Math Talk vs. Number Talk: They are not the same!

MATH TALK (Learning Conversations)

➤ "A respectful but engaged conversation in which students can clarify their own thinking and learn from others through talk" (Chapin, p 5)
➤ Should be used within the daily lesson in all areas of math study
➤ Can be used in all academic areas
➤ Students discuss a concept, procedure, solution method, idea, or definition in order to understand more deeply and with greater clarity.
➤ Teacher uses 5 Talk Moves to move along the conversation.

5 PRODUCTIVE TALK MOVES FOR MATH TALK

- Revoicing: Teacher repeats some or all of what a student said.
- Repeating: Teacher asks someone to restate another student's comment.
- Reasoning: Teacher asks someone to apply their reasoning to someone else's reasoning.
- Adding On: Teacher asks students to add new thoughts to the conversation.
- Waiting: Teacher uses wait time.

MATH TALK EXAMPLE

Some students are engage in a discussion about the relationship between squares and rectangles.
Amanda: Squares have two sets of parallel sides, and we already said rectangles do, too. So squares and rectangles are the same.
Teacher: Luis, do you agree? Why or why not?
Luis: I'm not sure, because they have the parallel sides, but squares don't have long and short sides...but the angles are right angles.

NUMBER TALKS (Mental Math Computation)

➤ "Classroom conversations around purposefully crafted computation problems that are solved mentally" (Parrish, p xviii)
➤ Happen separately from the daily lesson
➤ May or may not connect to the lesson
➤ Last for 5 to 15 minutes
➤ Is quick paced
➤ Teacher poses problems, listens and charts students' strategies.
➤ Students share strategies and try out new strategies.

NUMBER TALKS EXAMPLE

Students solve the following problems in succession in order to develop the "Making Friendly Numbers" strategy.

- $99 + 5$
- $99 + 17$
- $99 + 26$

During the third problem, students share:
Ramiro: Oh, I can take 1 from 26 and give it to 99. That's 100 plus 25, which is 125.
Teacher charts: $99 + 66 = 100 + 25 = 125$
Jimmy: Why 25? There is no 25.
Ramiro: I used 1 from the 26 to make that 100. Now the 26 is 1 less. It's only 25.
Teacher: Amaya, did you use the same strategy?
Amaya: No, I know 100 + 26 is 126. Then I just had to subtract 1. It's 125.
Teacher charts: $100 + 26 = 126$
$$126 - 1 = 125$$
Teacher: You subtracted 1?
Amaya: Yes, because I added too much at first. I added 100 instead of 99.

Summarize the different purposes of at Math Talk and Number Talk below:

Number Talks at a Glance

Step 1: Problem
- The teacher says and writes a problem on the board horizontally. It can be as simple (like 9 + 17) or complex (500 ÷ 24), as long as it is appropriate as a mental math problem for the class.
- Problems are presented in many different ways: a word problem, number lines, dot cards, models. You can show problems on a document camera or write on the board.
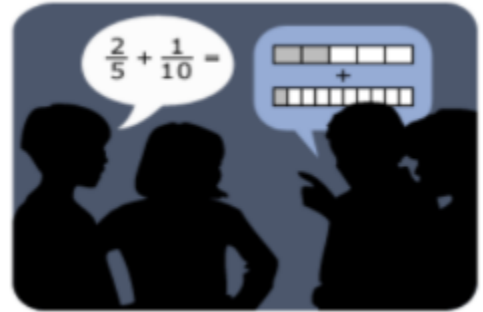
Step 2: Think
- Students mentally solve the problem.
- They show the teacher whether they have the answer by (silently) giving a thumbs up at their chest. This prevents a small batch of quick students from shutting everyone else down. If students can come up with a second way to solve the problem, they hold up a second finger at their chest. This means that everyone can keep thinking about the problem even after they have the answer
- Wait until most have a thumb up.

Step 3: Listen & Share
- After enough time has passed that everyone or nearly everyone has a solution, the teacher asks students what their solutions are. The teacher writes down all solutions on the board; none are given preferential treatment, and the teacher doesn't say whether they are right or wrong.
- Students use "same" signal if they had the same total.
- Ask: can both/all these answers be correct? *(this isn't an everyday step, just once in a while as a reminder that there can only be one correct answer for each equation)*

Step 4: Explain & Defend
- Teacher could choose to have students think-pair- share before they share out their thinking.
- Once all solutions are written down, the teacher asks students to explain how they got their solution. Students explain (from their seat), while the teacher writes the steps they describe on the board
- Take time to ask students to name the strategy used (i.e. counting on, making a ten, using friendly numbers)
- Students use "same" signal if they used the same strategy and got the same total
- Repeat the process with another student's strategy (3-4 maximum)

Step 5: Discussion & Consensus
- Allow students to question each other about their thinking or the strategy they chose. *This may come later with younger students, after they have grown more comfortable with the Number Talks routine.*
- Have students identify similarities/differences between strategies
- Ideally, by the end of the discussion, the class should have a list of 3-6 different approaches to the problem, plus a consensus as to what the correct answer is.

Step 6: Follow-up
- The teacher then has the option to ask a follow-up question that builds on the last. (If 9 + 17 was the first question, 9 + 27 or 19 + 17 might be follow-up.)
- Thank the students for their participation in the Number Talk.

Rationale

The daily math routine begins with a **Number Talk** to help students develop and discuss strategies to build computational fluency and number sense, leading to accuracy, efficiency and flexibility. Accuracy is the ability to produce an accurate answer. Efficiency is the ability to choose an appropriate, expedient strategy for a specific computation problem. And flexibility is the ability to use number relationships with ease in computation.

A Number Talk is a short (5-15 minute), ongoing daily routine that provides students with meaningful practice with computation. Classroom conversations and discussions around purposefully crafted computation problems are at the very core of number talks. These are opportunities for the class to come together to share their mathematical thinking and develop efficient, flexible, and accurate computation strategies that build upon the key foundational ideas of mathematics such as composition and decomposition of numbers, our base ten system, and the application of properties of operations.

Number Talks allow students to make connections and find relationships and patterns.   Number Talks also allow students to use the language of mathematics. The conversation is the focus of the Number Talks, and the teacher takes on the role of facilitator.

The teacher is not the ultimate authority in Number Talks. Students are clarifying their thinking with each other. Mental computation is a key component of number talks, encouraging students to build on number relationships to solve problems instead of only relying on memorized procedures.

Nonverbal Signal Examples

Agree: move hand back and forth to show agreement

Disagree: "Safe" sign in baseball: palms flat and down, in a crossing motion in front of the chest

Thinking: fist in front of chest

I have an answer: thumbs up in front of chest

I have another way of getting the answer: finger up in front of chest (can show additional finger for each way of getting the answer)

References

- Chapin, S. H., O'Connor, C., & Cnavan Anderson, N. (2009). *Classroom discussions: Using math talk to help students learn, grades K-6*. Sausalito, CA: Math Solutions. Parish, S. (2010).
- Humphreys, Cathy and Parker, Ruth. 2015. *Making Number Talks Matter: Developing Mathematical Practices and Deepening Understanding, Grades 4-10*. Stenhouse Publishers.
- Parrish, Sherry. 2010. *Number Talks: Helping Children Build Mental Math and Computation Strategies*. Math Solutions.