

# Investigations

IN NUMBER, DATA, AND SPACE®

## Case Study:

### New Mexico State University Partnership with Gadsden School District

## A Conversation with Dr. Cathy Kinzer, Mathematics Educator, NMSU

When a University department with expertise partners with a school district, exciting things can happen. That is exactly what has taken place in southern New Mexico. Dr. Cathy Kinzer, Mathematics Educator at New Mexico State University, Dr. Karin Wiberg, Associate Dean of Research for the NMSU College of Education, and Wanda Guzman, also of NMSU, worked with Gadsden school superintendent Yvonne Lozano to obtain a grant that changed the face of mathematics education in the Gadsden Independent School District (GISD), New Mexico. The funding, from the National Science Foundation, was an LSC (Local Systemic Change) grant and funds were used to provide a wealth of Professional Development opportunities for Gadsden K–8 elementary school teachers. Some of these opportunities are described in the related article about Gadsden, as described by Instructional Mathematics Specialist, Cheryl Coyle. This article focuses on the partnership from the perspective of the University-based participants.

Dr. Kinzer outlined some of the many professional development activities that the grant made possible. Knowing that many of the Gadsden teachers were familiar with—and comfortable with—only very traditional instructional materials, one of the first priorities was a week-long summer academy which all K–5 teachers were required to attend. The new program, *Investigations in Number, Data, and Space*, was radically different from the mathematics instruction many teachers were used to.

All during the gradual implementation of *Investigations*, staff from the University participated in teacher training in a number of ways. During the school year, teachers participated in Professional Development workshops and school study groups. University experts visited schools and volunteered time helping teachers to do “lesson study,” a way of reflecting on their own progress as math teachers and on their students’ learning. According to Dr.

Kinzer, the benefits of the lesson study approach to teaching were visible through the greater gains made by those teachers’ students. Throughout the GISD study, Dr. Wiburg found significant positive differences in achievement for those students whose teachers participated in lesson study as compared with students whose teachers were not participating in this training. A curriculum like *Investigations* is critical for implementing a program like Lesson Study, since it is necessary to have programs that provide students with opportunities to solve problems and discuss mathematics.

University staff also worked with building administrators, assisting them in initiating procedures to encourage the acceptance of the *Investigations* philosophy by all teachers. They also assisted administrators and teachers

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in aligning the district’s teaching, standards, curriculum, and assessment.

To follow up on the impressive success of the *Investigations* adoption in Gadsden, University researchers have also continued to study the implementation through the use of observation tools which measure the level of implementation in each classroom. The ideal, and part of the underlying structure for Gadsden’s success, is a Professional Learning Community (PLC) in each of Gadsden’s

elementary schools. As part of the research underpinning the Gadsden – NMSU partnership, the project identified key characteristics of effective implementation of *Investigations*. These characteristics are summarized here:

### **An effective District:**

- Provides every teacher with curriculum resources that meet Mathematics standards
- Requires all teachers and principals to participate in Mathematics professional development
- Designs periodic assessments that set a high bar for student learning
- Aligns funds to provide school based support (mathematics coaches)

### **An effective principal:**

- Requires participation in grade-level collaborative planning
- Makes sure that teachers have at least two hours a week for grade level planning
- Ensures that teachers have the resources they need to implement standards-based lessons
- Monitors instruction through classroom walk-throughs

### **An effective teacher:**

- Plans units and lessons based on standards and benchmarks
- Understands the mathematical focus of each unit and lesson
- Uses classroom assessments that measure how well students are meeting learning goals
- Analyzes student performance and makes needed modifications to ensure student progress

The bottom line for any successful new program implementation is successful performance of students on required tests. According to Dr. Kinzer, “Our state criterion referenced test requires students to communicate their mathematical thinking. We emphasize the same five process standards as NCTM. With the *Investigations* program, the communication of mathematical thinking is built right in. That is an important reason why Gadsden’s students do so well.”

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