

Research Into Practice: A Service Agency Model for Effective Professional Development

by

Sue Anderson, Ph.D.
Jill K. Bruckner, M.A.

More than at any other time in American public education the academic achievement of students and the instructional practices of their teachers are under scrutiny. While efforts to reform public education are not new, including the federal No Child Left Behind (NCLB) Act of 2001 and the more recent federal Race to the Top grants, what may distinguish these efforts from earlier initiatives has been the ensuing body of research focused on professional development and its role in improving teacher practice and student achievement.

Responding to NCLB in 2001, the United States Department of Education identified criteria for effective professional development that call for the alignment with academic content standards, that advance teacher understanding of effective instructional strategies, and that are sustained over time and evaluated for effectiveness (USDE, 2001). The American Educational Research Association (AERA) reported that professional development leads to better instruction and improved student learning when it connects to content knowledge, collective participation, and active learning (2005). Reeves (2010) characterized professional development as effective when it influences professional practice, fosters teacher initiative, and implements action research to document and inform professional practices.

Learning Forward (2012), formerly the National Staff Development Council, has cited learning communities to support improvement of teaching and learning, school and district leadership, and the effective use of data as standards for effective professional learning for teachers.

And most recently, the adoption to date of the Common Core State Standards by 45 states has brought into sharp relief the need for extensive professional development for teachers who may need extensive, ongoing support in understanding the learning progressions and integrated content associated with the standards.

While few would argue with the value of high quality professional development for teachers, many school districts struggle to find adequate resources, including time, to support effective professional learning opportunities for their teachers.

According to the National Center for Education Statistics (NCES) 2007-2008 Schools and Staffing Survey, two states, Arkansas and Vermont, reported more than 40 percent of teachers as receiving 33 hours or more of professional development in their academic disciplines in the preceding school year (Table 1). States reporting the lowest percentage of teachers receiving 33 hours or more of professional development are included in Table 2.

Table 1

Top 6 states for percentage of educators receiving professional development for 33 hours or more in the content of the subject(s) they teach

STATE	PERCENTAGE
AR	42.9
VT	41.8
UT	37
WA	32.9
AK	32.8
NH	32.5

Table 2

Bottom 6 states for percentage of educators receiving professional development for 33 hours or more in the content of the subject(s) they teach

STATE	PERCENTAGE
NE	17.4
IL	17.1
MS	16.2
IN	15.1
CT	14.4
TN	14

Source: Compiled from National Center for Education Statistics 2007-2008 Schools and Staffing Survey

Professional Development and the Service Agency Role

Critical in addressing the needs and challenges faced by school districts are Educational Service Agencies (ESAs). By their very name, they are charged with providing support to improve teaching and learning through a variety of services, not the least of which is professional development.

Nebraska's 17 Educational Service Units are supported by local property taxes and state aid for education, which specifies the funding be used for professional development support for school districts.

Educational Service Unit #3 (ESU #3), near Omaha, Neb., which serves 18 school districts representing nearly 70,000 students, is teaming with area school districts and the University of Nebraska at Omaha to address the challenges of time and resources and to provide high quality professional development that will improve teacher practice and student achievement.

Project Overview

This report examines a collaborative professional development project involving two eastern Nebraska school districts, an intermediate service agency, ESU #3, and the University of Nebraska-Omaha. The general intent of the project, a response by ESU #3 to a request by school districts, addresses district-identified needs for increased knowledge of mathematics concepts and improved instruction of mathematics by elementary and middle school teachers. Rex Anderson, PhD, Director of Curriculum, Instruction, and Assessment, for the Gretna (NE) Public Schools, and Dee Hoge, Director of Curriculum, Instruction, and Assessment for the Bennington (NE) Public Schools, agreed their teachers, and ultimately their students, would benefit from intensive instruction on the content and concepts of mathematics as well as focused professional

learning about effective math pedagogy. The improvement of student achievement in math is an improvement goal in both school districts.

Hoge suggests the collaborative project is “unique” because it “is attempting to raise the teachers’ understanding of the content they are working with.”

For example, not all educators are equally math proficient. “Elementary teachers have limited math training during their undergraduate programs and math may not be their strongest area of knowledge,” Hoge explains, adding, “Teachers are not comfortable admitting that the content may be difficult for them, especially when they are doing alright teaching the material in their grade. Through this project we are trying to expand and deepen their understanding.”

ESU #3 took the lead in designing a professional development project to address these two needs, the improvement of math content understanding and pedagogy, that would also incorporate research-based practices for effective professional learning.

Partnering with University of Nebraska-Omaha’s teacher education faculty to provide the math concepts and pedagogy content, ESU #3 launched a collaborative effort that also included the planning input and support of school district leadership and follow-up support by ESU #3 consultants with expertise in math instruction.

Purpose of the Project

The initial planning process clarified the purpose of the project: To increase student achievement by providing teachers with a deep understanding of mathematics concepts and pedagogy that results in greater confidence and knowledge in the teaching of mathematics content.

Aligned to this purpose are the following project goals designed to help teachers:

- Build an understanding of how to approach and manage challenging math content and concepts

- Build habits of action related to mathematics through discourse and exploration
- Develop a common vocabulary for use in teaching math content and concepts
- Learn what it means to be a mathematician

“One of the biggest hurdles in contemporary mathematics education is that teachers have to understand mathematics very deeply in order to match the appropriate brain-based techniques with content representations such that they facilitate efficient learning and application,” says Elliott Ostler, Ed.D., associate professor of mathematics education at the University of Nebraska at Omaha and member of the project leadership and implementation team.

Lenny VerMaas, math consultant at another Nebraska ESA, ESU #6, and project team member, explains, “This project creates an understanding of what will be expected of students as they develop deeper understandings of concepts at higher grade levels. While challenging for teachers the understanding of higher levels of math is important for improving mathematical understanding.”

Project Design

Hoge, who says she “recognized the need for recurring training on the same topic” prior to the program’s induction, points out the project “also asks teachers for some accountability to others in the project, so they are ready for the next gathering,” a strategy she believes enhances not only the nature of the project, but also improves essential outcomes, such as teacher learning and student growth.

“This is so much more than the favored ‘make-and-take’ workshops or the ‘one-and-done’ style,” she says of the project. “Not all teachers appreciate being challenged through professional development. I think it is more valuable, but not always comfortable.”

In designing the content and format to align with the goals and purpose, the project partners were not only committed to addressing the needs articulated by the school districts but also to implementing high quality professional learning characterized by:

- More hours, longer duration and greater frequency of participation
- Active, engaged learning activities and environments
- Teachers learning from their peers
- Focus on a specific content area
- Opportunity to gain knowledge about the content
- Learn how to teach the content
- Content coherent to teachers’ needs and circumstances (Desimone, L., Smith, T., & Ueno, K. 2006)

While robust PD can enhance student learning and increase teacher effectiveness (Joyce & Showers, 2002; Yoon et al. 2007), math project organizers also designed content to expand educators’ conceptual knowledge.

“Another goal for participating educators [was] to understand and feel comfortable with a higher level of math than they are teaching their students,” VerMaas explains.

ESU #3 consultant Robbie Jensen, who co-facilitated project sessions designed to help participants connect their math learning to their local curriculum materials and who conducted follow-up sessions with teachers in their districts, agrees. “The individualized differentiation

made an impact on how those teachers were able to connect the learning to direct classroom instruction,” he says.

Just as effective professional development occurs in a collaborative practice-focused environment (Garet et al. 2001; Gentile, 2006; Zaslow et al. 2010), the project’s school district administrators helped facilitate continued dialogue following training sessions.

“Teachers seldom find time to talk vertically about where they fit into a student’s development in any subject,” says Dr. Anderson. “This [project] has allowed teachers of like grades to have constructive discussions” about exactly what students are learning at each grade level and to ensure the progressions for learning are logical and appropriate.

Even so, without school and district administrative support for ongoing professional development, VerMaas suggests the project might have unfolded less seamlessly. “Teacher collaboration within a grade level, across grade levels, and between school buildings is an important product of the training,” he says. “A commitment from administration to provide time for teachers to meet together is required.”

Project Format

With the criteria for effective professional learning at the center of the project, the project partners designed a 3-year phased format that has included 3-4 face to face full-day sessions and 2-4 follow-up coaching and mentoring sessions during each phase. In each of the first two phases of the project the average number of participant contact hours was 31, close to the average number of hours of professional development cited by the 2007-2008 NCES Schools and Staff Survey as associated with effective professional development for teachers.

In 2011-2012, Phase 1 of the project focused on increasing the understanding of and improving the teaching of fractions for 32 second, third, and fourth grade teachers from the two school districts. In Phase 2 during 2012-2013, 40 new teachers of grades 2-8 were added to the project with the focus of their professional learning being fractions. The 32 teachers from Phase 1 continued in the project with a new focus of their work on geometry and measurement. Phase 3 of the project is set for 2013-2014.

“The experiences the teachers get in each of the sessions include connections both within mathematical content (i.e. representing ideas numerically, algebraically and geometrically) and to other mathematically sensitive subjects, such as science and engineering,” explains UN-O’s Dr. Ostler. “Additionally, there have been sustained efforts to connect ideas vertically throughout the curriculum in each of the workshop sessions.”

Designing professional development in this way presents challenges of time and resources. “Pulling teachers from classroom for multiple days and keeping the enthusiasm up between training dates” are among those challenges, says Hoge.

In addition to these challenges is the issue of teacher confidence in the area of mathematics. During the early stages of the of the project participants reported uncertainty and low levels of confidence in approaching challenging math problems. Many expressed the professional development session content as being difficult to grasp. “Some have shared that they didn’t sign up for a grad class,” says Hoge, “and have questioned why the district signed them up for this challenging learning.”

Despite the rigorous content presented to project participants, ESU #3 consultant Debbie Schraeder reports observing teachers implementing concepts and strategies learned in the sessions with their students.

“For me, the coaching component when we actually were in teachers’ classrooms with students, made the biggest difference as far as the degree of implementation,” she notes.

“Teachers who were willing to receive and give feedback are the ones who helped best meet the needs of their students, as well as the individuals that feel most confident being teachers of mathematics.”

Roles and Responsibilities of the Project Partners

The project was truly a collaborative effort. University faculty provided guidance on the content design of the project and delivered content and pedagogical instruction during the professional development sessions. ESU #3 consultants facilitated activities related to connecting participant learning to their local math curriculums and provided in-district coaching sessions related to the project content. And, school district administrators assisted in planning the content of the professional development sessions, securing substitute teachers for participants, and helping participants process their learning during guided-reflection activities.

“The [school district] superintendents have been great in this process,” explains Dr. Anderson. “This project has a lot of staff, time and money involved from various sources. You have to have that top support.”

Project Evaluation

Evaluating the effectiveness of professional development, while challenging, is nevertheless critical to ensuring that appropriate and adequate alignment of resources are leveraged toward the improvement of teaching and learning (Killion, 2002).

Throughout each phase of the project participants were surveyed, using Likert-style items to measure levels of agreement related to their learning of mathematics concepts and pedagogy, their classroom implementation of their learning, and their level of confidence in being able to approach challenging mathematical content. In addition to the surveys, participants were asked to provide reflective, anecdotal feedback about their learning at the close of each professional development session. This session-by-session feedback was used to address participant learning needs and to plan for the next professional development sessions.

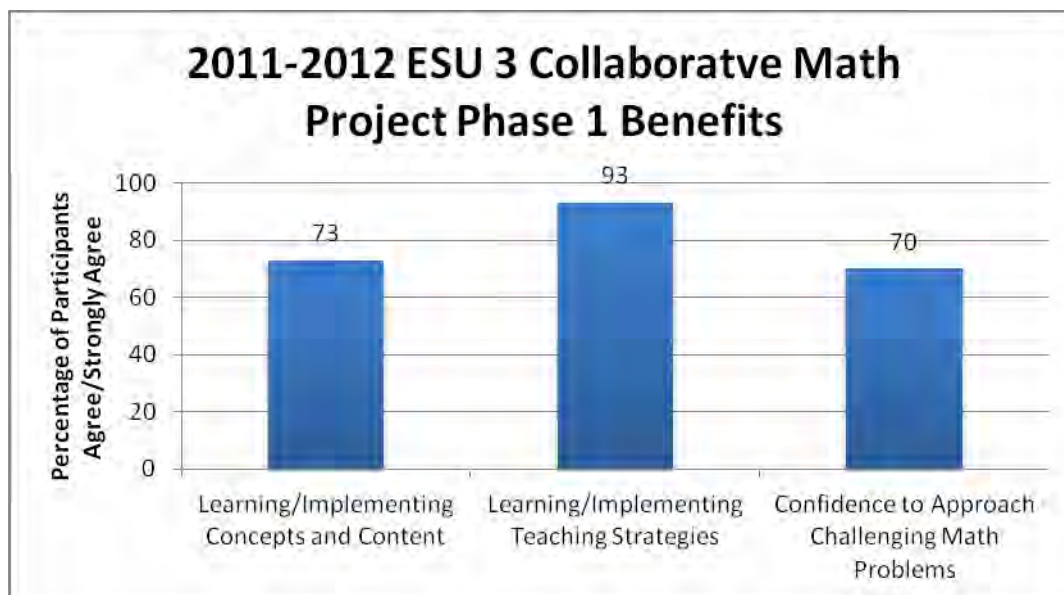
“We know that for students we need to differentiate instruction to meet their needs,” Gretna’s Dr. Anderson says. “As this project has developed, we have tried very hard to do the same for participating educators.”

Dr. Anderson adds, “This year's sessions have been built around the exit surveys of each meeting. I think it has also really helped the project to look at it from math, curriculum and instructional viewpoints as all three of these come together with the teacher, as an artist in the classroom, as they weave the three together for students.”

Evaluation Findings

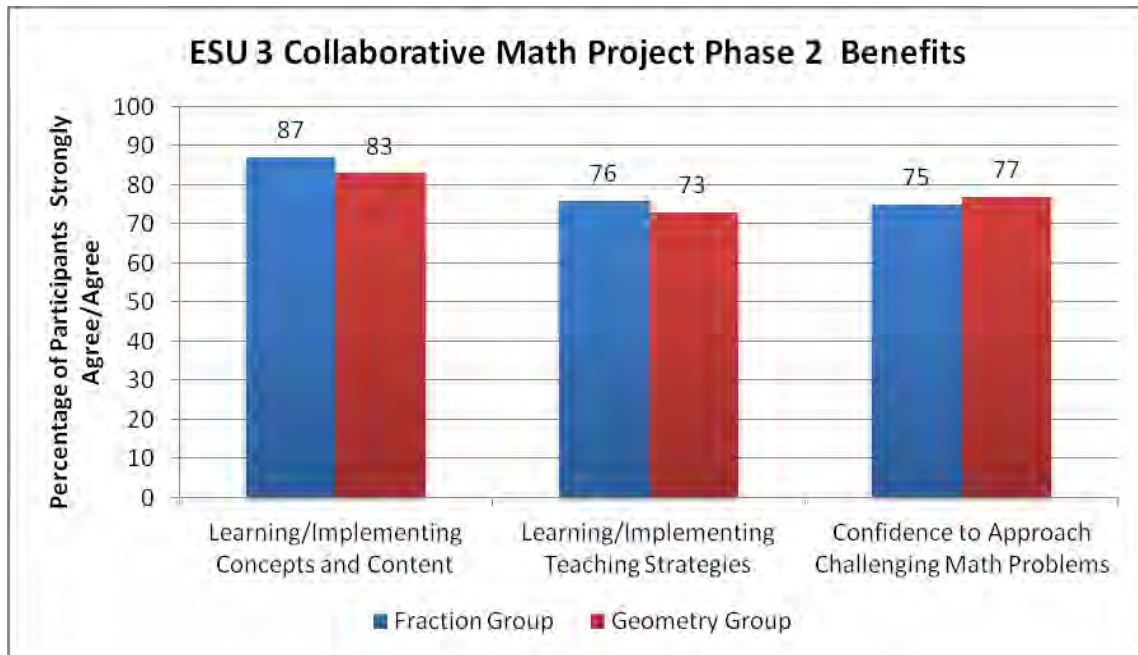
Phase 1 project findings showed that overall participants agreed or strongly agreed the project provided professional development benefits related to the project goals. Seventy-three percent of teachers indicated their knowledge of mathematics concepts and content related to fractions had increased, while 93% reported their understanding and implementation of strategies

for teaching math fraction concepts had increased. Seventy percent of participants indicated their level of confidence in approaching challenging math concepts had increased.

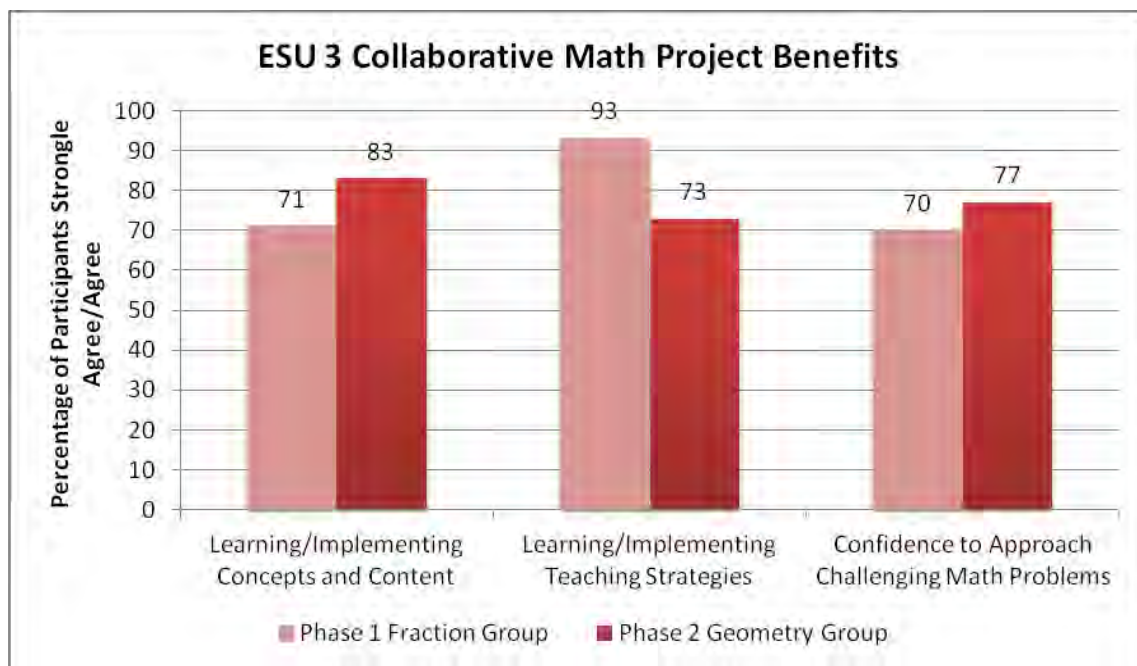


In Phase 2 of the project, first and second year participants were surveyed separately in order to assess the experiences of each group with both groups indicating they experienced professional development benefits from their project participation. Eighty-three percent of teachers who had participated in the project for two years agreed or strongly agreed their learning of math concepts (geometry and measurement) had increased. Seventy-three percent of teachers in this group reported their understanding and implementation of effective math instructional strategies had increased, and 77% reported an increase in their level of confidence related to the teaching of challenging math content.

Eighty-seven percent of teachers who joined the project in Phase 2 agreed or strongly agreed their learning of math concepts (fractions) had increased. Seventy-six percent of these teachers reported an increase in their understanding and implementation of effective math instructional strategies, and 75% indicated their level of confidence in teaching challenging math concepts had increased.



To have a more accurate assessment of the effectiveness of the collaborative project requires an analysis of the responses of teachers who participated in both phases. These teachers reported an increase in their knowledge of mathematics concepts from 71% in Phase 1 to 83% in Phase 2. But they indicated a decrease in their levels of agreement from year one to year related to their understanding and implementation math instructional strategies, from 93% in Phase 1 to 73% in Phase 2. An increase in levels of confidence from 70% in Phase 1 to 77% in Phase 2 was also reported.



Exit survey comments collected from project participants at the close of the professional development sessions addressed their learning, confidence levels, and intent to implement what they had learned. Following are representative comments from Phase 2 project participants:

- “I feel more confident and competent, especially in teaching fractions. I feel I was shown and given many tools/activities to implement in my classroom.”
- “Participating in this project has broadened my horizons in providing more hands-on activities for math topics. I also learned how various math topics can be connected.”
- “My confidence in teaching math has improved over the last two years, especially when using the hands-on materials we have received or learned about.”
- “My knowledge and understanding have increased. The project has helped my confidence level grow. It has helped me grow more aware of the topic across grade levels.”

Conclusions

Based on the results of the Phase 1 and Phase 2 participant surveys and the exit-survey comments, the collaborative project has benefitted teachers in building their knowledge of math concepts and instructional strategies and in increasing their level of confidence in approaching challenging math content. The project's design has affirmed what is known about the characteristics of high quality professional learning for teachers. But the challenge of how to sustain this model remains.

“To sustain the benefits of this professional development, we will have to schedule and plan for follow-ups,” says Bennington’s Hoge. “These may be as simple as a discussion of the current topics they are teaching and how they can present it more than the way shown in the teacher’s edition [of their textbooks]. Other supports will be reminders of learning that was gained through the professional development. I foresee this as email tips and reminders. Finally, the building administrators will need to encourage continuous improvement efforts to improve for our students.”

“Sustainability in part comes back to building leadership,” says Gretna’s Anderson. “Principals have to draw upon the expertise gained by [these teachers] in their buildings so all can gain from it.”

Sustainability from a service agency perspective is also challenging, but the ESU #3 project staff agree this collaborative effort that has put research into practice has yielded results that show this kind of model for professional development holds promise for future and ongoing professional support for its school districts.

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Authors

Sue Anderson, Ph.D., is director of Professional Development at Educational Service Unit #3 in Omaha, Nebraska. She may be reached by phone at 402-597-4881 and by email at sanderson@esu3.org

Jill K. Bruckner, M.A., writer and journalist, is also a program analyst at Educational Service Unit #3 in Omaha, Nebraska. She may be reached by phone at 402-597-4974 and by email at jbruckner@esu3.org