

Magnifying Problem Solving in Early Learning Environments

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Discussion

- ▶ What is your experience/familiarity with the 8 Standards for Mathematical Practice (SMP)?
- ▶ How much emphasis is placed on the Practice Standards in your math curriculum?
- ▶ Are your students and their families aware of the Practice Standards?

Unpacking the Practice Standards

- ▶ Read SMP 1 and highlight the skills students would perform when problem solving using this practice standard.
- ▶ Can you create *I Can* statements for those skills in student-friendly language?
- ▶ See the handout for suggestions of student-friendly language for all eight SMP.

Using the Practice Standards

- ▶ How have you used children's literature in your math instruction?
- ▶ Using children's literature for problem solving:
 - ▶ Offers examples of real-world mathematics
 - ▶ Demonstrates characters using math
 - ▶ Provides common language and contexts for problem solving situations

Using Literature with the Practice Standards in PreK

- ▶ Pete the Cat and His Four Groovy Buttons by Eric Litwin and James Dean
- ▶ *SMP 1: Make sense of problems and persevere in solving them.*
- ▶ *Early Learning Standard - Demonstrate and apply a knowledge and sense of numbers, including numeration and operations, beginning understanding of numbers, number names, and numerals.*
- ▶ Count with understanding and recognize “how many” in small sets up to 5. Use subitizing (the rapid and accurate judgment of how many items there are without counting) to identify the number of objects in sets of 4 or less. Understand and appropriately use everyday terms that mean zero, such as “none” or “nothing”. Connect numbers to quantities they represent using physical models and informal representations.
 - ▶ Students role play with 4 large buttons
 - ▶ Repeating story line allows preschoolers to tell the story
 - ▶ Make connections with Pete the Cat series

Using Literature with the Practice Standards in Kindergarten

- ▶ Five Little Monkeys Jumping On the Bed by Eileen Christelow
- ▶ *SMP 5: Use appropriate tools strategically.*
- ▶ Content Standard K.OA: *Understand addition as putting together & adding to, and understand subtraction as taking apart & taking from.*
 - ▶ Students act out monkeys falling out of bed.
 - ▶ Teacher and students can model monkey's falling or rolling out of bed with different tools including: stuffed animals, manipulatives and drawings.

Using Literature with the Practice Standards in 1st & 2nd Grade

- ▶ The Doorbell Rang by Pat Hutchins
- ▶ *SMP 4: Model with mathematics.*
- ▶ *Content Standard 1.OA: Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions; 2.OA: Determine whether a group of objects (up to 20) has an odd or even number of members.*
- ▶ Students explain how they shared 12 cookies among groups of children; write equations to explore even addends & sums
- ▶ Teacher and students model the mathematical content with concrete objects, pictures, acting it out & equations

Fostering a Culture of Problem Solving

- ▶ How are you preparing your students to become efficient problem solvers?
- ▶ How can you foster mathematical discourse in your classroom?
- ▶ How do you emphasize Academic Language in your math program?
- ▶ What other selections of children's literature support mathematical discourse and problem solving?