

Promoting Equitable Problem Solving with Numberless Word Problems

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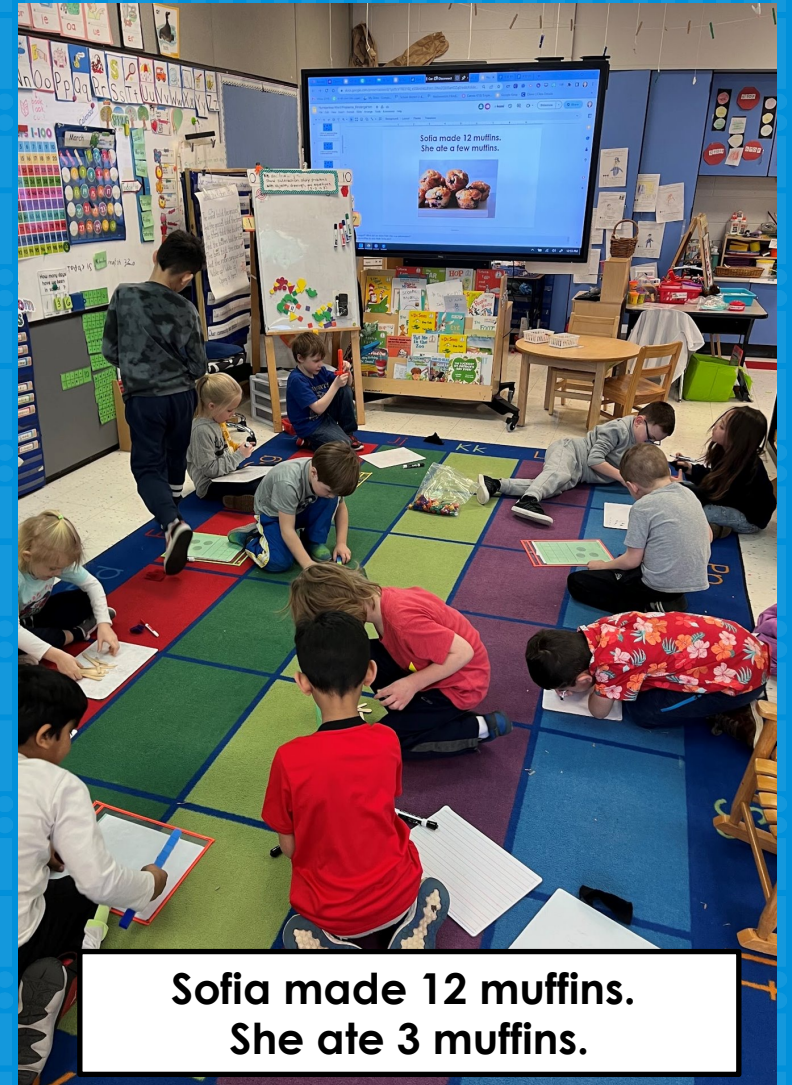
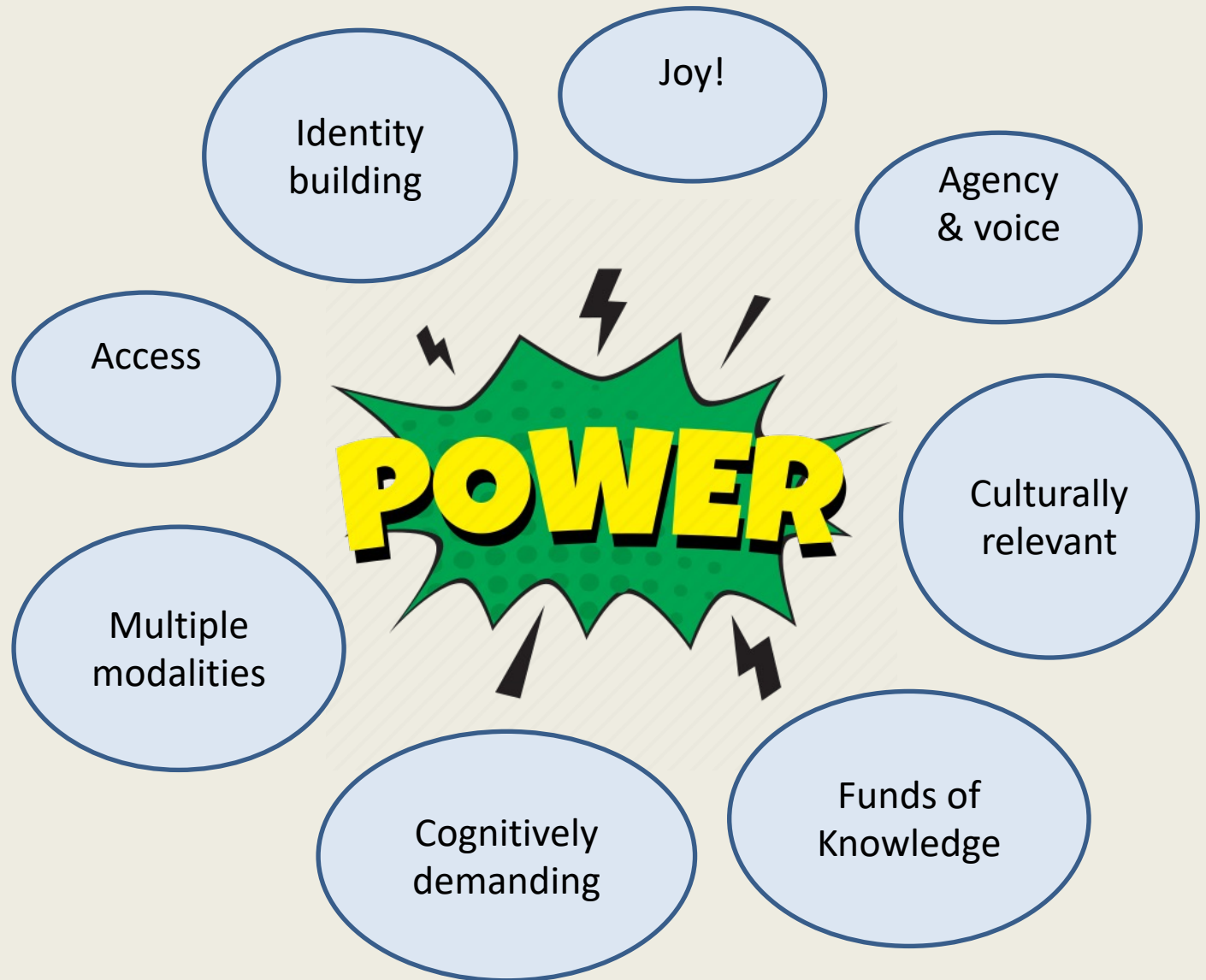
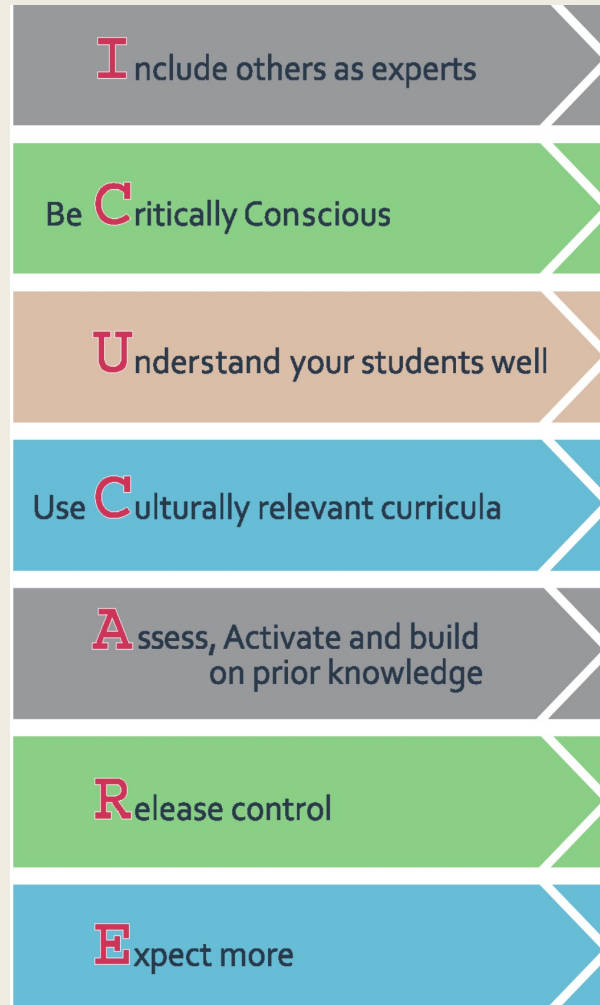


Photo: Laura Englehart

What does equity in math look like and sound like ?



ICUCARE – Framework for Equity in Math Class



Pamela Seda and Kyndall Brown, authors of “Choosing to See: A Framework for Equity in the Math Classroom.”

Let's do math: Geese Problem



A
H

Rate your engagement on a scale of 1 to 5.

1 = falling asleep → 5 = jumping out of your seat

What's the Goal of Numberless Word Problems?

- All operations tell a story
- Conversation!
- Emphasis on thinking not fast answer-getting
- Boost engagement and persistence
- Give every student **access** to challenging problem solving

Numberless Word Problem in Kindergarten



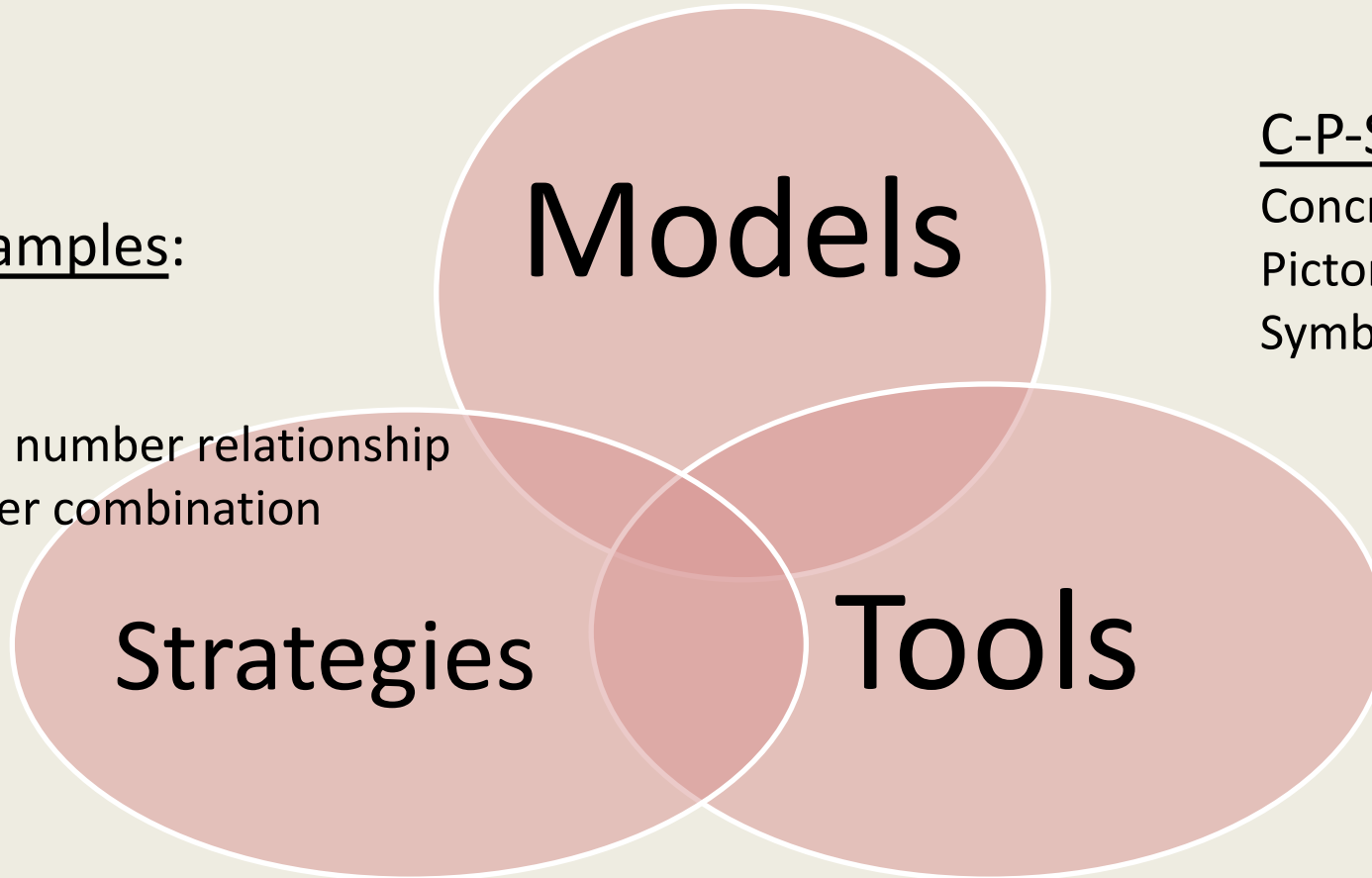
Numberless Word Problems

- A mathematical story or situation **without** a question attached.
- First, quantities are removed (numberless)
- **Soft words** such as “*some*” or “*few*” take their place
- We share the story with the whole class through pictures or videos.
- **Slow Reveal** is an essential component of numberless word problems

Child-centered Problem Solving

Strategy Examples:

Count all
Count on
Reason with a number relationship
Know a number combination



Models

Strategies

Tools

C-P-S Principle:

Concrete
Pictorial
Symbolic

Tool Examples:

Cubes, fingers, drawings,
number path, ten frames

Child-centered Problem Solving



T: How are the tools (pom poms) helping you think about the problem?

S: I counted them.

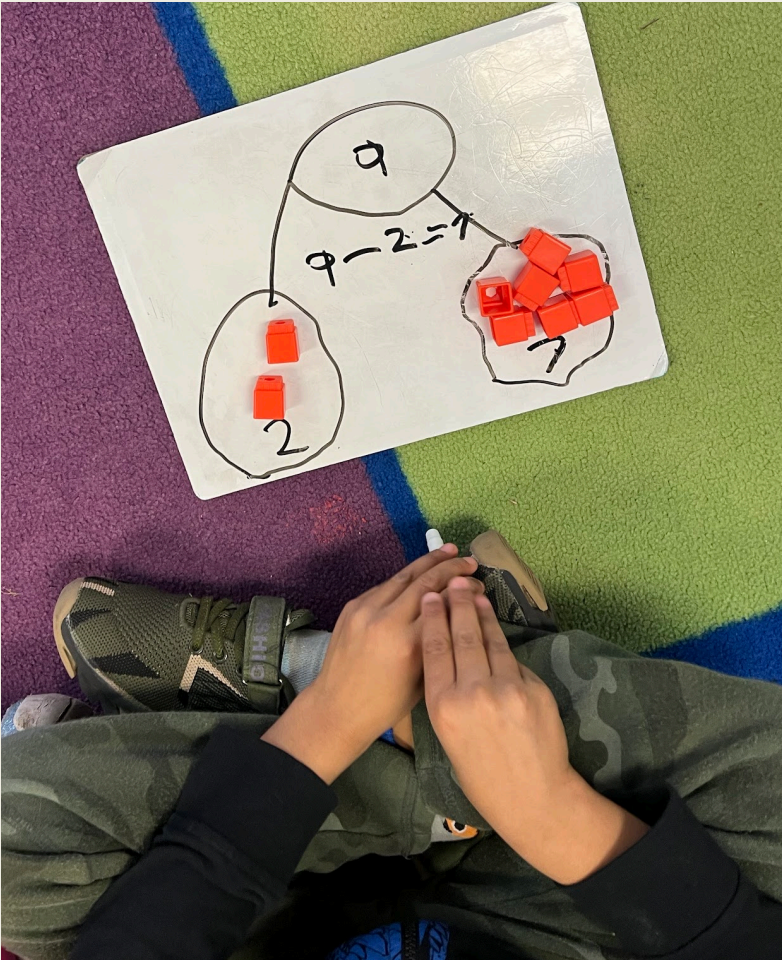
T: Which geese are resting?

S: Here – these 2.

T: How do you know?

S: there were 9 geese flying and these 2 stopped to rest.

Child-centered Problem Solving



T: What is the 9 for at the top of your board?

S: There are 9 geese flying

T: Then what happened in the story?

S: 2 went to rest

T: where do you think they went?

S: to a nest

T: Now how many geese are still flying?

S: 7 geese still flying. I know 7 and 2 more is 9.

Class Meeting

Students share their work and more importantly their thinking with the whole class.

No perfect selection but should be purposeful selection

Be equity minded: Engage the learners who need a boost!

Keep it brief!

Peek into the classroom

- Bilingual Spanish-English Kindergarten in Illinois
- The numberless word problem is slightly modified: 9 geese are flying and **4 stop to rest**
- The teacher has conferenced with each of the students while they were problem solving
- Joan and Rosalinda

Where to Find Numberless Word Problems

- Modify your curriculum
 - Photos from classroom and community
- Insert student & staff names
- Read- alouds
- Culturally relevant context

