

Practical Ideas and Resources for the SLP in the Math Classroom

Helen S. Strines MA CCC-SLP
BELL Program
Butler University
Indianapolis, Indiana

"Math is the language of logic"

*"Math Builds reasoning, which leads to
comprehension"*

Dr. Jie-Qi Chen
Early Math Collaborative, Erikson Institute

THERE IS NO MATH WITHOUT LANGUAGE!

Use of Numbers

- Cardinal
- Ordinal
- Nominal
- Referential

English is complex

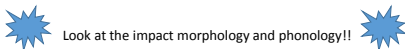
Phonologically complex
Morphologically complex
Not logical
Not consistent

- 11 Eleven vs “oneteen”
- 12 Twelve vs “twoteen”
- 13 Thirteen
- 15 Fifteen
- 20 Twenty

Place Value
11 234 56,789

Language of Order (sequencing)

First, second, third (1st, 2nd, 3rd)
Fourth, fifth (4th, 5th)
Twelfth (12th)
 Twenty-third (23rd)



Look at the impact morphology and phonology!!

Four – 4 – Quattro

- “say it” - Phonological representation /for/
- “see it” - Arabic numeral or symbol 4
- “write it” – orthographic image 4, four
- “how much/many” – value 4 bulldogs
- “many meanings” – homophones for, fore, four

Arabic numerals – 0 1 2 3 4 5 6 7 8 9

Decimal system based on units of 10

Roman numerals

- I – one – 1
- V – five – 5
- X – ten – 10
- L – fifty – 50
- C – one hundred – 100
- D – five hundred – 500
- M – one thousand – 1000

Directional/Positional Concepts/Words

→ Conceptual words often differ in meaning inside and outside of math

open/close	over/under	Next to/beside/between
front/back	up/down	inside/outside
first/last	forward/backward	apart/together
second/third...	away from/toward	here/there
through/around	low/high	
in/out	above/below	
behind/in front of	center/corner	
bottom/top	right/left/middle	

Quantitative Concepts

- More/less
- Most/least
- Many few
- Same/different
- Whole/half
- All/some/none
- Big/little
- Huge/tiny
- Large/medium/small
- One/one more
- Double/triple...

Concepts of Weight/Volume

- Big/little
- Empty/full
- Short/tall
- Narrow/wide
- Thick/thin
- Shallow/deep
- Heavy/light
- Fat/skinny

Concepts of Distance/Time/Speed

- Night/day
- Start/finish
- Slow/fast
- Far/near
- Old/young
- Backward/forward
- Late/early

Generalized abstract math language



- Both
- Equal, equals, equivalent, the same as
- Left
- Product, difference, sum/some
- Remainder
- Total, all together
- Corners/verticies/point
- Composing/decomposing
- Skip, skip count
- Missing
- Odd/even
- Circle (noun,verb?)
- Pair
- Cent
- Round
- Pound
- Exactly
- Foot

The Language of...

- Fractions
 - There are many ways to say the same thing
 - Vocabulary nightmare and definitions are no help
 - phonology and morphology
 - ½, half, 1 half
 - 1/3, one third
 - 5/6 five sixths – plural but still means less than 1
 - “TH” has a different meaning than with ordinal numbers

The language of...

- Geometry
 - Prefixes, root words, suffixes – WORD STUDY
 - Angles measured in degrees
 - 2 vs 3 dimensional figures
 - Very visual in early stages
 - theorems
- Measurement
 - US vs Metric system
- Algebra
 - Heavily language based
 - Letters representing numbers
- Negative numbers


 “Math should not be learned in silence.”
 

Dr. Yeap Ban Har



EARLY STAGES

Early Math Collaborative, Erikson Institute

- Counting
- Shapes
- Patterns
- Measurement
- Sorting
- Data collection and analysis
- Spatial relationships

??? What can SLPs do ???

- Talk about math
- Break it down / back it up
 - Make it
 - See it
- Attach meaning
- Analyze the words and language being used
- Use the same comprehension strategies that we use with reading
 - Be an advocate for our students
- Help the teacher see the language involved

Number Sense

- The Early Math Collaborative, Erikson Institute 2014
 - The ability to understand the quantity of a set and the name associated with that quantity.
 1. Connects counting with quantities
 2. Solidifies and refines the understanding of more/less
 3. Helps children estimate quantities and measurement.
- Fennel and Landis ("Number Sense and Operation Sense" in Windows of Opportunity: Mathematics for Students with Special Needs)
 - An awareness and understanding about what numbers are, their relationships, their magnitude, the relative effect of operating on numbers, including the use of mental mathematics and estimation.

IDEAS

- Counting
- Categorization (AKA “sets” and “sorting” in the math world)
- Math Talks
- Schema
- Math Journals
- Language lessons – in the classroom or with a small group
- Read alouds that tie into the math lesson
