



A non-profit organization dedicated to improving all students' mathematical understanding and achievement through meaningful, effective professional development

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[www.teachersdg.org](http://www.teachersdg.org)

# Cognitively Guided Instruction

*Understanding and Supporting the Development of Children's Mathematical Thinking*

## CGI PROFESSIONAL DEVELOPMENT

Cognitively Guided Instruction (CGI) professional development enhances teachers' understanding of research-based knowledge about children's mathematical thinking and how to use this knowledge to design instruction so that all students learn math with understanding.

Over 25 years of research across diverse populations show that participating in CGI professional development:

- Improves students' achievement on problem solving and early algebraic thinking tasks without loss of achievement on traditional arithmetic tasks
- Increases students' engagement in problem-solving and communicating their mathematical ideas
- Increases students' ability to communicate their mathematical ideas
- Helps teachers use information about students' thinking to plan instruction based on the needs of the individuals in their class
- Increases teachers' knowledge of mathematics

Teachers who participate in CGI Professional Development learn to:

- Analyze word problems and equations to determine the mathematical demands and recognize student responses in terms of cognitive development
- Assess students' thinking and design problems that will develop students' understanding of important concepts and skills
- Facilitate discussions that provide a window into students' thinking, strengthen students' ability to reason about arithmetic, and build students' capacity for algebraic reasoning
- Engage students in algebra tasks that enhance students' learning of arithmetic while also providing a foundation for the future learning of formal algebra.

## FOR MORE INFORMATION

More information about CGI, including video clips of CGI classrooms and blogs from CGI teachers, is available at:

[www.heinemann.com/ChildrensMath/](http://www.heinemann.com/ChildrensMath/)

## CGI COURSES

Teachers Development Group offers two CGI Professional Development programs.

- CGI for K-2 Teachers
- CGI for 3-6 Teachers

Administrators and other educators who support the work of these teachers are encouraged to participate along with their teachers.

Consistent with research on teacher change, TDG offers three years of CGI professional development. TDG also offers a 3-day Introduction to CGI course that supports teachers to start using CGI with their students.

## TDG CGI INSTRUCTORS

Linda Levi, a member of the CGI research team since 1989, leads the ongoing development and dissemination of CGI professional development for Teachers Development Group (TDG). Dr Levi is co-author of three CGI books for teachers as well as numerous CGI research papers and journal articles. All TDG CGI instructors are either members of the CGI research team or have worked directly with members of the CGI research team. They include classroom teachers, university professors, curriculum specialists and retired teachers.

Dr. Levi consults with each contracting organization to assure a thoughtful match between the needs of local teachers and students and the experiences and expertise of the CGI instructor.

## CONTRACTING FOR CGI

To discuss offering CGI or ECM professional development, contact Linda Levi

Phone: 503-650-1914

E-mail: [linda.levi@teachersdg.org](mailto:linda.levi@teachersdg.org)

We offer three years of CGI and ECM professional development.

## RESOURCES

*Children's Mathematics: Cognitively Guided Instruction*  
(Carpenter, Fennema, Franke, Levi and Empson, 2015)

*Extending Children's Mathematics: Fractions and Decimals*  
(Empson and Levi, 2011)

*Thinking Mathematically: Integrating Arithmetic and Algebra in the Elementary School*  
(Carpenter, Franke and Levi, 2003)