## Talking and Writing During Math?

## From Math Journals to Math Talk

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## Research shows...

- According to Boaler (2008)... "Listening to a teacher talk about math is quite different from actually understanding the concept well enough to apply it a few weeks later. When students reflect and organize their thoughts to share their ideas with others, they often discover that they need more clarification to fully understand the concept or that they have developed keener insights into the mathematical concepts."
- "One of the most important parts of being mathematically literate is the ability to reason and offer justifications for solutions to problems." Boaler.
- The National Council of Teachers of Mathematics (2000, 64), "When students can connect mathematical ideas, their understanding is deeper and more lasting. They can see mathematical connections in the rich interplay among mathematical topics, in contexts that relate mathematics to other subjects, and in their own interests and experience." The deeper understanding that students gain through recognizing connections equates to greater utility and versatility of the knowledge of the learner. (Bamberger and Oberdof 2007, 2.)


## Quick Write...

How do you incorporate writing and literacy into math?

How do you incorporate math during literacy?

## Quick Write

- A quick write or fast write is a short written response.
- The teacher is trying to help students connect or show what they know about a topic by looking for evidence of their thinking.
- The focus is not on grammar, punctuation, and/or mechanics but on the content.
- Students will write for 3-5 minutes.
- Quick writes can be written on index cards, sticky notes, recycled paper or in math journals.


## Talking and Writing During Math?????

## Yes!!!!!!!!

- It's interdisciplinary! It will allow you to integrate math during your literacy time and integrate literacy during your math time!!!!
- It's a way to differentiate instruction! Students can speak as much as they would like (within parameters) to explain/analyze their thinking or critique/justify their responses or the response of another student/teacher.


## Talking and Writing During Math???

- It's a great formative assessment tool! Incorporating writing will allow teachers to have a deeper insight regarding students' understandings, misconceptions, and/or strategies that they are using but confusing. . .also lack of strategies.
- Meets all of the Career Readiness Anchor Standards for Speaking and Listening.
- An easy way to ensure you are utilizing the Eight mathematical Practices daily.
- Students aren't merely doing math...they are thinking, analyzing, and developing strategies/skills while learning the math concepts as opposed to...
- Just using an algorithm....regrouping in second grade without understanding place value.
- ??????....Suggestions....???????


## Eight Mathematical Practices

- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Model with mathematics
- Use appropriate tools strategically
- Attend to precision
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.


## number Talk

1. Teacher presents the problem
2. Students figure out the answer.
3. Students share their answers.
4. Students share their thinking.
5. The class agrees on the "real" answer for the problem.
6. The steps are repeated for additional problems.
number Talk...

## Which fraction is larger? $3 / 4$ or 5/8

number Talk

## $56+64=$

number Talk

Mrs. Altman-Lewis cab charges $\$ 1.50$ for the first mile and $\$ 0.90$ for each additional mile. How far can Ms. Mebane go for $\$ 20$ if she gives the driver a $\$ 2$ tip?

## Open Tasks....

The answer is 24 .
What is the question?

## Look at the picture to answer...

"What's the Math Problem?"


## Smart

my dad gave me one dollar bill, 'Cause I'm his smartest son, And I swapped it for two shiny quarters, 'Cause two is more than one!

And then I took the quarters and traded them to Lou,
For three dimes - I guess he don't know, that three is more than two!
Just then, along came old blind Bates and just 'cause he can't see, He gave me four nickels for my three dimes, and four is more than three!
find then I took the nickels to Hiram Coombs down at the seed-feed store. And the fool gave me five pennies for them, and five is more than four!

And then I went and showed my dad, and he got red in the cheeks And closed his eyes and shook his head --- too proud of me to speak!
-----Shel Silverstein, Where The Sidewalk Ends
fmy is helping her teacher plan a fourth grade trip to the zoo for 180 students. Bus Company A has buses for $\$ 350$ that can hold 60 students. Bus Company B has buses for $\$ 175$ that can hold 30 students. Which company offers the best deal? which company should they use and how many buses will they heed?


## Justify It

How do these problems differ?

- Mr. Lewis had some toy cars. His mother gave him 17 more cars. now he has 34 cars in all. How many cars did she have at first?
- Mr. Lewis had 34 toy cars. His mother took 17 of his cars. How many cars does he have left?
- Mr. Lewis had 17 toy cars. His mother gave him some more. now he has 34 cars. How many cars did his mother give him?


## Strategies in Action

- I can count up!
- I can count back!
- I can make a five or ten!
- I can use doubles or doubles plus one!
- I can use a number line!
- I can use a 100 's board!
- I used a unit fraction!
- I simplified!
- I can....


## Attend to Precision

James had 34 kittens and 17 kittens. James added the ones first... $4+7=11$. Then he added the tens $30+10=40$. $11+41=51$. "My answer is 51," said James.

Is James correct... why or why not?

## number Stretches

- number of the Day
- How did your family use math last night?
- How many ways can you represent this number?
- What comes next...?


## Resources

- Classroom Discussions: Using Math Talk to Help Students Learn by Suzanne H C.hapin
- Building Mathematical Comprehension: Using Literacy Strategies to Make Meaning by Laney Sammons
- number Sense Routines: Building Numerical Literacy Every Day in Grades K-3 by Lucy West
- Reading Strategies and Writing Strategies for Mathematics by Trisha Brummer and Stephanie Macceca
- http://thecornerstoneforteachers.com/free-resources/math/math-journals
- http://www.mathsolutions.com/documents/2004_writing_in_math.pdf


## Thanks for Joining Me!!

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