

Number Talks

Why do number talks? From the words of Ruth E. Parker

- The goal of mathematics education should be to produce learners who are both mathematically competent and confident. **To be competent students need to recognize mathematical relationships and use them to make sense of information, situations, and problems.** It doesn't come from practicing rote procedures until you automatically can do them. **Confidence comes from knowing that you understand mathematics and that you have the tenacity to make sense of information and situations that you encounter even when the problems are complex or messy.**
- Number talk can be an experience that helps students build facility with numbers. As citizens we are bombarded with information about our world in the form of statistics and other numerical information. We often need to make sense of this information mentally and need to decide if it's reasonable or accurate. **Mental computation is an important part of developing mathematical power.** In today's society we need people who can estimate answers, understand mathematical concepts to tell the machines what to do, be able to interpret the results, and determine their reasonableness. Children who have had experiences with diverse algorithms or ways of solving number problems often have an easier time dealing with numbers and numerical information.
- **Fluency and understanding of small numbers is the foundation of success with larger numbers.** This is sometimes referred to as basic facts. Understanding these basic relationships leads to facility with mental computation. Knowing and understanding is more than just memorizing the facts!! Children should be able to take apart and put back together the numbers with little thinking involved. Students need to be able to use these number relationships to get accurate results without much of a struggle. **Students need to learn to compute accurately, flexibly and efficiently.**

Helpful Hints for Implementing Number Talks (With thanks to Cathy Young for her suggestions)

1. Do number talks every day but for only 10 minutes. A few minutes more often better than a lot of minutes infrequently.
2. Ask questions such as
 - How did you think about that?
 - How did you figure it out?
 - What did you do next?
 - Why did you do that? Tell me more.
 - Who would like to share their thinking?
 - Did someone solve it a different way?
 - Who else used this strategy to solve the problem?
 - What strategies do you see being used?
 - Which strategies seem to be efficient, quick, and simple?

3. Experiment with using the overhead, the whiteboard, chart paper, etc.
4. Consider having students "circle up" in chairs or on the floor
5. Give yourself time to learn how to
 - Record student solutions
 - Listen to and observe students
 - Collect notes about student strategies and understanding
6. To help determine what numbers or problems you select use what you learn from previous number talks as well as the focus of your daily classroom instruction
7. Do number talks with yourself and others to try new strategies and increase your own confidence
8. Name/label the strategies that emerge from your students:
 - Use doubles
 - Break apart numbers
 - Make it simpler
 - Use landmark numbers (25, 50, 75, 200, etc)
 - Use a model to help
 - Use what you already know
 - Make a "10"
 - Start with the 10's
 - Think about multiples
 - Think about money
 - Traditional algorithm
 - Counting on
9. Use related problems: 3×14 , 3×114 , 3×1104 OR $7+8$, $27+8$, $107+8$ OR $3 \times 6 \times 7$
10. Do number talks in small groups
11. Ask students to "Do as much of the problem as you can."
12. Give students lots of practice with the same kinds of problems.
13. Use numbers for subtraction and addition that require student to work past 10 or 100 such as $87-9$ OR $94+8$ OR $106-8$
14. Give students opportunities to add and subtract 9, then 8 etc. using 10 as a friendly number to work with such as $68+10=78$ so $68+9=77$
15. Expect students to break apart numbers, not count on their fingers. Show them how $6+8$ (think of 6 as $4+2$; add the 2 to 8 to get 10 and just add the remaining 4 to get 14)
16. Show the strategy you used. Make sure they know it's not "the" way, just another strategy
17. Give students larger numbers so they can give "estimates"
18. If you use chart paper, write down the student's name next to their solution. Keep track of who is participating and their strategies. Use the following as a "sorting" assessment guide:
 - Can figure it out (by counting on, using an involved strategy, etc.)
 - Beginning to use efficient strategies (can complete some of the problem efficiently)
 - Just knows or is using efficient strategies

19. Create a safe environment. When children feel safe, they are comfortable sharing answers even when it's different from everyone else's.
20. Provide concrete models (snap cube "trains", base 10 blocks, money, etc)
21. Give opportunities for children to "think first" and then check with the models
22. Have students occasionally record their thinking and the steps they use to solve a problem
23. Encourage self-correction; it's okay to change your mind, analyze your mistake, and try again
24. Provide number stories
25. Be curious; avoid making assumptions
26. Give number talks time to become part of your classroom culture. Expect them to follow the usual learning curve stages. "Keep on keeping on" and you will get positive results