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Leadership Institute for Teachers (LIFT)

Background

Our research focuses on university/public school partnerships to develop effective mathematics programs for all students. Through National Science Foundation funding, New Mexico State University (NMSU) has engaged in the Gadsden Mathematics Initiative (GMI), Scaling up Mathematics Achievement (SUMA) and currently the Leadership Institute for Teachers. Through our research efforts, we better understand what it takes to build viable sustainable learning systems and how to support English language learners in mathematics achievement.

The MC^2-LIFT project is a five-year research partnership between New Mexico State University (NMSU) and five southern New Mexico school districts. Mathematicians, education faculty, and school leaders collaboratively design the MC^2-LIFT project. Each LIFT cohort comprises about 30 mathematics teacher leaders who develop their knowledge and understanding of K–12 mathematics and the leadership skills for improving teaching and learning.

The goals of the project are to:

- Increase teacher leaders' knowledge of K–12 mathematics and expand and enrich pedagogical practices through blended courses that are team taught by mathematicians and math educators.
- Develop intellectual leaders who understand what students should learn and who can differentiate instruction in their own classrooms and support other teachers to meet the needs of diverse learners.
- Implement LIFT Institute Learning in their classrooms and schools with mentoring from the School Support Team.
- Build and sustain viable partnerships between mathematicians, education faculty, and school districts.

MC^2-LIFT provides participating teachers and math coaches with two years of coursework involving intensive summer study, as well as a follow-up academic-year program that includes application of their learning in their school or district settings. Each semester and during the summer, pairs of courses are designed and team taught by NMSU mathematicians and educators, blending mathematical concepts with knowledge and skills in pedagogy and leadership. Cohort members work together for two years and have the opportunity to earn a Master of Arts degree in teaching mathematics. Teacher leaders come from elementary, middle, and high schools or serve as math coaches in a school district.

The cohort members, as teacher leaders in the LIFT program, gain a new lens for learning mathematics by studying how concepts progress through the K–12 continuum, connecting within and across grade levels in the LIFT institutes. They are developing a deeper understanding of mathematical concepts through engaging in rigorous math tasks to strengthen mathematical thinking and reasoning, sense making, communication, and math connections in the LIFT program. Then, by developing a range of models and strategies to represent mathematical ideas, teacher leaders support other teachers at their respective schools to differentiate their instruction and to meet the needs of diverse learners in their classrooms. The LIFT coursework is developed from the premise that effective mathematics teaching requires a deep understanding of mathematics, pedagogy, and pedagogical content knowledge to advance K–12 students' learning and achievement.

Principals also engage in professional learning during MC^2-LIFT courses for gaining an understanding of how to foster a collaborative culture for teaching and learning mathematics on their campus. Principals and teacher leaders are developing a shared vision for the teacher leaders' roles in their classrooms, schools, or districts, communicating expectations for professional learning among school staff and

gauging the progress that their schools are making toward student learning goals. The LIFT School Support Team helps to connect the university institute experiences to the school site and classroom. LIFT utilizes these school-based team structures for supporting professional learning throughout the year. The School Support Team provides onsite ongoing mentoring for teacher leaders and utilizes extensive feedback in shaping support at the campus, connecting research and practice, and informing course development.

Documented Results

The Gadsden Mathematics Initiative helped us to understand essential components of a dynamic district model for significantly improving mathematics achievement for all students. As a result of the GMI, these key components were integrated into a building-capacity model for mathematics teaching and learning. The model was subsequently implemented through a partnership between NMSU and a school district in the desert southwest. The SUMA research project focused on the ways in which the systemic model should be modified to ensure its effectiveness in a large urban district with relatively high numbers of English language learners. The project also examined which components of the model had the greatest effect on student achievement. The results of this research project contribute to a broader understanding of systemic mathematics reform in five specific areas: (1) how to build the capacity of the district system-wide, (2) the importance and nature of professional development, (3) the effective use of data to drive improvements in student achievement, (4) instrumentation to document classroom learning environments, and (5) developing viable partnerships.

The lessons learned in the SUMA research are applied in the LIFT. The MC^2-LIFT program has designed unique graduate coursework and mentored K–12 teachers using a variety of models, including peer observations and lesson-study. Through these methods, teachers have been able to modify their teaching methods and practices to improve their own effectiveness as educators, which have increased student academic achievement.

At Monte Vista Elementary in Las Cruces, it has become evident that collaborating with teachers at the school level and providing an in-depth understanding of mathematical concepts can effectively support student learning. Monte Vista Elementary achieved a grade of "A" for two consecutive years on the state report card, but more importantly the students are engaged and excelling in mathematics. The multicultural educators presenting in the workshop will share methods that are implemented both in their classrooms as well as school-wide, to support all students' achievement in mathematics particularly English language learners.

For More Information

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