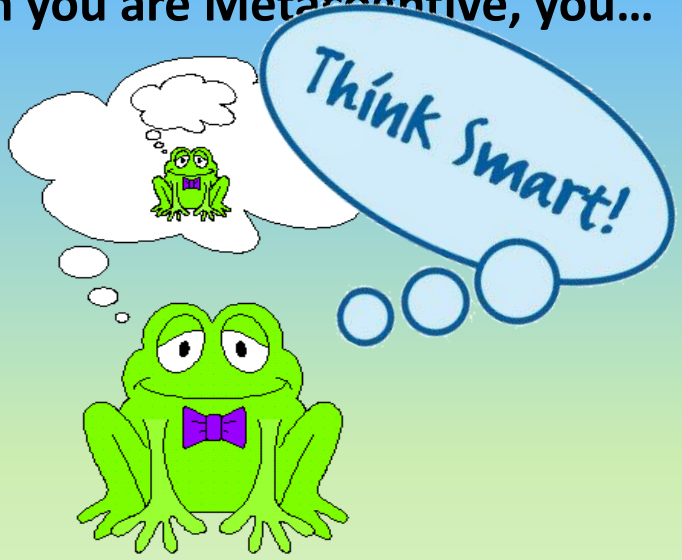
Learning to do well in school isn't magic….



LEARNING & *the* BRAIN®

conclusions

When you are Metacognitive, you…



LEARNING & *the* BRAIN®

conclusions

You have to Think SMART And have a…

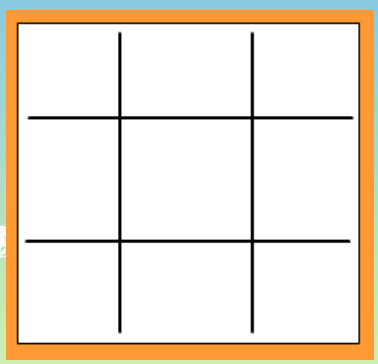
LEARNING & the BRAIN®

conclusions

First: Teach Intentionally About Metacognition

Metacognition is thinking about your thinking, having a plan of action for what to do when you don't know.

RESTATE: Now restate the term in your own words.



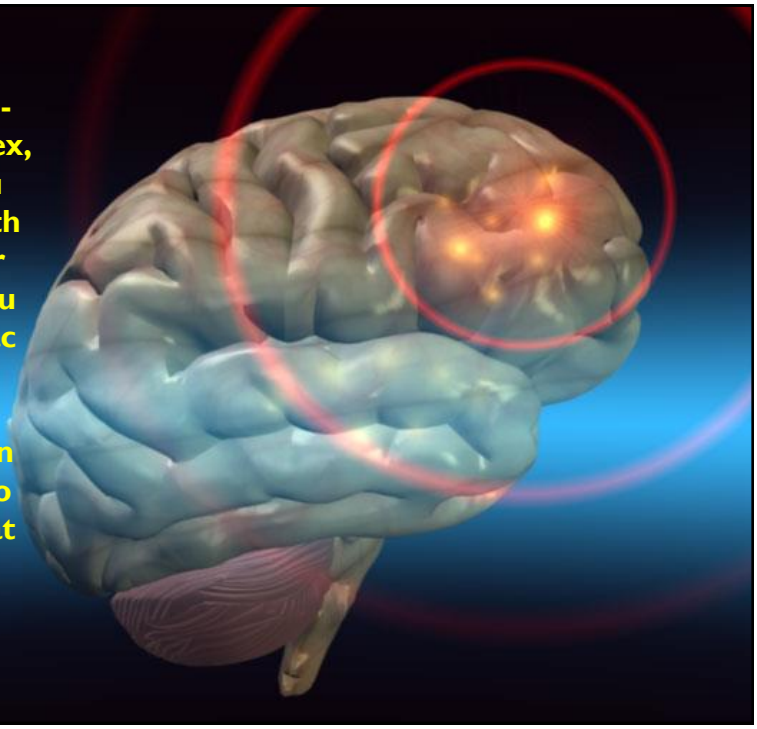
LEARNING & the BRAIN®

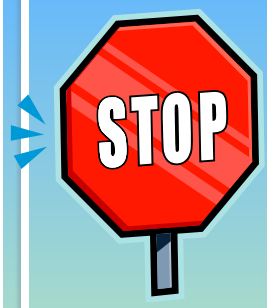
www.inspiringlearners.com
2012

conclusions

The front part of your brain, or pre-frontal cortex, is where you come up with strategies or plans like you did for tic tac toe.

You can train your brain to get better at Planning





&

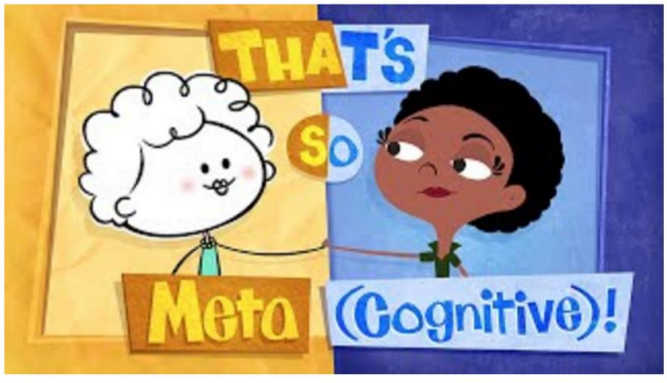
Draw a picture that represents your idea of metacognition. Share.

STOP AND DRAW: Non-linguistic representations helps cement learning

LEARNING & the BRAIN®

www.inspiringlearners.com
2012

https://edpuzzle.com/assignments/577703593cfdf58b29d7c670/watch

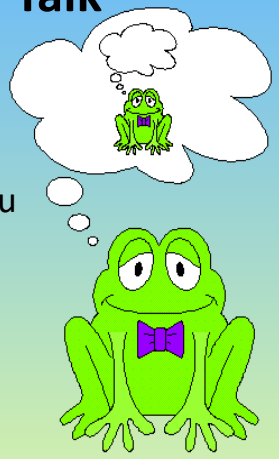


REVIEW: More on Metacognition (Read "How People Learn" for more…)

- **METACOGNITION** consists of three basic elements:
- *Developing a plan of action*
- *Maintaining/monitoring the plan*
- *Evaluating the plan*

- The more students are aware of their thinking processes as they learn, the more they can control such matters as goals, dispositions, and attention. Self-awareness promotes self-regulation

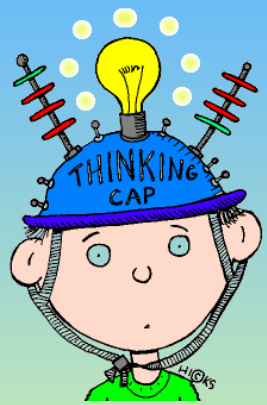
You Try It! Turn and Talk



- Based on what you just learned, describe how you are metacognitive about exercising or eating right.
- Do you need to monitor and adjust? How's your plan working?

(Meta-strategic)

Think SMART!



Stop and THINK

Make a PLAN

Take **A**ction!

Review/Reflect/Revise

Ta da! (or) Try Again

Developed by Naglieri and Kryza, 2014

Let's Try: Academic Metacognition

- I'll give you some examples and you tell me if this person is THINKING **SMART** or NOT.
- Scott tried once, but couldn't do his math homework, so he watched T.V.
- Was he THINKING **SMART**?
- Let's help Scott THINK **SMART**

LEARNING & the BRAIN®

conclusions

Let's Try: Social Emotional Metacognition

- I'll give you some examples and you tell me if this person is THINKING **SMART** or NOT.
- Wenting was upset when kids started teasing her on the playground, so she picked up dirt and started throwin[illegible] a[illegible] them.
- Was she THINKING **SMART**?
- Let's help Wenting THINK **SMART**

LEARNING & the BRAIN®

conclusions

Think SMART!

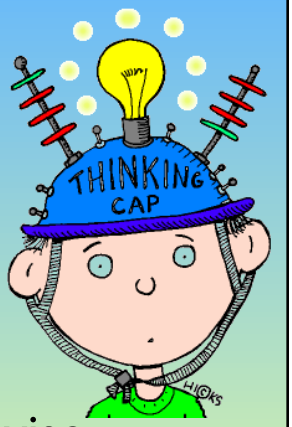
Stop and THINK

Make a PLAN

Take **A**ction!

Review/Reflect/Revise

Ta da! (or) Try Again



Developed by Naglieri and Kryza, 2014

LEARNING & *the* BRAIN®

conclusions

Think SMART Rap!

Think SMART!
Here's how you START
You THINK, "I CAN!"
Then you make a PLAN
Now give it GO,
Watch your brain GROW!
So now YOU KNOW…
THINK SMART!
Peace out!

LEARNING & the BRAIN®

conclusions

An introduction to METACOGNITION - Lesson	
Length	30 minutes
C U KAN	**Concept:** METACOGNITION **Understand:** that using metacognition will help them become better learners **Know:** how to define metacognition **Able To Do:** sing a song or chant that will help them to remember to use metacognition **Now You Get It:** Students will reflect on how using metacognition will help them become better learners.
Evidence	Metacognition journal/chart entries (follow up lessons) & memorization of the song/chant

Min	materials	Lesson details
2	worksheet	**Do Now:** Students should silently write down their own descriptions of what's happening in the cartoon. (It's a frog thinking about his own thinking a metacognition)
1		**Opening:** Choose a student to share her description with the class. Tell the students that this picture will make more sense by the end of the lesson if it hasn't quite clicked for them yet.
3	Worksheet Pencils Timer	**Brain warm up/game time:** Tell the students that they will have a chance to play Tic Tac Toe with a partner. They can play as many games as possible within the 2-minute time limit. Tell them to pay attention to what's going on in their minds as they make their choices throughout the games.
4		**Discussion:** Have students raise their hands if they won at least one match. Ask some students to share their secrets. What were they thinking in their minds before they made their moves? Do you have a favorite place to start? Why do you start there? Most likely the students will say they like to start in the corner because they can win that way. Teacher says: "Right! You have a plan, and that helps you win! If your opponent does something you hadn't expected, you're able to think of ways to adjust your plan so that you still win. Now I'm going to show you how to create a plan for winning the learning game. I'll help you see how this same type of thinking will translate to better results with your school work."
15	White board & marker or a chart paper Smartboard or projector and computer to show the clip	**Lesson:** Define metacognition: thinking about one's thinking (Depending on the age group of students with whom you're working, this video could be a good resource to use describe metacognition to the class - http://www.youtube.com/watch?v=mYE21OhY_II.) Have you ever turned to the next page in your book and only to realize that you hadn't really been paying attention to the words you were "reading"? Have you ever spent time "studying" flash cards only to realize that you can't remember any of the words or concepts? Being metacognitive will help you be aware of your own learning and adjust your strategies to make learning easier. TEACHER'S CHOICE: You can now teach the class a rap, chant, or song that you've invented to help them remember the definition for metacognition and when to use it or allow the students to come up with their own song/rap/poem/chant/etc. Here are some examples of songs from other teachers' classrooms: Elementary school - http://www.youtube.com/watch?v=FxyZeSO3uI4 Middle school - http://www.youtube.com/watch?v=LNeQKk_1Bg8
5	Worksheet Tape to post the sign Empty space on the wall	**Closing:** ▪ Have students work alone or with a partner to write and reflect on how metacognition will help them learn. ▪ Post the picture of the frog on the wall as a reminder to use their metacognitive skills throughout the year.

*** During follow up lessons include many scaffolded (I do, we do, two do, you do) opportunities for learning how to be metacognitive. Use the metacognition chart included in this month's newsletter for practice using this skill before, during, and after reading.**

www.kathleenkryza.com
Past Newsletter on Metacognition

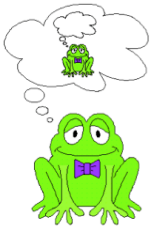
LEARNING & the BRAIN®

conclusions

Name _____ date_____

	In your own words describe what's happening in this cartoon.
Game time:	
Metacognition Definition	
How will metacognition help you become a better learner?	

METACOGNITION



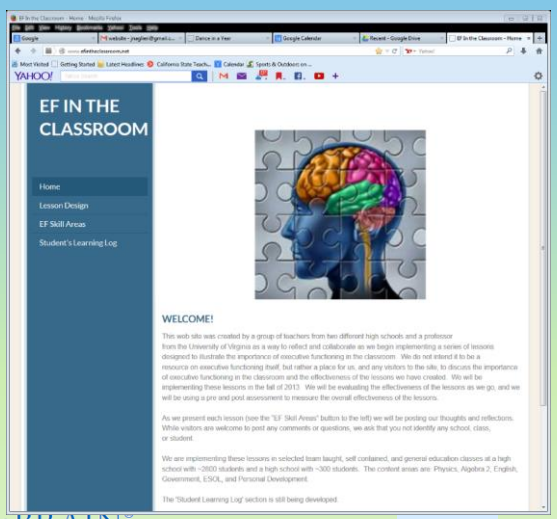
THINKING ABOUT ONE'S THINKING

LEARNING & the BRAIN®

conclusions

High School Lessons www.efintheclassroom.net

- Start with Awareness of thinking about thinking



LEARNING & the BRAIN®

conclusions

Metacognition Lesson: EF in the Classroom

Planning Lesson

Phrase of the week: What is your plan?

http://www.youtube.com/watch?v=bQLCZOG202k

1. What had to happen so that the people could dance together in this video?
2. What are the parts of a good plan?
3. How do you know if a plan is any good?
4. What should you do if a plan isn't working?
5. How do we use planning in this class?

Go to student learning log and create a plan for the week.

Students watched a Flash Mob at Antwerp train Station (2009)

Planning Lesson Student responses

- Q: What would you have to plan out?
  - They had to learn the dance steps (knowledge)
  - Someone had to start dancing (initiation)
  - Permission from train station (planning)
- Q: What are the parts of a good plan?
  - Think of possible problems (strategy generation)
  - Organize the dance (organization)
  - Practice the dance steps (initiation)
  - Have a good idea of what to do (knowledge)

Planning Lesson Student responses

- Q3: How do you know if a plan is any good?
  - Put the plan in action and see if it works (self-monitoring)
  - Give it a try (perhaps learn by failing)

1. Q4: What should you do if a plan isn't working?
   1. Fix it. (self-correction)
   2. Go home ! (a bad plan)

Planning Lesson Student responses

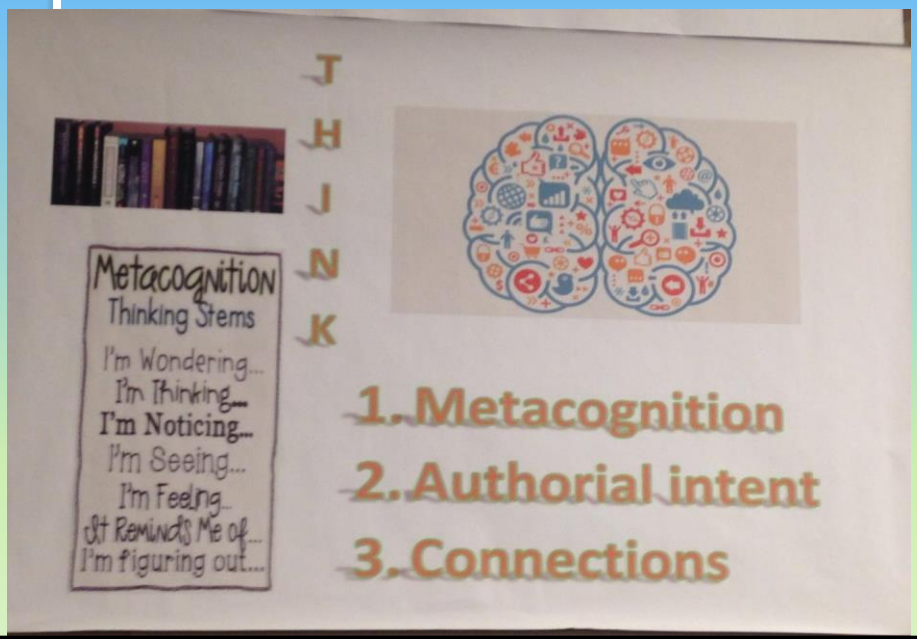
Q5: How do you use planning in this class?

1. We don't plan in this class
2. Mrs. XXX does all the planning in this class so you don't have to think about planning

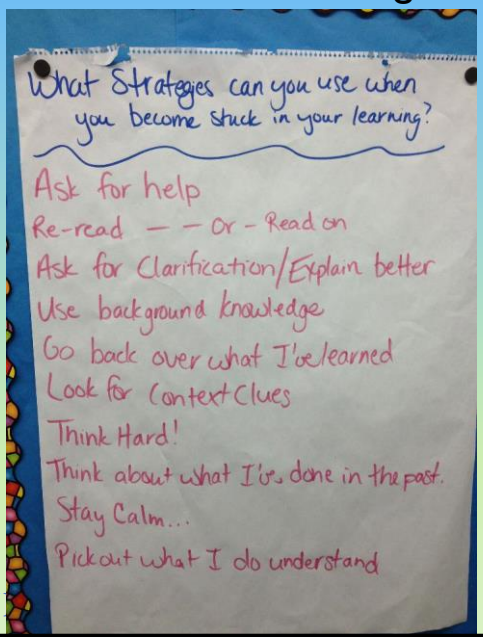
Regroup to Create Planning Facilitation (Metacognitive) Questions

- Social Emotional
  - Before, During, After
- Academic
  - Reading
    - Before, During, After
  - Math
    - Before, During, After
- Develop three guiding questions you could ask students to

Anchor Charts = Transparent



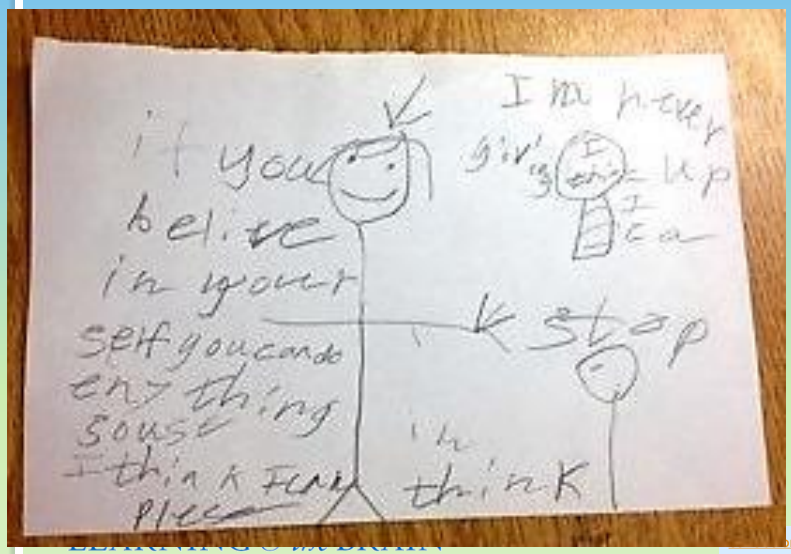
Skill Set Anchor Chart: Making Thinking Visible

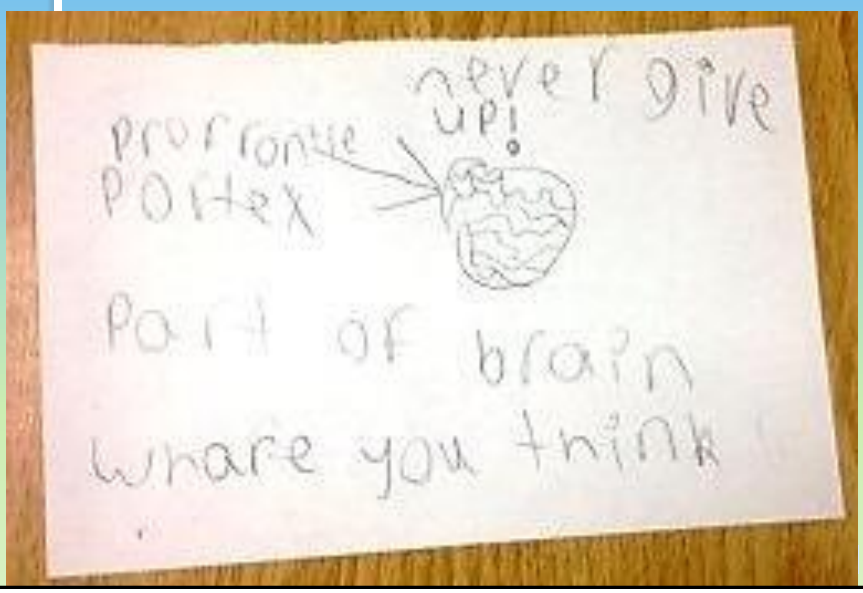


LEARN

conclusions

Self-Assessment…





Dennis, 16, On Metacognition

- What's metacognition?
- It's the recognition,
- Of how my brain works,
- Understanding my learning quirks.
- It means I've got to have a plan
- And more important, think, "I can!"
- Before, during, after, that's the trick
- Metacognition means that learning sticks.
- When I have a plan, I'm a stronger reader
- This can help me become a real leader!
- So I'll practice my skills each and every day.
- Metacognition will take me all the way!

Think and Talk

&

How will you support students in developing their meta-strategic skill sets?

NOTE: STOP AND TALK is important because the brain retains 50% through talk.

LET'S TAKE A BRAIN BREAK or Syn-Nap

The brain needs time **to process!**

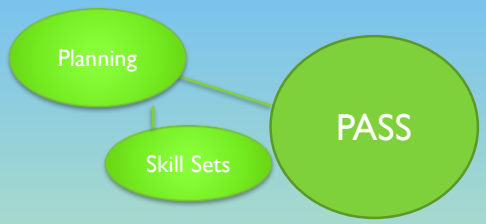
- **Stretch**
- **Cross Laterals**
- Walk and Talk
- Energizers
- Relaxers

Building the Big Picture

Big Idea :PASS

Subheadings:

- Planning
  - Mindsets
  - Skill Sets
- Attention
- Successive
- Simultaneous



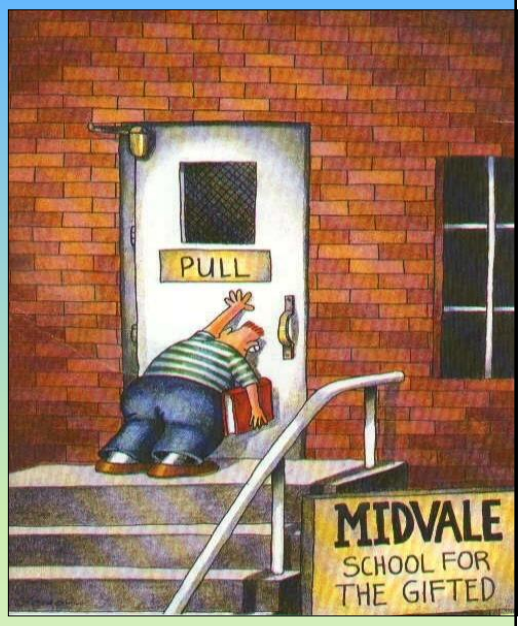
You will be capturing the "Big Idea" of each key part of PASS on your organizer after we teach each section.

LEARNING & the BRAIN®

conclusions

146

POOR PLANNING



LEARNING & the BRAIN®

conclusions

147

PASS Theory: Planning Challenges

Examples of classroom problems related to Planning

- Using the same strategy even if it is not effective
- Struggling with how to complete tasks
- Not monitoring progress during a task
- Misinterpretation of what is read

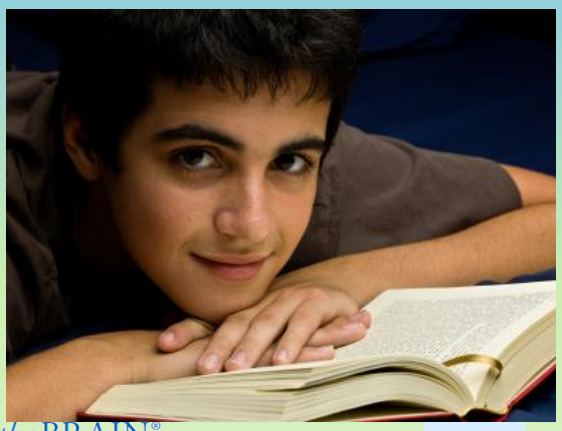
LEARNING & the BRAIN®

conclusions

148

The Case of Rocky

Specific Learning Disability and ADHD



LEARNING & the BRAIN®

conclusions

149

The case of Rocky

- Rocky[1] is a real child with a real problem
- He lives in a large middle class school district
  - a wide variety of services are available
- In first grade Rocky was performing significantly below grade benchmarks in reading, math, and writing.
  - He received group reading instruction weekly and six months of individual reading instruction from a reading specialist
  - He made little progress and was retained

Note: This child's name and other potentially revealing data have been changed to protect his identity.

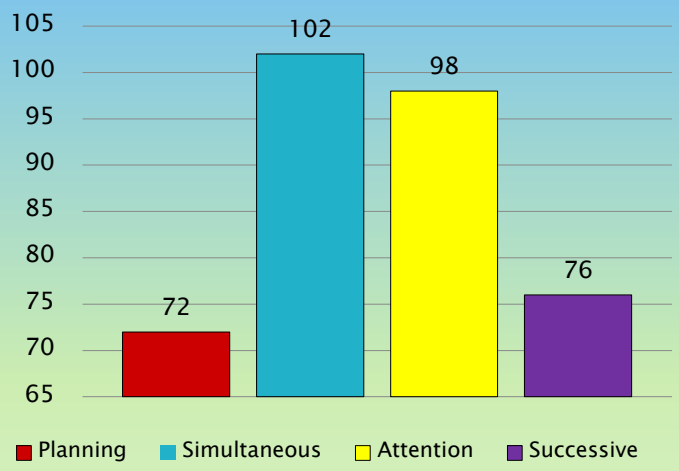
The case of Rocky

- By the middle of his second year in first grade Rocky was having difficulty with
  - decoding, phonics, and sight word vocabulary; math problems, addition, fact families, and problem solving activities;
  - and focusing and paying attention."

➢ After two years of special team meetings and special reading instruction he is now working two grade levels below his peers and is having difficulty in reading, writing, and math

➢ A comprehensive evaluation was conducted

Basic Psychological Processing Scores



LEARNING & the BRAIN®

conclusions

152

The case of Rocky

- He has Planning and Successive weaknesses
- Met DSM for ADHD
- Met SLD definition a "disorder in one or more of the basic psychological processes"

	Score	Diff	Significant	S/W
Planning	72	-15.0	yes	Weakness
Simultaneous	102	15.0	yes	
Attention	98	11.0	yes	
Successive	76	-11.0	yes	Weakness
PASS mean	87.0			

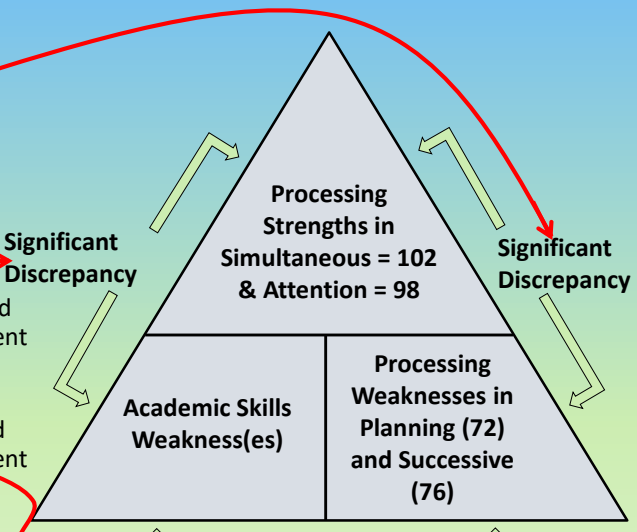
LEARNING & the BRAIN®

conclusions

153

Discrepancy Consistency Model for SLD

- Discrepancy between high and low processing scores
- Discrepancy between high processing and low achievement
- Consistency between low processing and low achievement

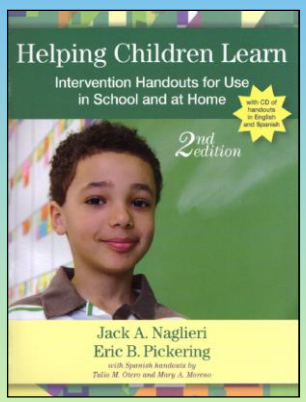


LEARNING & the BRAIN®

conclusions

Interventions

- Helping Children Learn Intervention Handouts for Use in School and at Home, *Second Edition*
  By Jack A. Naglieri, Ph.D., & Eric B. Pickering, Ph.D.,
- Spanish handouts by Tulio Otero, Ph.D., & Mary Moreno, Ph.D.

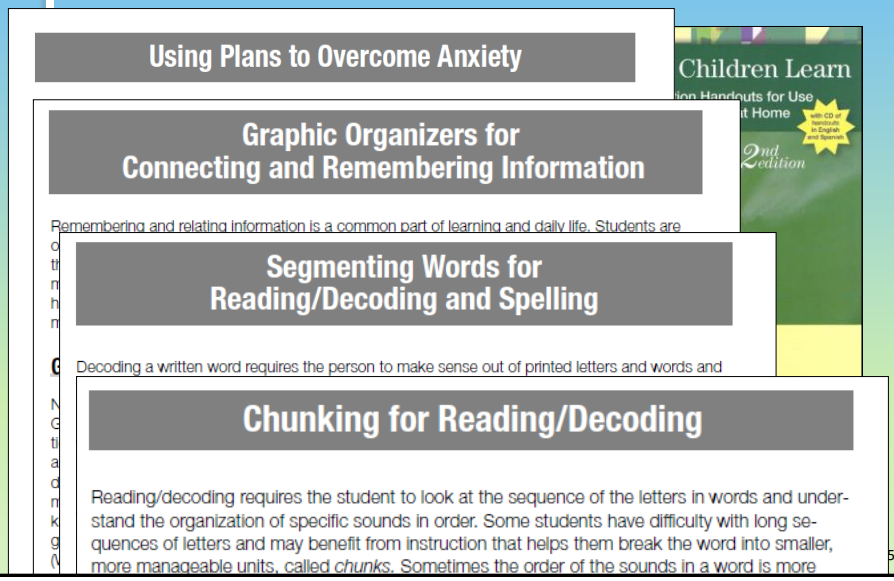


LEARNING & the BRAIN®

conclusions

155

Interventions for Rocky



56

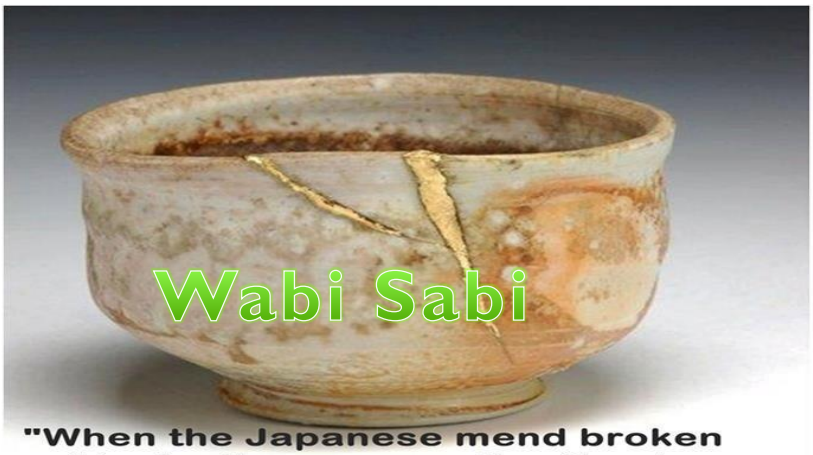
Three Categories for Each Day

- Summarize the Big Idea and WHY it['s important.
- List 3-5 facts you want to remember
- Note at least three take away strategies or ideas you plan to use in your work with students.

LEARNING & the BRAIN®

conclusions

157



"When the Japanese mend broken objects, they aggrandize the damage by filling the cracks with gold. They believe that when something's suffered damage and has a history it becomes more beautiful."

Billie Mobayed

LEARNING & the BRAIN®

conclusions

158

The only way to climb a mountain …

Slowly, slowly, easy, easy…

LEARNING & the BRAIN®

conclusions

The Shape of Things…

Something that Squares with your beliefs

3 Strategies you intend to use

A question that is still circling in your mind

LEARNING & the BRAIN®

conclusions

160

Stand and Share

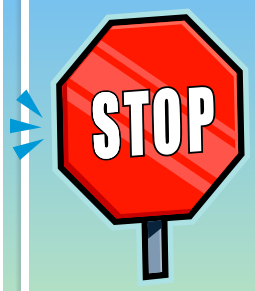
&

Think back to the SNL video this morning. Why do we need to develop these six foundations if we want kids to "Think Smart?"

LEARNING & the BRAIN®

conclusions

161



&

How have we been learning both collectively and individually thus far? How have we learned in varied modalities?

LEARNING & *the* BRAIN®

conclusions

162