

DEVELOPING TRUSTING RELATIONS
IN THE IN-SERVICE EDUCATION
OF ELEMENTARY MATHEMATICS TEACHERS

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Research on professional development has highlighted the importance of communities and school-based work for promoting teachers' professional growth. However, despite discussions on school cultures and learning communities in the literature, not much has been said about how to build trust in a community as it develops. Trust seems to be taken for granted in professional development projects. This paper presents issues relating to trust in project SIPS (Support and Ideas for Planning and Sharing in Mathematics Education), a school-based professional development initiative aimed at helping teachers improve the quality of their mathematics instruction by building a mathematics education community within their school. The paper focuses on data from the first year of SIPS and discusses factors that helped build teachers' trust in the mathematics educators.

By the end of the 1990s, many reviews of the literature on professional development attempted to summarize the growth the field experienced in that decade, pointing to new directions. In particular, Wilson and Berne (1999) reviewed research on successful professional development to verify whether certain truisms of the field were supported by research. They concluded that all of the successful projects they analyzed "involved communities of learners that are redefining teaching practice" (p. 194). These projects also privileged "teachers' interactions with one another" (p.195). In an effort to define new research-based essentials for professional development, Hawley and Valli (1999) reviewed research in cognitive psychology, school reform, and professional development. They searched for research implications for new professional development initiatives. They proposed a model for professional development in which an important component was having initiatives that are school based and integral to school operations. As these reviews indicate, research on professional development in the last decade has highlighted the importance of communities and school-based work for promoting teacher change and professional growth.

In their analysis of successful professional development projects, Wilson and Berne (1999) noted that each project struggled with how to build community and how to build trust among participants in professional development initiatives. However, despite discussions on school cultures and learning communities in the professional development

research literature, not much is said about trust and how to build trust in a community as it develops. Trust seems to be taken for granted in many reports about professional development projects.

This paper presents issues relating to trust in a professional development project that underscored the importance of working with school communities as the unit of change in mathematics education reform. Project SIPS (Support and Ideas for Planning and Sharing in Mathematics Education) is a school-based professional development initiative to help teachers improve the quality of their mathematics instruction by building a mathematics education community within their school. SIPS is currently in its third year of implementation. In the first year, one of the main goals of the project was to begin building what we called a mathematics education community at the school and to begin developing trust among participants—in particular, developing trust among school-based and university-based educators. This paper focuses on data from the first year of SIPS and discusses factors that helped the development of trust in this mathematics education community. More specifically, the paper is about one aspect of trust, namely, building teachers' trust in the mathematics educators.

Teacher Learning in a Mathematics Education Community

From the beginning of SIPS, a fundamental assumption of the mathematics educators was that teachers constantly try to implement what they see as the best possible teaching. A second assumption was that in order to offer *all* children a mathematics education that is aligned with current societal demands, teachers need to experience new ideas for teaching mathematics. Teachers need to deepen their content knowledge of the subject, examine their attitude towards mathematics, and expand their pedagogical resources. Mathematics educators also assumed that teachers do not typically modify their practices by themselves—they need professional collaboration and a supportive community in order to learn and make changes. Thus, SIPS mathematics education community was conceived as a support and learning environment for teachers.

Summarizing research on learning, Bransford, Brown, and Cocking (2000) propose four integrated perspectives on learning environments that are aligned with current knowledge about how one learns. They are the learner-centered, the knowledge-centered, the assessment-centered, and the community-centered perspectives. The authors use the term learner-centered to refer to “environments that pay careful attention to the knowledge, skills, attitudes, and beliefs that learners bring to the educational setting” (p. 133). The knowledge-centered perspective draws attention to the “well-organized bodies of knowledge that support planning and strategic thinking” (p. 136), which learners need to acquire to better function in society. Becoming knowledgeable implies that learners will go beyond what they bring with them to the learning environment. Assessment is also an important perspective in effective learning environments because learners need ample opportunities for feedback and revision as their knowledge develops. Finally, with the community-centered perspective, Bransford and colleagues highlight the importance of “norms for people learning from one another and continually attempting to improve” (p. 144).

Bransford, Brown, and Cocking (2000) stated that what is known about learning applies to teachers as well as their students. Therefore, learning environments for teachers should consider the four aforementioned perspectives. In relation to working with teachers in a community-centered environment, the authors explain that “an important approach to

enhancing teacher learning is to develop communities of practice, an approach that involves collaborative peer relationships and teachers' participation in educational research and practice" (p.197). The two major themes that emerged from studies that examined teacher collaboration were "the importance of shared experiences and discourse around texts and data about student learning and a necessity for shared decisions" (p. 199).

The value of teachers working within communities, sharing experiences and decisions, has been an on-going theme in the professional development literature of the 1990s. Teachers who work together as colleagues find themselves better prepared to teach (Little, 1990) and in schools where faculty comes together in a professional community, teachers strengthen their pedagogical preparation (Louis, Kruse & Marks, 1996). Thus, similarly to what was indicated by research on learning, research on professional development points to the idea that when teachers have the opportunity to work with each other in a professional community, learning increases.

In mathematics education, professional development projects are beginning to capitalize on the importance of communities for teacher learning and growth. For example, Stein and Brown (1997) proposed that professional developers should consider mathematics teachers' development processes from a sociocultural view of learning. Their work was based on the analysis of a project that focused improvement efforts in mathematics on the school mathematics programs instead of on individual teachers. In the project, the entire school mathematics faculty, administrators and mathematics educators worked together. Teacher learning relied heavily on the collaboration among teachers and between teachers and other partners. In a similar way, Franke and Kazemi (2001) also took a sociocultural perspective to design a professional development in which teachers had the opportunity to come together to "create a community in which they could learn together about the teaching and learning of mathematics:" (p. 56). Their goal was for teachers to share and challenge each other, increasing their understanding about the development of children's mathematics.

Considering the importance of communities for teacher learning, project SIPS was designed to foster collaboration within a school-based mathematics education community. From the beginning, mathematics educators worked to facilitate sharing and exchange of knowledge within the SIPS community. In this attempt, all four perspectives of effective learning environments (Bransford, Brown & Cocking, 2000) were considered. Mathematics educators took teachers current knowledge into consideration when planning activities for the group (learner-centered); SIPS meetings had a strong focus on discussion of mathematics and children's mathematical knowledge (knowledge-centered); and teachers received ongoing feedback about their ideas concerning mathematics and mathematics teaching (assessment-centered). However, the learning environment aspect of SIPS that received most attention was the community-centered aspect. As the description of the activities conducted within SIPS will show, teachers had many opportunities within the project to exchange ideas and share their teaching practices with colleagues—within and across grade levels.

Building a community is neither a simple nor a short-term process. In particular, building trust among community members is a complex issue to tackle. This issue is further complicated when university-based and school-based educators participate together in the community, due to a history of distrust among professors and teachers. When describing the development of a partnership between university and schools, Jones, Yonezawa, Ballesteros, and Mehan (2002) stated: "the first *two years* in the formation of our collaborative approach to partnerships primarily involved establishing trusting

relationships with our colleagues in partnership schools” (p. 6, emphasis added). The authors continued to explain that the university educators had to “convince” local educators of their commitment. Thus, Jones and colleagues concluded, “establishing trusting and supportive relationships with schools is vital for the success of any school-university partnership” (p. 7).

For the SIPS mathematics education community to become a learning environment, trust needed to be in place. Furthermore, for SIPS, trust needed to be investigated so we could better understand how the community operated and evolved. Therefore, in this paper we explore factors that helped the establishment of the community and the development of trust within project SIPS.

Background Information

At Adams Elementary School (pseudonym), 90% of the children qualify for free or reduced lunch. In its school district, Adams has the highest percentage of Hispanic children (39% in 2003), although the school population is mostly African American (51% in 2003). In an initial SIPS background survey we found that Adams’ teachers rarely participated in mathematics-related professional development initiatives. Of the twenty-two teachers who returned the background survey, twenty (91%) said they had not completed any in-service program or a graduate course in the last five years in which recent research on children’s learning of mathematics was discussed. With teachers’ input, SIPS was designed to provide teachers professional development activities to increase their mathematical content and pedagogical knowledge while building a mathematics education community among the school staff and the mathematics educators.

Activities During the First Year of SIPS

During the first year of SIPS, teachers participated in a variety of professional development activities, the most important being the SIPS worksessions and the mathematics faculty meetings. SIPS worksessions took place at the school during school hours. Teachers worked with the mathematics educators within grade-level groups. Each group met for a half-day activity every other month and substitute teachers were hired to allow for teacher participation. Each half-day worksession addressed research on children’s learning of those mathematics topics selected by teachers as critical to the grade-level. For example, one 2nd grade worksession focused on place value and subtraction. During the worksessions, teachers were introduced to activities and ideas for teaching mathematics, explored their knowledge of and teaching strategies for the mathematical topic in focus, and planned lessons to implement in their classrooms. The after-school mathematics faculty meetings were attended by the whole school staff and, whenever possible, by school administrators. These meetings were devoted to building and maintaining a mathematics education community within the school. During these meetings, teachers had the opportunity to share what they were doing in their mathematics classrooms with their colleagues.

SIPS Research

As a research project, SIPS shares the overall goal of understanding “the complex world of lived experience from the point of view of those who lived it” (Schwandt, 1994, p. 118). Understanding this world means interpreting it, and as inquirers, SIPS researchers

have attempted to “elucidate the process of meaning construction and clarify what and how meanings are embodied in the language and actions of social actors” (p.118). Thus, in its research component, SIPS is interested in unveiling teachers’ perceptions about the development of the mathematics education community. In this paper we focus on factors that, from the teachers’ perspectives, were important for building their trust in the mathematics educators.

A plethora of data was collected during the first year of SIPS, including videotapes of all monthly faculty meetings, teachers’ written reflections after worksessions and faculty meetings, and mathematics educators field notes. This paper focuses on interview data collected at the end of the first year. These interviews, conducted by an external evaluator, were designed to allow teachers to freely voice their opinions and make suggestions for changes in the project. They were conducted in focus groups of three or four teachers, organized mainly by grade level (seven groups for prekindergarten to grade 5). The semi-structured interviews lasted approximately 45 minutes and were all transcribed.

Participants’ language during the interviews is the main data source for this report. Through content analysis of the interview transcripts, we searched for patterns in the teachers’ discussion of SIPS and for recurring words and themes that expressed teachers’ appreciation of and engagement with the project. We looked within interviews and across the seven interviews to bring up issues that were important to many teachers, trying to represent an overall view of the teachers instead of particular aspects commented by one or two teachers only. We contrasted and augmented these findings with those reported by the external evaluator.

The Webster’s Ninth New Collegiate Dictionary defines trust as “assured reliance on the character, ability, strength, or truth of someone or something; one in which confidence is placed.” Thus, although the word trust was never used in any of the interviews, we searched for evidence that pointed to factors that led teachers to “rely” on the mathematics educators’ character, ability, and knowledge. We also looked for factors that, from the teachers’ perspectives, helped them develop confidence in the project, in the implemented activities, and in the community they were forming.

Factors that Helped Build Trust

Three main aspects of SIPS emerged from the teacher interviews as factors that helped build trust during the development of a mathematics education community involving both elementary school teachers and university-based mathematics educators. The factors were the mathematics educators, the organization of the project, and the school-university relation, with specific characteristics of these factors being highlighted by the teachers. Teachers repeatedly mentioned specific characteristics that were important to them and to their participation in the SIPS community.

Characteristics of the Mathematics Educators

In evaluating SIPS, all groups interviewed spoke of the professional conduct of the mathematics educators and commented on aspects of what the mathematics educators did and said that helped teachers feel valued and comfortable within the project. The availability of the mathematics educators as well as their attitudes toward the teachers and the school were highly appreciated by the teachers. As one teacher explained, “they did not come in and say, ‘We are going to help you with these.’ They came in and said, ‘What do you need help with?’ And I mean, that made a difference.” In particular, teachers

repeatedly mentioned a few particular characteristics of the mathematics educators as professionals: flexibility, how they valued teachers' knowledge and experience, and their knowledge about classroom and school realities. These three professional characteristics of the mathematics educators were important for teachers to feel welcome and valued.

Characteristics of the Project

In addition to characteristics of the mathematics educators, project characteristics related to SIPS organization were highly valued by the teachers. Two factors —providing teachers with time and resources as well as giving teachers practical ideas to take to their classrooms— helped teachers appreciate the project, further developing the trust they conferred to project SIPS.

Characteristics of the School-University Relation

A few activities that were not initially planned by SIPS became very important in the project. They were the 100th day of school celebration, the school math night, collaborating with pre-service elementary teachers (undergraduate students at the university), and the on-site work of the graduate research assistant during the second semester of the first year of SIPS. These activities were highly valued by the teachers because of the way they integrated school and university lives. All these events were mentioned several times in the various group interviews. Thus, integration was an important characteristic of the school-university relation. Bringing together two different spheres of action (school and university) was important for SIPS teachers.

Working on Building Trust

The characteristics of the mathematics educators (flexibility, valuing teachers' knowledge and experience, and knowledge about classroom and school realities), of the project (provided teachers with time and resources and gave teachers practical ideas to take to their classrooms) and of the school-university relation (integration) allowed teachers to feel respected and to appreciate SIPS. Teachers felt their knowledge and realities were taken into account during SIPS activities, and their needs were fulfilled by the project. Teachers also saw the project grow as it developed, including other ideas that came from the integration of school-based and university-based activities. Within this scenario, university-based and school-based educators developed trusting relations.

Trust and Professional Development

In searching for an understanding of how Project SIPS developed trusting relations between university-based and school-based educators, it is useful to consider Noddings' (2001) discussion of caring relations in education. From this perspective, caring involves a carer and a cared-for in a relation through which both grow. The carers are attentive and receptive to the needs of cared-fors. They experience motivational displacement when their "energies flow toward the projects of the other" (p.100). The cared-for complete the relations by recognizing the care and responding with growth. Both the assessment of the needs of others and the values of the carers play a role in establishing goals for caring relations, as these relations should strive for a continuous drive towards competence. Although SIPS researchers were not originally considering Noddings' caring theory as they developed and worked on SIPS, the characteristics raised by the teachers as important

in the trust-building process of the project can be all placed within the notion that educators participating in SIPS enacted caring relations.

Noddings uses caring relations to talk about teachers and students. We think caring theory aptly applies to relations between teacher educators and teachers; a relation in which the teacher educators take the initial role of carers, respecting and valuing teachers, as well as pushing teachers towards competence in teaching. In SIPS, teachers felt they were involved in caring relations, which allowed the development of trust in the community.

It is important to note that, for Noddings (2001), the caring teacher (educator) is not one who possesses certain stable, desirable traits but rather one who can establish relations of care in a wide variety of situations. Thus, the characteristics of the mathematics educators, the project, and the school-university relation raised in this paper are more important as instances of care than as “fixed qualities” for all professional development initiatives to embrace. Above all, trust developed in SIPS because mathematics educators and teachers worked to initiate and maintain caring relations. The characteristics of the professional development initiative raised in this paper illustrate one instance in which caring can be manifested in professional development that aims at building a trusting mathematics education community.

As we continue to investigate school-based programs of professional development in mathematics education, there is a need to critically examine the ways in which caring and trust are built among participants as a foundation for community building. Since community-building has been identified by Wilson and Berne (1999) and others as an important element in successful professional development, it is clear that we need a more carefully nuanced understanding of the ways communities are built and maintained. The research within the SIPS mathematics professional development project points to several important aspects to be further investigated.

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