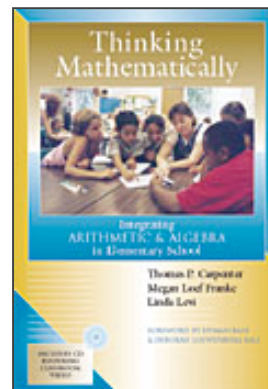

Thinking Mathematically: Integrating Arithmetic & Algebra in Elementary School

Carpenter, Thomas P.; Franke, Megan L. and Levi, Linda
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Pedagogical Knowledge: Books

DESCRIPTION

Thinking Mathematically: Integrating Arithmetic & Algebra in Elementary School, by Thomas P. Carpenter, Megan L. Franke, and Linda Levi, explores the profound mathematical thinking that elementary students can do when given the opportunity, as well as the complex work of teachers in providing those rich opportunities. The book emphasizes understanding students' thinking and the mathematics that is embedded in their thinking. The idea that mathematics involves reasoning about objects and their relations, exploring patterns, and investigating conjectures about objects, relations, and patterns is explored. Learning opportunities engage students when teachers choose tasks for students that are both interesting and sufficiently scaffolded.



Ideas are presented for teachers to use in promoting students' thinking in arithmetic and algebra in their own classrooms. A variety of problem types and forms of questioning are described that elicit student thinking and promote growth in mathematical understanding. Throughout the book, examples of classroom dialogue along with teacher commentaries are included. Each chapter includes a set of challenges for teachers to use for further investigation. The accompanying DVD provides examples of classroom and individual student interactions linked to the text.

STAGE 1 LEADERSHIP DEVELOPMENT

Thinking Mathematically: Integrating Arithmetic & Algebra in Elementary School, by Thomas P. Carpenter, Megan L. Franke, and Linda Levi, supports stage 1 development of leaders working to develop and model knowledge about instructional strategies that improve student learning. Whether working alone or with a colleague, using this book provides the opportunity for leaders to work on problems that bring each chapter to life with detailed portraits of students' work on the problems. Answers for selected challenges from each chapter are included after the conclusion and may be useful in reflecting on the tasks. The DVD provides the additional opportunities to hear and see the student interactions linked to the text.

Descriptions of a number of types of problems and forms of questioning the authors have found useful for fostering growth in mathematical understanding are included. Reading and analyzing the extended examples of classroom dialogue provide the opportunity to develop understanding of how students make sense of the mathematics they are learning. You can experience the questions and responses in actual classroom episodes.

STAGE 2 LEADERSHIP DEVELOPMENT

Thinking Mathematically: Integrating Arithmetic & Algebra in Elementary School, by Thomas P. Carpenter, Megan L. Franke, and Linda Levi, supports stage 2 development of leaders interested in facilitating growth of teachers' mathematical knowledge and implementation of effective instructional strategies. The mathematics problems with detailed descriptions, the in-depth look at students' work in each chapter, and the video examples on the DVD provide a valuable resource for leaders providing professional development. Participants might work the problems from the chapter and discuss their experiences with similar problems in their own classrooms. Next, reading the text and viewing the video examples identified within the text might be used to promote discussion about student understanding. The challenge questions at the end of each chapter provide suggestions for further discussion on the topic of the chapter.