

Colorado Professionals Engage in Math Research

Research participants:

- *Cherry Creek School District (CCSD) Team: Mark Semmler (district special-education coordinator), Joanie Funderburk (district secondary-math coordinator), Anne Haas (special education/ middle school), and Kristie Mitchell (special education/ middle school)*
- *Aurora Public Schools (APS)/ Littleton Public Schools (LPS) Team: Lisa Viscal (special education/middle school, APS), and Jennifer Powell (special education/middle school, LPS)*
- *Jeannette Villalobos (special education /middle-school, CCSD)*
- *Kevin Osborn (special education /elementary, APS)*
- *Dr. Patty Meek (Project Coordinator)*

Last spring, math educators conducted research projects stemming from their participation in CCLD's Math on the "Planes" conference held in February, 2009. Conference presenters Anna McTigue and Fred Gross shared a number of engaging, effective, and scientifically-based instructional practices for helping *all* learners access higher-level mathematics.

Discussion: The focus of the research was to implement selected techniques from the conference and determine the efficacy of such techniques. At the same time, researchers were asked to thoughtfully consider and share information regarding the successes and challenges of incorporating new-instructional techniques into their curriculum, analyzing student work on an ongoing basis, and, where appropriate, meeting regularly with colleagues to discuss data and plan together.

Selected areas of math instruction covered a broad range, including basic number sense, decimals/fractions/percentages, pre-algebra, and algebra. Instructional settings included self-contained, team taught, and general education with consult from special educators. According to the researcher participants, the most prevalent challenges for their struggling learners included:

- Number facts (both accuracy and fluency)
- Math vocabulary
- Expressing (both written and orally) processes utilized in solving mathematics problems

Results: While the breadth of the various projects did not permit *comparison* of data results regarding the implementation of the techniques suggested by presenters Anna McTigue and Fred Gross, the data from each individual project suggested noteworthy improvement in students' understanding of selected math concepts.

Frequently noted research highlights:

- The value of close analysis of student work, particularly when working with colleagues
- Where applicable, the value of having direct access to mathematics experts
- The value and reward, for both teachers and students, in having adapted elements of the general education curriculum to grant students greater access to higher-level mathematics concepts

Specific needs expressed included:

- A uniform structure and/or process for reviewing student work
- Staff development for teachers (both general and special education teachers) regarding effective math instruction (including both accommodations and modifications)
- Time to meet together
- Schedules that allow for collaboration to occur on a regular basis

Summary: The hard work of the research participants, along with the projects they submitted, has done much to reinforce the benefits of closely reviewing student work, designating time for professional discussion and collaboration, and effectively modifying instructional techniques based on a review of student work. Staff development, time, and a schedule that permits collaboration on a regular basis remain areas of significant need. **CCLD** congratulates these research participants and their ongoing efforts to make higher-level mathematics accessible to *all* learners.