

Math Conferences: Making Learning Visible

2013 NCTM Conference

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What is a Math Conference?

A brief and focused one-on-one conversation between a teacher and a student during which the student shares his/her mathematical thinking and the teacher leads the student to his/her “next step” in learning.

How do Math Conferences compare to Math Interviews and Small-Group Instruction?

Format	Time	Participants	Focus	Function
Math Conference	About 5 minutes	Teacher/ 1 student	Student's current work	Assessment Feedback Individual Instruction (Teaching Point)
Math Interview	About 10-15 minutes	Teacher/ 1 student	Instructional task introduced by teacher	Assessment
Small-group Instruction	About 15-20 minutes	Teacher/2-6 students	Group Lesson (based on the identified needs of the group)	Group Instruction (Focus lesson) Assessment Feedback

What is the value of Math Conferences?

- Assessment
 - Formative
 - Student self-assessment
- Instruction
 - Targets cutting edge of students' knowledge
 - One-on-one opportunity to share teaching point
- Feedback
 - Timely
 - Specific
 - Allows students to adjust their thinking and work in its midst to meet learning goals and criteria for success
- Mathematical Communication
 - Students expected to explain their mathematical reasoning
 - Student mathematical reasoning and communication is closely monitored by teacher
 - Teacher modeling of appropriate and precise use of mathematical language
 - Supports CCSS Standards for Mathematical Practice
- Accountability
 - Students learn that just having the right answer is not enough—they must be able to justify it
- Higher Order Thinking
 - Intimate conversation with teacher encourages students to pursue more complex thinking and develop a curiosity about math
- Building Relationships
 - Teachers show they care about and respect their students
 - Time to talk with, not at students
 - Builds relationships that tend to maximize student achievement and motivation—especially with poverty student

The Components of a Conference (adapted from Calkin's writing conferences)

Research	Student explains his or her work while the teacher identifies strengths and needs.
Decision	Based on the research, the teacher decides on: <ul style="list-style-type: none"> • An authentic compliment • A teaching point • How to teach the teaching point
Teaching to Student Need	Teacher teaches the teaching point and actively engages student.
Link	Teacher emphasizes that student should remember and use the new mathematics concepts or strategies that they have learned. Student restates the teaching point to ensure understanding.

Routines and Procedures Skill Checks

Comprehension Checks

Problem Solving Checks Recheck

Kinds of Conferences

Where to Go from Here

Encouragement

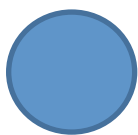
Goal Setting



When can Math Conferences be conducted?

- As students enter classroom
- At the beginning of Math Workshop
- At the end of a small-group lesson
- Set aside one day a week
- Be creative about using bits of time during the day that arise

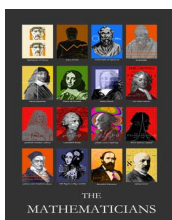
Strategies for Effective Conferring



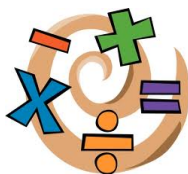
Create a setting that invites conversations.



Listen actively—paying close attention, showing you are listening, providing feedback, and deferring judgment.



Communicate as a fellow mathematician.



Work to understand the thinking of the student.



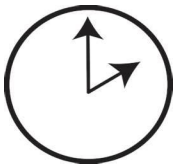
Respond to student's verbal and nonverbal cues.



Build on student strengths.

1 or 2
will do!

Limit the number of teaching points.



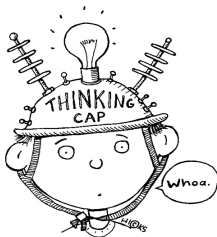
Keep conferences brief.



Encourage students to do most of the talking.



Avoid power struggles.



Encourage students to think more deeply and with more complexity.



Use conferences strategically being aware of the impact on neighboring students listening in.

Math Conference Snapshots

Grades K-2

Research Student Understanding:

Teacher: *Yoshi, can you tell me what you are doing?*

Yoshi: *I'm counting these coins. I'm going to find out how much there is.*

Teacher: *Great! So, how are you counting them? Can you show me exactly what you are doing?*

Yoshi: *Okay. This is a penny. It's just one cent. There're some nickels, too. They're five cents. Let's see. I have a quarter and some dimes, too. A quarter is 25 cents. A dime is...uh...oh, ten cents. There are a lot of coins here.*

Teacher: *You know all of the coins and their values! So, how are you going to find out what their total value is?*

Yoshi: *I am going to count them. So, this penny is one cent, and then there's a nickel. One and five more is six cents. Then, uh...here's another penny and a quarter. So, let's see...I had six cents and one more is seven. Then, there's the quarter. Seven and 25 more...*

Yoshi begins to write $25 + 7 =$.

The teacher has discovered that Yoshi can identify the coins and knows values of each of the coins. Once Yoshi identifies the coins and their values, however, he does not have a strategy to help him organize the coins to make counting the total value easier. Although he demonstrated that he knows the values of the coins have to be added, the teacher decides to show Yoshi a more efficient method he can use. After making note of these observations, the teacher moves into the "Teach to Student Needs" phase of the conference.

Teach to Student Needs:

Teacher: *Yoshi, as you worked, I noticed that you have an excellent knowledge of the coins and their values. You know that you need to add their values together to find the total value of this group of coins. What I also noticed is that when you adding the values of the coins, you were writing addition number sentences to help you find the sums. That's a great strategy to use if you don't have very many coins to add. Today, I am going to show you another strategy you may want to try. I noticed that Carlita was using this strategy as she was figuring out the value of some coins. Let's look at what she is doing.*

They move to the table where Carlita is working. Carlita first groups like coins together and then begins counting with quarters, then dimes, nickels, and pennies. As they watch, the teacher

does *not* ask Carlita to explain what she is doing so that the conference will be concise and focused on the strategy being suggested. Instead, the teacher will explicitly explain the strategy to Yoshi. Note: This conference is taking place only after Yoshi had opportunities to explore and devise strategies working independently and with student partners.

Teacher: *Carlita is grouping coins that are the same together before counting their values. She begins counting with the quarters, then dimes, nickels, and pennies. Using this strategy, she is able to use mental math as she counts. She knows how to count by 25 with her quarters. Then, counting on from the total value of the quarters, she counts by 10's for the dimes, by 5's for the nickels, and finally by 1's for the pennies. She doesn't have to write down number sentences.*

Yoshi, let's get back to your set of coins, so you can give it a try.

Yoshi quickly and accurately sorts his coins and is able to use the new strategy to determine their total value.

Teacher: *Wow! That worked so well! You used a strategy that made use of what you know about skip counting. Can you explain this strategy to me?*

Yoshi: *I put all the quarters together, all the dimes together, all the nickels together, and all the pennies together. That was the first thing! Then I just counted.*

Teacher: *How did you count?*

Yoshi: *I started with the biggest coins.*

Teacher: *The biggest in size or the ones with the greatest value?*

Yoshi: *The greatest value. So I counted the quarters by 25, and for all the others, I just counted on skip counting. For the dimes by 10's, the nickel's by 5's, and the pennies were just by 1's. It was easy that way.*

Link to the Future:

Teacher: *Yoshi, today you learned a new strategy for counting coins. You sort the coins and then skip count starting with the coins of the greatest value. You already knew one way to find the total value, but this is a quicker, easier, more efficient strategy you can use. When you are counting sets of coins in the future, be sure to remember and use this strategy.*

When Yoshi demonstrated the ability to identify coins and their values as well as the understanding that he had to add the values of the coins to find their total value, the teacher decided to show Yoshi an example and explicitly explain a more efficient strategy for counting a group of coins. The teacher will observe Yoshi's work with coins in the next few days to see if he is making use of the strategy or needs further support to implement it.

Grades 3-5 Conference

Research Student Understanding:

Teacher: *Hello, Jamari. How is your math work going today? Can you tell me a little bit about what you are doing?*

Jamari: *I'm solving a problem. It's right here. But, I am kind of stuck with it.*

Teacher: *Will you read the problem to me?* (The teacher wants to be sure that Jamari has no problems with reading the problem.)

Jamari: *"Main Street School has 200 students who eat in the lunchroom at the same time every day. They sit at tables that each hold the same number of students. Every seat is taken when they are all present. How many students might there be at each table?" So I have to find out how many students sit at a table, right?*

Teacher: *You know what you have to find out. What are doing to solve the problem?*

Jamari: *I am drawing some tables, just like in the lunchroom. Let's see, about ten people sit at each table in our lunchroom. But, the ones over by the window only have six kids at them. Let me draw some of them.*

Decide What Is Needed:

In the research phase of the conference, the teacher discovered that Jamari can read the problem without difficulty and knows what he is asked to find. However, he seems to be jumping into the problem without taking time to identify its relevant facts. After making note of this with anecdotal records, the teacher decides to demonstrate how to reread a problem carefully to pick out the important facts before trying to solve it.

Teach to Student Needs:

Teacher: *Jamari, you read that problem very well and know what you have to find. That is the first step in problem solving! You are thinking like a mathematician.*

Whenever I have a problem to solve, first I think about what it is I need to find out. You have already done that with this problem. Next, I want to be sure I know what facts are important to know so I can solve it. I'm going to read the problem again carefully and underline the facts. Then I'm going to go back again and be sure everything I underlined is needed for this problem.

The teacher reads, underlines, and rereads the problem.

Main Street School has 200 students who eat in the lunchroom at the same time every day. They sit at tables that each hold the same number of students. Every seat is taken when they are all present. How many students might there be at each table?

Teacher: *Did you notice how I read the problem carefully, underlined the facts, and then went back to recheck them before I tried to actually solve the problem? Now, I can focus on those facts: 200 students, eat at the same time, tables hold the same number, each seat taken. Does it help you as you are trying to solve this problem to focus on those important pieces of information?*

Jamari: *Yeah! I wasn't even thinking about each table having to have the same number of kids. I was just thinking what our lunchroom is like. Let me try it again. I think my strategy of drawing tables will help me figure it out.*

Teacher: *Jamari, what was it I did that helped us get to this point?*

The teacher asks this to get Jamari to state the teaching point in his own words to be sure he understands it and to help him remember it.

Jamari: *You read the problem again and underlined the important stuff. Once I read it, I just kept thinking about the question. I forgot all about that other stuff.*

Link to the Future:

Teacher: *Remember, Jamari, this is something important to do any time you have a problem to solve. Reread and pick out the important information you need. When you are solving problems in the future, read and think like a mathematician.*

By demonstrating the process, Jamari was able to actually see the teacher go through the process being taught. The teacher makes a note to follow-up with Jamari in the next few days to see if he is able to apply this lesson independently.