

What is CGI?

Cognitively Guided Instruction (CGI) is an approach to teaching and learning mathematics in which knowledge of children's thinking is central to instructional decision making. Teachers use research-based knowledge about children's mathematical thinking to help them learn specifics about individual students and then to adjust instruction to match students' performance. In implementing CGI, teachers assess students' thinking and then use that knowledge to plan instruction.

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CGI Classrooms

CGI teachers help students develop their mathematical understanding by making curricular decisions based on what students know and understand. As curricular decisions are implemented, a unique classroom emerges, structured to fit the teacher's teaching style, knowledge, beliefs and students.

Common Components:

1. Problem solving is the focus on instruction, with children deciding how they should solve each problem.
2. Many strategies are used to solve problems.
3. Children communicate to their teachers and peers how they solved their problems.
4. Each person's thinking is important and respected by peers and teachers.
5. Teachers understand children's problem-solving strategies and use that knowledge to plan their instruction.

CGI Basic Assumptions

1. Children bring with them to school knowledge of mathematics, which should be used as a basis for instructional decisions.
2. Children develop mathematical understanding and acquire skills by solving a variety of problems in any way they choose.
3. Children gain understanding and inform other children and their teachers as they communicate their mathematical thinking.

Some Big Ideas

1. Mathematics instruction should be based on what children understand about mathematics.
2. When teachers understand a research-based framework of children's thinking, they make instructional decisions based on what and how to teach that enable children's knowledge about mathematics to grow.
3. In CGI classrooms, children spend most of their time solving problems.
4. Although CGI teachers do not show children how to solve problems, teachers actively make decisions about mathematics instruction.
5. CGI teachers believe that children can figure out how to solve problems without direct instruction and that solving many problems enables children to grow in their own understanding of mathematics.