Educators For Equity:

The Work of the EMELI Leaders

Kasi Fuller
Judy Hirabayashi
Nina Houghton
Katherine Ramage
Laura Stokes
Mark St. John
Pam Tambe

with the assistance of:

Dawn Huntwork

February 2001

INVERNESS RESEARCH ASSOCIATES

Table of Contents

PREFACE

Beginning in 1995 the Equity in Mathematics Education Leadership Institute (known hereafter as "EMELI") was funded by the National Science Foundation (NSF award number ESI 945-4357) to serve as a national center that would enhance the work of mathematics education reform efforts across the nation. EMELI's specific mission focused on helping the leaders of mathematics education reform efforts increase their ability to identify and address inequities in mathematics education.

Inverness Research Associates has served as the external evaluators for the EMELI project. We have studied the work of EMELI over its lifetime, visiting EMELI events, interviewing and surveying EMELI participants, and, most recently, conducting in-depth case studies of EMELI participants working in three different states. As the culmination of our study, we have produced this monograph. Its five chapters, together, portray how EMELI seeks to help its participants use their EMELI experience to further the degree to which mathematics education in their local communities is equitable for their students.

- Chapter 1 provides the reader with a brief overview of the EMELI project – its guiding beliefs and theory of action – and also describes the evaluation work and the rationale for the case studies.

- Chapter 2 serves as an executive summary of our findings and summarizes what we believe are EMELI's major contributions to mathematics education reform. In addition, we offer some general reflections that arise out of the EMELI experience.

- Chapters 3, 4, and 5 are the case studies themselves. Chapter 3 is an account of equity work in the Juneau School District in Alaska. Chapter 4 is a study of equity work carried out in the nine districts involved in the Urban Systemic Initiative in Phoenix, Arizona. Chapter 5 tells the story of several different EMELI teams who are working throughout the state of Colorado.

CHAPTER 1

THE EQUITY IN MATHEMATICS EDUCATION LEADERSHIP INSTITUTE (EMELI)

What is EMELI?

From 1995 to 2000, the National Science Foundation (NSF) provided funding for the Equity in Mathematics Education Leadership Institute, better known as EMELI. The primary goal of this project was to develop leadership on national scale that would support districts and schools in identifying and addressing issues of inequity in mathematics education. The EMELI project accomplished this by working in-depth and over time with more than 45 teams of educators (including teachers, school and district administrators, college faculty, and leaders of mathematics education reform projects) in 15 states. EMELI provided these educators with experiences, structures, and resources that equipped them to serve locally as leaders who could identify and address problems of inequity in mathematics education reform.

Dr. Julian Weissglass, a professor of mathematics at the University of California, Santa Barbara, founded EMELI and since its inception has provided the central leadership and ongoing vision for the project. Although the 7th and final cohort of teams funded through the NSF project has completed its training, the work of EMELI has continued through its website (http://www.math.ucsb.edu/EMELI), with the establishment of the National Coalition for Equity in Education – and through the ongoing work of the local EMELI teams.

EMELI postulates that the phenomenon of inequity in mathematics education – from unequal opportunities to learn, to gaps in achievement – is rooted in deeper and more entrenched personal, cultural, and institutional biases. The work of EMELI is based on the notion that the core causes of inequity must be understood, and addressed directly, if their manifestations are to be resolved. That is, to begin rectifying inequity in mathematics education, those within the system must take both a very personal *and* a very broad examination of its causes, and then apply those insights and understandings to mathematics teaching and learning in their own local education systems.

Guiding Beliefs and Assumptions

We have studied many education reform projects, and EMELI stands out as one of the few that articulates a set of guiding assumptions for its participants. A set of core beliefs, referred to as

the "Perspectives on Equity," have provided the foundation for the work of EMELI and served as guiding principles for all participating teams.[1]

Perhaps the most fundamental assumption is that inequity in schooling is a social and institutional ill that is the outcome of individual and institutional biases. The EMELI project believes that a deeply personal understanding of equity issues is the necessary first step in addressing the problems of inequity – whether they are to be found within individuals, with educational institutions, or within the broader functioning of the system. Another core belief that underlies the work of EMELI is that educators at all levels of the system have a professional as well as moral responsibility to address issues of inequity. EMELI argues that without the strong, direct and personal intervention of leading educators, the structures and cultures of schooling serve to perpetuate inequity as a deep systemic problem. Together, the foundational EMELI perspectives propose that true "systemic reform" demands those inside the system, at all levels, have the will to identify issues directly related to equity (e.g., racism, classism, sexism) – and they must also have the skills and knowledge needed to address those issues in a collaborative and serious fashion.

EMELI — A Leadership Development Project

EMELI has operated quite differently from other equity and mathematics education reform initiatives. Notably, EMELI purposefully did not use a "trainer of trainers" model for professional development; rather, it sees itself as a leadership development project. It was clear from the start that EMELI involved a long-term commitment and the educators attending EMELI were to be the key leaders in their own home settings. Moreover, EMELI used a highly personal and intensive approach to increase educators' understanding of bias and other equity-related issues. EMELI participants confronted their own prejudices and emotions and learned to think more clearly about the inequitable situations they and their colleagues were facing. In addition, they came to understand the cultural and institutional embodiments of prejudice and the specific ways individual and institutional biases manifest themselves in the policies and practices of mathematics education. This approach was coupled with local teams working together to develop and carry out appropriate strategies and plans for identifying and addressing equity issues in their own schools, districts, and states. EMELI also supported participants specifically in designing and delivering their own professional development activities that were customized for local conditions and needs.

The EMELI Workshops

The EMELI workshop series were designed to help participants understand equity first by examining their personal experiences and listening to those of others, and later by examining systemic and institutional inequities. Each team that participated in EMELI attended a series of six residential four-day workshops in Santa Barbara. With three and four months between each

[1] A current version of the EMELI "Perspectives on Equity" appear at the end of Chapter 1. This set of principles is ever-evolving as EMELI participants contribute to their refinement and completeness. In the first workshop of the series, one of the first activities is to learn about and then discuss the perspectives that define the nature of the work of EMELI.

workshop, EMELI participants went to four workshops a year, and, over a period of 18 to 20 months, each EMELI participant spent a total of 24 days working intensively with their own team members and the 30 to 40 other members of their EMELI "cohort."[2] The workshops involved different modes of work including the study of research, discussion of equity issues, mathematical activities, the learning of specific modes of communication, and, perhaps most centrally, the personal sharing of experiences. The culture of EMELI – based on a steadfast commitment to equal treatment of all participants and helping people understand and heal from the effects of racism, classism, and sexism – pervaded all of the workshops. These teams were ethnically diverse; it is the policy of EMELI to strive for 50% of team members to be people of color.

During the first two workshops, participants spent most of their time in structured cross-team discussion of issues and sharing of their own personal experiences with racism, classism, and sexism. Mathematics was woven into the program through mathematics activities and references to mathematics curriculum, pedagogy, and access issues. Teams met at least twice during each workshop to develop their cohesiveness and begin to plan During the second year, participants examined a variety of topics related to mathematics education and leadership through the equity "lens" they had developed. Teams met more frequently to strategize and plan for how to take what they were learning in the EMELI setting and translate it into their work back home.

In the EMELI workshops, the teams also encountered a wealth of materials and resources that helped them build their awareness and deeper knowledge of equity issues. These resources included data about student achievement and participation in mathematics courses that illustrated inequities in the system, as well as books, articles, and videotapes about issues related to equity. EMELI teams often used these same resources in their local work.

The EMELI Structures

In addition to traditional discussion groups, three kinds of communication modes – called the "EMELI structures" – provided the scaffolding for the EMELI workshop activities, tools, and processes.

- In *dyads*, two participants have the same amount of measured time to speak and listen as each person addresses a topic that arises in a workshop or meeting. Dyads are by far the most common and adaptable EMELI structure, and the purest form of "equitable communication" – that is, one in which each participant has equal opportunity to speak and to be heard – with the promise of confidentiality and without direct response or questioning.

- EMELI workshops also included *support groups*, which consisted of five to eight people who met together throughout the two years. In these small groups, the participants explored topics arising from the workshop; as with dyads, each person has an equal amount of time to talk and they listen to one another attentively. Support groups are facilitated by an experienced support group leader.

[2] EMELI conducted workshop series for seven different cohorts. Each cohort was numbered in the sequence in which it occurred; when we discuss these we refer to them as Cohort 1, Cohort 2, and so on.

- In *personal experience panels* (or "PEPs"), four or five people form a panel and each speaks for a specified time about their personal relationship to a topic or theme of the workshop (e.g., trust, being a math student, or one's early memories of social prejudice). The members of the panel meet ahead of time with a staff member to discuss what they might say or any anxiety they might have. Rules of confidentiality and attentive listening apply to the panel participants as well as to the audience.

These EMELI structures, all of which model equitable communication, have the advantages of being both simple in their design and uniquely suited for the emotional work of addressing equity issues. The structures are intended to be exportable and translatable to the work of participants in their local settings. A significant portion of the first workshop for all EMELI cohorts was devoted to use of the structures, familiarizing participants with them as tools that would be used throughout all future meetings. As teams progressed through EMELI, participants developed and improved their leadership skills largely through and around the use of these communication structures. Teams also attempted to incorporate them into their equity work at home, particularly during the second year of involvement.

The Role of Inverness Research Associates

Inverness Research Associates is an educational evaluation and policy analysis group with a long history of work in science and mathematics education.[3] Inverness Research served as the external evaluators for the EMELI project for the duration of the NSF grant. As evaluators, we chose to focus our studies on what happened as participants and their teams returned to their own schools and districts with their own customized plans for action, rather than on the EMELI leadership workshops. These workshops have now been tested and refined for several years, and they are very professional and well-implemented.[4] We wanted to examine and understand the ways in which the emerging equity leaders attempted to put into practice the knowledge and skills they learned through their EMELI workshop experiences.

During the initial years of our evaluation work, we documented the efforts, struggles, and achievements of all the EMELI teams. We conducted phone interviews with a variety of participants from the first four EMELI cohorts. We distributed a survey to all participants during the project's first phase to gain a sense of the value of EMELI and its usefulness to the entire group of participants. We also attended EMELI workshops, where we observed teams planning their individual local strategies.

The Case Studies

Due in large part to the very personal and complex nature of what each team was trying to accomplish, we ultimately chose to conduct a small set of longitudinal case studies that would enable us to document the work of a few teams in depth over multiple years. We began selecting sites and teams for our case studies as EMELI Cohort 4 was completing its first year of

[3] For more information, visit our website at www.inverness-research,org.

[4] For more information about these workshops, please see Weissglass, J. (2000). *No compromise on equity in mathematics education: Developing an infrastructure*. In W. Secada (Ed.), *Changing the Faces of Mathematics* (p. 67-78). Reston: National Council of Teachers of Mathematics.

workshops. Our primary purpose in producing the case studies was to capture and portray what it really means to "do equity work." We wanted to help those who are not familiar with EMELI see and understand the specifics of what EMELI teams did, and what issues they encountered, as they applied what they had learned in EMELI to their local settings. We also wanted to illuminate the kinds of leadership roles played by EMELI participants so that the nature of their difficult and often subtle work might be better understood. In selecting the teams to study, we wanted a range of examples that would represent the multiple forms of equity work and the different venues in which it can take place. We selected Juneau, Alaska; Phoenix, Arizona; and Colorado.

Juneau, Alaska: The Juneau School District sent a group as part of EMELI Cohort 4. The original team of five consisted of four teachers accompanied by their assistant superintendent as team leader. The teachers spanned the elementary, middle, and high school grades. They included a woman of Alaska Native descent and another of Japanese-American heritage. When we began our study, one of the teachers was also president of the local teachers union. Members of the Juneau team were not strangers to reform or equity work in mathematics education. Prior to participating in EMELI, all had participated in activities in their district funded by Eisenhower grants, particularly through elementary and secondary Math Cadres that have existed in Juneau for the last five years. Math equity issues facing the Juneau school district include the under-representation of Alaska Natives and females in more advanced mathematics courses (especially Pre-Calculus and Calculus) and the over-representation of Alaska Natives in lower level mathematics classes

Phoenix, Arizona: The original team from the Phoenix Urban Systemic Initiative (USI) was part of EMELI Cohort 3. The group comprised nine members drawn from five of the nine districts that were participating in the Phoenix USI. The team members included a mathematics specialist, a multicultural specialist, a curriculum coordinator, a staff development specialist, a mathematics consultant, and four Collaborative Peer Teachers (CPTs are teachers released from their classroom duties to work with schools, teachers, and principals in support of mathematics and science reform.). The team members were well positioned to effect change; they worked at different levels of the USI, with three people being members of the Unitary Management Team that oversaw the work of the USI. The Phoenix EMELI team began its equity work as the Phoenix USI was enmeshed in a volatile controversy about tracking in mathematics courses.

Colorado: The Colorado team from EMELI Cohort 3 was a relatively large team, involving sixteen members associated with the Colorado Partnership for Educational Renewal and CONNECT, the Colorado SSI (State Systemic Initiative). Colorado presents an interesting case because the mathematics education reform effort was focused on an entire state. We felt we could gain insight into the question of "critical mass" in addressing equity issues as there were three more teams from Colorado who attended EMELI as part of Cohort 4, and all have worked loosely with the original EMELI 3 team. (Additional teams from Colorado attended EMELI as part of Cohorts 5, 6, and 7.) The Colorado team members represent all levels of the system including elementary, middle and high school mathematics teachers; district administrators; leaders of reform projects; university mathematics professors; and administrators from the Colorado Department of Education. Together, CONNECT and the Colorado Partnership are reaching 50-70 percent of the students in 176 districts in Colorado. The EMELI team worked on equity issues with the context of these two initiatives, with CONNECT financially supporting their work.

In documenting the work of these three teams, we conducted multiple visits to each of the sites over a two-year period. The site visits included classroom observations as well as interviews with EMELI team members and others. We also attended a variety of events organized by each team – including large-scale equity conferences, university seminars, a school board meeting, and a variety of equity-related professional development events for teachers, teacher leaders, and administrators. Throughout the data collection period, we maintained ongoing communication via phone and email with the team leaders from each of the cases and met with teams periodically when they attended workshops in Santa Barbara. In addition, we continued to conduct phone interviews with other EMELI participants not included in the case studies, as well as non-EMELI educators connected to the equity work of the teams.

Each team we studied encountered the barriers created by large educational bureaucracies, divided communities and all the other complexities of education in the United States. The case studies that resulted from this longitudinal research provide in-depth and detailed accounts of committed individuals attempting to promote more equitable policies and practices. As a group, the three stories also generate some interesting insights about the nature of the work involved in addressing issues of equity in local school settings, and about the contributions equity work can make in those settings. These insights, we believe, have implications not only for the future work of EMELI-based groups, such as the National Center for Educational Equity, but also for other discipline-based reform efforts that aspire to address inequities in the teaching and learning of their disciplines.

Perspectives on Equity[5]

1. No one is born prejudiced. All forms of bias, from extreme bigotry to unaware cultural biases, are acquired – actually imposed on the young person.

2. We are one species. All humans are very much alike.

3. In many societies many of the assumptions, values and practices of people and institutions from the dominant culture serve to the disadvantage of people from the non-dominant culture.

4. Individual prejudice and institutionalized biases are dysfunctional for individuals and to the society as a whole.

5. Systematic mistreatment (such as racism, classism, and sexism) is more than the sum of individual prejudices. Thoughtful action with regard to curriculum, pedagogy, and school policies and organization is necessary to overcome the effects on people and institutions of a long history of prejudice and discrimination.

6. Individuals and groups internalize the systematic mistreatment. They often act harmfully toward themselves and each other. This process must also be identified and eliminated.

7. Educators are an important force in helping many people overcome the effects of societal bias and discrimination, but schools also serve to perpetuate the inequalities and prejudices in society.

8. Race, class and gender bias are serious issues facing U.S. society and education that are usually not discussed. Talking about them is necessary, not to lay blame, but to figure out better ways of educating our children.

9. Lack of acceptance and support is an impediment to the development of educational leadership among people of color, women and the working class.

10. To make progress on this very complex problem it will be necessary to improve alliances between educators from different ethnic and racial groups, between males and females, and between people of different class backgrounds.

11. Discussing and gaining new understandings about the existence and effects of bias and discrimination will usually be accompanied by strong emotions.

12. Changed attitudes and actions will be facilitated if we are listened to attentively and allowed to release our emotions as we attempt to make sense of our experiences and the experiences of others.

[5] J. Weissglass (1996). *Ripples of Hope: Building Relationships for Educational Change*. Center for Educational Change in Mathematics and Science. University of California, Santa Barbara, CA 93106

CHAPTER 2

FINDINGS AND REFLECTIONS ON THE WORK OF EMELI

In this chapter we summarize our findings about the EMELI project in terms of its contribution to mathematics education reform. We note that while these findings emerge from all of our studies of EMELI, it is the case studies that have provided us with the most insight into the nature of equity work. By necessity, the summary provided here is abstract and without the level of detail included in the cases that makes the work of EMELI leaders vivid and real. We therefore urge the reader to look carefully at the case studies themselves, in order to more fully understand this overview of findings.

Findings

The Nature of and Need For the Work of EMELI

In this section we present three findings, each of which is central to our own understanding of the nature of the work that EMELI does as well as the needs it is addressing.

- **EMELI is an important and new kind of investment. EMELI seeks primarily to "add value" to the work of existing mathematics education reform efforts. That is, EMELI is not primarily centered on carrying out mathematics education reform *per se*; rather, EMELI is devoted to strengthening the ability of existing reform efforts to productively address issues of equity.**

Mathematics education reform efforts (such as the NSF-funded Local Systemic Change projects and the State, Urban, and Rural Systemic Initiatives) seek to improve the teaching and learning of mathematics in the K-12 system. One of the most persistent problems that reform projects are trying to rectify is differential achievement in mathematics – and differential opportunity to learn mathematics – for groups based on socio-economic status, race, and gender. The reports of the National Council of Teachers of Mathematics (NCTM), the Mathematical Sciences Education Board (MSEB), the American Association for the Advancement of Science (AAAS), and many other national groups all emphasize the importance of having a system of mathematics education in which all students have equal opportunity to succeed.[6]

[6] *Curriculum and Evaluation Standards for School Mathematics*. Prepared by the Working Groups of the Commission on Teaching Standards for School Mathematics of the National Council of Teachers of Mathematics, (Reston, VI: 1989). *Everybody Counts: A Report to the Nation on the Future of Mathematics Education*. Mathematical Sciences Education Board, National Research Council. National Academy Press (Washington, DC:

All mathematics education reform efforts avow the importance of equity and give it high priority as a goal. Projects, however, typically have little specific ability or knowledge that helps them in concrete ways to address real issues of inequity that exist within the educational systems in which they are working. That is, they know what results they want, but they do not know how to go about reaching them. The following comment from an EMELI participant and a math education reform leader reflects the sentiments of many reform project leaders:

> *People leading math reform efforts were becoming very concerned that they should do something about equity – but they didn't know what to do or how to do it… EMELI's combination of structure, a sense of purpose, and a strong value base has provided a strong avenue for all of us to effectively address equity issues.*

EMELI, as a externally funded project, thus represents an investment by the NSF in the development of what we have come to call the "improvement infrastructure." The EMELI staff and programs are a form of "infrastructure" in that they serve as a support to many other reform efforts. The support offered by EMELI, in the form of its staff, knowledge, resources, and programs, enhances the ability of existing math education reform efforts to include a strong equity component in their work.

We also think it is important to note that there is a kind of symbiotic relationship that develops between EMELI and the reform projects it supports. The activities of existing reform projects (such as the USIs and the LSCs) provide arenas for EMELI teams to do their work. In return, the EMELI teams help the existing mathematics projects develop greater capacity to achieve important reform goals centered around the high priority of achieving greater equity.

- **Leadership development is the key need in the overall effort to promote equity. EMELI is first and foremost a program for the development and support of that kind of leadership.**

All reform projects require leadership. But because of the fundamentally personal nature of equity issues and the complexity and emotionality of systemic problems of inequity, the need for leadership that can promote equity is both greater and qualitatively different than the need for leadership in other areas of reform. There are several reasons that underlie our assertion that leadership development is the key need in the effort to promote equity.

First, we note that explicit discussion of the issues that underlie inequity – class bias, racial prejudice, sexism, and other biases – is practically taboo in education, and thus such discussion rarely happens among educators of diverse backgrounds. Thus, it takes individuals with exceptional commitment and personal strength to speak up, and persist in their efforts to generate, and then guide, such discussions. Second, to address equity issues constructively requires specific knowledge and special skills that are not routinely developed in discipline-based reform efforts. Hence, a mathematics educator may be good in promoting new modes of instruction in mathematics, or in teaching mathematics content; but that does not mean that they

1989). *Benchmarks for Science Literacy*. American Association for the Advancement of Science, Oxford University Press (New York: 1993).

have any skills at all in addressing the sources and issues of inequity in mathematics instruction and achievement. Third, most state, district and school administrators, as well as project leaders, simply do not have the experience, the skills, or the propensity to effectively identify and address issues of inequity within their settings. Fourth, and very importantly, most of the leadership in mathematics education is of European American ancestry, and at the highest levels – particularly in mathematics departments at colleges and universities – the leadership is composed of white males. Because of the lack of diversity in the existing leadership cadre, it is even more difficult for math education reform efforts to address issues of equity.

To generate leadership that is comfortable and skilled in handling equity issues, EMELI carefully identifies and recruits educators who are committed to equity *and* who hold positions of leadership in mathematics education reform. Just as mathematics education projects do not automatically address equity, it is also the case that the leadership necessary to do equity work also does not arise automatically. Instead, that leadership must be carefully developed, supported and encouraged. The EMELI project takes a long-term approach to doing this, both by providing them with knowledge, skills, and resources related to equity issues, but also by giving them opportunities to explore their own personal experiences and perspectives about racism, classism, and sexism. This development and support gives educational leaders the courage, skills, and structures that enable them to work on issues of inequity in very concrete ways within their own educational systems. Through our observations of the EMELI workshops, and by seeing the local work of EMELI participants, it has become very clear to us that very skilled and committed leadership development is the critical component required for reform efforts to work seriously and constructively on equity issues.

Further, we believe the EMELI work makes a strong case for the need to develop leaders who have a hybrid expertise. By that we mean they must know mathematics and mathematics education on the one hand, ***and additionally***, they must also deeply understand the personal, cultural and institutional roots of inequities. Neither mathematics educators nor equity specialists alone can successfully address the most pressing issues of inequity that are found in mathematics education today.

We conclude this finding by re-iterating that because inequities are systemic problems that are rooted in personal and cultural biases, very strong leadership by those who occupy positions of authority throughout the system and who are personally committed to equity is critical to solving problems of unequal opportunity and outcome. In particular, it is vitally important that educators of all ethnic backgrounds and both sexes work on equity issues, and that they work on them together in manifestly visible ways.

- **The support of an active diverse network is vital to the work of individuals and teams who seek to address equity issues. EMELI is, in fact, a national center that is capable of supporting hundreds of individual leaders – and teams of leaders. These individuals, who are themselves a very diverse group, share a both commitment to and a similar approach to addressing issues of inequity in education.**

EMELI makes it clear that those who seek to do leadership work in the area of equity require the ongoing support of a national network. Equity work is often emotionally demanding and always

complex. It is nearly impossible to do in isolation because inequities are so deeply ingrained in the system. Having the courage and developing the skill to directly address equity issues requires support and assistance of many kinds. Diversity is important because no one individual group is capable of understanding the complexity of the problems or of developing credibility with the communities.

Networks are one of the most powerful vehicles for change, yet functional and lasting networks are notoriously difficult to initiate and sustain.[7] EMELI has built an active national network of committed change agents who are diverse in all respects – in their personal racial/ethnic backgrounds and experiences, and in the positions they occupy in schools, district offices, universities and state departments of education. The national-level effort creates legitimacy for the local work, and provides inspiration and support for individual members and teams. Reciprocally, the work of local individuals and teams enriches and strengthens the larger national network.

The EMELI network and its leaders have gained national scope and stature. For the local EMELI teams, the national network has been a source of visibility and legitimacy in the sense that the local work was joined with and supported by a large-scale, national, and highly credible effort. The national EMELI network has created a "bigger picture" for the local work, and has added legitimacy to it.

The national EMELI project gathered books, articles, videos, and data-sets that served as the core materials for their leadership workshops. Local EMELI teams were able to draw from these for their own work, and they were also able to contribute new materials to the national fund of resources. The use of these materials in many different states and districts helped build common knowledge and experience on a sizable scale.

The Specific Contributions of EMELI

In this section we summarize the more specific ways in which EMELI is adding value to existing efforts to improve mathematics education. These findings reflect the design principles and qualities of EMELI that we described in Chapter 1, but they specify in more detail the ways in which EMELI is concretely helping mathematics education reform efforts work toward achieving the goal of greater equity.

[7] Ann Lieberman's research has been especially important in identifying characteristics that make networks effective and conditions that threaten their effectiveness. Lieberman, A., and Grolnick, M. Networks and reform in American education. *Teachers College Record (98)*1: 7-45 (1996).

- **EMELI has introduced specific new process and tools that actually help existing reform efforts address issues of inequity in mathematics.**

In education generally, there is a history of developing "technologies" for instruction – that is, specific processes and tools used for teaching. Such technologies include textbooks, tests, and discipline-specific pedagogical strategies such as cooperative learning or problem-solving in mathematics. With regard to the goal of equity, however, there are virtually no proven and shared processes and tools for doing the work of addressing the salient issues.

On the contrary, in each of the EMELI cases there is a previous history of efforts to address equity issues in which the only results seemed to be greater conflict, frustration, and even hopelessness. One African American EMELI leader in Colorado put it on a personal level: "Before EMELI I had made a conscious decision that I would not be on the front line again around issues of race, bias – ever. You get labeled, you get fanfared, your family takes a hit. It is not worth it. And you don't see any progress." A Phoenix EMELI leader, after years of observing open conflict and name-calling in district meetings, said: "We never thought we could come together to really talk about racism." In fact, one reason that the reform projects we studied welcomed EMELI was that those projects had not been able to make headway on equity issues by focusing primarily on reform in mathematics education.

EMELI gave its participants concrete processes and tools they could use in reliable but flexible ways to facilitate the real work of promoting greater equity. For example, EMELI provided educators with local data related to equity issues, and also modeled ways to use data as a grounded starting point for the examination of equity issues. EMELI also created norms and "ground rules" for personal interactions and for the use of resources that created safer environments in which educators of all backgrounds could examine the issues that underlie inequity.

EMELI has also created a small set of highly refined, replicable, and reliable "structures." The dyads, support groups and personal experience panels were tools that EMELI leaders used in many settings to facilitate the personal, inter-personal, and systemic work of examining equity issues. EMELI also generated a repertoire of larger professional development experiences – including workshops, retreats, and conferences designed for a range of audiences and purposes – that local leaders were able to adapt for local contexts.

Having good intentions and philosophical commitment are necessary, but not sufficient, for accomplishing the goals of promoting more equitable mathematics education programs. EMELI helped fulfill a need for concrete structures and well defined approaches for identifying and actually addressing issues of inequity within the context of broader educational reforms.

- **EMELI is in many ways a radical[8] approach to addressing equity, and yet it has achieved a viable model that works for many different leaders in many different situations. The EMELI project has been able to recruit and support many different teams of local leaders who have adopted EMELI approaches successfully in their own settings.**

The EMELI project has successfully recruited and worked with seven cohorts of leaders. This includes 255 participants and 46 teams from 15 states. It is, in itself, a significant accomplishment for EMELI, or any other program for that matter, to be able to recruit and work with so many highly placed individuals in such an intensive fashion over such long periods of time. Clearly EMELI has built a strong reputation for itself, and its participants are clearly devoted to the project and committed to the work of achieving greater equity for their students.

We conclude from the ability of EMELI to attract participants, from the low rate of turnover of those participants, and from the allegiance of the EMELI alumni that the program is very successful in its leadership development efforts. We also conclude that even though the personal and even therapeutic approach of EMELI is many ways a radical approach to addressing equity, it has worked for many different individuals and, as our cases show, has served very different communities in very different ways.

- **EMELI has empowered people to work at all levels of the educational system.**

The three cases we present in this monograph illustrate the types of the equity work that local EMELI leaders engage in. And, for most, the tasks they carry out are tasks that they were not able to do before EMELI.

This new work has taken place at a state level, through the creation of new policies that are intelligent about and responsive to issues of equity. It has taken place in districts, through changes in personnel policy, changes in selection criteria for mathematics adoptions, new requirements for professional development of teachers and administrators, and changes in mathematics placement instruments and course offerings. It has taken place in classrooms, where teachers challenge their expectations, experiment with new teaching approaches, or invite students to use the EMELI structures to construct understanding of mathematics or equity issues. The work of EMELI has also taken place in university classrooms, through changes in undergraduate mathematics courses and in the courses offered to prospective teachers. It has taken place in schools, through changes in the ways meetings with parents are run, in the assignment of teachers to classrooms, and in informal conversations between two teachers in a hallway.

[8] By "radical" we mean here the fundamental meaning of the word which involves getting at the "root" of things.

- **EMELI has helped local district administrators, principals and teachers play a more active role in identifying, raising and addressing equity issues within their own districts and schools.**

District and school-level educators who were EMELI participants were able, within their spheres of influence, to exercise new leadership that influenced many people working within their districts. The importance of enhanced district leadership stands out especially in the case of Juneau, where there was no NSF-funded reform initiative. The Phoenix EMELI teams included many administrators from both the elementary and high school districts. The knowledge, skills, and moral support they gained from EMELI enabled them to address equity issues in ways that, for the first time, gave them some hope that they could begin to make a real difference. The Colorado case also presents important illustrations of leadership work carried out by district administrators – many of whom felt for the first time that they had the tools, the legitimacy, and the personal courage to influence policy and practice vis-à-vis equity.

Similarly, individual teachers who participated in EMELI became able to exercise leadership in new ways – first, by changing their own classroom practices, and then by designing and offering professional development workshops for their colleagues. Equally important, they worked in more subtle ways, by "standing up" to inequities they observed in their schools and districts.

- **EMELI was able to raise the priority of equity issues within existing externally-funded mathematics education reform projects.**

EMELI members who held positions of leadership within existing reform projects were able to re-focus those projects on the issues that underlie inequity. They did this by providing professional development to other local reform leaders and by initiating new activities that infused a focus on equity across all the work of the project. The Colorado case, for example, provides multiple examples of the ways in which EMELI enhanced and changed the course of leadership within the Colorado Partnership and CONNECT, the State Systemic Initiative. Likewise, the Phoenix case illustrates how the work of the EMELI team (which comprised several reform project leaders) led to a fundamental shift in the assumptions and specific reform tactics of the Phoenix Urban Systemic Initiative.

More generally, EMELI has helped to keep equity issues "on the front burner" in the projects and schools and districts it worked with. Because of the complexity and often emotional nature of equity work, it is easy for districts to let equity issues slip into the background even while they acknowledge that the equity goals remain important. These cases show that EMELI teams can help keep attention focused directly and persistently on equity issues. The Phoenix case, in particular, shows how the team was able to shift the perspective of key local leaders so that equity became a "lens" through which all could think differently about professional development and curriculum related to mathematics.

Finally, we note that EMELI in a way switches the "horse and cart" of reform. EMELI puts equity issues at the center and clearly in the foreground; the project then explores the ways in which the policies and practices of mathematics education need to evolve to address the key

identified equity issues. Almost all other mathematics education reform efforts focus first on the nature of the instructional reforms desired, and then, almost as an afterthought, asks about the issue of equity. The work of EMELI represents a clear complementary, if not alternative, approach to achieving the goals of the mathematics education reform.

- **EMELI has helped to build a diverse group of leaders across the nation who are now able to work together to improve mathematics education for all.**

All three of our cases show the ways in which EMELI literally changed the face of leadership, first by bringing together educators of different racial groups who could jointly take the lead in addressing equity issues, and second, by purposefully drawing more teachers of color into positions of influence. These latter contributions of EMELI to educational leadership are extremely important because of the subtle but pervasive phenomenon of mistrust among educators of different racial and ethnic backgrounds.

Final Reflections and Summary

Our observations of the work of mathematics education reform projects before EMELI, and of their work with EMELI, substantiates the idea that equity in mathematics education does not happen "by itself." Nor will greater equity result solely through projects that have their focus only on improved mathematics education. We argue that greater equity in mathematics education will come about only through explicit attention and careful "engineering." A focus on mathematics education reform, on its own, does not necessarily enable educators to address equity, even when equity is the goal. In fact, attempts to address issues such as tracking, without careful structure and guidance, can generate even greater conflict among local educators of different ethnic backgrounds and views. EMELI has demonstrated that the knowledge, skills, and reform processes and tools for addressing equity issues are different from those involved with mathematics education reform *per se*. But, also, it is important to note that there is a potential synergy between math education reform and broader equity work. Because mathematics is such a crucial subject, a powerful filter for students, and because math education reform efforts are prominent, it is clear that this reform can serve as an educationally significant, highly visible, and concrete context in which to address equity issues.

EMELI has been able to develop and support a national group of leaders committed to equity in mathematics education reform. These leaders are to be found at all levels of the system. EMELI has given greater visibility to the leadership of those educators already committed to and working for equity, has helped to develop new "equity leaders" by offering knowledge and skills to people already in positions of power and influence. And we note again, that the EMELI network is perhaps unique in its diverseness, bringing together educational leaders across all racial and ethnic backgrounds, and generating greater leadership opportunity for more teachers of color.

We conclude our summary and reflections by saying that it is clear to us that most current mathematics (and science) reform projects need a lot of help in the area of equity. They need

new perspectives, leadership, knowledge, material resources and professional development approaches if they are to seriously and directly address issues of inequity. And we believe the key to this help lies in efforts like EMELI. What is needed, we would argue, is sustained long-term investment in projects that can build the capacity of those educators who are in positions of influence. A system of supports needs to be created for those individuals who have both the commitment and expertise to address inequities within their own settings. EMELI has proven to be a good example of a project that is doing exactly that kind of work.