

**NOT a Universal Language:  
Coaching the Language of Math**  
NCTM Regional Conference  
Oct. 26, 2012

Presenters:

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and

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# Today's Objectives

Content Objective: PWBAT identify prerequisite math and language skills necessary for students to solve math problems.

Language Objective: PWBAT articulate answers to a partner, using complete sentences.

# MSP Grant Overview

- 5 Elementary Schools and 1 Newcomer Center
- 46 Participants: 39 K-5 teachers, 1 Special Ed, 4 ESOL, 1 CSR, 2 Academic Instructional Coordinators
- Focus: Improve teacher math content knowledge and ability to teach the language of math through extensive PD and coaching

# Construct viable arguments and critique the reasoning of others.

Mathematically proficient students understand and **use stated assumptions**, definitions, and previously established results in **constructing arguments**. They make conjectures and **build a logical progression of statements** to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counter examples. They **justify their conclusions, communicate them to others, and respond to the arguments of others**. They reason inductively about data, **making plausible arguments** that take into account the context from which the data arose. Mathematically proficient students are also able to **compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed**, and—if there is a flaw in an **argument**—**explain** what it is. Elementary students can **construct arguments using concrete referents** such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can **listen or read the arguments of others**, decide whether they make sense, and **ask useful questions to clarify or improve the arguments**.

# 8 SIOP Components

- Lesson Preparation
- Building Background
- Comprehensible Input
- Strategies
- Interaction
- Practice & Application
- Lesson Delivery
- Review & Assessment

# What do these words have in common?

- Attributes
- Congruence
- Data Sets
- Dimensions
- Drawings
- Equivalence
- Expressions
- Graphs/Grids
- Money Values
- Number Sentences
- Number Relationships
- Objects
- Patterns
- Polygon/Shapes
- “Shape” of Data
- Tables
- Time
- Transforming Shapes
- Volume
- Weights & Measures

# What do these words have in common?

- Analyze
- Apply
- Classify
- Compare
- Compose
- Convert
- Describe
- Decompose
- Draw
- Conclusions
- Estimate
- Extend
- Generate
- Identify
- Properties
- Justify
- Model
- Predict
- Recognize
- Represent
- Use Strategies

**Content Vocabulary**

**Process/Function  
Vocabulary**

**Academic Language**

**Vocabulary that develops  
knowledge of English  
structure**

# Solve It!

Darla goes to the library every second day. Heather goes to the library every fifth day. If they both go to the library today, on which of the following days from now will they both go to the library? Explain how you know your answer is correct.

Taken from *Math Elevations*, Northpoint Horizons (2008)

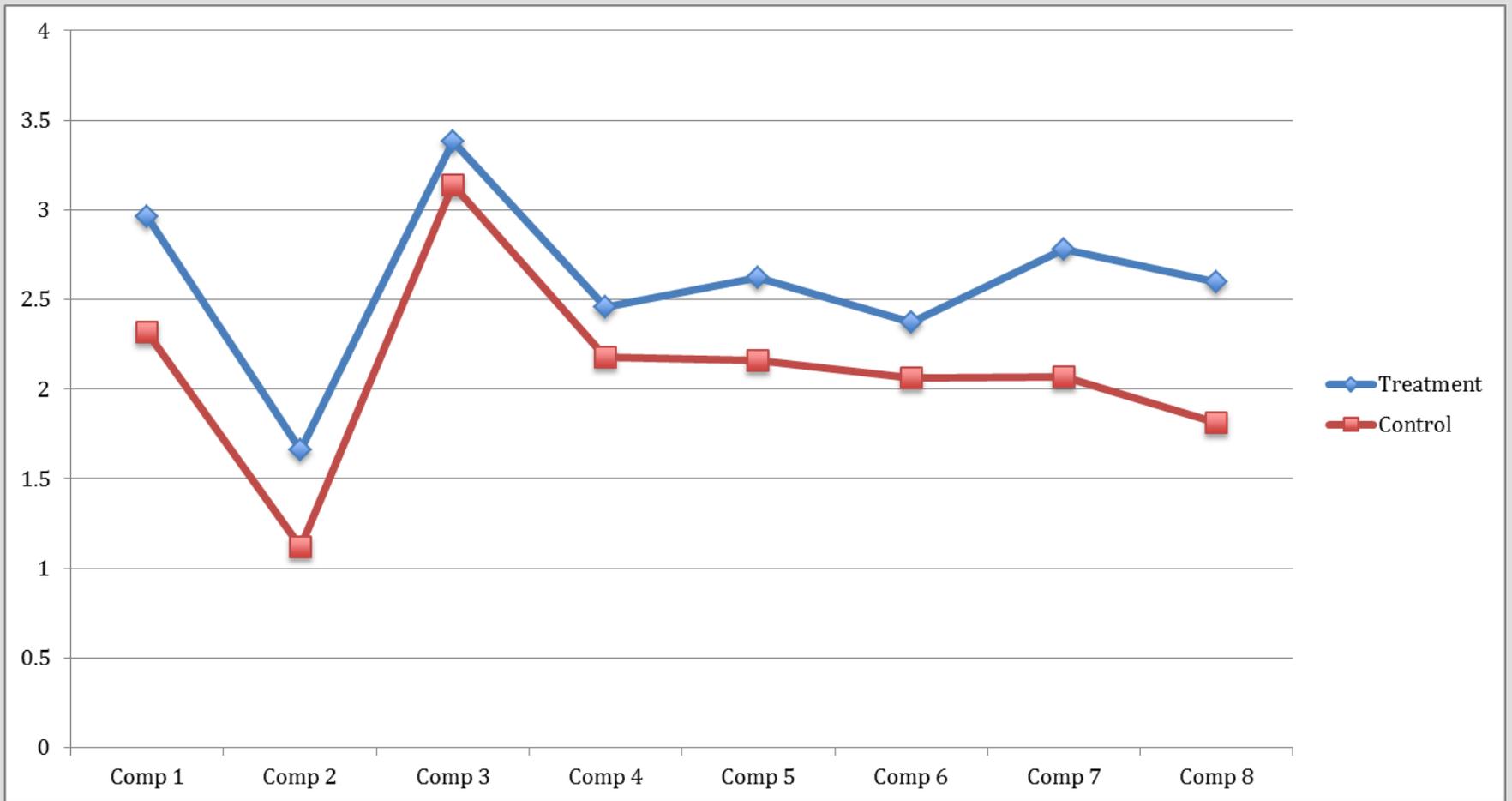
# Coaching

Model:

- Pre-conference
- Observation of Math Class
- Post-conference

# What We Observed

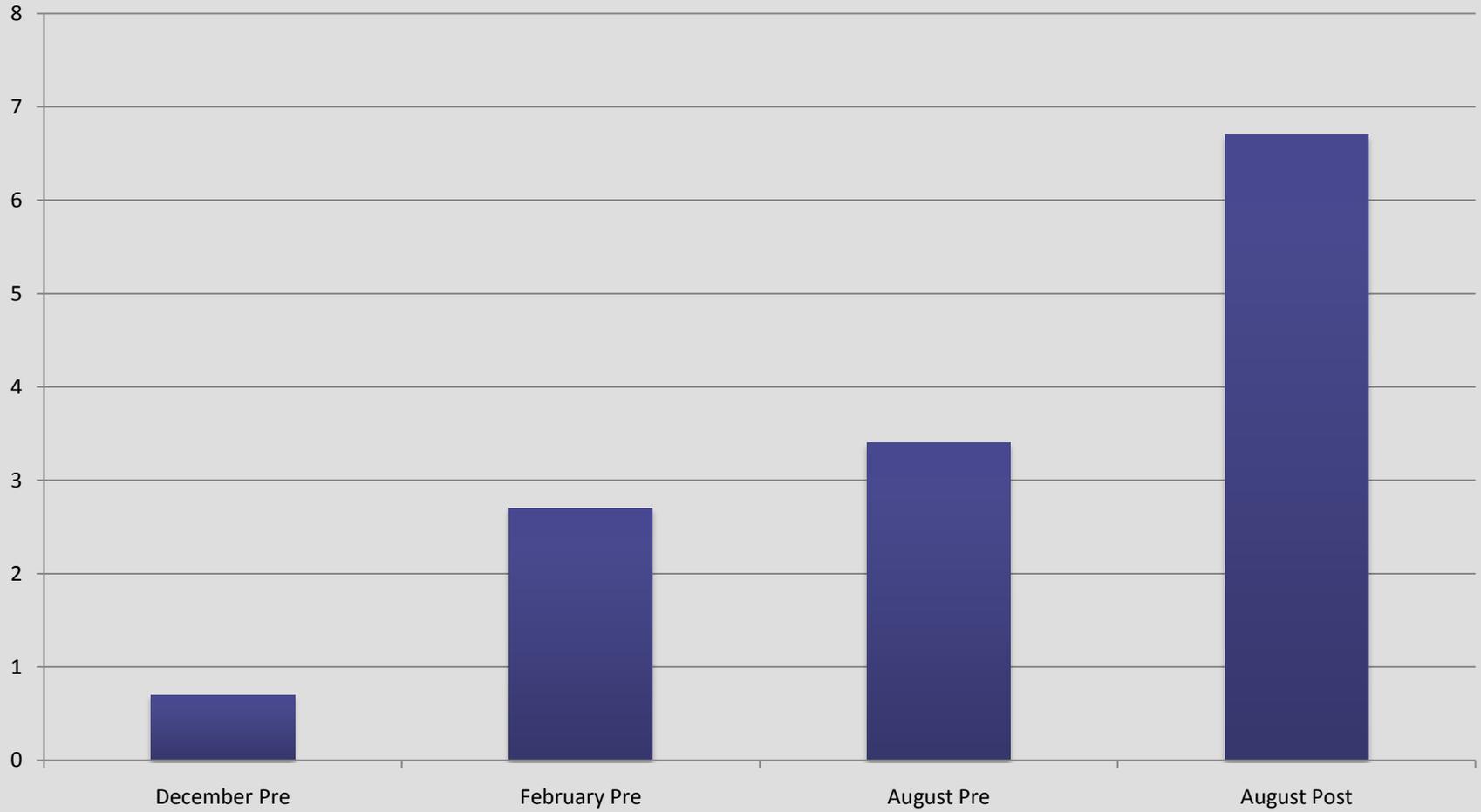
- Increased use of content vocabulary
- Increased confidence level when teaching math
- Increased use of sentence stems to support mathematical discourse
- Less dependence on teacher edition of math text



## SIOP COMPARISON GROUPS

# Year 2 Data

**Average Score/12 points**



# What the teachers say...

“The Webster instructors and others involved in the program have really helped me to see how important it is to get students talking in Math.”

“This math grant has been fabulous! It has changed the way I teach math & has made my students better thinkers. ”

“I still feel unsure with many of these problems but I feel more confident to at least attempt to figure them out or to find a way—I also feel more comfortable knowing there are many ways to figure them out and that is okay.”

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# Contact Information

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