Investigations

IN NUMBER, DATA, AND SPACE®

Case Study:
Rapid City Area School District, Rapid City, South Dakota

A Conversation with Nancy Ward, Elementary Math Coordinator

Rapid City has been using *Investigations in Number, Data, and Space* for the past four years. Formerly, the district had used another "reform" program, but it was one that was published for only a short period of time, had no associated Professional Development, and the reactions of teachers had been decidedly mixed. So teachers largely sought other resources, and math classrooms in Rapid City ended up with a variety of materials and programs. At the time of the adoption there was no uniformity in approach to math instruction.

As Nancy Ward, the Elementary Math Coordinator, explained, "We wanted everyone to have the same materials. One of the things we did was a survey… we wanted everyone on the same page." Among the important considerations in choosing the new program was the need for appropriate staff development. And when the new program, *Investigations*, was introduced in Rapid City's elementary classrooms, a critical factor to its early success was the support of principals.

Knowledgeable principals, noted Ms. Ward, asked, "What does the research say?" Once convinced of the soundness of the research underlying *Investigations*, these principals assumed responsibility for the success of the program. "If scores go down, we'll take the heat," they promised the sometimes-apprehensive teachers. These administrators were also strong supporters of the staff development that was an important element in the introduction of this new program. And they made it clear to teachers that "this is where we are going." There was no ambiguity, no going back.

In a few schools, at first, the principals were more uncertain. In such instances, a teacher's concerns might be met by administrator agreement that "this might not work." Confirming teacher fears in these few cases made successful implementation more difficult…but even in these situations, continued strong support provided by district administration and staff development continues to gradually move teachers forward.Ms. Ward summarized Rapid City's experiences this way:

"It was certainly an easier fit for some teachers than for others. The same holds true for principals. We heard comments from many teachers similar to, 'This is great. I've been doing things like this for years, and now it's coherent and all in one place. I don't have to continually search for activities or create my own.'"

For other teachers, the First Edition curriculum units looked so different from the traditional teacher's manuals they were used to, the fit was challenging. There was also significant resistance from teachers who had primarily procedural mathematics content knowledge. They didn't understand the mathematics they were asked to teach. Teachers who use a behaviorist pedagogical approach and do the talking and thinking for their students also struggled.

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Our strongest implementation successes occurred in buildings where the principal was committed to *Investigations*. They supported their teaching

staff, listened to concerns, found answers to questions and provided clear expectations and daily support."

The district was proactive from very early on in providing teaching support. As Ms. Ward explained:

"We began the work of shifting to an inquiry-based program almost a year and a half before adopting. In the summer of 2003, we held K–2 and 3–5 *Investigations* summer camps which were week-long professional development experiences focusing on math content and pedagogy and navigating through the new materials.

We had also received a NSF Math School Partnership grant which allowed us to provide both district professional development and building-based professional development in the person of Math Teacher Leaders for all elementary teachers."

Another key element was engaging the support of parents. In a series of meetings, parents were given problems which their students were also solving in class, and asked to develop and explain their strategies. Subsequently, they were shown videos of *their own children* developing the same strategies. This did much to solidify the base of parental support for the new math program.

As part of the ongoing development of *Investigations* materials, selected teachers were provided with examples of new Second Edition Curriculum Units. These included both experienced users of *Investigations*, and several who were less familiar. One teacher, who earlier had struggled with some of the materials, remarked after using the new lessons, "I love it!" Another teacher was on the phone soon after receiving the first curriculum units to inquire, "Where's my next book?" One of the key features of these Second Edition materials is the fact that more staff development is embedded in the materials themselves.

According to Ms. Ward, this will enhance the accessibility of the materials to new teachers and those who might need a bit of encouragement. She believes that the best advocates of *Investigations* are successful teachers. As she remarked, "it's the pilot teachers who really sold the program!"

South Dakota

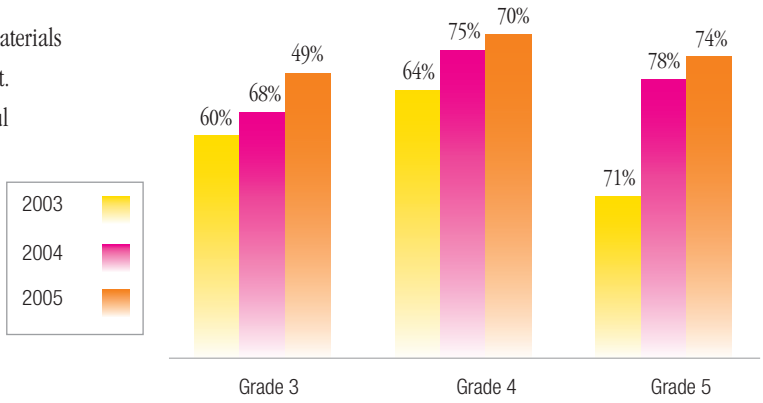
School District:	Rapid City Area School District 51-4
Test:	STEP (State Testing of Educational Progress)
Grades:	3, 4, and 5
Measure:	Percent of students 'proficient' or 'advanced'
Percent Change:	Grade 3: +18%; Grade 4: +15%; Grade 5: +51%

Rapid City adopted **Investigations in Number, Data and Space** in the fall of 2003. As shown in the graph, since the adoption there has been an increase in the percent of students attaining 'proficient' or 'advanced' scores on the math part of the STEP test across the three tested grades. Prior to the adoption, 60% of third graders were proficient or advanced, and by the end of the seventh implementation year, 71% reached this level. Comparable figures for grade 4 are: 68% proficient or advanced before the adoption, 78% at the end of the seventh year; grade 5: 49% proficient or advanced before the adoption; 74% at the end of the seventh year. Rapid City adopted **Investigations in Number, Data and Space-2nd edition** in the fall of 2009 for their title schools and in 2010 for their non-title schools.

District Demographics: Total enrollment: 13,199; LEP students: 1%; Ethnic mix: Asian: 1%; African American: 2%; Native American: 19%; Hispanic: 2%; Caucasian: 76%; Free/reduced lunch: 34%; Approximate number of students represented by this graph at 7th year: 2,978.

Rapid City, South Dakota

STEP Test Score Gains



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