MAKING SENSE OF PROBLEM SOLVING NEWSLETTER

Provided by Teacher to Teacher, Inc.

NEW: Online course to support using *Making Sense of Problem Solving*

Encouraging Mathematical Discourse

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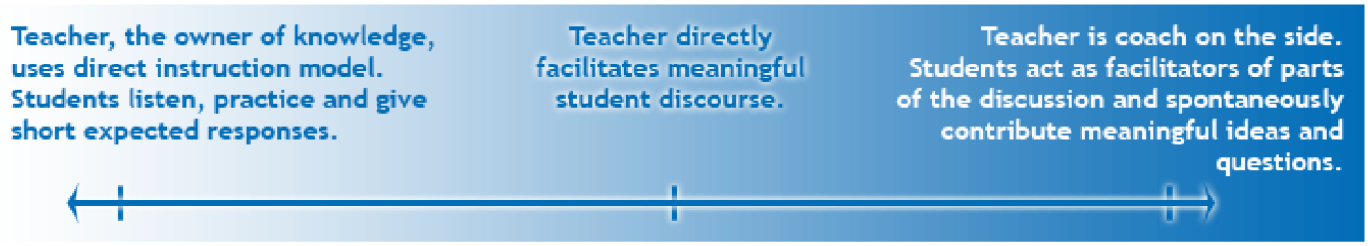
One of Teacher to Teacher's consultants recently was doing demonstration lessons in a series of classrooms in a rural school district. At the Professional Learning Community meeting that followed this series of model lessons, one of the classroom teachers, who was accomplished at using direct instruction methods, had this to say, "I was amazed at how my students were talking about math. I had no idea they thought as deeply about math as I heard them do when you asked them to explain their strategies for how they were coming up with their answers. I've seen the videos. I know the goal is to increase student discourse but I've never really known how to do that. Now, knowing my class as well as I do, I can see that I've been missing out on something by not going deeper with them to find out how they were thinking about math ideas.

Teachers often ask our mathematics consultants how they can get their students to go deeper into mathematics concepts. The following graphic shows a spectrum of teacher and student roles in discussing mathematical ideas.



In the descriptor on the left side of the continuum, the teacher acts as the total manager of the knowledge. He or she uses a direct instruction method to impart the concepts to be learned and check student understanding through specific questioning. The teacher expects short answers from students based on information that has been presented.

When teachers decide they want to learn more about how students think about math ideas, the first steps still involve directing the discussion but also include asking open-ended questions and probing for more student input. Examples of the kinds of questions the teachers might use to facilitate this level of discourse might include: "Explain your thinking. Tell us more about that idea. Can you explain what Jamal has said in your own words? Do you agree or respectfully disagree? Why or why not?"

The descriptor on the right of the continuum has been described in a study by Hufferd-Ackles, K., Fuscon, K.C., and Sherin, M. like this: "Teacher monitors all that occurs, still fully engaged. Teacher is ready to assist, but now in a less visible, more supportive and monitoring role (coach and assistant). *Student-to-student talk is student-initiated, not dependent on the teacher. Students ask questions and listen to responses. Many questions are "Why?" questions that require justification from the person answering."*

Hufferd-Ackles, K., Fuscon, K.C., and Sherin, M. G., *Describing Levels and Components of a Math-Talk Learning Community,*

If you would like support for how to develop skill in increasing student participation in the classroom discourse, there are two options for professional development using *Making Sense of Problem Solving* materials: a facilitator guide with a DVD that spells out four sessions of at least one hour each, designed to support students and teachers successfully implementing the materials.

The second option is participation in an online college course through Portland State University where educators can earn 1-3 college credits. The course is offered to groups of teachers (either at the same site or across multiple sites) who become a community of learners and deeply engage in analyzing the teaching and learning of mathematical concepts through problem solving.

The online course allows educators to participate according to their own schedules. We are accepting applications for classes starting in April 2009. If you are interested in this opportunity, please contact Teacher to Teacher Publications at office@teachertoteacher.com or 503-659-5616.

Journal for Research in Mathematics Education, Volume 35, Number 2, March 2004, pp. 81-116.

The *Making Sense of Problem Solving: Targeting NCTM Curriculum Focal Points* supplementary curriculum is developed to facilitate learning communities that help students deeply engage in thinking about mathematical concepts, as described on the right hand side of the continuum.

You are invited to participate in Jackie's K-5 blog!

Jackie Cooke, one of TTT's consultants and the editor of the Journal of the Oregon Council of the Teachers of Mathematics, would like to use this space as a place to address any issues regarding the teaching of *Making Sense of Problem Solving* (MSPS) lessons. Feel free to send Jackie your questions. We would also like to invite feedback on any of the *MSPS* lessons. What lesson did you try out? How did it go?

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