

Teachers, Parents, and Mathematics: Exploring Contexts for
Collaboration and Partnership

Emily Bernier (etb@email.arizona.edu)
The University of Arizona
Tucson, AZ

Martha Alleksaht-Snider (marthaas@coe.uga.edu)
The University of Georgia
Athens, GA.

Marta Civil (civil@math.arizona.edu)
The University of Arizona
Tucson, AZ.

Paper presented at AERA, American Educational Research Association
April 2003, Chicago, IL.

ABSTRACT

This paper's aim is to explore avenues for parent and teacher collaboration and experiences of teachers involved in a four year project whose goal was to involve minority working class K-12 parents in supporting their children's mathematical learning. The specific role that teachers can play in partnerships with parents has not been succinctly theorized or studied up until this time. Within the context of the MAPPS project (Math and Parent Partnerships in the Southwest), we look at what teachers have learned about collaboration with parents and mathematics education reform. We argue that involving teachers in projects which have as their theoretical grounding a view of parents as intellectual resources can provide professional development opportunities for teachers and partnerships between parents and teachers that expand the roles for parents to more than just homework helpers. A concept of shared leadership, and the accompanying tensions, is explored from the perspectives of teachers.

In a poll conducted by the US Department of Education (USDOE) in 1995, 89% of the company executives surveyed, as well as many teachers, students, and parents identified the lack of parental involvement as the biggest obstacle to school reform (USDOE 1995). This concern has prompted many federal and state agencies to create programs and offer incentives to schools and districts to engage more parents in the education of their children. How to best achieve this goal is a much disputed topic. Research on this issue has been aimed at exploring how best to define parental involvement, and the roles parents, teachers and administrators should play as well as how to create partnerships between schools, home and communities.

Within the mathematics education reform debates, or the ‘Math Wars’ as they have been known, research on parental involvement is scarce, with a few notable exceptions (Peressini, 1997, 1998; Applebaum, 1999; Silver & Stein, 1996; Mokros, 1996). Within these debates low income, ethnic minority parents have often been viewed as less than capable of providing their children with the necessary skills to be successful in school. Bourdieu’s (1983) theory of cultural capital informs our work with low income, ethnically diverse, language minority groups of parents and the teachers of their children. The learning of mathematics by students in poor communities is often viewed as being limited by the education level of the parents; conflicts between home culture and schooling; low academic expectations for these children; and remedial instruction that emphasizes practice over problem solving and reasoning. Our education system does not afford children from low income and racial-ethnic minority backgrounds the same educational opportunities, on average, as middle-income nonminority children (Kozol, 1991; Ogbu, 1978, 1987). It is with an eye toward leveling the mathematical playing field that we undertake our research.

Our aim with this paper is to add to the minor body of research on the roles played by teachers within the realms of mathematics reform in low income, ethnically diverse populations, and home-school-community partnership discussions. By exploring the ways that teachers see their roles within this domain we aim to challenge that notion that parental involvement is only for parents.

Review of parental involvement research

Research suggesting that parental involvement programs can positively affect student achievement is becoming more and more plentiful (Henderson, 1987; Henderson & Berla, 1994; Henderson & Mapp 2002; Epstein, 2001). Parental involvement is typically thought of in a very static unilateral sense that is, in terms of what parents and families can do or provide for the school. Lueder (1998) calls this an energy-in model while Swap (1993) terms it a home-to-school transmission model. Lueder's model suggests that the energy goes into schools from families in terms of time, money and resources while very little energy returns to parents and families from the schools. Swap's model has energy, in the form of information and knowledge concerning best practices for parenting and involvement, going from schools to households. These models have a strong deficit component focusing on what parents and families are not providing and are not able to give their children. Inherent is the assumption that parents need to be fixed so that they can be "good" parents. But this assumption raises the question as to who is a good parent and what constitutes the right support?

The standard by which parental involvement is often derived from a middle class ideal; baking cookies, serving hot dogs at team sporting events, driving children on field trips or stopping by the class to present information. While these activities are often beneficial they should not form the basis of a communities' thinking about the quality of parental involvement. Low income and ethnic minority parents may not always have the language skills, monetary means, or educational funds to support their children in the ways deemed acceptable by schools and the greater educational community. This is not to say that they do not have anything to offer. On the contrary, since the mid-80's there has been a plethora of research models developed that challenge these deficit views (Henderson, 1987; Williams & Chavkin, 1986; Epstein, 1992; Swap, 1993; Moll, 1992; González, 1995).

The majority of these models posit different roles that parents and educators can play in the social and educational development of children. For example, Williams and Chavkin's (1986) model of parental involvement includes parents as Home tutor, Audience, Co-Learner, and Advocate (for a detailed discussion of all these models please see Lueder 1998). This model incorporates roles that parents play both within the school

and at home and focuses on cooperative relationships that should exist between these two places.

Epstein's extensive body of literature focused on six types of parental involvement within a family/school partnership (1990, 1991). Epstein places the community in an important role and uses the term parent and family to capture the dynamic structure of today's households. Swap (1993) built upon Epstein's typology to explore four elements that should exist in a home-school partnership: a) creating two-way communications b) enhancing learning at home and at school c) providing mutual support, and d) making joint decisions. This model highlights the reciprocal nature of collaborative endeavors. All of these models explicitly or implicitly imply that previously held beliefs about parental involvement are not dynamic enough to account for all families. This is especially true of the Funds of Knowledge research that directly informs the project in which we work.

Our research on parental involvement is grounded in the theoretical basis of the Funds of Knowledge for Teaching Project (González, 1995; Moll, 1992; Moll, Amanti, Neff & González, 1992) and more recently Project BRIDGE (Civil & Andrade, 2002; in press). This work is framed by socio-cultural perspectives that aim to establish an authentic dialogue among parents, schools and researchers. In an authentic dialogue all voices are valued for their input and not the power and prestige associated with hierarchical educational structures (Flecha, 2000). We explicitly reject the deficit view that identify homes and communities at the root of students' academic failure, without taking into account the institutional biases inherent in schools that have contributed to the mismatch between home and school (Civil, 2002). We believe that cultural diversity is a strength (Gay, 2000) and that the households we work with are repositories of knowledge and resources that can be tapped to foster education, rather than create barriers to educational attainment (González, 1995). It is our hope that through this work, the pedagogies of teachers, parents and schools may be critically examined as they relate to parental involvement.

Parental Involvement and Mathematics Education Reform

There is small, yet growing, body of research that focuses on parental involvement and mathematics education issues. Mathematics is an important area of focus in work with parents for two main reasons: First, proficiency in mathematics is critical for advancement in school, and it can be a gatekeeper for working-class students and certain ethnic minority groups (Oakes 1990) who remain severely underrepresented in technical and scientific fields (Secada 1992). Second, parents often describe their own learning experiences in mathematics as problematic. Researchers such as Appelbaum (1999), Lehrer and Shumow (1997), Martin (2003), and Peressini (1997, 1998) have explored a variety of topics within the field of parental involvement in mathematics education. Their research suggests that parents have mixed feelings about mathematics education reform. Many parents in their studies were supportive of certain practices they were now seeing in their children's classrooms. For example, different approaches to problems from what they had experienced and by the way their children were exploring mathematics with tools and manipulatives. Yet, many others expressed anxiety at the changes in mathematics; especially in relation to their frustration at not being able to help their children with homework (no textbooks, or not familiar with the content their children were studying), and to the apparent lack of practice of basic computational skills (Civil, Quintos & Bernier, 2003).

Throughout this rather lengthy examination of the fields that inform our work there has been little direct examination or mention of the teachers' roles and experiences within either parental involvement or mathematics education reform movements. This is because very little research has been done connecting teachers' roles and expectations within both parental involvement and the mathematics education reform movement (De La Cruz, 1995; Epstein & Becker, 1982; Becker & Epstein, 1982).

Teachers are expected to keep up with new research, to raise test scores, to manage classrooms of students that look less and less like more and more of the teachers and to create partnerships with parents and community members. The only way to achieve these goals is through extensive, long-term training and support for teachers. Our research focuses on teachers reported experiences in a math and parent partnership program aimed at involving low income, predominantly Hispanic parents in the mathematics schooling of their children. We believe that by examining the teachers' roles

and experiences in this project other possibilities can be examined for how teachers are experiencing their participation. Other researchers involved with the project have focused specifically on the parents' experiences and expectations (see Anhalt, Allexaht-Snyder, & Civil, 2000; Civil, Andrade, & Anhalt, 2000; Civil, 2001a; Civil, 2001b; Civil, 2001c; for more on parents' voices).

*Project MAPPS (Math and Parent Partnerships in the Southwest)*¹

Project MAPPS is a four-year long project that focuses on parental involvement in mathematics. It is currently in place at four sites² (Tucson, AZ; Chandler, AZ; San Jose, CA; Las Vegas, NM). The project began in Tucson in 1999 and at the other three sites in 2001. The districts where the MAPPS program is being implemented are the Sampson, Arlington, City and Lincoln districts respectively. In Tucson, the Sampson School District is largely Hispanic (72%) (mostly of Mexican origin) and with 81% of the children on free or reduced lunch. All but one of the other three districts where MAPPS has been implemented have large populations of Hispanics. Arlington AZ has the highest number of Anglo students (23% Hispanic, 77% Anglo). The schools participating in MAPPS within the Arlington Unified School District (AUSD) ranged from 13% to 81% receiving free or reduced lunch. City, CA. has the most diverse population with approximately 34% Asian, 36% Hispanic and 35% Anglo students. The two schools where MAPPS is in place are predominately Hispanic (51% at the high school and 69% at the elementary school), with 84% of the elementary students receiving free or reduced lunch. Lincoln has the largest population of Hispanic students (75%). Most of the population in Lincoln is 3rd or 4th generation Hispanic Americans. The numbers of children receiving free or reduced lunch were not available.

The implementation at the different sites varies somewhat according to their local needs (e.g., in City, all the sessions are given in Spanish to reach out specifically to the Spanish speaking families; in Arlington and in Sampson³, sessions are conducted bilingually, while in Lincoln, they are carried out in English). But overall the sites share some common goals. One such goal is to develop leadership teams (LT) (parents and teachers/administrators) that will

¹ Project MAPPS is funded by the National Science Foundation (NSF) under grant – ESI-99-01275. The views expressed here are those of the authors and do not necessarily reflect the views of NSF

² All names of participants and districts are pseudonyms.

³ We refer to the sites by their district names throughout the rest of the paper.

help in the mathematics education outreach effort throughout the districts involved. We are currently in our last year of the project, in the leadership teams we have had approximately 80 parents and 30 teachers in Sampson, and approximately 90 parents and 30 teachers among the three other sites combined. The project seeks to promote the leadership of parents in mathematics activities in home and school, through three components⁴:

a) Leadership development sessions in which parents, teachers, and administrators come together to explore different learning styles, to learn how to facilitate workshops for the larger parent community, and to work on parent recruitment issues. Our goal in bringing together the different groups of people is to work towards establishing a dialogue that allows us to break the traditional power structures that are in place in schools.

b) Mathematics Awareness Workshops (MAWS) that are open to all the parents in a given district and explore key topics in mathematics in K-12. For example, one workshop explored multiplication and its different representations; another workshop centered on “discovering π ”). These workshops are self-contained and last about two hours. Children and parents are invited to attend with the children being dismissed at some point in the workshop to allow for the parents and other family members to engage as adult learners or to discuss and analyze their children’s thinking. After the first year in the program, parents and teachers become joint facilitators of these workshops. This puts them in very different roles in which they work together to facilitate a learning experience for other families. Each team of facilitators has a mentor—a parent or a teacher who entered the project earlier (in Sampson we have four leadership teams in place, which allows for this structure). So, we have teams in which parents are in fact mentors for the teachers.

c) Math for Parents (MFP) courses in which parents on the Leadership Teams (and a few other guests) have an opportunity to explore mathematical topics in more depth. These courses meet for eight weeks in 2-hour-long sessions. We have developed five MFPs-- in algebra, geometry, fractions and decimals, numbers, and data. These courses are taught by experienced instructors (teachers, professors), some of whom are the authors of the MFP materials. We view these courses as arenas for professional development for parents, very much along the same lines as our work with teachers in the community. Parents work on tasks that are very similar to what one would see in

⁴ All four sites have these components.

mathematics classrooms that have adopted Standards-based curricula. Working in groups, sharing of ideas, using manipulative materials and calculators, encouraging different representations and solution approaches, and focusing on conceptual understanding are common characteristics of these courses (see Civil, 2001b, for more on these courses).

We have recently begun work in the area of teacher experiences and expectations within the MAPPS project. If we are to believe Epstein's (2001) claim that teacher action is the most important factor, above SES, ethnicity, race, mother's work status and schooling, influencing whether and how parents are involved in the schooling of their children, then we have much to learn from teachers who have been involved with this project from 1 to 4 years. We focused on teachers' beliefs about working with parents, particularly ethnic minority and working-class parents, and on their beliefs about the teaching and learning of mathematics, both as they previously experienced it and how they are now being asked to teach mathematics.

Role of the teacher in Project MAPPS

The teachers' role within MAPPS was first conceptualized as a co-leadership role. Teachers were placed on teams according to the year they joined MAPPS. On these teams were parents, teachers and administrators from different schools within the districts. Sub-groups, often school-based, were formed within the larger leadership team. Parents and teachers from the same school, or several schools, were grouped together. These were the facilitation teams. Each team had a mentor, and in the case of Sampson, a coordinator as well.

As we described in the earlier section on MAPPS, the project has been in Sampson for 4 years. This has allowed for more leadership "layers" to develop. Year 1 parents and teachers now serve as coordinators and planners for the entire project. They aid their team's mentors in teaching the modules to the facilitators and providing logistical help. Parents and teachers from year 2 are what we have called mentors. They are in charge of planning, training, providing support and feedback to the facilitation teams and keeping in contact with the district liaison. The year 3 parents and teachers are the actual facilitators this year. Year 4 parents and teachers must attend at least 3 workshops per semester as well as the 2 or 3

leadership development sessions each year. Year 4 parents (as well as some parents from previous years) attend two Math for Parents courses per year.

We will highlight the major differences between the teachers' role in Sampson and at the other sites. City has only one teacher on their team. She stays in close contact with the two participating schools' parent liaisons in order to recruit for the MFP course and the MAWs. Over 14 of her students' families in the past two years have participated in MAPPS. Arlington is structured very similar to Sampson. Their year 1 parents and teachers are now presenting MAWS, which are open to the public. Their year 2 participants attend leadership development sessions and a specific number of MAWS throughout the year in the same manner as Sampson's year 4 participants. Arlington parents also attend two MFP courses throughout the year.

Lincoln has the most unique set up in that all of the parents and teachers attend every session together. The teachers from year 1 have been going to the MFP courses as well as the MAWS and the leadership development sessions. The parents and teachers from year 2 are following the same pattern. This has allowed for the teachers and parents to become inextricably involved in each other's learning and teaching processes.

Hearing from all four sites allows us, as researchers, to share the different visions MAPPS participants have been able to develop, as well as the lessons and experiences that have emerged in the context of those different visions. For example, many of the Lincoln teachers have told us how beneficial it has been to be involved in the MFP course with the parents, even though that means more time away from home after the school day has ended. Many have viewed it as a professional development opportunity within the realm of reform mathematics. By becoming learners themselves, they have an experiential base from which to draw ideas for their own classrooms (Neuman & Mohr, 2001).

Methodology

Interviews were conducted with 19 teachers out of a total of 40 from all four sites of the MAPPS project. A group of 13 were chosen to be transcribed and used as the research basis for this paper. The group of 13 included both new and experienced

teachers, bilingual as well as monolingual teachers, and teachers who had worked for only a semester with the project, as well as several who had worked with the project for 2-3 years. Both men and women teachers were interviewed, and elementary, middle and high school teachers were interviewed. The selection of teachers to interview was based on a desire to represent a range of experiences, grade levels, and different geographic locations of teachers in the project. A phenomenological theoretical orientation (Van Manen, 1990) informed our design of the interview protocols and our analysis, as we were seeking to understand teachers' perspectives on their experiences in the MAPPS project.

MAPPS project evaluators, who have conducted research with the project for four years, carried out the interviews and interpreted the data. The evaluators drew on field notes from observations of leadership training activities, workshop presentations and debriefing sessions, as well as written feedback from workshop sessions and other materials such as mathematics autobiographies and parent and teacher surveys, to develop the interview protocols and provide the context for interpreting the interview data. Each interview lasted from 45 minutes to an hour. The constant comparative approach (Glaser and Strauss, 1979; Strauss, 1987) to content analysis was utilized in order to identify themes and to locate disconfirming and confirming evidence within the data corpus.

Data Analysis

An interesting theme that emerged from our interviews came as a bit of a surprise to the authors. Many of the 13 teachers talked about what they, as learners, teachers and leaders, had had the opportunity to learn during their experiences in MAPPS. It is not surprising that the teachers learned something; it was more that they learned so much on so many different levels from participating in a project in which they thought they would be teaching parents. We have chosen to focus on two main themes within the research:

- 1) Teachers reported views of their own experiences in and with mathematics:
 - as learners of Standards-based mathematics,
 - as teachers of Standards-based mathematics.
- 2) Teachers reported views of parents involvement and experiences with mathematics:

- views of parental involvement in general,
- views of parents as resources for their children.

As you can see several sub-themes exist within each of these two categories. We will end with a short discussion on future research topics focusing on the possibilities surrounding leadership, collaboration and partnerships between teachers and parents.

Teachers as learners of Standards-based mathematics

MAPPS began in the Sampson district when a Standards-based curriculum was being used in K – 12 classrooms. The other three sites were variable in their experiences with reform based curricula as well. Only Arlington has been using a Standards-based curriculum district wide for the past 7 years. While reform based textbooks might not be actively used within the classroom at the other sites, there is still emphasis on teaching for understanding within the classroom. In Lincoln, copies of the Standards are handed out to teachers at the beginning of the academic year as well as at conferences and meetings. Teachers are expected to design and incorporate the Standards into their lessons, regardless of current or previous experience with the methods and ideology. This has resulted in many teachers not having a sense of what Standards-based teaching strategies look like, beyond having the class work in groups and allowing students to use manipulatives such as beans, geoboards or Cuisenaire Rods® every once in awhile. Even in Arlington, where a reform based textbook has been used for 7 years, Betty Otis, a curriculum specialist, shares the reality of using a reform-based curriculum:

There has been a lot of resistance. We are in our 7th year now and when we first implemented it there was absolutely a lot of resistance. Teachers are from very different backgrounds and training and many are very reluctant to change. It's comfortable to stay with what you know. A lot of workshops were given to help train teachers; there is also a math cadre person at almost every site. Not everybody uses MATH LAND 100%. There are those who want to close their doors and do what they want to do and not change... There are also old textbooks out there. We tried to box them up but somehow they sneak back in (the school). It is a different approach and it wasn't comfortable for teachers. They are used to telling their students that here is an algorithm and this is what you need to do with it. They don't know what to do with the kids who don't just memorize the algorithm. It is a very different approach and they need a lot of help with it.

In the second year of the project, Sampson district voted to change back to a more traditional curriculum. This decision was made because many of the teachers felt the way that Betty described. Training in the Sampson district was not as widespread as in

Arlington. Gary Holder, a high school math teacher in Sampson for the past 18 years commented on the return to a more traditional curriculum:

This is the very first program where we'd be doing an activity, the bell would ring and (the students) did not want to leave, they wanted to finish their math because they were so involved and it was so interesting what they were doing. The trouble was, you had to trust that the students would do these things and you had to get students in there. There are teachers here and at the other high school, who, this is not how they learned mathematics, they are going to do math the good old fashioned way and where is the practice? Where can I give them 50 problems so that I can sit right there and have them do it and have them turn stuff in? Well it wasn't there, this was all hands-on active stuff. You had to grade using a lot of different techniques. You'd think after a while that paper and pencil assessments may not be the only way of determining what a student knows. They didn't like it because they tried to mold it into a traditional program so they didn't like it. The book did not have all the problems they wanted to give them

We now wish we had questioned teachers about their mathematical pedagogies prior to joining the program. We have asked them how their math experiences have been since participating in the math workshops and classes. Arlene Sumner, an 8th grade math teacher in Arlington, talked about what she felt has been important about her experience:

I came to this (program) thinking that I wasn't going to be learning anything new but yet I'm walking away with learning things and different approaches and all kinds of things I never thought I'd learn from it. I thought I was just there helping parents but I never thought I'd get something from it.

Teachers and parents alike have had experiences in inquiry based learning, which has been important for them as adult learners, Randy Malnoti, was a 6th grade science teacher is in his first year of the project. He is not sure what to expect from the Math Awareness Workshops, but stated that “a real bonus about being in MAPPS is knowing that (other teachers) will be there to work with and we're going to sit there at a table and see what is going on.” Linda Morales, a 5th grade teacher in Lincoln, reflected on how learning to use manipulatives made her a better teacher as well as precipitated a pedagogical shift in relation to her students and her teaching practices. Linda stated that MAPPS has helped her teaching because,

...now we know what the kids are going through. It's really hard to get out of that teacher mode and say, 'Oh I know this because I was taught this way and this is how you do it.' To be forced to break it up and start at step 1, you don't know any of this. That's what MAPPS is making me do. It's making me break everything down and pretend that I don't know it and am having to re-learn it all over again. I have to break it down and learn how to use manipulatives and all this kind of stuff. I think that has been the best thing for me so far.

A number of teachers reported the value of experiencing what it was like to be a student again; to feel helpless and often frustrated with academic math problems. Regardless of

what teachers experienced in their own schooling, almost all of them commented on how much fun they had with math in MAPPS. There isn't pressure to find the one right answer with the one "correct" algorithm. For some of our MAPPS teachers, this alone has been worth the experience,

A lot of the (participants) are parents, so they're not teachers. We get to have a lot of fun with that too. Usually they bring in a whole other way, the way they learned it, so we get to see a whole other way (to think about math). It's fun...when we do the MFP class, that's when we get to break things down and work in a group and help each other figure it out, that's the funnest part for me.

The experiences in the project were varied. As we mentioned before with Randy's comment, there were several teachers who held traditional views of parents and even of learning mathematics. We will address the issues raised by their perspectives in the concluding section of the paper

Teachers using different learning strategies in the classroom

As was highlighted earlier, teachers felt different learning strategies and styles were validated throughout the MFP courses as well as the MAWS. Teachers also reported validating these strategies in their classrooms. Lena Epstein, a 4th grade teacher who has been involved with the project for 4 years in the Sampson district, told us about what had impacted her classroom practices the most:

I didn't know the importance of (students) actually going through that process. If they take the time to (use manipulatives) then the other part is easier if you've got that beginning... I think that's probably the biggest thing, I'll try to step back and try use manipulatives or drawings or kids at the board together so we can see the work that we're all doing and let as many of them answer their way as possible. In the past I probably would have said, 'yes there are different ways of doing it but we need to move on'.

Many teachers talked about hearing their students say, "this is how my mom taught me, even though we did it wrong we still got the right answer." They followed these vignettes by saying that now they would encourage students to go to the board to show different methods to add or subtract as well as validate the method that the student had learned at home. Whether this change was rooted in their participation in MAPPS or was influenced by the emphasis on process and conceptual understanding over algorithmic memorization in the Standards we are not prepared to say. We can assert that

teachers reported how powerful having a model for teaching reform-oriented mathematics has been for them.

Cary Manson was a first year teacher when she joined MAPPS in the Sampson district. She was thrust into an environment where she was expected to be a partner with parents and to value their learning along with all the other concerns of a first year teacher. While she admitted that her first year as a teacher was overwhelming at times (“trying to figure out how I would run my day effectively...was really my focus.”), three years later she spoke eloquently about how much she learned as a MAPPS participant;

In taking this program my first year it served as a wonderful guideline to classroom activities, to teach in which you have everyone involved and everyone is thinking and you're not stressed always for that right answer in math. It really diverts that misconception that it's only one way or another, it's either right or wrong. ..Where are you going to get these ideas from? It's not only getting the idea for one lesson or two lessons, it's a style that once you practice enough through your teaching at the MAWS, you go, ‘Oh, I have an idea, I could teach another lesson like that so that they could all do team work or group work and I could use this manipulative.’ Or ‘Oh, I have that, and that would only take a few minutes.’ You start to see the instruction of mathematics differently.

Linda Morales, a 5th grade teacher from Lincoln has been teaching for 7 years prior to joining MAPPS. She states:

MAPPS kind of forces you to become a student again. We'll be doing something and I'll say, ‘Oh I know how to do that’ but the (facilitators are) like, ‘no no you have to pretend you are like a 3rd grader or a 5th grader.’ I have to break it down and learn how to use manipulatives and all this kind of stuff. Actually it's made it funner for me. I thought I was a pretty good math teacher at first, but now that I know how to use manipulatives and all this cool stuff, I think it's even better. It's helped me to become a stronger teacher.

She elaborates on what she believes other teachers should or could get out of the project:

We get to do all of these really cool things, you know, things kind of outside the box. That's the way most teachers will want to look at it. They'll say, "oh here I've been in this little classroom and here I've been doing things this way for years and years and years and now I'm outside of that box and I'm getting to have some fun with this and in turn we get to take it back to the classroom and have fun with the kids.

It is exciting to hear that the experiences teachers are having with Standards-based mathematics are affecting their teaching in the classroom at a deeper level, more than just playing games or using manipulatives on Fridays. Teacher’s comments reflect Neuman and Mohr’s (2001) statement that, ”the connection between staff and learning and student learning is direct and intense and can’t be overestimated. And in order for teachers to be

able to offer learning opportunities to kids they need to experience it themselves first” (p.5). Because their participation in and with mathematics in MAPPS has been a dialogic process teachers have been able to reflect on their pedagogy concerning what mathematical thinking is and the construction of mathematical knowledge.

Teachers’ thoughts on working with parents

Teachers in MAPPS shared a wide range of views of family involvement in children’s schooling as they discussed their experiences working with parents in the project. Several of both the newer and experienced teachers described the evolution of a new vision for family involvement as they participated in the project over one, two and three years. Others, who were either beginning the project or had been involved for several years, and both those who were experienced and those who were not, presented traditional views of family involvement, suggesting that they saw parents’ role as mainly one of supporting the school and their children’s learning (Epstein 2001; Swap, 1993). Still others, all of whom were experienced, presented a more dynamic, interactive vision from the start of their work with MAPPS. These teachers suggested that opportunities to learn from parents and collaborate with them to support children’s learning in mathematics were the reasons they valued the work with the MAPPS project. Following are some samples of teachers’ voices, expressing their views.

Gary Holder was one of the few high school mathematics teachers who took an active part in MAPPS. His initial thoughts showed a more traditional view of family involvement:

When I first heard about the program I thought, *let's just get parents in there and show them a little math* at the appropriate levels and get them where they can learn to appreciate and like math so that maybe it would rub off on their children. I know that's what I was looking for-to get them more involved at their math activities at school or their homework or whatever it is.

After several years of working with parent leaders, Gary said he saw parents’ roles differently:

I've seen parents take an upper hand in it and I've seen parents lead other parents so, yeah, it sure is different.

Arlene Sumner, a middle school teacher, talked about a similar shift in her view of parents' roles based on her first year of experiences with parents in MAPPS:

I've never had the chance to work with parents like this before. *It's always been kind of the parent on the other end of the phone line and the parent at the other end of the table, you know just somebody on the other side*, not necessarily somebody who you really felt like you worked with.

Cary Manson, a new teacher when she began working with the MAPPS project three years ago, suggested that it was not necessarily that her view of family involvement had changed, but instead her perspective on teaching and what she could focus on changed as she became more experienced and more ready to think about working with parents.

Initially when I came to this school, [parent involvement] wasn't a top concern only because I was a new teacher and I was trying to familiarize myself with the setting and learning people's names and all the expectations that the principal would have for me, the outside paperwork and the red tape that is so much... And also I would have to say, trying to figure out how I would run my day effectively. That was really my focus. So, the parent involvement, again that is part of the process of teaching. I say it develops as you go. You learn more strategies about how to communicate.

Betty Otis, an elementary curriculum specialist in mathematics in the Arlington district, was seeking new approaches to working with parents. During her interview she highlighted teachers' dissatisfaction with Family Math Nights not seeming to meet parents' needs and teachers' concern with making parents feel more welcome at school as motivations for getting involved with the MAPPS project.

We'd always had issues with our parents, that is why we always had Family Math Night. We tried to pull ideas and lessons from [our math curriculum] to use in our Family Math Nights, so they could see the kinds of things that the kids are doing in the classroom. We've had a really good response to that, but have found that many of the parents were still very unsure of some of the materials which were going home with their children.

The year before MAPPS was in place in Arlington, Betty's school administered a survey to teachers, administrators, parents and students about what they would change about their school. The teachers and Title I facilitators who said they believed that parents were not on campus as much as they would like to be. They then surveyed parents and they said that they didn't feel as comfortable being on campus as we would like for them to be. They also surveyed children who said they didn't think their parents were on campus

as much as they would like to see them. A parent center was opened in response to this information.

Debby Harris was fourth grade math and social studies teacher who also had previous experience with Family Math Nights and saw potential for the MAPPS project, with its goal of leadership for parents as offering new opportunities for both parents and teachers.

The three [parents] who said, "You know, we're going to be on leadership next year." I thought that really said a lot that they are getting excited about it and that they want to be leaders and help the other parents, and not just rely on teachers to do that job. In the past we've had Family Math at our school and they come and they play the games and the teachers are in charge. I think this is going to be interesting

Lena Epstein, an experienced third grade teacher who has worked with the MAPPS project for four years, did not feel that her views on parent involvement had changed much; instead she found that her experience with parent involvement in MAPPS reinforced her understanding of research findings that parent involvement makes a difference in children's attitudes about school.

I always thought it was important for parents to help their children, no matter what it was, reading or math or whatever. I think after seeing a lot of parents attending the [workshops] and feeling like they are successful in some different areas and seeing the students working with their parents, I think really, you know, the thing that we've heard about when the parents are active and the parents are there the kids are more involved and they do value education more and I think that really does matter. I think that was brought to light. I don't think it changed my views or anything, but think it made me more aware that that is true. I think it is important, particularly with the students that we work with, I think they look at some of their parents, I don't want to say they don't know the answers but maybe they don't have the time. So if [parents] do spend the time it enlightens the kids and lets them be aware that, 'Wow, mom and dad really do know what I am doing and do understand the stuff I am doing.' I think it is important for them to talk about it.

Other beginning teachers working with MAPPS seemed to hold traditional views of parent involvement based on their student teaching experiences. They talked about parents volunteering in classrooms and teachers communicating with parents when they had problems with students. Jim Garcia, a sixth grade science teacher, discussed his student teaching experience.

[The parents] were doing volunteer work. They had at least one parent a day in each classroom. In that district where I worked, there was a lot of parent involvement, because teachers put responsibility on parents.

Randy Malnati, another sixth grade science teacher, seemed to have a view of parents as divided into two groups: those who are involved and care about their children, and the majority who are not involved and do not seem to care or have time for supporting their children's education.

... it depends on where you're at. Like at this school, if I have a problem with a kid and I call home you find out right away if that parent is involved or not. If they're like, "What do want me to do, punish him?" Or, "What can my kid do to get better?", and the kid comes back the next day a brand new kid, then you understand, yeah, that's the one, I can call her for help.

Where here, whatever I do isn't really all that important, I don't think the parents really have any idea what I'm teaching their kids, it's not as important to them in this district, from what I've seen. It's the same thing when I student taught in Mariposa. I was really far out there. You know some of the parents were involved and they would come in or were on the PTA and you'd see them after school and they'd ask you how their kid was doing. Where I don't get that all that often here.

As these beginning teachers got involved in their first semester of middle school teaching, they also seemed to hold more traditional views of parental involvement in the MAPPS project.

Yeah, the parents who are involved with MAPPS are the ones who, if I call them and say, "Little Johnny has been bad," they're the ones that will back you up. They are the ones who care about their kid's education and know what is going on in the classroom. You can see it in the kids, the kids who are highly motivated and do the things they are supposed to do. I think they are the parents who care and that's why the kid is that way. Where the parents I'm calling are the kid who's misbehaving. I have 150 students so I don't have time to call them all, maybe I should make the time to do that. The ones that you call are probably the ones who don't care in the first place and that's why their kid acts that way, doesn't pay attention, doesn't do their work. The parents who are involved with MAPPS are the ones who would be involved anyway, and who I'm sure have kids who are doing better than the rest.

Julie Grossi, an experienced kindergarten teacher in her third year with the MAPPS project, also held traditional views of parent involvement that focused on the need to get parents to help their children and the challenge of working with parents of children in trouble. Her views of parent involvement were very similar to the two beginning teachers who held traditional views. Julie raised concerns about the difficulty of getting parents to come to school, and also talked about problems with making the home visits required by the district:

Even when we had the session [where we gave away] the computer, we had 31 people signed up for it, who sent the note back saying, "Yes we will come," and about 8 showed. It's really hard to get parents to come.

When we... make home visits it's usually with kids who are struggling or having trouble, and it's just not a good situation to be in. You have angry parents who don't want you there, [they're] ashamed of having a teacher have to come to the house to straighten things out. So, and it's I just don't like to be by myself in a strange place after dark. I don't like it.

Julie did not feel that her views of parents had changed through her work with parents in the MAPPS project:

I've always had high expectations of parents, looking at their kids, no matter if it's math or reading or whatever it is. When we do the "Back to School" [night] at the beginning of the year, I tell them that I expect them to help their kids. The parents that come to the MAPPS workshops, it doesn't change my view. I think it changes their view, on how to help their kids.

The range of teachers' views, from dynamic, collaborative visions to more traditional views that some parents care and some do not, provide an important context for understanding the next sections where we highlight what teachers told us about their learning and their experiences working in the unique setting for collaborative parent and teacher leadership in mathematics education that characterized the MAPPS project. As we reviewed the wide range of teachers' perspectives, it was important for us to contextualize the teachers' views in light of the opportunities for experiencing and observing expanded visions for parent involvement in the different sites where the MAPPS project was implemented. The two beginning teachers and two experienced teachers who expressed the most traditional views of parent involvement worked in a district and school culture that seemed to offer few examples of efforts to reach out beyond the traditional parent involvement activities of parent conferences, calling parents when children are in trouble, and inviting parents to help in fund-raising activities. Two of the teachers who spoke of an evolution in their thinking about the possibilities for parent involvement also worked in the Sampson school district, but seemed to draw on their new experiences with parent leaders in the MAPPS project to construct new visions of parent involvement.

Teachers from the Arlington school district also presented a variety of perspectives on parent involvement, although none were limited to a traditional view. Each of the four either reported an evolution in their thinking about parent involvement from traditional to a more dynamic and interactive perspective, or they sought involvement in the MAPPS project because they saw limitations in some of the less

traditional means of parental involvement such as Family Math Nights. The latter teachers saw a match between their vision for the possibilities of parental involvement in mathematics and the goals for parent leadership and collaboration with teachers proposed in the MAPPS project. The three teachers interviewed from the Lincoln and City school districts also demonstrated a range of perspectives, with one seeing potential for more positive interactions with parents through the collaborative activities in the MAPPS project, and two others seeming to draw on long-held beliefs and practices about the importance of working in partnership with parents and reaching out to work with them collaboratively to support children's learning.

Creating partnerships with parents

Rubin (2002), in discussing effective partnerships with communities and schools, states:

Students (first) and their families (second) are the most important client-partners of our public education systems. Their relationships with our schools will not be strengthened by reduced expectations, comfortable fluff, or classroom candy. They will be strengthened when we shift the way we institutionally relate to them from a *parental model* to an *enlightened consumer model*- an approach to public education that treats students and their families as collaborative partners in mutually productive relationships” (emphasis in the original p. 30).

In the MAPPS project, the concept of *shared leadership* in partnerships among parents, teachers and administrators, has been a recurring theme. All of the sites have leadership teams that include parents, teachers and administrators; at the leadership training sessions leadership qualities are a topic of study at training sessions for leadership team members; some teachers talk about seeing parents as leaders in the project. This concept of shared leadership in partnerships among parents, teachers and administrators is one that needs to be studied further, particularly since there are so few models within the field of parent involvement.

Participants in a collaborative project such as MAPPS enter with and develop varying definitions of leadership and varying expectations for leadership roles. One teacher we interviewed implied that all teachers were leaders because they can get up in front of people and talk without apprehension. Here leadership seems to be equated with the confidence to talk and present in front of others. Other teachers spoke of parent leaders inspiring and serving as models for other parents. Many teachers and parents alike

seem to be initially unsure about what parent leadership roles might look like, but over time many began to have a clearer and more complex vision for both parent leadership and collaborative leadership between teachers and parents. An important question as we begin to develop new visions for collaborative leadership between teachers and parents is how does it affect their parents' and teachers' interactions in school and in the classroom? (See Civil, Bernier & Quintos, 2003, for more on this).

Teachers in the MAPPS project expressed some of this vision for parent leadership as follows:

The experience and the confidence that is being built by these parents is awesome! To see them get up there and put on a mic and see them speak in front of a crowd, it's true community effort and growth. I just think it's wonderful. Who knows what effects that will have on people that were in the program. Once they see, "Wow, I never thought I could get up in front a group and teach mathematics, that would have been my worst nightmare, and I did it and I survived and I wonder what else I can do?" I can see that thought created in some of the parents minds.

- 4th/5th grade teacher, Sampson District

The three who said, "You know, we're going to be on leadership next year," I thought that really said a lot. That they are getting excited about it and that they want to be leaders and help the other parents, and not just rely on teachers to do that job. In the past we've had Family Math at our school and they come and they play the games and the teachers are in charge. I think this is going to be interesting.

- 4th grade teacher, Arlington District

I think it would be a good thing for other parents to see that parents can do this and not just teachers can do this. I think sometimes we intimidate them. They think we know everything, which we don't, but they think we do. I think having other parents to work with them and show them ways that children learn, ideas to use at home ...[is inspiring].

- 5th grade teacher, Lincoln District

Conclusions: Extending our research focus

Based on these data, we are left with as many, if not more, questions about roles, lived experiences and collaboration between parents and teachers in schools: What role could professional development play in giving teachers a long-term sustained environment in which to experience and participate in reform oriented mathematics? What is the impact of the principals' role in challenging the deficit models of parental involvement? (See Allexaht-Snyder & Bernier 2003 for more on this issue within MAPPS). Can or should parents take leadership roles within the mathematics education

of their children at all levels (not just elementary)? How does the interplay between the language of students, their families and their teachers help or hinder the learning and teaching of mathematics?

Though there were many other themes that we were not able to elaborate on in this paper, we hope that we have succeeded in illuminating the complexity surrounding teachers' roles in parental involvement in mathematics education. We have seen that lived experiences and participation in a project such as MAPPS has allowed many teachers the opportunity to challenge their dominant pedagogies. The voices represented in Sampson, Arlington, Lincoln and City are very typical in that many raised concerns about the parents in our target demographic taking on leadership roles within the field of mathematics. For example, Randy (whom we discussed earlier) was very forthcoming about his displeasure at some of the parent led activities:

I don't know how they're split up or how they do it, but if you have 3 parents together who haven't been "trained" to teach, sometimes theirs can just hit the wall. There were times when we were just sitting there, especially that first semester, falling asleep and nodding off because we were bored.

Randy's comments bring up valid research questions about our project that require further research to answer. Did the parents get enough training in teaching methodology or did we simply support them enough so that they had the confidence to get up in front of people and speak? How much teacher training is necessary or even desired by the parents? Alicia Enriquez, a kindergarten teacher and the only teacher representative in City, brought up some of these issues when reflecting on her mentoring abilities.

I wasn't sure how this (meaning the parents presenting) was going to work out so I went very slowly and read and re-read the module with them. I now wish I had given them a bigger picture earlier. Also, it is extremely important for the parents to have been to and seen the MAWS that they are going to present at least once before hand...In the future I should try and give them more of the teacher and organizational skills that I take for granted.

Julie Grossi, another Kindergarten teacher, commented on parents not being comfortable with presenting but sees it as merely an issue of practice,

I shouldn't say (having parents lead a MAW) is a problem, but the lack of training as a teacher. I mean we have really fine parents...but in order to take the leadership role you must be able to be up there in charge, and they'll get used to it after they do it two or three times. They get used to it; it's like a first year teacher. It's not a problem; it's just a matter of experience.

According to the *NCTM Principles and Standards for School Mathematics* (2000), “when parents understand and support the school’s mathematics program they can be invaluable in convincing their daughters and sons of the need to learn mathematics and to take schooling seriously. Families become advocates for education standards when they understand the importance of high quality mathematics education for their children” (p. 378). The teachers we interviewed showed us that this could be true for teachers as well. Nevertheless, we must end with a cautionary note. As researchers, we often fall into the trap of believing that most parents, teachers and students will see the benefit of a better mathematics curriculum if it is explained clearly enough. Recent research suggests that this might not be true (Martin, 2003; Theule- Lubienski, 2003). Based on his research with low income African American parents, Martin (2003) suggests employing the term “opportunity mathematics” as an alternative to “reform mathematics” as an identifier of the type of mathematics different groups of parents would like their children to learn. Neither parents nor teachers are a homogenous group; socio-economic status, language and ethnicity and the interplay between all of these factors, have outcomes for reform mathematics.

We have seen how important the role of experience can be in shaping the perceived outcomes for teachers. But we believe that the issue is much deeper. The experience of one workshop is not what led many of the teachers to develop new ideas about their own learning and teaching. It appears that participating in the project, in the way that it was developed, which led some teachers to reflect upon their long held assumptions about what actions constitute parental involvement.

Epstein and Becker (1982) stated, “there are few rewards, other than internal ones, to encourage a teacher to spend time working toward the potential benefits of parental involvement” (p. 106). We believe that by giving teachers an opportunity to participate as co-constructors of knowledge within a mathematics sphere, there is a greater possibility that teachers themselves will find and define rewards worthy of their time and effort to support parental involvement.

REFERENCES

- Anhalt, C., Allexaht-Snyder, M. & Civil, M. (2002). Middle school mathematics classrooms: A place for Latina parents' involvement. *Journal of Latinos and Education*, 1(4), 255-262.
- Appelbaum, P. (1999). *Hierarchic interpretations of family involvement in mathematics education*. Paper presented at the Annual Meeting of AERA in Montreal, Canada.
- Becker, H.J. & Epstein, J.L. (1982). Parent involvement: A study of teacher practices. *Elementary School Journal* 83: 85 – 102.
- Bourdieu, P. (1983) The forms of capital. In J.G. Richardson (ed.), *Handbook of Theory and Research for the Sociology of Education*, New York: Greenwood Press.
- Civil, M. (2001a). *Redefining parental involvement: Parents as learners of mathematics*. Paper presented at NCTM research pre-session, Orlando, FL.
- Civil, M. (2001b). *Mathematics for parents: Issues of pedagogy and content*. Paper presented at ALM8, the Eighth International Conference of Adults Learning Maths – A Research Forum. Roskilde University, Denmark, June.
- Civil, M. (2001c). Adult learners of mathematics: Working with parents. In G. E. FitzSimons, J. O'Donoghue, D. Coben (Eds.), *Adult and Lifelong Education in Mathematics* (pp. 201-210). Melbourne, Vic. Australia: Language Australia.
- Civil, M.(2002). Everyday mathematics, mathematicians' mathematics, and school mathematics: Can we bring them together? In M. Brenner and J. Moschkovich (Eds.), *Everyday and academic mathematics in the classroom. Journal of Research in Mathematics Education Monograph #11* (pp. 40-62). Reston, VA: NCTM.
- Civil, M. & Andrade, R. (in press) Collaborative practice with parents: The role of researcher as mediator. In A. Peter-Koop, A. Begg, C. Breen & V. Santos-Wagner (Eds.), *Collaboration in Teacher Education: Working Towards a Common Goal*.
- Civil, M., Andrade, R., & Anhalt, C. (2000). Parents as learners of mathematics: A different look at parental involvement. In M. L. Fernández (Ed.), *Proceedings of the Twenty-Second Annual Meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education* (Vol.2, 421-426). Columbus, OH: ERIC Clearinghouse.
- Civil, M. & Quintos, B. (2002). *Uncovering mothers' perceptions about the teaching and learning of mathematics*. Paper presented at the annual meeting of AERA, New Orleans, LA.

- Civil, M., Quintos, B., & Bernier, E. (2003). *Parents as observers in the mathematics classroom: Establishing a dialogue between school and community*. Paper presented at the research pre-session of the annual meeting of NCTM, San Antonio, TX.
- Civil, M., Bernier, E., & Quintos, B. (2003). *Parental involvement in Mathematics: A focus on parents' voices*. Paper presented at the annual meeting of AERA, Chicago, IL.
- De La Cruz, Y. (1995). *The beginning of a dialogue: Issues for Latino parents and non-Latino teachers*. Paper presented at the annual meeting of AERA, San Francisco, CA.
- Epstein, J.L. (2001). *School, Family, and Community Partnerships: Preparing Educators and Improving Schools*. Boulder, CO: Westview Press.
- Epstein, J. (1991). Effects on student achievement of teacher practices of parent involvement. In S. Silvern (Ed.) *Advances in Reading/Language Research, Vol 5: Literacy Through Family, Community, and School Interaction*. Greenwich, CT.
- Epstein, J. (1992). School and family partnerships. In M. Alkin (Ed.) *Encyclopedia of Educational Research, 6th ed.* New York: Macmillan.
- Epstein, J. & Becker, H.J. (1982) Teacher practices of parent involvement: Problems and possibilities. *Elementary School Journal* 83: 103 – 113.
- Epstein, J., & Dauber, S.L. (1991). School programs and teacher practices of parent involvement in inner-city elementary and middle schools. *Elementary School Journal* 91: 298:303.
- Flecha, R. (2000). *Sharing words: Theory and practice of dialogic learning*. Lanham, MD: Rowman & Littlefield.
- Gay, G. (2000). *Culturally responsive teaching: Theory, research, & practice*. New York: Teachers College Press.
- Glaser, B. & Strauss, A. (1979). *The discovery of grounded theory: Strategies for qualitative research*. Hawthorne, NY: Aldine.
- Goldsmith, L.T. & Mark, J. (1999). What is a standards-based mathematics curriculum? *Educational Leadership* (11): 40 – 44.
- González, N. (1995) (Ed.). Educational innovation: Learning from households. *Practicing Anthropology*, 17(3), 3-24.
- Henderson, A. (1987). *The evidence continues to grow: Parent involvement improves student achievement*. Columbia, MD: National Committee for Citizens in Education. .

- Henderson, A. & Berla, (1994). *A new generation of evidence: The family is critical to student achievement*. Washington, DC.: Center for Law and Education.
- Henderson, A. & Mapp, K. (2001). *A new wave of evidence: The impact of school, family, and community connections on student achievement. Annual Synthesis 2002*. Austin, TX: Southwest Educational Development Laboratory.
- Kozol, J. (1991). *Savage inequalities: Children in America's schools*. Boston: Houghton Mifflin.
- Lehrer, R. & Shumow, L. (1997). Aligning the construction zones of parents and teachers for mathematics reform. *Cognition and Instruction*, 15 (1), 41-83.
- Lueder, D.C. (1998). *Creating partnerships with parents: An educators guide*. Lanham: Scarecrow Press, Inc.
- Martin, D. (2003). *Gatekeepers and guardians: African American parents' responses to mathematics and mathematics education reform*. Paper presented at the annual meeting of AERA, Chicago.
- Mokros, J. (1996). *Beyond facts and flashcards: Exploring math with your kids*. Portsmouth, N.H.: Heinemann.
- Moll, L.C.(1992). Bilingual classrooms and community analysis: Some recent trends. *Educational Researcher* 21(2), 20-24.
- Moll, L., Amanti, C., Neff, D., & González, N. (1992). Funds of knowledge for teaching: A qualitative approach to developing strategic connections between homes and classrooms. *Theory into Practice* 31(2),132-141.
- Neuman, M. & Mohr, N. (2001). Cracking the mathematics and science barrier: Principles for principals. *NASSP Bulletin* 85(623) 43 – 52.
- NCTM (2000) *Principles and Standards for School Mathematics*. Reston, VA: Author.
- Oakes, J. (1990). Opportunities, achievement, and choice: Women and minority students in science and mathematics. In C.B. Cazden (Ed.), *Review of Research in Education*, (16): 153-222.
- Ogbu, J. (1978). *Minority education and caste: The American system in cross-cultural perspective*. New York: Academic Press.
- Ogbu, J. (1987). Variability in minority student performance: a problem in search of an explanation. *Anthropology and Education Quarterly* 18:312-334.

- Peressini, D. (1998) What's all the fuss about involving parents in mathematics education? *Teaching Children Mathematics* 4(1): 320-25.
- Peressini, D. (1997). Parental involvement in the reform of mathematics education. *The Mathematics Teacher*, 90(6), 421-427.
- Rubin, H. (2002). *Collaborative leadership: Developing effective partnerships in communities and schools*. Thousand Oaks, CA: Corwin Press Ltd.
- Secada, W. (1992). Race, ethnicity, social class, language, and achievement in mathematics. In D.A. Grouws (Ed.), *Handbook of Research on Mathematics and Learning* (pp. 623-660). New York: Macmillan.
- Silver, E., & Stein, M.K. (1996). The QUASAR project: The “revolution of the possible” in mathematics instructional reform in urban middle schools. *Urban Education*, 30, 476-521.
- Strauss, A. L. (1987). *Qualitative analysis for social scientists*. Cambridge: Cambridge University Press.
- Swap, S.M. (1993). *Developing home-school partnerships: From concepts to practice*. New York: Teachers College Press.
- Theule-Lubienski, S.(2003). *Traditional or standards based mathematics? Parents and students choices in one district*. Paper presented at the annual meeting of AERA, Chicago.
- United States Department of Education (1995) *Goals 2000: A world class education for every child*. Washington, DC: US Government Printing Office.
- Van Mannen, J. (1988) *Tales of the field: On writing ethnography*. Chicago: University of Chicago Press.
- Williams, D., Jr. and Chavkin, N.F. (1986). *Teacher/Parent partnerships: Guidelines and strategies*. Austin, TX: Southwest Educational Development Laboratory.