

Presentation 105 Bachman

Engaging and Expanding Mathematical Learning for Every Student

I appreciate the opportunity to talk with educators about what students need in order to thrive in mathematics in the early years. I have selected this topic based upon my experiences in education.

My background includes 25 years as a classroom teacher with young children in the Iowa City Community Schools, 20 years as a part time Math Solutions instructor under the guidance of Marilyn Burns, extensive study in Developing Mathematical Ideas – DMI, and current/ongoing work with teachers and students using Cognitively Guided Instruction (CGI), and 10 years as a math consultant at Grant Wood Area Education Agency. My currently work includes consulting with the Iowa Dept of Education relating to CGI, Grant Wood Area Education Agency relating to CGI & RTI and Consultant for Math Solutions.

Children come to school from increasingly varied backgrounds. Even in these early years, the gaps are wide. If our students are to have success in later mathematics we must ensure a solid beginning with all of the habits of the mind that the *Common Core Practice Standards* set before us. How can we help fragile early learners persevere and be actively engaged? How can we help our confident robust learners stay engaged and enthusiastic? These are the questions that will be addressed during this talk. The key points are:

- ❖ Teach within the “access range” of each student.

The *access range* is also known as:
 the *zone of proximal development* (Lev Vygotsy)
 the *just right range* (i.e. guided reading)

- ❖ There are two types of knowledge that must be addressed at school.

1. Socially conveyed knowledge – such as vocabulary and symbol systems

For example:

Math words with everyday homophones create confusions for some children.

one	won
hour	our
eight	ate
cents	scents
sum	some
week	weak

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2. Mathematical relationships that need to be developed within each child's mind:
For example:

Jemma had 10 stickers. She gave her friend five stickers. How many stickers does Jemma have now?

Jemma had 5 stickers. Her friend gave her 5 more stickers. How many stickers does Jemma have now?

Jemma had 5 stickers. Her friend gave her some more stickers. Now Jemma has 10 stickers. How many stickers did her friend give her?

The practical aspects of how to address these key points are the focus of the talk.

Materials and resources that have been used to develop ideas in this presentation include:

Children's Mathematics Cognitively Guided Instruction. Thomas P. Carpenter, Elizabeth Fennema, Megan Franke, Linda Levi, Susan Empson

Math for All Differentiating Instruction, Grades K-2. Linda Dacy, Rebeka Eston Salemi

Number Talks, Helping Children Build Mental Math and Computation Strategies. Sherry Parrish

Research in Review Article, NAEYC July 2010, *Bridging the Vocabulary Gap.* Tanya Christ and X. Christine Wang.

Little Pea, Amy Rosenthal and Jen Corace

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