Principals + algebra (– fear) = instructional leadership

Carver, Cynthia L.; with Steele, Michael and Herbel-Eisenmann, Beth

Learning Forward Journal ◆ October 2010 **Program and Leadership Knowledge: Articles**

DESCRIPTION

"Principals + algebra (- fear) = instructional leadership," by Cynthia L. Carver with Michael Steele and Beth Herbel-Eisenmann, describes the use of study group sessions to engage principals in solving and discussing algebra tasks commonly used in middle school, watching video of teachers implementing similar tasks in classrooms, analyzing student work, and identifying teaching practices that support meaningful student-centered learning in mathematics. As a result of their participation in the *Building Capacity in Algebra: Teaching, Learning, and Leading Project*, principals acquired content knowledge along with knowledge of how the content is best learned and taught in order to support teacher development. Perhaps most importantly, principals had the opportunity to experience what it is like to be a learner of the subject of algebra specifically and mathematics in general. The work centered on three big ideas about algebra:

- How algebra can be conceptualized as the study of patterns and functions
- Ways in which algebraic reasoning is developed through tasks of high cognitive demand
- The importance of representing algebraic ideas and translating among representations in the teaching and learning of algebra

Additionally, the work focused on three areas of teaching algebra:

- Lesson Planning
- Lesson Delivery
- Attending to Student Thinking

STAGE 2 LEADERSHIP DEVELOPMENT

"Principals + algebra (– fear) = instructional leadership" by Cynthia L. Carver with Michael Steele and Beth Herbel-Eisenmann, supports stage 2 development of leaders working to ensure relevant and meaningful mathematics in every lesson. A mathematics leader might work with a group of principals to provide opportunities to solve problems in small groups, then to share their work with others in an effort to provide principals the opportunity to experience the value of learning from others' approaches to problem solving. Principals need the opportunity to experience the curricular and instructional changes that teachers are being asked to adopt. Using the Leadership Moves for Algebra Teaching, the leader might facilitate a group discussion on what principals might expect to see when visiting effective algebra classrooms.

LEADERSHIP MOVES FOR ALGEBRA TEACHING

Algebra teaching	Potential leadership moves
LESSON PLANNING	
A teacher's selection of mathematical tasks has critical implications for what students can learn.	• Encourage a vision for algebra that puts an emphasis on mathematical reasoning. • Reassure teachers that time spent on high-level tasks will be rewarded. • Help teachers secure needed curricular and instructional resources. • When observing in the classroom, pay attention to the cognitive demand of selected tasks.
LESSON DELIVERY	
A teacher's skill at facilitating discussion around mathematical tasks, including the questions asked, has critical implications for what students can learn.	• Acknowledge teachers for engaging students in discourse around the big ideas of algebra. • Assist teachers in learning how to become more skilled at facilitating discussion-based classrooms. • When observing in the classroom, pay attention to how questions get asked and how discussions are facilitated.
A teacher's willingness to allow students time to muddle through problems together has critical implications for what students can learn.	Acknowledge the trade-offs that come from devoting time to high-level mathematical problem solving with teachers. • Help teachers manage the press of state content standards and benchmarks by clarifying local expectations. • When observing in the classroom, track student engagement with the task.
ATTENDING TO STUDENT THINKING	
Teaching for conceptual understanding requires that we listen closely to student thinking.	• Support and encourage the collaborative analysis of student work by teachers. • When observing in classrooms, pay attention to teacher-to-student talk and student-to-student talk.