

Tips for Getting Started with Number Talks

By Leigh Belford

A Number Talk is an essential math routine for developing fluent, confident mathematicians. This student-centered talk allows students to build an understanding of numbers and their relationships to flexibly solve problems. During Number Talks, students are asked to solve problems using mental math and precisely communicate their thinking while reasoning about the strategies of their peers. Ready to launch Number Talks in your classroom? These tips will help you get started.

1- Conduct Number Talks regularly. Number Talks should be conducted 3 to 5 times a week and build upon new strategies from day-to-day. Number Talks can be conducted during whole group or small group time so think flexibly about when it best fits with your daily math routines.

2- Be comfortable with wait time. We as teachers are familiar with the idea of wait time, those 10 long seconds we pause after posing questions to allow students to gather their thoughts and formulate a response. There are actually two chances for wait time during mathematical discourse: after you pose questions and after a student responds. Be comfortable with wait time in both of these instances as students develop their ideas before sharing.

3- Getting over the procedural hump. Even with ample wait time, when you first begin Number Talks students may only have one single way of solving a problem. Students whose early mathematical experiences focused on learning procedures typically don't have a good understanding of underlying mathematical relationships and may feel that being good in math means using the "right" procedures. When this is true, it is not the best time to press for too much explanation as it may bog down your Number Talk. Pushing too hard for explanations too early in the implementation process may often be discouraging for you and



the students. Being asked to explain memorized procedures may result in students being less likely to share their ideas.

If your students seem to be stuck with one method, ask "How else could we think about this?". This question turns the Number Talk into a puzzle for students to solve together. Gradually students realize they can make sense of problems on their own and that their teacher values different ways of solving as opposed to one 'right way.' As students become more comfortable with Number Talks, gradually increase your probing questions to dig more deeply into their thinking, calling on students to reason about their own strategies and connect their mathematical ideas with the strategies of their peers.

4- Genuinely listen to student thinking. Number Talks are an opportunity for us to get a true glimpse into our students' thinking about mathematics. It's easy to assume that we understand a student's strategy and to describe it using our own words rather than theirs. When we are unsure of their explanations, it is a good idea to revoice what they said or ask a probing question so that students can clarify or extend their own strategy/thinking. Once we understand their idea, our role moves to recording their thinking as clearly and accurately as possible.

5- Encourage student to student conversation.

During a Number Talk, we should facilitate direct student to student conversations about the mathematics rather than student conversations that go through us as the facilitator. To encourage student to student conversation it might be helpful to position ourselves to the side of the room rather than the center, making the students' thinking and sharing the focus. As students share their strategies, we should utilize wait time and provide opportunities for other students to add-on or pose questions about a classmate's strategy. If students are accustomed to raising their hands, allow the one whose strategy is being represented to call on other students during the discussion.

6- Encouraging everyone to participate. Early in your Number Talk implementation, you may notice that a small group of students dominate the conversation. Here are some ways to encourage more reluctant sharers to participate.

- ❑ "I would like to hear from someone who hasn't had a chance to share." Then give extended wait time.
- ❑ Have students turn and talk to a partner before the whole whole group conversation. This practice allows students to practice sharing their own ideas and to begin to reason about other strategies.
- ❑ Do Number Talks in a small group setting. Small group Number Talks help to build a student's confidence in sharing their mathematical thinking.

It's also important to remember the impact of building a safe classroom culture. In order for students to feel comfortable in sharing their thinking and taking intellectual risks during a Number Talk, you must work to build a community of mutual trust.

7- Encourage students to express their ideas using precise mathematical language. Most students lack experience in sharing their mathematical thinking. Number Talks give students practice in formulating responses using appropriate mathematical language.

English Language learners and Learning Disabled students can also greatly benefit from Number Talks. When working with these students, the primary goal is to encourage students to express their mathematical ideas in their own words. Using appropriate vocabulary is a secondary focus.

Here are some ideas that help facilitate clear student explanation.

- ❑ Model appropriate mathematical language when talking with your students about mathematics.
- ❑ Encourage students to speak loudly enough for everyone to hear and use appropriate mathematical language.
- ❑ Provide students with sentence starters like those shared in Figure 1.1
- ❑ Encourage students to share their ideas precisely by discouraging the use of pronouns like *it* ("Since *it* had two 5s I added 10 to *it*"). Insist that students clarify their thinking.

Figure 1.1

Number Talk Sentence Starters

I solved the problem by _____.

I noticed that _____.

The strategy I used was _____.

I know that _____ because _____.

To add on _____.

I agree/disagree with _____ because _____.

I'm still not sure about _____.

A better strategy might be _____.

_____ and _____ are similar/different because _____.

This reminds me of _____ because _____.

8- Make the most of multiple answers and mistakes. Multiple answers to the same problem offer meaningful learning opportunities for students to defend their thinking and convince others that their strategy makes sense.

As teachers we often have reservations about entertaining wrong answers. Since students are expected to justify their own thinking during Number Talks, these conversations provide opportunities for students to clarify and extend their own thinking by working through their own misconceptions. Misunderstandings increase chances for students to learn about the importance and usefulness of mistakes. A productive math classroom views mistakes as a means for “growing smarter.”

9- Know when it’s appropriate to share a new way of thinking. Occasionally students are stuck in one way of thinking, or the teacher recognizes the need to introduce a new strategy that is more efficient or mathematically interesting. Exercise extreme caution when sharing your own ideas as they influence what students think is “the right response.” In sharing our own thinking, students might feel their thoughts are being discredited or one idea is better than another. Assigning our ideas to someone else may be a more appropriate way to introduce new ways of thinking about the solution, such as: “I once saw a student solve a similar problem using this strategy. (Teacher shares the strategy.) How might this strategy be helpful?”

10- Stay focused on your goal. During the 10-15 minute Number Talk, be sure to stay focused on your goal or focus strategy. In order to achieve this, it may be necessary to limit the number of students who share their solution path. It is acceptable to put some strategies ‘on hold’ if you are spending too much time trying to making sense of it or if it the strategy takes the Number Talk in a different direction. It may be appropriate to revisit that strategy in a later Number Talk or tell the student that you need some time to think about the strategy and meet

with him/her at a later time to affirm the importance of his/her thinking.

As you prepare to launch Number Talks in your classroom, remember that routines develop over time. Start slowly, allow for hiccups, and be patient. You will be amazed by the confidence, understanding and fluency your students develop!

Bibliography

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