CHAPTER 4

EMELI IN PHOENIX: BUILDING EQUITY WORK INTO URBAN MATHEMATICS EDUCATION REFORM

After my first EMELI experience three years ago, I came back and said, 'you know, I can see now where we are stuck in our district. We never thought we could come together to really talk about racism.' So this retreat was just a milestone, and the reason why we were able to make it happen is because of the alliance-building among our EMELI team. We have people of color who have built alliances with white people who are saying, 'We need to talk about racism.' A white female organized it. It was just beyond our wildest dreams.

– Linda Fulmore, Assistant Principal of Camelback High School, referring to the first-ever high school district administrators' retreat on equity

INTRODUCTION

The Greater Phoenix Area sprawls across the Arizona desert. The city of Phoenix, the older center of the burgeoning region, has all the complexities of urban areas: high poverty amidst wealthier surrounding regions, sudden demographic shifts that create social stresses, and schools with rising populations of at-risk students and declining achievement scores.

The education system serving the city of Phoenix consists of the Phoenix Union High School District (PUHSD) and 14 elementary districts that feed into it.[1] That system is fraught with signs of educational inequity, including disproportionately low numbers of minority students enrolled in higher level mathematics courses, problems of access for ELL (English Language Learners), students, and imbalanced allocation of resources.

[1] The Phoenix schools comprise roughly one-third of the districts in the Greater Phoenix Area. Those within Phoenix are the most ethnically diverse in the region. In these districts, the combined Hispanic, African American, and Native American student population is well over 50 percent of enrolled students. In every Phoenix Urban Systemic Initiative district except for Madison, Hispanic students alone comprise close to or more than 50 percent of the students, and several of these are close to 90 percent Hispanic. The European American population in these districts is less than one-third in all cases except Madison. The size of the districts vary greatly. Phoenix Union High School District serves approximately 22,000 students. Its feeder districts range in size from 1,339 students to 17,000. See Table 1 at the end of this chapter for more demographic statistics and information on the size of districts.

The Phoenix Urban Systemic Initiative (PUSI) is a large-scale mathematics, science and technology reform effort funded by the National Science Foundation. Between 1993 and 1998, the PUSI served the Phoenix Union High School District as well as 11 of the 14 elementary districts in Phoenix. A central goal of the PUSI was to reduce the achievement gap between minority and non-minority ethnic groups. As in most mathematics education reform projects, PUSI leaders struggled to address issues of equity through the regular mechanisms of professional development and curriculum reform focusing on mathematics. The PUSI leadership sought out the help of the national EMELI Project[2] three years into their reform initiative, knowing that EMELI was designed to build leadership specifically to address equity issues. Phoenix EMELI members were drawn from the PUSI project and participating districts, and the PUSI served as the reform context in which the 24 members of the Phoenix EMELI team carried out their equity work.

The story of EMELI in Phoenix is about the struggle required to address serious and fundamental issues of equity involved in a large urban district. The story details the variety of strategies Phoenix EMELI members used to infuse equity work into the PUSI-supported reforms, to try to redress problematic polices and practices in mathematics, and to enable educators within the system to become better able to address complex and volatile problems of inequity at all levels of the system. In this account we portray highlights of this work as individual Phoenix EMELI members and the team as a whole carried it out. We do not attempt to be comprehensive; rather we mean to illuminate key approaches used and their contributions to the Phoenix education system.

I. MATHEMATICS EDUCATION REFORM AMIDST A MINEFIELD OF EQUITY ISSUES

The work of the Phoenix USI, and later of the Phoenix EMELI teams, entered into and unfolded in an education landscape characterized by politicized equity issues with deep historical roots. Imbalanced distribution of resources for education has been one example of inequity in the system. In 1992, four of the urban elementary districts[3] sued the state because of uneven allocation of funds across wealthy and poor districts. According to Joe Pena of the Roosevelt district, "Inequity is the issue here. There is no equity in the school system. The resources are just not where they are needed the most – 95% of students are minority in this district, and we get only a fraction of the resources that non-minority districts get." The four districts won the suit and in 1998 the courts ordered reapportionment of resources. Some district administrators, however, remain unconvinced that it was fully implemented.

Similarly, African American and Native American educators feel they receive too little attention from policy-makers and hold a weak political position because of their smaller numbers relative to Hispanic and white groups. Ted Hibbler, Director of Indian Education for Phoenix Union High School District, explained that Native American education issues – for example, high

[2] Equity in Mathematics Education Leadership Institute.
[3] Roosevelt, Cartwright, Isaac, Murphy

school retention and graduation, and university attendance – have generally not been well-represented in equity discussions in the district or the Phoenix USI.

A third challenge has centered around how best to address the needs of English language learners and children in poverty. The Cartwright Elementary District's dilemma is just one case in point. Between 1991 and 1999, the number of Limited English Proficient (LEP) students rose from 750 to 5,200. In 1968 the district community was 20% Hispanic, mostly long-time residents whose children spoke English; in the late 1990's the district is 70% Hispanic, mostly recent immigrants, most of whom qualify for free lunch. Predictably, achievement declined with the changing demographics. As is the case in other U.S. cities, the debate about how best to educate English language learners – bilingual instruction *vs*. English immersion – began within the education system but soon became politicized at local and state levels. The teaching force in the district, meanwhile, has remained primarily white. Some teachers who have been there for many years feel unprepared, and there are not enough qualified bilingual or English as a Second Language (ESL) teachers to meet students' needs.

Both overt and unspoken racial tension among adults has made it difficult for educators to address equity issues constructively. There has been open tension related to hiring practices and job status between classified and certified staff in all of the districts, as well as severe conflict about referrals for discipline of African American males in the high schools. The absence of constructive dialogue about racial difference has meant that educators have had trouble addressing educational problems. For example, one administrator who advocated English-only instruction in school and support for families after school felt that he could not voice that position: "If I were not a white male, I would be able to say this out loud, but given that I am, I cannot."

Equity issues also underlay specific debates surrounding mathematics teaching and reform. An especially thorny dilemma has been the under-representation of Hispanic, African American and Native American students in higher-level mathematics classes. The most prominent example is high school calculus, widely characterized as the "gatekeeper" course that filters too many students of color out of avenues to higher education and life opportunity. There has been ongoing disagreement among the mathematics faculty in the high schools, for example, about whether under-representation of Hispanic and African American students results from institutionalized racism or from the choices and preferences of the students themselves. Taking on this problem – one that is nearly universal in high school mathematics – turned out to be one of the greatest challenges for the Phoenix USI (PUSI) and, later, for the Phoenix EMELI team.

The Phoenix Urban Systemic Initiative

The Urban Systemic Initiatives (USIs), funded by the National Science Foundation, aim to improve mathematics and science education through a multifaceted approach that focuses on many dimensions of educational systems. The Phoenix Urban Systemic Initiative was funded for six years (1993-1998) as a large-scale effort to improve mathematics, science and technology education K-12.

Why PUSI came to be

The Phoenix Union High School District and eleven[4] of its most diverse elementary feeder districts comprised the USI. Leaders from these twelve independently governed school districts, along with local institutions of higher education and numerous business partners, created a vision for the USI: to act as a "single, unitary K-12 system for these separately governed districts" in reaching its goals.

The overarching goal of the Phoenix USI was to improve mathematical, scientific and technological literacy for *all* K-12 students, including those who had traditionally been underserved. Their broad strategy was to "create a culture for learning and change in which all students are mathematically, scientifically, and technologically competent to function successfully in the 21st century."

The PUSI identified four major components of its work:

Four Components of the Phoenix USI[5]

- To implement standards-based[6] curriculum aligned with assessments in mathematics and science education
- To support K-12 teachers in making improvements through multilevel, long-term professional development opportunities and in-class support from teachers on special assignment (These teachers are called Collaborative Peer Teachers, or CPTs.)
- To develop policies that support high quality mathematics and science education for all students (e.g., to eliminate tracking in mathematics and science, to change high school graduation requirements from two years of mathematics to three years, to provide continuing support for each mathematics and science teacher including elementary, and to articulate instruction from elementary through high school)
- To collect, analyze, and use data at the district and school level

PUSI's structure: Multi-level support for systemic change

The Unitary Management Team (UMT) was created as the decision-making body for the USI, responsible for setting priorities and directing the work. The UMT, approximately 53 members strong at its peak, included three representatives from each of the participating districts (for example, superintendents, district-level curriculum administrators, and representative principals) as well as representatives from the higher education partners, the PUSI business partner (Motorola), and the Arizona Science Center.

[4] Alhambra, Balsz, Cartwright, Creighton, Isaac, Madison, Murphy, Osborn, Phoenix Elementary, Roosevelt, Wilson

[5] Information on the goals and strategies of the PUSI is taken from the "Phoenix PUSI Annual Report," May 15, 1998 and the "Phoenix PUSI Program Effectiveness Review," December 9, 1998.

[6] When the term "standards-based" is used in this report, it refers to the standards prepared and published by the NCTM: *Curriculum and Evaluation Standards for School Mathematics* (1989), *Professional Standards for Teaching Mathematics* (1991), and *Assessment Standards for School Mathematics* (1995). It should be noted that some states have adopted standards inconsistent with the NCTM Standards.

The work of PUSI was structured to enhance the leadership of people working at the project level, the district level, and the school level. UMT members, K-8 principals, Collaborative Peer Teachers (the teachers on special assignment working as workshop leaders), and classroom teachers all received ongoing professional development.

The UMT saw the Collaborative Peer Teachers as the key change agents of the project because they worked directly in the schools with lead teachers and classroom teachers. CPTs modeled lessons, team-taught, co-planned, assisted in materials acquisition, organized study groups, and conducted informal classroom observations with feedback. Further, the CPTs conducted some of the K-8 teacher professional development institutes called "academies." Academies ranged from 45 to 90 hours in length, and provided content-specific professional development strands for classroom teachers aimed at improvement of mathematics and science education.

The need for PUSI to develop leadership for equity

The PUSI espoused the goal of improving equity within the system. However, PUSI leaders found themselves at a loss as to how to work on the issues they encountered. In the complex and highly political education landscape, their approach of providing professional development in mathematics was not helping them address problems of inequity. Furthermore, as the PUSI unfolded, some of its members (including those who would become members of the Phoenix EMELI team) became increasingly concerned that the leadership group of the PUSI did not reflect the demographics of the students they were serving. Of the 53 members of the UMT, 13 were Hispanic, one was African American, and none were Native American or Asian.

All of this was an indication that both the education system and the reform project hoping to improve it were in need of new approaches to problems of inequity. The PUSI leadership realized (as many similar projects have) that they needed to give *direct* attention to the issues underlying inequities. The PUSI was in its third year of reform work when it sent its first team to EMELI workshops. The team was searching for concrete strategies with which they could address specific issues – including racism, classism and sexism – that contributed to inequity throughout the system.

The formation of the Phoenix EMELI teams: Adding value to systemic reform

EMELI's leadership development strategy fit well with the PUSI approach of involving educators at multiple levels of the system. To assemble the first nine-member EMELI team, PUSI leaders hand-picked leaders who could exercise influence in several areas. Four of the first Phoenix EMELI team members sat on the Unitary Management Team: Hilda Carr-Goana, an elementary curriculum coordinator; Linda Fulmore, a high school PUSI math coordinator; Nora Ramirez, mathematics consultant to the USI; and Linda Jaslow, elementary PUSI mathematics coordinator. Three members of the first team, Bob McDonald, Olga Klem, and Debbie Valadez, were Collaborative Peer Teachers whom Ramirez characterized as doing the "real work" with Phoenix teachers. There was also a principal, Joe Peña. The Isaac district's multicultural coordinator, Dora Barrio, rounded out the team.

Over a three-year period two more teams were formed, until there were 24 Phoenix EMELI members altogether. Members of the first Phoenix EMELI team paid close attention to the composition of the two new teams, making sure to include members who were directly involved in the most pressing equity issues facing the PUSI. A full team was drawn from the Phoenix Union High School District, where equity issues were most volatile.

II. THE WORK OF EMELI IN PHOENIX

Led by the first team, Phoenix EMELI members undertook several strands of equity work over time. One strand involved enhancing the ability of the PUSI leadership – the Unitary Management Team and the Collaborative Peer Teachers, in particular – to address equity issues. To do this, Phoenix team members infused what they had learned and experienced in the national EMELI project into professional development opportunities for these two key groups. Another strand involved participating directly in the effort – initiated by PUSI before EMELI involvement – to eradicate tracking from high school mathematics. The Phoenix EMELI team's experiences addressing this extremely controversial and complex matter of policy and practice led to a third strand of activity, which emphasized broader awareness-raising among teachers and administrators about equity issues and ways of fostering dialogue about them.

Our portrayal of the Phoenix EMELI teams' work is organized around these basic strategies. We describe the collective work of the teams, interspersed with portraits of the work of individual EMELI leaders. Again, we do not aim to be comprehensive but rather seek to describe enough of the work to illustrate the strategies used at multiple levels and their contributions to reform.

Enhancing the Capacity of PUSI Leadership to Address Equity

Providing professional development in equity for the CPTs

The first Phoenix EMELI team felt it was important to infuse skills for addressing equity into the leadership work of the CPTs who worked directly with teachers in schools, and also the work of PUSI's Unitary Management Team. As we described earlier, the CPTs are teachers who have been released from the classroom to conduct professional development and they are key to the effectiveness of the PUSI. As Nora Ramirez put it, they are the "change agents of our schools."

The Phoenix EMELI team's first collective effort as equity leaders was to offer an equity workshop as part of the CPT professional development in the Spring of 1997. Their plan was that this would be the first of three workshops, this one focusing on racism, the next on classism, and the third on gender bias. The Phoenix team modeled the first workshop very much on the experiences they had in the national EMELI workshops, in effect "importing" the key communication structures and materials into the PUSI. For example, they introduced the EMELI "Perspectives on Equity,"[7] presented data (not from PUSI districts) on math test scores disaggregated by race, discussed articles on mathematics and equity, and taught the CPTs how to

[7] Please see the end of Chapter 1 of this report for the current version of the EMELI "Perspectives on Equity."

use "dyads" and "personal experience panels" (PEPs), which are two of EMELI's core communication structures.[8] The CPTs received articles, materials and books from EMELI workshops on issues, such as Herbert Kohl's *I Won't Learn from You*,[9] a core reading in the EMELI Project.

A second session was planned for August 1997, the annual PUSI professional development retreat for the CPTs. The team wanted to give participants time to further process emotions raised at the first workshop and to introduce issues related to the second topic, classism. This second session, which had gotten the approval of the PUSI professional development committee, did not occur as planned. Although the EMELI team found the delay frustrating, they did offer it in January 1998, almost a full year after the first.[10]

In the second workshop, CPTs looked at mathematics achievement data from the PUSI districts themselves, which was a more emotionally charged experience than that of looking at data from other districts. In addition, they played a game called Barnga, designed to raise awareness of issues of culture and class differences; and they watched "True Colors," a video that portrayed the different experiences of a white male and an African American male in present-day America. Throughout, they used the EMELI communication structures to explore issues of classism and racism. The third CPT training took place in the Spring of 1999.

CPT reactions to the equity-based workshops

Most Collaborative Peer Teachers were quite positive about the equity-related professional development they received through their required PUSI program. But the work of EMELI is personal, and it becomes emotional as people confront their own issues surrounding equity. Hence, it is not surprising that not all CPTs were happy with the program. For a handful of participants, the first workshop signaled an unwelcome change in priority: "This is taking time away from what we are meant to focus on – the classroom and children...this is too much focus on ourselves. People are angry." Another CPT said, "They talk about equity; [but] there is no equity in this organization. I hate to come to these workshops and know others do too."

Phoenix EMELI team members attributed these early mixed reactions to the inherently emotional nature of equity work. They felt some teachers' discontent was primarily due to their not having an immediate follow up session where they could continue processing the emotional and controversial issues of racism that surfaced in the workshop. For example, one white teacher recalled that the workshop left her feeling blamed for racism: "It surfaced blame and hurt from minorities toward whites and [there was] no time for healing."

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[8] EMELI created a number of communication structures that enabled people to discuss equity issues constructively. They emphasize listening, and sharing authentic experiences. For more details, please see Chapter 1 of this report.

[9] Kohl, Herbert (1991), *The Role of Assent in Learning: I Won't Learn from You.* Thistle Series of Essays. Milkweed Editions: Minneapolis. Kohl's book uses personal stories to "distinguish not-learning from failure." It supports the axiom that "all learning must on some level be voluntary," and makes a plea "to respect the truth behind this massive rejection of schooling by students from poor and oppressed communities."

[10] The reasons for the delay never became completely clear in the accounts given to us by those involved with the Phoenix case. Some people felt there was some concern about, or even resistance from within the PUSI itself about the new emphasis on issues of race and class.

The CPTs infused equity into curriculum-based professional development

As part of the PUSI's regular professional development that focused on mathematics, teacher leaders and classroom teachers participated in academies of 15 to 75 hours. The CPTs who participated in EMELI offered some of these workshops. These academies reached nearly 1500 teachers over the course of the PUSI project. Cognitively Guided Instruction (CGI)[11] was the foundational approach adopted by the PUSI in terms of the mathematics-specific content and pedagogy for K-8, and PUSI leaders (including the Phoenix EMELI team) believed CGI and EMELI complemented each other. In fact, with the infusion of EMELI-based equity work, equity was the lens through which teachers approached CGI. Integrating the two brought equity further to the forefront of PUSI professional development.

Portraits of PUSI-EMELI members

Along with the work carried out collectively by the Phoenix EMELI team as a whole, individual members worked on their own within their positions in the PUSI structure. Below, we offer a brief portrait of the work of one Collaborative Peer Teacher who was on the team. In a later section, we describe the work of a member of the PUSI Unitary Management team.

Olga Klem, Collaborative Peer Teacher

Olga Klem was a CPT in the Roosevelt Elementary School District. She is outspoken about how best to meet the needs of students, particularly minority language students. A Latina, and a teacher of many years, Klem says her experience with the PUSI changed the direction of her career and led her to take on new leadership roles. "I wouldn't have connected with this [opportunity to be a CPT] without the USI; I wouldn't have participated in EMELI. [I would] still be in the classroom and unknown. We got training we wouldn't have gotten."

Klem says that EMELI and Cognitively Guided Instruction, together, have altered her thinking about how best to serve English language learners and how to work with K-6 teachers on issues related to equity and mathematics. As a professional developer, Klem places great value on listening to students and appreciates the power of understanding a child's mathematical thinking. As a result, she says that both the content and the process of the teacher academies that she offers look different than they did three years ago. "I would say that my first [facilitation of an] Academy was strictly mathematics, very surface mathematics – here are some activities, this is how you do them, there is some literature." Three years later, her 75-hour CGI class "incorporates all of the [EMELI] communication structures. We do a lot of the equity things in our classes…We have incorporated the dyads, the group sections and the PEPs…on racism, one on language, one on *I Can't Learn From You*, some on the articles that are part of…our [EMELI] training. So everything we have done with EMELI has been infused into these academies."

[11] As part of the implementation of standards-based curriculum in mathematics for K-4 students, the PUSI districts adopted Cognitively Guided Instruction (CGI) as a framework for developing students' mathematical thinking abilities. PUSI leaders felt that CGI's focus on mathematical reasoning and developing multiple strategies for solving problems fit well with their goal of reaching all students.

Klem has also found it valuable to work closely with Esther Sanders, another CPT and EMELI participant in her district who is African American. Klem finds that the power of their collaborative experience lies primarily in the fact that they think so differently, yet both have strategies and common language to communicate their thoughts constructively with each other. In addition to teaming up as facilitators for the academies, Esther and Olga have co-led sessions on equity for pre-service teachers at Arizona State University, and co-presented a session on equity at a National Service Learning Conference.

Professional development in equity for the Unitary Management Team

The Phoenix EMELI team's other approach to enhancing the leadership of the PUSI was to work with the project's advisory group, the Unitary Management Team.

In January 1998, the Phoenix EMELI team held its first equity workshop for 22 of the then-35-member UMT. This session was significant in that it marked the first time PUSI's leadership group had devoted a block of time solely to issues related to equity. The Phoenix EMELI team's original hope, as with the CPT workshops, was to offer the UMT multiple sessions covering the three core problems of racism, classism and gender bias. However, the UMT at first committed very limited time to this training, so the Phoenix EMELI team tailored the session to meet the most immediate needs and offer the most compelling experience possible in the time frame. Three members of the Phoenix EMELI team – Hilda Carr-Goana, Dora Barrios, and Bob McDonald – led the session, with most of the rest of team present to support them.

As is customary, the Phoenix EMELI team engaged the participants in a series of activities they had adapted from the national EMELI project. In this workshop, UMT members received a copy of Herbert Kohl's *I Won't Learn from You*. They also discussed data disaggregated by race, first California data borrowed from an EMELI activity, then the more pertinent (and more emotionally charged) data from PUSI districts' ITBS and SAT 9 test scores. The group also watched and discussed the "True Colors" video, another EMELI resource. Phoenix EMELI team members had participants interact using the EMELI communication structures. For example, some members of the UMT had agreed before the session to be panelists on a personal experience panel. They spoke to the question, "When in your life have you not been treated equitably because of your race, gender or class?" As is common EMELI practice, the panelists had received the question well before the session, had met as a group prior to the panel to share their thoughts and concerns about what they would say and were given a time limit for talking during the PEP. The rest of the group had the opportunity afterwards to process their reactions in dyads and some chose to share their thoughts with the whole group.

Beyond involving UMT members in personal examination of racism and other equity issues, the meeting also focused on strategies for promoting equity in schools and classrooms. Jose Leyba, the Superintendent of Isaac Elementary School District, shared equity activities that his district had begun to implement, and the participants discussed ways in which analysis of data along race and gender lines could create a climate for equitable practice in districts. Participants also received a handout entitled "Creating A Climate for Equity," intended to be shared with teachers.

UMT members said that they were impressed with their intensive three-hour experience. Several – including the Motorola representative – said that it was "the best training" they had attended, and that they would like more. For Phoenix EMELI members, the spirit in which the UMT responded meant that they as a team were becoming capable of working with different audiences, and also meant that EMELI's professional development tools were directly translatable and could be used opportunistically to promote additional equity leadership throughout the system.

Outcomes of the equity-based workshops for the UMT

This workshop, a first step in working with the UMT, was pivotal to the efforts of the Phoenix EMELI team both because it began to affect the perspectives of UMT members themselves and also because it gave a higher profile to equity work in the eyes of district administrators participating in the PUSI. Phoenix EMELI members trace both immediate and longer-term outcomes back to this beginning.

For example, Mike Lang, a white UMT member and PUSI science coordinator, noted that some PUSI members began to use an "equity lens" in making decisions and were quite "outspoken about it." He offered as an example that some UMT members regularly reminded the rest of the group to be inclusive in selecting new teacher leaders, not discounting people of color who had leadership qualities and who may want further support in mathematics and science. Lang said that his own decision-making and leadership style within his district also changed as a result of EMELI's influence. For example, he said that he began to consider how different groups would view a decision and the implications it held for them, whereas before these were not primary considerations for him.

The Phoenix EMELI team's work also led to changes in PUSI policy and practice for professional development. For example, the UMT gave approval to the infusion of equity-related workshops into the regular professional development offerings at all levels of the USI; they also approved new professional development offerings (including the Saturday equity sessions discussed below) that would focus centrally on equity.

The UMT's response to the Phoenix EMELI team's work also won the commitment of several district superintendents to addressing problems of inequity. Dr. Rene Diaz, the Phoenix Union High School District Superintendent, as well as a number of the elementary district superintendents (including those in the Roosevelt and Isaac Districts), began to support the work of the EMELI teams. Dr. Diaz eventually approved funds for the high school district's equity retreat for administrators (discussed below), as well as other equity events in his district. Additionally, the Phoenix EMELI leaders worked with him to create a policy change so that equity workshops (i.e., the Leadership Forum, discussed below) would be part of the professional development required annually for high school principals and other district level administrators. Changes such as these show the ways in which the enhancement of local USI leadership for equity, as part of the Phoenix EMELI team's long-term vision for their area, helped to build greater capacity for equity work across the participating districts.

Nora Ramirez, Unitary Management Team member

Nora Ramirez taught high school mathematics for fifteen years. Her life experience as a Latina, coupled with the perspectives on equity that were clarified, enriched, and refined through EMELI, are central to her leadership. She holds a profound personal commitment to equal access to high-quality mathematics for all students, a central goal of the USI. She had long been concerned that the district's calculus classes are "made up of all white students," which she attributes to issues of access and equity. Beyond that, she is concerned about the lack of representation of the different racial/ethnic groups in the teaching population (which is predominantly white) and about the role of social class bias in teachers' teaching.

Ramirez is an energetic leader capable of juggling commitments to mathematics education reform in many different settings. While Ramirez was a coordinator and member of the first EMELI team from the Phoenix USI, she was also consultant to and professional development coordinator for the Phoenix USI, as well as the Arizona coordinator for the Integrated Mathematics Program (IMP).[12] She functioned from the outset as one of the political leaders for the team, providing important links to local decision-making groups (through her role as a member of the UMT) and to the national mathematics education reform scene (for example, as a member of the national IMP network and Co-PI of Phoenix's Local Systemic Change [LSC] Initiative, the aim of which was to implement the IMP curriculum in the high schools). She also teaches mathematics methods courses for future teachers at the local university. In Phoenix, she has also been at the forefront of the effort to eliminate tracking in mathematics in the high schools.

Ramirez's participation in EMELI led to an important shift in her thinking about the relationship between equity and mathematics. When she began EMELI, she felt that the PUSI had not "been dealing with the deep emotional issues necessary to truly address equity." She believed that the PUSI was doing a good job in mathematics education reform and was "going in the right direction" but that equity issues were being couched "in terms of access only." EMELI heavily influenced her thinking about the purpose of the PUSI's reform agenda.

Rather than thinking about inequity as a rationale to initiate mathematics education reform, Ramirez came to see that reform as being in the service of equity. This shift in thinking gave Ramirez a stronger perspective from which to act as a leader. Just as one example, Ramirez told of how she had participated in the revision in the Horizon Research LSC protocol for classroom observations. Rather than considering issues of equity only in the one section devoted to equity, she examined the entire protocol through an equity lens. She said, "I would not have been so aware of equity issues in classroom observations had it not been for EMELI." She says further that EMELI provided her with the concrete structures and materials she needed to really address issues of equity.

[12] The Interactive Mathematics Program (IMP) is a National Science Foundation-supported mathematics curriculum for grades 9-12. The IMP emphasizes an integrated approach to teaching mathematical thinking and problem-solving based on the tenets of the NCTM Standards. IMP is a problem-based curriculum using cooperative methods with students working with real data. It is designed so that students progress developmentally through the curriculum using in-depth problems. Nora Ramirez describes IMP as "basically a constructivist approach to learning, so the students are always analyzing and figuring things out on their own."

Ramirez experienced the process of becoming a leader for equity as a personally transformative one in which EMELI became part of the fabric of all of her work: "Equity is a real big piece of what we are trying to do." Because she was positioned as a leader of mathematics education reform at the school, district and regional levels, she has been able to contribute the perspectives of EMELI to a very wide spectrum of educators.

Ongoing leadership development for the Phoenix EMELI team

As they were infusing equity work into the existing PUSI leadership structures, the Phoenix EMELI team members also managed to stay connected to the national EMELI network. For example, one Phoenix EMELI member, Linda Fulmore, served as a support group leader for the national EMELI project, assisting in the entire two-year workshop series of Cohort 6. Linda Fulmore was part of the national leadership group that conceived of the National Coalition for Equity in Education (NCEE). In addition, in a proposal to the National Science Foundation for an expansion of EMELI, plans were laid for Phoenix to be one of the five regional centers. Although this proposal to NSF was not funded, the Phoenix leadership network is still actively engaged in developing a local center and seeking other sources of funding.

The Phoenix EMELI teams have also invited national level EMELI/NCEE leaders to Phoenix. For many of the activities that followed the team's successful presentation to the UMT, national EMELI Director Julian Weissglass or another core EMELI leader (such as Vivian Elliott, equity consultant to the Colorado Partnership for Educational Renewal and a core staff member of Colorado EMELI, and Ana Becerra, an Associate Director of the national EMELI project based at the University of California at Santa Barbara) served as the keynote speaker. This ongoing relationship with the national group was an important form of professional development for the Phoenix EMELI team members themselves, enabling them both to contribute more to and gain more from the national alliance. This relationship with the national project in turn supported Phoenix team members' capacity to build leadership in their region.

Direct Work on Mathematics Policy And Practice

A second strategy of the Phoenix EMELI team focused on providing support to local mathematics education leaders who were addressing key issues of policy in mathematics education. The EMELI work helped these leaders identify and understand issues that were critical to addressing deeper systemic inequities. This meant that, in Phoenix, the EMELI team involved themselves in examining the selection of curriculum materials as well as the complex and highly politicized problem of tracking in the high schools.

Bringing an equity lens to selection of curriculum

As part of its effort to bring some unity to what had been separate policy systems in the 14 school districts, the Phoenix USI leadership sought to coordinate the selection of standards-based curriculum. One of the first ways in which the Phoenix EMELI team infused equity into the work of the PUSI was through the new evaluation process for curriculum and materials. Several Phoenix EMELI participants served as members of the working team that evaluated commercial mathematics materials.

In undertaking this task, the Phoenix EMELI members stood out from the other reviewers because they examined and evaluated mathematics materials through an equity lens. To use the horse-and-cart metaphor, this means that they treated equity as the criterion that would lead the way in producing the best judgments about curriculum. Their assessments of materials thus came out differently in some cases from those of other reviewers who did not have equity as the driving concern. The Phoenix EMELI members found that the communication strategies for addressing controversial topics they had learned in their EMELI professional development experience were quite useful for discussing, in an evenhanded manner, these differences with their colleagues. From the recommendations of the team of reviewers, a few of whom were EMELI team members, a list of standards-based mathematics materials was developed and the PUSI districts all agreed to adopt their materials from the recommended list. This list of recommended materials continues to guide the materials adoption in the PUSI districts.

Addressing the practice of tracking

Long before EMELI entered the picture, the PUSI leadership had been working to eradicate policies that led to tracking. For years, students were placed in their high school math classes based on their scores on a standardized placement test – the Mathematics Placement Inventory (MPI).[13] Many believed that other criteria should be considered instead of or in addition to these standardized scores, for example, teacher recommendations, and student choice.

Team members are the first to acknowledge that to this day, tracking remains a contested and problematic issue in Phoenix. In fact, one of the lessons the Phoenix EMELI team learned from this work is how difficult – and important – it is even to be able to initiate and sustain constructive dialogue about tracking. Their experience with this issue illustrates the importance of fostering leadership committed to a persistent, sophisticated and sensitive approach to improving equitable access to high-quality education for all students.

[13] In the latter two years of its use the same test was renamed the Algebra Readiness Test (ART).

The debate about tracking in high school mathematics

At the core of the debate, from the PUSI perspective, was the fact that students of minority racial and ethnic backgrounds were severely under-represented in the higher level academic mathematics courses. Hence, tracking was seen as a major equity issue because these courses are a first step in preparation for higher education and better employment opportunities. Students who entered the lower Mathematics 1-6 track in the 9th grade at course level 1 or 2[14] almost never reach the higher level mathematics courses because of the slower pace of the Math 1-6 program. That is, a 9th grade student in Mathematics 1-2 (of the Mathematics 1-6 track) does not have the same opportunity to take four years of college preparatory mathematics as does a student who enters into Integrated Algebra 1-2 (in the higher 4-year academic track) because two years of the Mathematics 1-6 track are the equivalent of one year of college preparatory mathematics. And with the exception of those students who enter Integrated Algebra 1-2 after they complete Mathematics 1-2, once a student is in one track it becomes very hard to transfer out. As Nora Ramirez said, "It is not normally done. It is not done." Ninth grade students who enter the Mathematics 1-6 track are thus virtually guaranteed that they will be unprepared for college when they leave high school.

The debate surrounding this disproportionate representation of under-represented groups in higher level courses has focused on several issues, including the causes of differential access to higher tracks, the quality of curriculum in different tracks, and the quality of instruction in the different levels.

For example, Rob Turley, a PUSI science coordinator, believes that minority students are not denied access but rather that they are unprepared. He believes preparation "is what we need to work on." Jerry Gambino, director of curriculum for mathematics, science and gifted and talented programs in the Phoenix Union High School District, acknowledges that "the elementary districts perceived that the [9th grade placement] test was tracking kids by ethnicity," but he believes "that is debatable." In his view, student choices may underlie the tracking pattern: "The question becomes, 'Is that some kind of a plan or a plot, or is it a choice?'" While Gambino agrees that "most of the Hispanic kids are in lower level math courses," he suggests that this may not mean they get watered-down curriculum: "What I mean when I say 'lower level' is that these classes allow students more time to do algebra, geometry, what they call college-bound mathematics. It isn't as fast, but it's still algebra."

Some of those who accept the existing curriculum strands point to another problem related to equity that accounts for the uneven preparation of students; this other problem is that the best teachers are not equally deployed across all tracks and all courses. As Linda Fulmore explained, "The curriculum is still the same in the different tracks…. The problem is teaching it. We find

[14] A few years prior to the PUSI effort to eliminate tracking, the district stopped offering General Mathematics and Science courses. As a result, all 9th grade students now take algebra. There are essentially three initial placement choices for 9th grade students – Mathematics 1-2; Integrated Algebra 1-2, with an honors strand; and IMP (Interactive Mathematics Program), also with an honors strand. Mathematics 1-2 was designed to prepare students either to stay in the Math 1-6 sequence or to move into the Integrated Algebra 1-2; thus, they have the option of entering the Integrated Algebra 1-2 after Mathematics 1-2. Disproportionately low numbers of minority students are found in the honors strands and in the higher levels of the Integrated Algebra and Geometry strand. See the data tables at the end of this chapter for more detailed information on high school mathematics course enrollments.

that the better teachers, or more experienced or more content knowledgeable math teachers, are teaching upper level classes, which would have mostly white students. That is still an ongoing problem." Though there are several influential educators who agree with Gambino that all of the math tracks offer standards-based curriculum, there are also some who do not believe this. Nora Ramirez, for example, says "there are a few of us who don't agree on what the standards are."

Issues of inequitable access are even more evident in the case of English language learners. They are systematically not offered equal access to high level mathematics because there is a dearth of good bilingual teachers in math and because standards-based materials are largely absent in their languages. Nancy Meyers, an LEP Resource Teacher and EMELI participant, explained, "We used to think math was an easy place to start for ESL," but experience has taught her that mathematical concepts are very difficult to teach if students do not have full command of the language. This means that ELL students, who could likely benefit from the improved instructional approaches of the PUSI reforms in mathematics and from bilingual instruction, most often receive traditional math instruction in English and thus work at a disadvantage.

Using EMELI to help CPTs work on tracking

In the hope of having an impact on tracking through the existing structure of PUSI-sponsored professional development provided by the Cooperative Peer Teachers, the Phoenix EMELI team worked with the CPTs specifically on the issue of tracking. This began at a three-day retreat for CPTs. In accordance with the PUSI strategic plan, nine PUSI districts had made a commitment to eliminating tracking, and these districts agreed to dedicate one of the CPT retreat days specifically to that.

Nora Ramirez planned the day with assistance from Motorola facilitators, and other Phoenix EMELI team members helped facilitate the small groups and contributed to the discussion. They felt that their EMELI training gave them the confidence to bring up the role of racism in tracking in a direct and evenhanded manner during whole-group discussions. Those attending included not only CPTs but also UMT members, including four superintendents from PUSI districts, a curriculum director, a coordinator of professional development, and evaluation/assessment specialists, all of whom influence policy.

The day included a personal experience panel with five participants, of whom one was of African American descent, two were white, and two were Hispanic. The participants talked about their personal experiences with tracking. One panelist talked about the negative consequences of the honors track based on his daughter's experience (she now hates math) and in the discrepancy in who gets into honors classes. Another talked about being one of the few African Americans on the high track during her schooling and the impact this had on her in terms of creating conflicted relationships with her friends. Another spoke about the powerful memory of a teacher who had fought for her and moved her out of the remedial track. The last was an emotional and painful story of a panelist's two children – one who tested gifted and the other who tested as a "have not" – and the consequences of this in their education and lives. Following the PEP, participants talked in dyads about their own assumptions about tracking, and then individuals voluntarily shared in the larger group.

Participants spent much of the day in small groups, facilitated by Phoenix EMELI team members, working towards an understanding of what tracking is and is not. Their discussions examined the role of racism in tracking as well as the high level of awareness of equity issues and teaching expertise needed to design a superior system. From a carefully planned and executed process, the group reached consensus on statements that described the problem that tracking was designed to solve, defined what tracking is, and clarified what tracking is not. The group then began to craft possible solutions, including individualized help, special interest classes, needs-based instruction, flexible curriculum that allows students to develop skills at their own rate, and fluid groups based on low-stakes assessments.

The limitation of existing professional development structures

The EMELI team realized early in their work that reaching the leaders of the high school district mathematics departments was perhaps their greatest challenge. And though they tried to address tracking practices through existing PUSI structures, it became apparent fairly quickly that high school teachers were far less accessible through CPT professional development academies than K-8 teachers. In fact, the Phoenix Union High School District did not even require professional development for math teachers. As Linda Fulmore pointed out: "The bigger problem is the fact that we can't get high school mathematics teachers and department chairs to the table to even talk about equity because you can't mandate staff development… All of the equity work that we have done… for three years, we have not been able to get a significant number of mathematics issues to the table for any type of staff development [in the high schools]. That is the real challenge."

The PUSI's move to eradicate tracking through policy change

The PUSI Unitary Management Team believed the 9th grade math placement test and the resulting high school tracking were responsible for the disproportionately high numbers of students of color being placed in the lower level courses. They thus reasoned that elimination of the test would help end tracking. When PUSI acted to replace the placement test with a system of teacher recommendations,[15] their move got the attention of the high school math teachers in a way that invitations to workshops had not. Many high school mathematics teachers were immediately critical of the change because they felt that their voices were not represented in the decision but that they would feel the impact in their classes.

A heated conflict arose around this decision, one that only widened the chasm between K-8 and high school educators, and one that intensified the internal conflict at the high school level. Much of the debate centered on the 9th grade placement test. For example, one K-8 administrator spoke for many of her K-8 colleagues – and the high school Superintendent – when she characterized the elimination of the placement test as one of the "greatest accomplishments of the USI." She did stipulate, though, that there were still tests that students would have to take to qualify for the most advanced classes. One high school mathematics chair was sorry to see the 9th grade test go because she thought that having an assessment of students' basic skills was

[15] The Phoenix Union High School District Superintendent sat on the Unitary Management Team, but the decision to replace the test was a joint decision made by the whole UMT acting as a unified K-12 decision-making body for the PUHSD and participating elementary districts.

useful. Jerry Gambino of the PUHSD held a very strong view, saying that the PUSI was in "constant conflict" with the high school district in its stance on mathematics course enrollment in general and the elimination of the placement test in particular.

Of course, the root causes of the controversy went deeper than the terms of the disagreement over the placement test. As with all real issues, there were legitimate concerns on both sides of the issue. Teachers worry about having students enroll in a course for which they are blatantly unprepared. On the other hand, the current system of using a placement test to determine access to upper level courses seems to be a sure way to enforce the status quo. Hence, the issues faced by Phoenix in this debate are real and complicated. They require the ability to engage in a serious and extended examination of the situation by all who are involved.

In fact, the important lesson for the Phoenix EMELI team members was this: *they saw a pervasive inability among leaders at multiple levels of the system to engage in a dialogue that could begin to get at deep-seated issues underlying access and equity*. The lack of access to high school teachers, combined with the well-intentioned but fairly heavy-handed policy change, had merely exacerbated conflict and divisiveness among teachers and administrators about this very complex issue.

Realizing this, the Phoenix EMELI team began to think about their equity work differently. They began working to develop a longer-term, more strategic approach that would focus on building capacity within the district to foster constructive dialogue. They did this with encouragement and support from the national EMELI leadership. The new approach was consistent with the national EMELI project's perspective on equity, which is that the work has to begin at a personal level with honest examination of and communication about issues that lie at the heart of inequity, rather than at specific local problems.

Building Capacity to Address Equity Issues Through Awareness Raising and Leadership Development

The Phoenix EMELI team met over several months to develop a new strategic plan for reaching the high school district mathematics departments. Linda Fulmore, who was the only member of the first EMELI team who was in the high school district, spearheaded this effort and kept it focused on the high school. What emerged was a long-term strategy aimed at building more support for equity work and creating alliances among key leaders. The new approach would focus on creating awareness about equity issues as broadly as possible among the leadership in the participating districts. It would simultaneously focus on providing more in-depth support to those individuals within the districts and schools who were committed to equity. This latter effort included, for example, providing support to leadership groups beginning to form at Alhambra, Camelback, Trevor Browne, Central, CES, and North high school campuses, as well as in some K-8 districts.

To carry out this strategy, Phoenix EMELI members set out to create new programs and activities specifically designed to include and educate key members of the high school community while continuing to infuse equity work into existing PUSI structures. In all of this

work, the team was attempting to increase local educators' capacity to engage in constructive dialogue.

Creating a high school EMELI team

One way to support emerging leaders and build greater local leadership capacity was to send an additional team composed of all high school personnel to the national EMELI project. High school administrators Linda Fulmore and Jerry Gambino carefully selected new team members so that key leaders responsible for both mathematics and under-served student were involved. These included, for example, Jerry Gambino himself (PUHSD director of curriculum for mathematics), Joan Mason (PUHSD curriculum director for LEP programs), Nancy Meyers (a resource teacher for LEP), Armando Ramirez (an assistant high school principal), and Mina Smith and Ruth Sandoval (high school counselors).

Raising awareness and building a broader base of leadership

The core Phoenix EMELI team also created new events designed for the purpose of addressing issues of equity in the high school district. These events took many forms. The best examples of these multiple modes of professional and leadership development include the annual Equity Summits, the Leadership Forums that preceded them, and ongoing series of Saturday workshops. These events varied in intensity and depth. The Equity Summits were larger (drawing 90-125 participants) and aimed at broad awareness-raising among leaders as a way to build capacity for change. The workshop series were smaller (10-60 participants), and offered more in-depth, multiple-session professional development for those whose interest was piqued by the Summit's awareness-raising sessions. All of these activities were initially spearheaded by Phoenix EMELI member and PUSI mathematics coordinator Linda Fulmore.

The Annual Equity Summit

The first summit – an all-day Saturday conference billed as "Climbing the Equity Summit: Ensuring Success for Every Student" – was held in 1998.

Roughly two-thirds of the participants were people of color, primarily of Hispanic background. Eight UMT members (three of whom were EMELI members) attended. The organizing EMELI team made a concerted effort to include fully the dozen or so parents who attended, including the seven or eight parents who took advantage of Spanish language translation services. As they had done in other local settings, the team designed a day's program that would introduce participants to both the substance and communication structures that lie at the heart of EMELI's work. National EMELI Director Julian Weissglass gave a keynote address focusing on national data related to inequity in mathematics and on the EMELI "Perspectives on Equity." Participants then engaged in dialogue about equity issues using the EMELI dyad and discussion group structures. In the afternoon participants attended two breakout sessions of the 11 offered. Sessions targeted diverse interests, for example: "Parent Power in Education," "Achieving Equity for Language Minority Students," "Reach More Science Students with Computer-based Labs," and "Student Views on Equity." One mathematics content session was designed for teachers to help students in grades 7-9 make the transition from arithmetic to algebraic thinking.

The following list offers a sampling of the actions participants committed to before leaving: to talk about race, gender, class and sexual orientation instead of avoiding those topics; to talk to counselors to raise their awareness of equity issues; to involve co-workers in dyads around equity issues; to use more "inquiry-based" teaching approaches; to teach to different learning styles; to involve both parents in the schools; and to provide nights for parents to share their stories. These statements give some insight into the ways participants hoped to connect their experience at the conference with the larger system and their daily work.

The Phoenix team received positive responses overall on follow-up evaluations. One person, for example, especially valued the way Weissglass opened the subject of racism: "I was surprised that he could acknowledge racism's existence in the classroom. People usually dismiss it as non-existent. I wish all of the teachers and staff at our school could attend a conference like this."

Participants also felt it was important that the event connected bilingual teachers with Spanish-speaking parents, who are often isolated due to cultural and language differences, as well as connecting them with each other and to other teachers and administrators in the district. Translators for Spanish-speaking parents were provided at this summit; this is another way the EMELI team addressed the problem of inequitable access to education. One bilingual teacher said the following: "Sometimes I feel alone at my school because of my 'separation' due to bilingual and regular split classrooms. The discussion helps me understand others." A Spanish-speaking parent wrote that the conference helped her learn that she needs to pay closer attention to the details of her son's education in grade school so he will be prepared to attend a university: "Este programa me ha servido para tener mas cuidado con la educacion de mi hijo. Deseo darle una educacion imparcial con referencia a las razas y sobre todo lo apollare para que logre llegar a un nivel universitario." [This program has helped me pay more attention to the education of my son. I wish to give him an education that is impartial in reference to issues of race, and most of all to support him in reaching a university level of education.]

Participants from the same district, but who held different positions (such as principals, department chairs, teachers, classified staff), said they valued the very rare opportunity to talk and listen to each other on issues related to equity. One person emphasized the need to continue: "There wasn't enough time. I really felt that this was a good beginning. We need more opportunity for this type of dialogue."

Because of the Equity Summit's broad appeal it has become an annual event, with participation increasing steadily. In 2000, 125 people attended, including principals, district staff developers (including CPTs), teachers, paraprofessionals, and parents (a number of whom were monolingual Spanish speakers). Each year a core staff member from the national EMELI project has been invited to Phoenix as keynote speaker for the conference. Vivian Elliott, of Colorado EMELI, was the keynote speaker at the second annual conference. Ana Becerra, an Associate Director of national EMELI was the keynote speaker for the third. Summit organizers have received funding from several sources in addition to the PUSI, including the PUHSD, Phoenix Union Business and Education Partnership, Phoenix Preparatory Academy, Arizona Public Service, Phoenix Elementary District #1, and Arizona Science Center.

The Leadership Forum

The Leadership Forum, which precedes the annual Equity Summit each year, targets a smaller, but influential, group (35-50) of district and central office administrators of the PUHSD and its feeder schools. The Forum focuses more specifically on district leaders' roles in addressing equity. Dr. Rene Diaz, Superintendent of the Phoenix Union High School District, opened the first Forum by noting that the PUSI had increased local dialogue around diversity. Julian Weissglass led a three-hour session focusing on the ways bias and inequity affect students, and on the factors that districts must address – curriculum, assessment, pedagogy, school culture – to reduce inequity. Beyond helping to facilitate small group discussions, the Phoenix EMELI team members volunteered their assistance to the participants in conducting local equity work. Like the Equity Summit that follows on its heels, the Leadership Forum has become a well-received annual event.

Ongoing Saturday Sessions

In all of the professional development provided by the Phoenix EMELI team, there are some participants who "wanted more." In anticipation of that reaction to the Equity Summit, Linda Fulmore proposed and received funding to offer a series of four Saturday sessions called "Equity in Mathematics and Science Education" as a follow-up, beginning after the first Spring 1998 summit. This more in-depth series was intended to support participants of all grade levels in carrying out the ongoing personal work necessary to further develop their own leadership skills. As Fulmore put it, the Phoenix EMELI team had "systemic change in their sights," but they were also convinced that "sound equity work had to start with personal transformation" – a key principle underlying EMELI.

Because Fulmore's colleagues from the high school district had not yet begun their EMELI training, she invited Arizona State University faculty to conduct the sessions with her. The sessions focused on African American, Native American and Asian American cultures and covered topics such as student voices, racism, classism, and building alliances. Fulmore was able to incorporate conversational structures and equity-related activities from EMELI workshops. The first round included roughly 40 participants, a mix of teachers, administrators, classified personnel, and maintenance staff. According to Jerry Gambino, the diversity of the first group was "what makes it a lot more powerful; those people generally don't get together. This mixed group gets together to talk about these issues, and I think it brings us together more as a district."

The first workshop series was so well received that Fulmore offered it again during both semesters of the 1998-99 school. Phoenix EMELI members, including Nancy Meyers (resource teacher for LEP) and Rob Turley (high school science professional development specialist), joined Linda to offer these workshops. The sessions focused on student voices, racism, classism and the building of alliances. In each session, team members took care to provide time for the participants to process the deep emotional responses that arise with these topics.[16]

[16] It was not only the participants who struggled with their emotions and personal issues related to equity; some Phoenix EMELI team members did, too. In fact, midway through this year, a team member made the painful

In the third year (1999-2000), responding to the emerging need, the Phoenix EMELI team expanded the offerings to include sessions as an extension of the well-established, original sequence of Saturday sessions. The Phoenix Union Partnership of Business and Education sponsored the series, called "K-12 Equity in Mathematics, Science, and Technology." The second-level series, involving 25 returning participants, included further attention to racism and building alliances, in addition to introducing new topics such as gender equity, homophobia, second language issues, and building leadership for equity.

In all of these series, Phoenix EMELI leaders asked participants to outline the actions they intended to take in their schools and districts. Most outlined plans to organize support for and address equity issues on their respective campuses. Some examples: To build alliances with other staff members who have taken both levels 1 and 2 Saturday series; to include feeder schools in equity-related professional development; to encourage other staff members to take the Saturday sessions; to design similar workshop sessions for parents and students; to include equity issues in "professional development day" meetings; to enlist the Phoenix EMELI team to meet with the equity support team on each campus; and to strengthen alliances with specific people on campus such as curriculum directors and mentoring programs. EMELI team members planned to meet with each campus' team to help them focus on their goals and move forward.

These Saturday workshops were the first of their kind in the PUSI, insofar as they offered in-depth, sustained professional development, rather than one-time events. They enabled participants to address and deal with their emotions that are a natural consequence of talking about – and listening to others of different backgrounds and life experiences talk about – deeply personal and complex issues and biases that underlie inequities. Further, these workshop series brought administrators, teachers, and classified staff together to delve into equity-related issues. As important as the workshops and retreats for CPTs had been – because they served to infuse equity into existing PUSI work – these Saturday series added a vital new dimension to the work of the Phoenix EMELI team.

Residential retreat for high school administrators

In the Fall of 1999, the Phoenix team organized and carried out a two-day residential retreat on equity for high school district and campus administrators. This first-of-its-kind program emerged in response to a new conflict – and it turned out to be a watershed event in the story of EMELI in Phoenix.

An explosive controversy had arisen between a member of the governing board of PUHSD and the high school principals around the question of who was responsible for the disproportionate number of referrals for disciplinary action of African American males in the high schools. Both sides publicly accused the other of racism. The Phoenix EMELI team wished to help out, but they also did not want to choose sides. They decided instead to take a long-term view and to think about how they could help all involved address the conflict positively. That is, they asked how they could help build the capacity of those within the system to address the issues themselves. At first they considered working directly with the members of the governing board

decision to leave the team. An internal conflict he felt about an equity issue prevented him from developing the commitment he needed to address this issue in professional development with the EMELI team.

and the district administrators, then finally decided to start within the PUHSD district, by working with administrators in a safe environment as a way of strengthening leadership for equity on each campus. To this end, they began organizing a retreat for them.

The team paved the way very carefully, first by conducting a two-hour workshop for district administrators (principals, assistant principals, assistant superintendents, and curriculum directors). In this workshop they emphasized building alliances. The administrators liked it and asked for more, and at that point, two EMELI team members, Joan Mason and Armando Ramirez, took this feedback to the Superintendent and asked for district support for a more intensive retreat. The Superintendent had (by design) already become acquainted with the work of the EMELI team, having attended the Leadership Forum for two years. He approved funding for the retreat, arranged to have each high school campus covered so the administrators could attend it, and participated himself.

Twenty-three administrators participated in the two-day residential retreat. Dr. Julian Weissglass and Colorado EMELI team leader Dr. Vivian Elliott led the workshop, along with EMELI members from Colorado and California. The administrators participated in personal experience panels on the effects of racism and bias, and in dyads to express reactions and relate personal experiences; and they viewed and discussed the video "*Fear and Learning at Hoover Elementary*." Also, the administrators identified steps they would take to address equity in their work, and the EMELI leaders built in follow-up support for carrying out these action plans at each campus.

For many participants, including Phoenix EMELI veterans, this was a profoundly transformational experience because they came to understand – for the first time – colleagues they had been working alongside for years. Joan Mason, an EMELI member and one of the organizers of the retreat, observed: "I think there were things they didn't know about each other, especially about the administrators of color and their struggle. People really bought into it; they were very moved by it and they made plans at the end to continue."

Another participant put it this way: "I can't believe I've worked shoulder-to-shoulder with a couple of these people for several years and never heard their stories – What a shame! I only hope some of the alliances and common values felt in the room, expressed by many, are still present in new settings Monday morning. To understand the depth of the 'damage' individuals have endured (my colleagues) is both disheartening and inspirational. The discussions caused me to reflect upon my own actions and words."

We discuss further the import of this event below.

Portraits of Phoenix EMELI leaders: Linda Fulmore, Dora Barrio and Nancy Meyers

Phoenix EMELI team members, working together, planned and carried out the key events that built wide familiarity with and understanding of EMELI's goals. They also carried out equity work in a different mode – individually, in their regular positions within the education system. The individual portraits of team members stand alongside the accounts of the team's larger activities as illustrations of the nature of EMELI work and leadership that unfolded in Phoenix.

Linda Fulmore

Fulmore began her 30-year career as a teacher just out of college. After teaching middle and high school mathematics for many years, she was mathematics department chair for three years, then became the PUSI mathematics coordinator in the Phoenix Union High School District for four years. In 1999-2000, she moved to an assistant principalship at Camelback High School. As a member of the first EMELI team, and its only African American member, Fulmore played a central role in bringing equity issues to the PUHSD, including spearheading the creation of both the Equity Summits and the Saturday workshop series. Beyond her work in Phoenix, Linda has also served as a leader for the National EMELI project.

People who meet Fulmore initially regard her as a strong, directed leader. In fact, she currently considers herself a "champion for equity in her school" and says she is "probably as proud of that as I am of anything." However, she has not always seen herself in this light, and she believes that it was through her experience with EMELI that her inner strength found a path of expression. Before EMELI, Fulmore says, she was "very much status quo, very much not [willing to] make waves, not take chances." That all changed with EMELI. "Now, I am really the opposite. I have really tried to respect people and not be too radical…People are respecting me more as I take on more leadership and I think that I have gained more confidence in myself." Fulmore says EMELI gave her the reflection time and structures she needed to start the work, and introduced her to role models to emulate: "I have had very few people in my life that I really looked up to and said, 'Oh my gosh I want to be like them.' I want to be able to do it the way they [the national EMELI project core staff] do it."

Fulmore's most personally challenging leadership roles have been when she participated in personal experience panels dealing with equity issues at professional development events held in her own district, in front of people she knows and has professional relationships with. Fulmore says the EMELI experience helped her see the value of sharing her life experiences in public forums, something she would not have done before. She can do this now "because I want people to know. I don't want people to feel sorry for me, I just want them to know my experiences have been different… I want them to know that I have had to work harder, that I have not grown up privileged, that who I am is because of all of these experiences…And then I want them to look at me and think about my story."

Dora Barrio

Dora Barrio, a Latina, is Instructional Specialist for ESL and multicultural education in the Isaac Elementary School District. Over 80% of the district's students are bilingual and the dropout rate is high. Barrio says she sees the inequity her students experience and talks to them about it: "They feel they aren't being treated equally, they feel it's because of language. Their parents are ignored in the schools, treated as lower class citizens."

Barrio found EMELI to be a good match for work she was already doing, and she found (unlike some EMELI participants) that she was immediately able to integrate EMELI structures and materials into workshops she conducted for parents, teachers, and administrators as part of her job. For example, she led a two-day professional development workshop, "Implementing Multicultural Education in Your School," for 20 district administrators (principals, assistant principals and directors from the district office). Barrio said that everything for the workshop came from EMELI – including a personal experience panel on racism and skin color differences, a "gender journey" to explore the different experiences of males and females, and questions that would help participants apply what they had experienced in their own daily work. Additionally, Barrio taught a credit course on multiculturalism for teachers and another for paraprofessionals, as well as conducted a multi-session workshop for parent volunteers, with follow-up offered in both English and Spanish.

Nancy Meyers

Nancy Meyers, who is white, is a Resource Teacher for the Limited English Proficient (LEP) program in the high school district. She has become a strong advocate of the idea that equity must take the lead position in mathematics education reform: "We've been doing reform since the 1980's, one innovation then another. Nothing has affected student achievement. If you don't have a staff that can understand students, they can't reach their experiences." Meyers was drawn to EMELI more for its equity emphasis than for the mathematics. However, she acknowledges that her background in language and literacy gives her a voice that is important for mathematics educators to hear, particularly where English language learners are concerned. One of her major concerns is that high school ELL students do not have mathematics teachers who are fluent in Spanish.

The Saturday equity workshop series have given Meyers her greatest opportunities for leadership in equity. She collaborated with other Phoenix EMELI members in offering several of the series for high school district staff. She admits that these leadership activities have added a new layer of work to her already demanding load. Leaving home at 6:15 on Saturday mornings to give an equity workshop is difficult. She says it seems worth it, however, "when I get home and talk about what's happened in the workshops and read the comments of the participants. I'm reminded that we need to make changes related to equity before we can make others."

Meyers came to EMELI having already been involved with equity issues through membership in feminist organizations and the National Coalition Building Institute. She says, "My assumptions were that I had all that figured out." EMELI affected her much more than she anticipated it would, however. She says that in her previous experiences, she had been able to stay at an

intellectual level, but with EMELI "the problems are at the emotional level…A PEP is emotional and hard." The hard, emotional work of EMELI enabled her to "come to a deeper understanding."

A Review of the Modes of EMELI Work in Phoenix

The Phoenix EMELI teams – led strongly by the first group that formed in 1997 – carried out equity work in several modes simultaneously. In all of their work, they directly imported the materials, communication structures, topics, and perspectives on equity of the national EMELI project. For many of the higher-profile events, they also invited in core leaders from the national EMELI staff. Using these resources, the team was able to vary the intensity of the work and sometimes the focus on specific issues in order to appeal to audiences who held different positions in the education system and who came to equity work with different personal capacities to examine complex issues.

With PUSI as the major mathematics education reform project already underway before the EMELI team formed, for example, it made sense that the Phoenix team initially focused on infusing equity work into that project. They did this by working with PUSI leaders to build their commitment and enhance their leadership for change, and they also worked with the CPTs – the "change agents" responsible for providing professional development to hundreds of teachers in the participating schools. Additionally, the Phoenix team tried to directly support the PUSI's ongoing effort to eradicate tracking in the high schools. In the course of this work, the Phoenix team learned a valuable lesson: without the tools and the will for constructive dialogue about the complex issues that underlie tracking and the inequities that tracking perpetuates, no one could make any headway on the problem. PUSI had tried to change the testing and placement policy in a context of open conflict among factionalized staff in a politicized school system – and professional development "as usual" was not the answer.

The Phoenix EMELI team then embarked on a carefully thought-through plan to build better capacity for dialogue. They focused on raising awareness about equity issues broadly among education leaders throughout the system, and on offering more in-depth, ongoing professional development for emerging leaders who were able and willing to address equity issues in their schools.

In these various modes of work, there was always a symbiotic relationship between the collective leadership of the Phoenix EMELI team and the individual leadership that team members exercised in their daily work. Individuals brought their personal commitment and perspectives to bear on the team's work, and the team supported and enriched the work of each individual. Very importantly, the Phoenix EMELI members had the will to do this difficult work because of the alliances they had formed among themselves and with their colleagues in the national EMELI project. All of them feel they could not have carried out the work without the personal support and encouragement they received from one another and also from EMELI Director Julian Weissglass and other national leaders.

III. CONTRIBUTIONS OF EMELI TO MATHEMATICS EDUCATION REFORM IN PHOENIX

The Scope of EMELI Work

Over the 2½ year period we observed the work of the Phoenix EMELI team, our best estimate is that the three teams (24 EMELI leaders) worked together to offer approximately 40 events. Of these, 22 were multiple-session workshops. These events reached approximately 2,500 participants. Along with the participants in the Equity Summits, Leadership Forums, and Saturday series, participation included 1,465 teachers who participated in the PUSI teacher academies, special CGI academies for K-4 teachers, and professional development strands on probability and statistics, and geometry and measurement for grades 5-8. The total estimate[17] of 2,500 includes only those participants in "first-generation" events organized and led directly by the team members; that is, they do not include "second-generation" events that were organized by other school leaders after they participated in Phoenix EMELI activities.

The fact that 24 EMELI leaders collectively worked with 100-fold of their colleagues – most of them in repeated sessions – reflects, first, the team members' personal commitment to this work: planning, organizing, and conducting these activities were generally not part of their formal day-to-day jobs. Secondly, the ever-growing participation also shows that the materials, perspectives and communication structures that EMELI provided were addressing a real need.

Contributions to the Phoenix USI itself

It is important to note first that the team's equity work had an impact on its "home" project, the PUSI. Part of this impact was that the PUSI leadership became stronger advocates for the EMELI team. This is important because without the ongoing support of the PUSI, the Phoenix EMELI team would have been hard-pressed to extend their work into the schools.

A shift in perspective for reform leaders gives priority to equity work

Addressing equity issues in mathematics and science education was a stated goal of the PUSI reform project; however, until the Phoenix EMELI teams brought direct attention to equity issues the goal received mostly lip service. EMELI contributed to the PUSI both content and process for addressing equity which they did not have previously.

The initial influence was on the PUSI leaders themselves as Unitary Management Team members. It began with the four UMT members who were on the first EMELI team, and it expanded with the team's first Equity Summit, which eight more UMT members attended. The increased level of awareness among these twelve leaders led to their putting pressure on their UMT colleagues to allocate more time and attention directly to equity issues in their meetings and in PUSI-provided professional development. This validates the overall design and purpose

[17] For detailed data about the number of participants reached, please see Table 4 at the end of this chapter.

of the national EMELI project, which is to enhance the ability of mathematics education reform leaders to directly address equity issues.

Ultimately, the work of the Phoenix EMELI team in the UMT and the equity-related professional development they offered shaped the thinking and priorities of the USI in a deep and significant way. Rather than focusing on mathematics education reform and assuming equity would follow, PUSI leadership used the focus on equity as a lens through which to shape the design and implementation of core professional development offerings. Involving both CPTs and UMT members in the national EMELI project and as leaders in Phoenix was an important factor in this shift in perspective.

New professional development tools create "know-how" for equity work

It is one thing to want to address equity; it is another to know how to do it. The specific EMELI communication structures made an important contribution to the professional development repertoire that could be used in the PUSI. Before EMELI, the PUSI staff cared about equity, but the tools they had at hand for professional development had to do with mathematics *per se*. What they learned from EMELI enabled them to address the specific issues related to equity that *interact with* mathematics content and pedagogy to reproduce inequitable results for students. The communications structures and content that the EMELI team brought to the PUSI made it more able and effective in working toward its goals vis-à-vis equity.

The EMELI communication structures seem quite simple in their design and can be used in many venues, and yet they can be profound. As Nancy Meyers said, "On the surface, the dyads look very simple. I wondered, how can you get that much out of it? But when you start to see people become clearer in their thinking *and acting*, you can understand the power of them." When used well, they offer people safe ways to clarify their thinking and to address the feelings that arise in emotionally charged areas such as racism and classism.

These structures also foster communication that leads to new cross-race alliances among leaders. This is a critically important contribution of EMELI work; in fact, EMELI's policy is that teams reflect the demographics of their regions and that at least 50% of the members are people of color. This policy is designed to enable people of color to feel safe enough to speak honestly about race and other equity issues. Virtually every EMELI leader has identified these alliances as essential to sustaining the hard work of leadership in equity. Nancy Meyers called this part of the "genius" of EMELI: "Cross-racial alliances have made it possible to do the Saturday workshops and to keep going deeper with my own personal work. I can ask Linda Fulmore to come up and stand by me when I'm talking about my life. Having Linda stand beside me as an African American female is more important than having another white person where people of color wouldn't feel included."

The EMELI project also contributed new content for equity-related professional development. EMELI leaders found that having materials at hand made the hard task of launching equity work possible. Some mathematics activities, for example, allow participants to experience firsthand how diverse learning styles affect classrooms, some raise awareness of how gender and class affect learning, and still others introduce teachers to relationships between mathematics and

culture (ethno-mathematics) and between mathematics and social issues (critical mathematics). Similarly, the standard EMELI approach of using different sets of achievement data to identify system-level inequities (such as examining mathematics course enrollment data, and data on standardized tests disaggregated by race and gender) have become a mainstay in the equity leaders' tool kits. Phoenix EMELI leaders also draw heavily on books, articles, videos, and research which EMELI introduced them to, including Kohl's *I Won't Learn from You*, the articles and booklets "Realizing All Students' Mathematical Promise: Sarah's Story;" "A Call for Educational Change Leadership;" "Social Class and the Hidden Curriculum of Work;" and *Ripples of Hope*; and the video "*Fear and Learning at Hoover Elementary.*" These materials have proven to be importable and applicable to many contexts. The Phoenix teams have also begun to add to these resources, establishing their own libraries of equity materials.

Beginnings of system-level change

Equity remains a priority after NSF funding

An important indicator of the impact of EMELI work in Phoenix is that the new professional development events created and offered by the EMELI leaders to address issues of inequity are becoming standard offerings in the PUSI districts, even though NSF funding has expired. The Equity Summits, Leadership Forums, and Saturday series are all continuing into their third year of offerings, and ongoing teacher academies in mathematics teaching continue to incorporate equity as part of their focus. In the Phoenix Union High School District, the Professional Growth Committee has institutionalized the Saturday series as part of the district's regular offerings approved for credit or a stipend. The annual Equity Summit has become an event that PUSI districts look forward to every year. As Patricia Allison, a principal in the Cartwright District, said, "the Equity Summit gets better each year…it isn't just for educators. Parents and classified staff are all together in the same place talking about these issues." These are all signs that equity has become a legitimate priority for professional development – and that is a further sign that the workshops are filling a real need.

Increased capacity for dialogue about equity issues in the high schools

One of the most volatile issues the Phoenix EMELI team took on was, of course, the issue of tracking in the high school district. Educators at all levels of the system found themselves ill-equipped to deal with the conflict that arose. When the EMELI leaders stepped back and initiated the broader-based awareness-raising effort, they began providing leaders at all levels of the system with insights and new communication tools with which they could respond in a more open and constructive way to the conflict.

Later, when the conflict about African American boys being referred for discipline arose in the high schools – complete with public accusations of racism – the Phoenix EMELI team responded very differently. They did not jump into the fray; rather, they slowed down and thought through how they could help increase the capacity of school leaders to engage in dialogue about the issues. The outcome of this more strategic process was the invention of the residential retreat for administrators (described on page IV-21 above). The fact that this retreat occurred at all demonstrates increased capacity within the system to address equity.

Linda Fulmore, who had devoted considerable energy to EMELI work, expressed what a ground-breaking event this first administrators' retreat was: "After my first EMELI experience three years ago, I came back and said, you know, I can see now where we are stuck in our district. We never thought we could come together to really talk about racism. So this retreat was just a milestone, and the reason why we were able to make it happen is because of the alliance-building among our EMELI team. We have people of color who have built alliances with white people who are saying, 'We need to talk about racism.' A white female organized it. It was just beyond our wildest dreams."

In this instance, we can see that the two-years' attention to leadership development within the system, ongoing alliance-building among the Phoenix EMELI leaders, and the uses of new communication structures all worked together to begin *a process of transforming fruitless arguments fraught with accusations of racism into constructive dialogues about the meaning of race*.

Affecting the "water supply" of mathematics education reform in Phoenix

Some of the most important – and most difficult to document – contributions of EMELI work in Phoenix are what we refer to as affecting the "water supply." By that we mean that equity becomes a "trace element" that infiltrates the system in unpredictable yet broad and observable ways. We observed two kinds of evidence of this.

Spreading equity work to other projects

Because so many of the Phoenix EMELI leaders were involved in multiple reform projects, attention to equity issues and use of the EMELI structures spread via "contagion" into many other reform projects underway in this very large region. This was true of both the elementary and high school Phoenix EMELI teams. This manner of dissemination is another reason why development of leadership is key to EMELI's strategy.

EMELI's impact on the Math Cases project is a particularly illustrative example. Math Cases, for grades 4-8, focused on mathematics content and student thinking. One goal of the program was to develop leaders, specifically people of color, who would be able to lead case discussions and teach the process to other teachers. Nora Ramirez, being both an EMELI team member and the Phoenix PUSI coordinator of Math Cases professional development, worked with Alma Ramirez of Far West Labs to integrate an equity perspective into the leadership training for teachers. As Alma Ramirez explained,[18] the education system tends to replicate itself unless educators make efforts to change its course: "Part of what EMELI is about, is that the leadership [in mathematics] is not very diverse and teachers of color frequently are either marginalized or silenced in the bigger group…The dominant groups, the European-American leaders, don't mean to marginalize, or don't mean to exclude, but when it comes to deciding who to groom for leadership, they pick people who look and sound like them. That is where we run into some trouble because the two CPTs that I initially picked were wonderful and they were very, very helpful and very understanding. And they were also white. As we were bringing in teachers and

[18] Alma Ramirez was not a member of EMELI, though she worked with the team in Phoenix.

they were picking who would be strong, the lists that they gave me were also overwhelmingly white."

As a result of this situation, the two decided that they needed to design a new course that would help diversify the pool of leaders. "The teachers that we were targeting were bilingual teachers who were Hispanic. Mathematics isn't what most bilingual teachers are experts in…[and] there are some cultural things that come into play – like 'you don't interrupt,' and 'you are not the first to speak' – that don't necessarily help them be a leader in the traditional sense of the word. So Nora said, 'Let's try some of the EMELI structures so people can confront the issues around leadership.'"

In the Math Cases project, then, EMELI perspectives and structures did more than raise the awareness of existing leaders; they helped bring greater equity to the process of identifying and developing new leaders.

Phoenix EMELI leaders also worked in a variety of ways with advisory board members or professional development leaders of such projects as Video Cases for Professional Development, Mathematics and Parents Partnership in the Southwest (MAPPS), Kids' Cases, Lens on Learning, and Cognitively Guided Instruction.

Creating a climate that can support individual change that matters for students

In this report we have discussed some of the ways in which EMELI leaders worked as individuals to address equity and foster change during their daily work. In examining some of the outcomes of their work, it is equally important to ask about the extent to which the overall climate in the system has become more hospitable for individuals – anywhere in the system – who wanted to make changes in the interest of greater equity. The following are only two of myriad instances in which EMELI helped create a climate of change. In both of these cases, it is evident that the actions of these teachers had real consequences for students.

Sarah Markham, a Latina, is a principal in the Roosevelt Elementary School District. She participated in a personal experience panel at one of the Phoenix Equity Conferences and later co-taught a professional development class with Olga Klem, an EMELI participant. She attributes her ability to "stand up to" an inequitable situation unfolding in her district to her alliance with Klem and EMELI's influence.

When two new schools were built in her district, new attendance boundaries had to be drawn and Markham sat on the committee. One school proposed that a block of their current students – predominantly very low income Hispanic students – be directed to attend the new school that was 2 ½ miles away instead of continuing to attend their school, only ¼ mile away. Markham says, "I was able to stand up to that…[which I learned from] working with Olga [Klem]. She said 'if you hear something that's wrong and you know it's not good for our kids and not good for our families, not just Hispanics but for everybody, you need to stand up to it.' So I did, and won. So having the little exposure to equity training helped me to stand up for something I thought wasn't right." Markham was not an EMELI team member herself; rather, the

professional development events conducted by the Phoenix EMELI team created a climate that gave her a stronger voice for equity.

Markham further says that the equity work has also affected her own teaching and her work with colleagues: "It helped me to see what was happening in the classroom, to observe teachers in a different way. During observations I was more cognizant of behaviors the teacher was displaying toward certain students."

Earl Charles, an African American, is a mathematics teacher at South Mountain High School and a member of the high school Phoenix EMELI team. At his school 60% of the students are Hispanic, 25% are African American, 10% are white, and 5% are Asian or Native American. Charles had observed that students usually segregated themselves by ethnic group at lunchtime and on breaks. In the midst of his EMELI training he felt an urgency to try to do something about it, and he began focusing on teaching them how to work well and interact with people of different backgrounds within the context of his math classes. For several months he structured workgroups that changed frequently but always included students of varied backgrounds. When the students complained about the lack of choice, he explained that they needed to learn to work with a variety of people. For the last several weeks of the year he did let them choose their own groups – and he found himself "glad and surprised that the groups were not chosen because of race but on the basis that the students wanted members who worked hard and got the job done."

In both of these instances, EMELI provided individuals with personal awareness, motivation, and tools that moved them to take real action when confronted by a troubling situation. EMELI also helped create a climate of support within the broader educational system that gave these individuals some confidence that these were legitimate actions to take in the quest for greater equity for students.

The "End" Is Just the Beginning: Sustaining the Momentum

It is of course difficult for Phoenix EMELI members to predict how the existing momentum will be sustained and what issues will move to the forefront in the future. They face some prospects for positive change and also new challenges:

Prospects for ongoing dialogue about equity issues. Following the Fall 1999 administrators retreat, high schools took the lead to develop campus equity teams that would bring colleagues from their feeder schools into the conversation. Each high school has funding for the effort and a committee that decides how the funds are spent. Each school also has a School Improvement Team, with funding, that is supposed to address equity. EMELI team members are hopeful that these fairly autonomous groups will choose to begin addressing deeper issues underlying inequity.

Progress in the effort to eliminate tracking. As of August 2000, according to curriculum director Jerry Gambino, "about half of our ten high schools have eliminated Mathematics 1-2. By August 2001 all of our high schools will offer Integrated Algebra 1-2 as the only 9th grade mathematics course that will meet the PUHSD three-year mathematics graduation requirement."

Prospects for institutionalizing professional development in equity. Ongoing efforts are afoot to further institutionalize equity professional development. For example, the district is considering a requirement that staff development specialists include a focus on equity in the second year of support for new teachers in the induction program. Also, the Phoenix EMELI team is pushing for approval of the Leadership Forum as part of the mandatory professional development for PUHSD administrators.

The challenge of developing and supporting leadership. A major challenge the Phoenix EMELI teams will face is that of continuing to support and develop leadership that can carry the momentum. There are several issues and factors involved in this. One issue is how to "home-grow" *new* leaders as time passes. For example, Linda Fulmore, an extraordinarily effective leader and key change agent, is retiring as of June 2000. It is also important that the Phoenix group continue to receive encouragement and advice from national EMELI Director Julian Weissglass and other leaders. The Phoenix group's ability to address both of these needs is somewhat dependent on the success of local and national efforts to secure funding.

Third, it is important to sustain the commitment and energy of existing team members who are carrying the practical and emotional workload. Like no other kind of reform, this work demands deep personal commitment to equity – which means commitment to addressing the issues that underlie *in*equity. Some members of the Phoenix team have struggled with that; one member made the painful decision to drop off the team because he realized he could not sustain a personal commitment to every equity issue that the EMELI project addresses.

Those who work for equity do not take gains for granted, even small ones. On the contrary, they view each step as important. They also are the first to say that the work is never finished. It is exactly for this reason – because there are no quick fixes or clear solutions – that Phoenix EMELI leaders believe they have just begun. While they see evidence of their work beginning to have an impact, they know that the key to greater equity is to keep up the momentum. As EMELI member Joan Mason said after the ground-breaking administrators' retreat, this new awareness – even the policy changes it has generated – are only first steps: "We need to find ways to keep this going."

DATA TABLES
HIGH SCHOOL MATHEMATICS COURSE ENROLLMENTS

Course enrollment statistics from Phoenix Union High School District 1998-99 show that disproportionately high numbers of students of color do not enroll in the higher-level mathematics courses that serve as "gate-keepers" to higher education and career advancement.

Overall student demographics

The following table shows the figures for total student enrollment and percentages of students by race/ethnicity in each of the PUSI districts.

Table 1.
Student enrollment in the Phoenix USI Districts

District	Total enrollment	Student Ethnicity				
		African American (%)	Anglo (%)	Asian (%)	Hispanic (%)	Native American (%)
Phoenix UHSD	21,678	12.4	25.8	2.2	56.2	3.4
PUHSD Feeder districts						
Madison[19]	4,885	5.2	68.1	2.5	19	5.2
Alhambra	12,276	9	32	3	49	6
Cartwright	17,314	11	28	1	58	2
Balsz	2,998	11.6	20.8	1.3	60.4	5.9
Creighton	7,605	7	20	1	68	4
Osborn	3,926	31	8	2.0	47	12
Isaac	7,931	5.6	7.2	0.5	85	1.7
Phoenix	9,042	8	6	1	81	4
Roosevelt	11,680	21	5.9	0.2	71	0 .9
Wilson	1,339	4	5.7	0.3	88	2
Murphy El	2,540	4	5.6	0.4	89	1

In all districts except one (Madison), the combined Hispanic, African American, and Native American student population comprises at least 75% of total district enrollment. In each of these districts, Hispanic students alone comprise close to or more than 50 percent of the student population.

[19] PUHSD figures are for 1998-99. For all of the elementary districts, we have used end-of-the-year enrollment figures from 1997-98 to calculate these percentages.

Patterns of enrollment in mathematics courses

The mathematics courses offered to 9th graders are: Interactive Mathematics Program (IMP) 1, Math 1, and Integrated Algebra 1.

The following table shows student enrollment in the three courses for the first semester of 1998–99.

Table 2.
Enrollment in 9th grade math courses, by ethnicity

Course	Total number	% African-American	% Anglo	% Asian	% Hispanic	% Native American
IMP 1	963	17	13	< 1	66	4
Math 1	1,353	11	20	< 1	63	5
Integrated Algebra 1	2,301	13	24	2	57	4
Total enrollment	4,617					

There are several points to be noted. First, the enrollment in the largest course, Integrated Algebra 1, fairly closely matches the ethnic distribution of the total student population. However, when the enrollment of Integrated Algebra 1 is compared to that of the other two courses, it is clear that both IMP 1 and Math 1 enroll proportionally more students of color and fewer white students than Integrated Algebra 1. It is this evidence of tracking by ethnicity that Phoenix educators are working to address. Although students in any of these three courses theoretically have the potential to reach higher-level math courses, students in Integrated Algebra 1 are more likely to do so. Second, it is important to note that the total enrollment in the three 9th grade classes is 4,617. This enables us to look at attrition in higher-level courses revealed in the next table.

Table 3.
Enrollment in 3 high-level math courses, by ethnicity

Course	Total number	% African-American	% Anglo	% Asian	% Hispanic	% Native American
Integrated Algebra 3	678	*	*	*	*	*
Analytic Geometry/ Calculus 1 AP	92	5	49	16	29	0
Calculus 1 (1B)	32	6	81	3	10	0
Total Enrollment	802					

* We do not have exact percentages for this course. Traditionally, enrollment in this course matches the diversity in the student population more closely than the other courses, as is reflected in the distribution of students in its "feeder" 9th grade course, Integrated Algebra 1.

Again, there are several points to note. First, there is significant attrition in overall mathematics attendance as students move through the high school grades. While there were 4,617 students enrolled in 9th grade courses, there were only 802 enrolled in the highest level courses. Even within the Integrated Algebra track where the largest number of students appear, there is a steady decrease in enrollment, from 2,301 in Integrated Algebra 1, down to 1,450 in Integrated Geometry (not shown in tables), down to 678 in Integrated Algebra 3.

Second, in the highest-level courses – Analytic Geometry/Calculus 1 and Calculus IB – white students are enrolled in substantially greater proportions than students of color. Whereas white students constitute roughly one quarter of the general population, they comprise half the enrollment in Analytic Geometry and four-fifths of the enrollment in Calculus 1B. There were no Native Americans enrolled in either of these last two courses.

Table 4.
Number of participants reached by the Phoenix EMELI Project: 1997-1999

Type of involvement in EMELI *	Number and types of participants
Key players	
Phoenix EMELI team members	24 Teachers, specialists, school and district administrators
PUSI Unitary Management Team (UMT)*	35 School and district administrators; representatives from higher ed and business, Arizona Science Center
PUSI Collaborative Peer Teachers (CPTs)*	35 K – 8 teachers
Attendees at leadership events	
1998 Leadership Forum at PUHSD	40 High school administrators
1999 " " " "	48 " " "
Fall 99 PUHSD Admin. Retreat*	25 " " "
Equity Summit participants	
1998	90 Teachers and administrators
1999	125 50 teachers, 25 parents, 50 others (administrators, parents, Arizona State University staff)
Saturday Series participants	
1998*	48 Teachers and administrators
1999*	36 Teachers and administrators
Second Level Saturday Series participants	25 Teachers and administrators
Participants in various PUSI Academies	
1997 - 1999*	1,465 Teachers
Other teacher participants	
Math Cases Project Leaders:*	12 Teachers at grades 4 - 8
Roosevelt District Equity Class*	9 Teachers
Phoenix Elementary Equity Training	60 Teachers
ASU teacher education students *(3 semesters)*	360 Pre-service teaching candidates
Conference attendees	
Arizona Interactive Mathematics Program (IMP) meeting	80 Teachers
Interactive Mathematics Program (IMP) National Directors	30
National Service Learning Conference	14
ESTIMATED TOTAL	**2,561 Participants**[20]

* For all events marked with an asterisk, participants attended multiple-sessions.

[20] We cannot estimate the number of different individuals because some people participated in more than one event. We are reporting the attendance at each event.