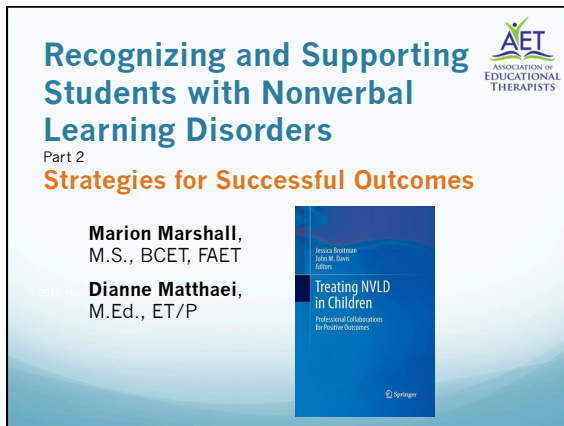


# Recognizing and Supporting Students with Nonverbal Learning Disorders

## Part 2 Strategies for Successful Outcomes



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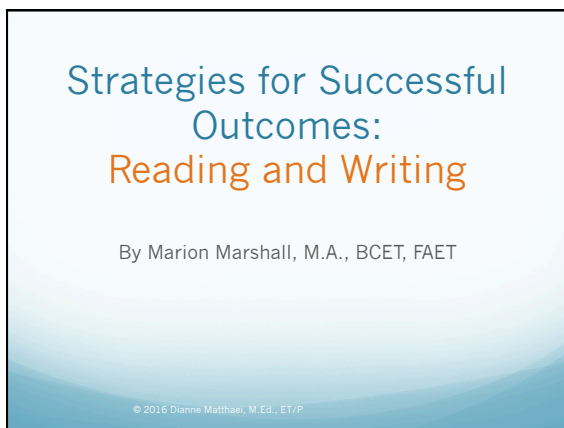
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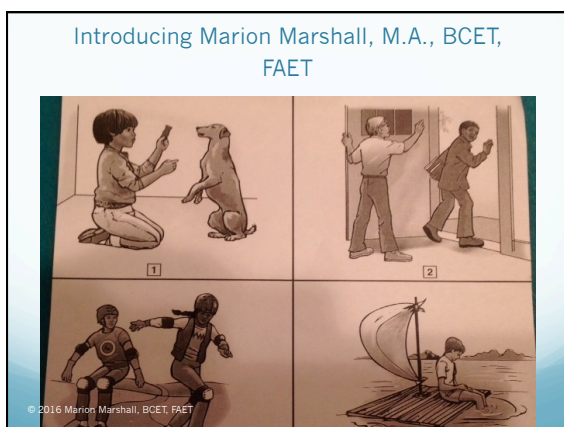
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## Recognizing and Supporting Students with Nonverbal Learning Disorders

### Part 2 Strategies for Successful Outcomes

#### Principles for ET Support

- ① Teaching **should not** be multisensory.
- ② Due to difficulties integrating verbal & visual spatial information, **increase verbal instruction** & limit or **reduce visual stimuli** (charts, graphs, tables, graphic organizers).
- ③ Perform task analysis to make **individual accommodations** using evidence of “research-based” strategies while holding in mind the individual student’s NVLD profile.
- ④ Instruct using concrete (3-D) before using pictures, diagrams, textbooks, etc. (2-D).
- ⑤ Match instruction to learning strengths, while remediating content areas.
- ⑥ Specialists should work in concert to support growth in both educational and social settings.

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#### Referral points for issues in written language

- Stark contrast between expressive language skills and written output.
- “Messy” work and lack of production may be viewed as *willful, uncooperative, lazy, or oppositional*
- Issues with handwriting stem from underlying difficulties with fine motor skills: difficulties with understanding directional/ positional elements and a lack of ability to visualize letter formation

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#### “Evidence-based” Practices

- Scant literature; not specific to NVLD
- Some specific to LD
- *National Reading Panel Report* (2000)
- *Writing Next* (2007)
- *Effective Instruction for Adolescent Struggling Readers: A Practice Brief* (2008)
- Instruction in writing while using current reading texts, reading comprehension improves. (*Writing to Read* 2010)

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## Recognizing and Supporting Students with Nonverbal Learning Disorders

### Part 2 Strategies for Successful Outcomes

#### Link between Reading and Writing

When writing is combined with reading - it **enriches reading comprehension**. If one writes about something just read, it increases **the depth of thinking**, allows for **greater recall**, and generally **clarifies understanding** of the material.

(Wallace, Pearman Hail & Hurst 2007)

- Writing to Learn = “cross training” (Marion Marshall)
- Efficient use of time

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#### Role of Executive Functioning in Writing

Not articulate when writing – why?

- Initiation, planning
- Paragraphs (or sentences) not well-sequenced (topic maintenance, flow)
- Drawn to novel or original ideas –insertions not germane
- Saliency determination (ideas seem of equal weight)
- Issues with categorization (What goes together? What is related? Why? Why not?)
- Formulaic writing (more like a list)
- Writing requires simultaneous integration of skills
- Dislike for having work edited

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#### Writing to Learn Effective Practices:

- ✓ Use of Graphic Organizers
- ✓ Compare and Contrast
- ✓ Four Square Writing Method
- ✓ Teach Elaboration
- ✓ Teach Summarization

For the NVLD student – also teach Categorization

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## Recognizing and Supporting Students with Nonverbal Learning Disorders

### Part 2 Strategies for Successful Outcomes

#### Reading Comprehension

- Reading comprehension difficulties may be surprising given the relative ease with reading decoding & reading fluency.
- In 4-5<sup>th</sup> grades: issues with understanding character actions & perspective taking.
- In 5-8<sup>th</sup> grades: issues with summarization; gets lost in details; idiosyncratic interests “override” the main idea.
- In 6<sup>th</sup>-12<sup>th</sup> grades: difficulties with expository texts due to issues with note taking and saliency determination.

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#### National Reading Panel

- Comprehension Monitoring
- Cooperative Learning
- Graphic Organizers
- Question Answering
- Question Generation
- Summarization
- Flexible use of Strategies

#### Techniques

Collaborative Strategic Reading (CSR):  
**Click & Clunk**  
 ET as partner  
 Reduce types; simplify graphics; 3-D first  
 2 column notes; teach text structure; “sticky notes”  
 Question- Answer-Relationships (QAR)  
 CSR “Get the Gist”  
 Teach each strategy in isolation until mastered; use texts at independent reading level

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#### Techniques

These techniques support the **thinking skills** needed in language arts.

- 1 “Mark and Defend” (Marshall & Handler p. 164)
- 2 Summarization (p. 162-163)
- 3 Find the main idea: “Mark what would your teacher put on a test.”
- 4 **Get the Gist** (p. 166)
- 5 Question-Answer-Relationships (p. 164-165). Separate the question type from answering.
- 6 Think Like a Detective (p. 165) Make predictions.

Page numbers reference *Supporting the NVLD Student: Professional Collaborations* (2013).

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## Recognizing and Supporting Students with Nonverbal Learning Disorders

### Part 2 Strategies for Successful Outcomes

#### Compare & Contrast

- T-square physical model first
- Use “sticky notes” that can be easily rearranged
- Initially, ET creates categories for comparison
- To introduce, use texts with **high contrast**

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#### The Golden Slipper



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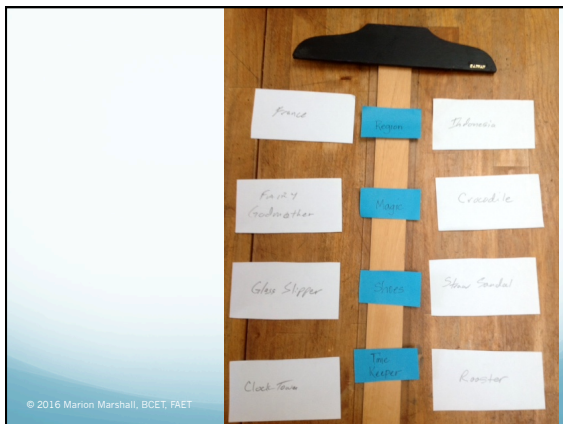
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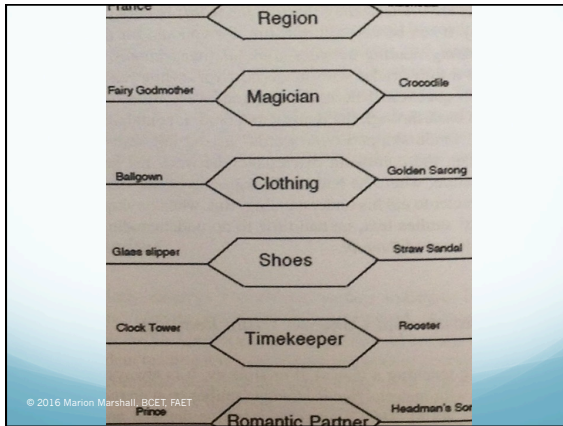
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## Recognizing and Supporting Students with Nonverbal Learning Disorders

### Part 2 Strategies for Successful Outcomes



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### Perspective Taking

- Use a large favorite object viewed from different perspectives
- Use commonly known books or stories

Examples:

*The True Story of the Three Little Pigs*

*George vs. George*

*Parallel Journeys*

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### The True Story of



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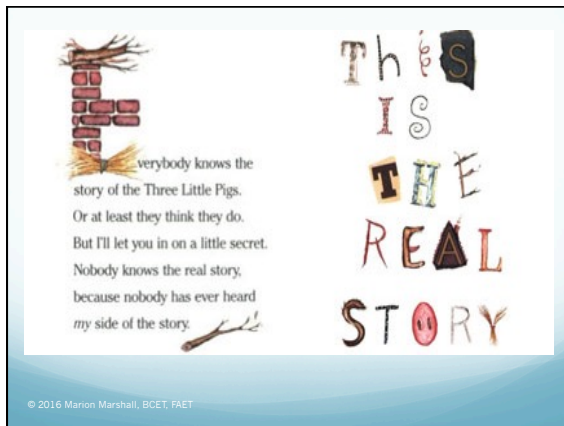
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## Recognizing and Supporting Students with Nonverbal Learning Disorders

### Part 2 Strategies for Successful Outcomes



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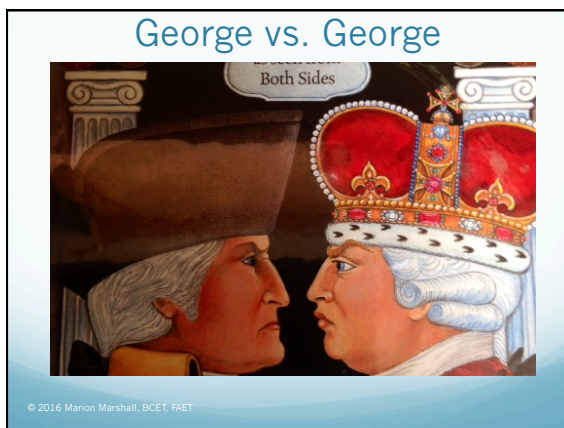
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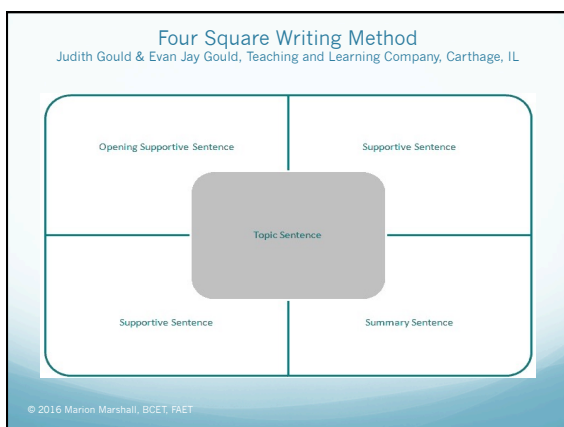
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## Recognizing and Supporting Students with Nonverbal Learning Disorders

### Part 2 Strategies for Successful Outcomes



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Also use technology tools such as.....

- Speech to text
- Audio books (especially for text books)
- Livescribe "smart pen"

More questions?  
[marshall@hnu.edu](mailto:marshall@hnu.edu)

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**Strategies for Successful Outcomes:**  
**Mathematics**

By Dianne Mattheai, M.Ed, ET/P  
Lighthouse Learning, LLC

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## Recognizing and Supporting Students with Nonverbal Learning Disorders Part 2 Strategies for Successful Outcomes

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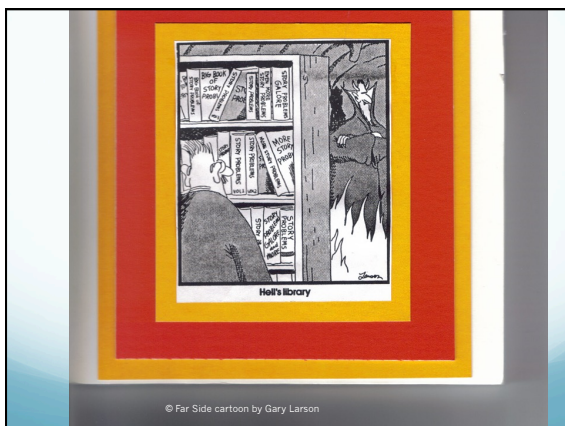
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© Far Side cartoon by Gary Larson

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## Recognizing and Supporting Students with Nonverbal Learning Disorders

### Part 2 Strategies for Successful Outcomes

### Why is math so hard for students with NVLD?

- Visual-Spatial Difficulties
  - Inaccurate visual perceptions
  - Problems with spatial relationships
  - Limited visual recall

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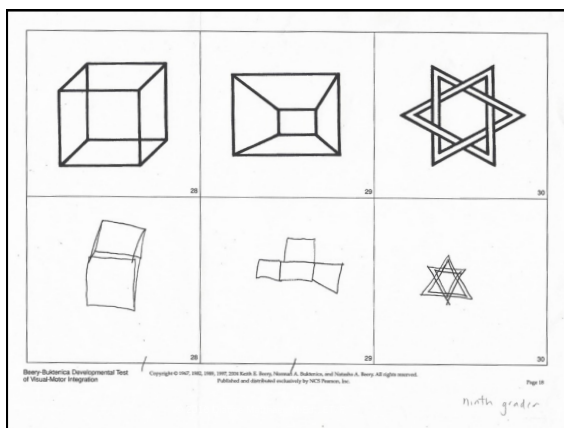
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### Difficulty with whole/part relationships

- Can't tell the whole from the parts
- Can see the trees but not the forest
- Struggle with math concepts that rely on whole/part relationships such as fractions, decimals and percentages



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$\frac{3 \times 3}{5 \times 3} = \frac{9}{15}$

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## Recognizing and Supporting Students with Nonverbal Learning Disorders Part 2 Strategies for Successful Outcomes

Other difficulties:

- Poor spacing and alignment
  - Problems drift all over the page
- Inaccurate skills for measurement
- Poor concept of time
- Difficulty with direction



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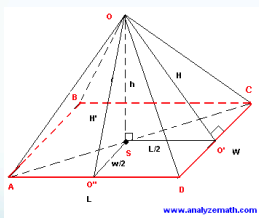
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## Problems with visual overwhelm



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## So what does it take to be successful in Math?

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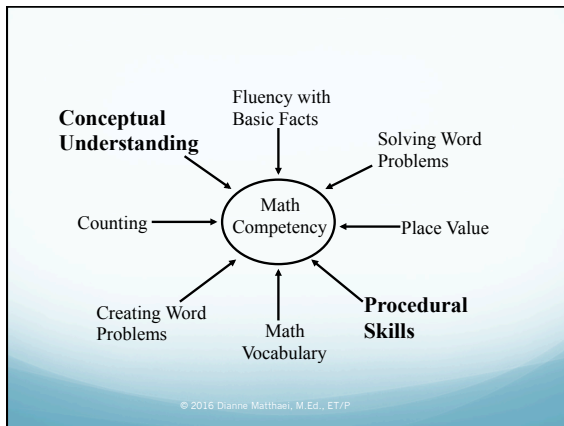
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## Recognizing and Supporting Students with Nonverbal Learning Disorders

### Part 2 Strategies for Successful Outcomes



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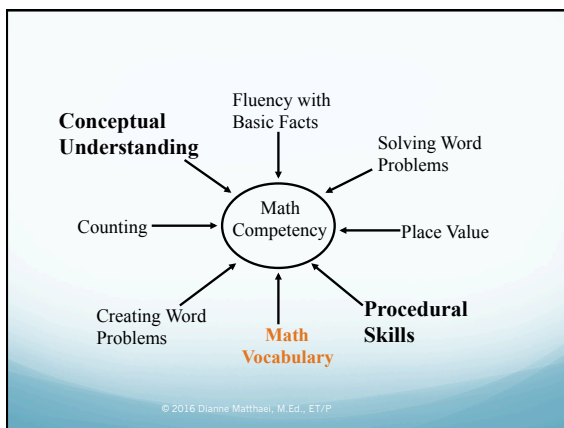
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### Why start with vocabulary?

- Learning core vocabulary is a vital, but often overlooked skill.
- Vocabulary acquisition is a strength for students with NVLD.
- Lead with your strengths.



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## Recognizing and Supporting Students with Nonverbal Learning Disorders

### Part 2 Strategies for Successful Outcomes

#### Math Vocabulary

- must link **term**, **definition**, and precise mental **image** for the term.



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#### Imagery

- The process of forming images, or mental constructs, for sights, sounds, smells, words, concepts, etc.



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#### Students with NVLD

Often readily memorize terms and definitions

- Will say, "The product is the answer to a multiplication problem."

But struggle to form images for those terms

- Will see the question, "Find the product of 2 and 6" and say, "What am I supposed to do? Add?"

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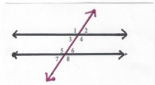
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## Recognizing and Supporting Students with Nonverbal Learning Disorders

### Part 2 Strategies for Successful Outcomes

**Alternate Exterior Angles**

Alternate exterior angles are created where a transversal crosses two (usually parallel) lines. Each pair of these angles is outside the parallel lines, and on opposite sides of the transversal.



One client with NVLD could give a perfect definition of alternate exterior angles but could not find them on a drawing.

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### Students with NVLD

- Will have a tendency to develop:
  - rote memory definitions (definitions where the term has no image)
  - definitions that are overly literal or too narrow
  - definitions that are vague or confused with other terms
- Radius - which one is that?

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### Teach vocabulary of math

Link term, definition, and image

Numerator	<b>3</b>	How many pieces you have	
Denominator	<b>8</b>	How many pieces in the whole thing	

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## Recognizing and Supporting Students with Nonverbal Learning Disorders

### Part 2 Strategies for Successful Outcomes

#### Picture Notes for Math Vocabulary

Picture notes are quick sketches drawn on a 3 x 5 card for math terms

- Sketch on one side and term on the other side
- Often put on a ring and clipped into a binder

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front:

$$\begin{array}{r} 10 \\ - 4 \\ \hline 6 \end{array} \leftarrow$$

back:

difference

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$$\begin{array}{r} 7 \\ \times 6 \\ \hline 42 \end{array} \leftarrow \leftarrow \leftarrow$$

7 ← factor  
 $\times$  6 ← factor  
42 ← product

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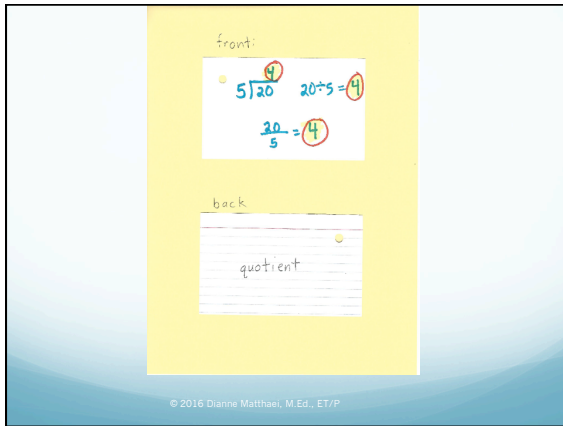
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## Recognizing and Supporting Students with Nonverbal Learning Disorders

### Part 2 Strategies for Successful Outcomes



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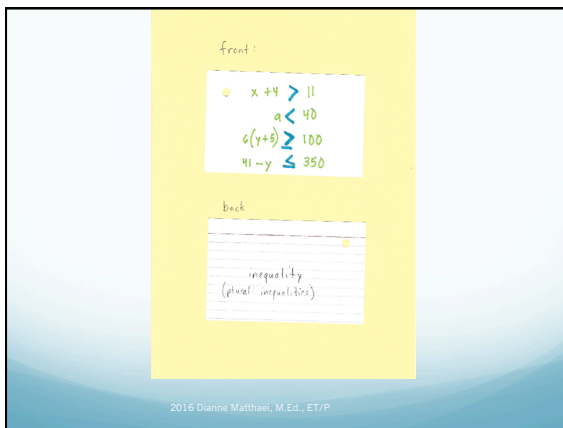
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### Math Vocabulary

- Review Picture Notes at the start of almost every Educational Therapy session
- Vary the presentation
  - Sometimes show the picture and ask for the term
  - Sometimes show the term and ask them to draw or describe the term

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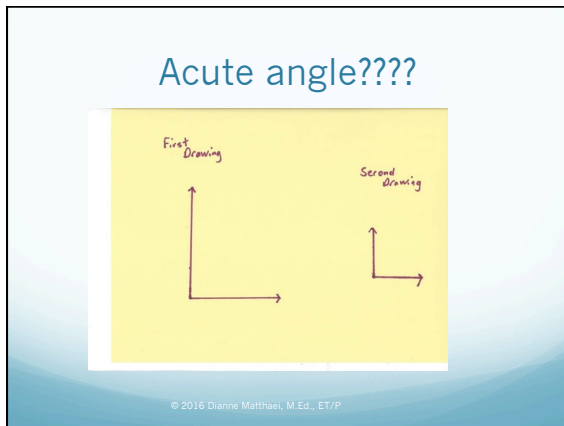
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## Recognizing and Supporting Students with Nonverbal Learning Disorders

### Part 2 Strategies for Successful Outcomes



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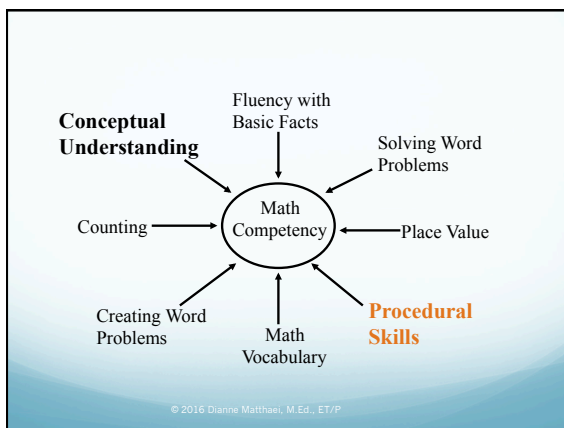
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Teach Procedural  
(Calculation) Skills with  
“Scripts”

- Scripts are sets of directions on how to do a mathematical procedure
- Usually written on 4 x 6 card
- Kept together in a small photo album

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## Recognizing and Supporting Students with Nonverbal Learning Disorders

### Part 2 Strategies for Successful Outcomes

How to X fractions

1. multiply the top numbers
2. multiply the bottom numbers
3. reduce to answer

$$\frac{1}{2} \times \frac{12}{1} = \frac{12}{2} = 6$$

$$\frac{1}{2} \times \frac{13}{1} = \frac{13}{2} = 6\frac{1}{2}$$

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How to divide with exponents  
(with same base)

$$\frac{9^4}{9^3} = 9^1 = 9 \quad \frac{x}{x^4} = \frac{x^1}{x^4} = x^{-3} = \frac{1}{x^3}$$

$$\frac{3^{10}}{3^4} = 3^6 = 729$$

keep base the same subtract exponents

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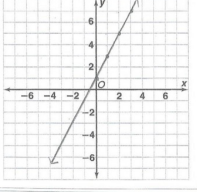
How to find the SLOPE of a Line

slope =  $\frac{\text{rise}}{\text{run}}$  or  $\frac{\text{change in } y}{\text{change in } x}$

$(x_1, y_1) = (2, 5)$   
 $(x_2, y_2) = (-2, 3)$

$$\frac{y_2 - y_1}{x_2 - x_1} = \frac{-3 - 5}{-2 - 2} = \frac{-8}{-4} = 2$$

slope = 2



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## Recognizing and Supporting Students with Nonverbal Learning Disorders

### Part 2 Strategies for Successful Outcomes

#### A good script card would have

- A title for the skill (e.g. How to Multiply Fractions)
- A series of steps necessary
- Examples and/or drawing

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#### A good script

- Is written in the student's words and checked for accuracy
- Works for that individual
  - When she reads the script, she remembers how to do the skill

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#### SCRIPTS

- Reduce the need to reteach skills
- Provide for more review
- Increase independence for the student
  - "I could be mugged in the hallway for my scripts book."

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## Recognizing and Supporting Students with Nonverbal Learning Disorders

### Part 2 Strategies for Successful Outcomes

#### Linked through language

- The individual's own language

Square the short sides of the right triangle, add them together, and it will be the same as the square of the longest side.

- Standard English

The square of the hypotenuse of a right triangle is equal to the sum of the squares of the two adjacent sides.

- The language of mathematics

$a^2 + b^2 = c^2$  (The Pythagorean Theorem)



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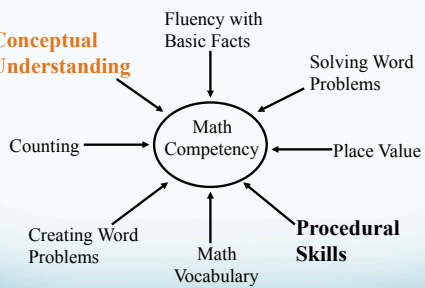
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#### Conceptual Understanding



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#### Conceptual understanding

- Teach

“whole - to parts - to whole”

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## Recognizing and Supporting Students with Nonverbal Learning Disorders

### Part 2 Strategies for Successful Outcomes

### Create a sense of the “whole”

- Provide context and relate to prior knowledge
- Give a frame of reference
- Ask, “How will you know when you are done?”
- Create a clear target
- Ask, “Do you see a pattern?”



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### “Whole-to parts-to whole”

- Start with the “big picture”
- Then teach the steps (the parts)
- End with the whole again
- Ask the student to summarize what he learned

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### Drop back to 3-D

- Drop back on the Learning Progression (or Abstraction Continuum)
  - from the 2 dimensional level (workbooks, drawings)
  - to the 3 dimensional level (real objects)

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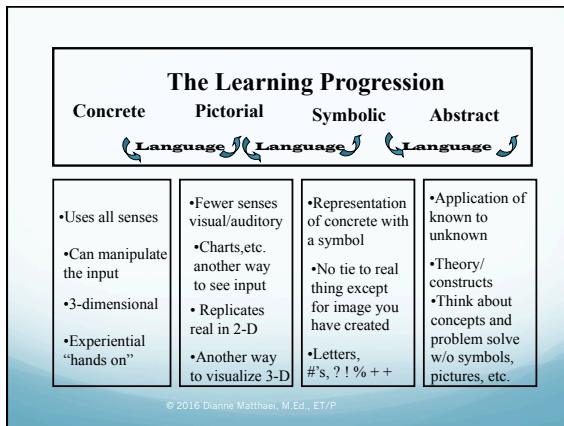
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## Recognizing and Supporting Students with Nonverbal Learning Disorders

### Part 2 Strategies for Successful Outcomes




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So how do we “drop back” to 3-D?

■ Examples:

- Get a real box for a student who is struggling to find total surface area.

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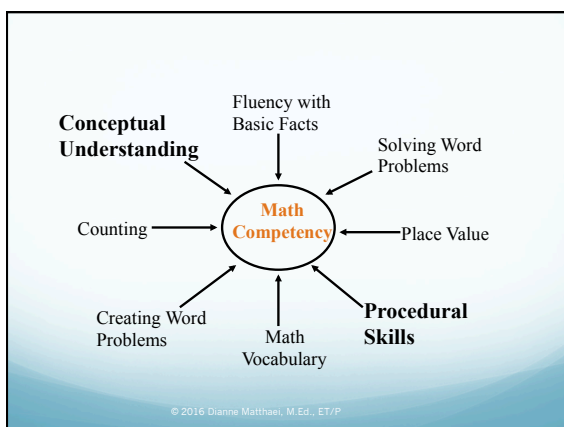
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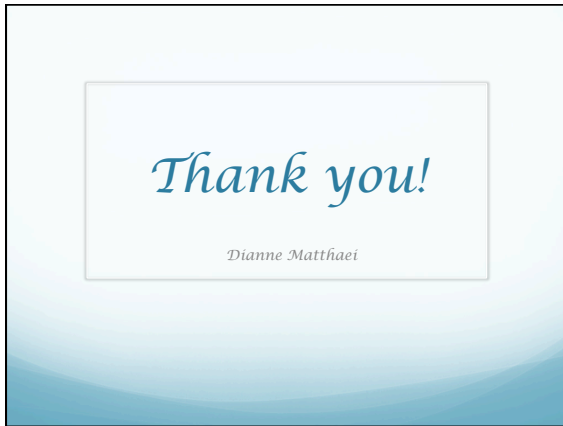
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Recognizing and Supporting Students with Nonverbal Learning Disorders  
Part 2 Strategies for Successful Outcomes



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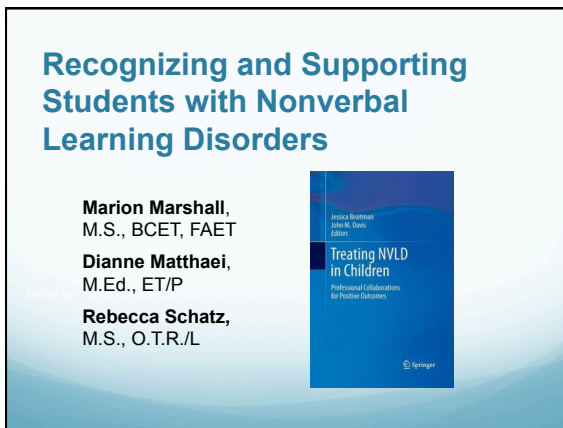
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