Project Overview

MC2 -LIFT is a new project designed by mathematicians, education faculty and school district leaders in order to develop a cadre of 60 teacher leaders who will have a deep conceptual knowledge of K-12 mathematics, as well as the knowledge, skills and dispositions to facilitate growth in mathematics teaching and learning environments in schools or districts.

The goals of the project are to:

* Increase Teacher Leaders' Knowledge of K-12 Mathematics;
* Expand and Enrich Pedagogical Practices;
* Develop Intellectual Leaders;
* Implement Institute Learning in School Environments; and
* Sustain Partnerships between Mathematicians, Education Faculty and Districts

MC2 -LIFT provides participating teachers with a two-year cycle of professional development involving intensive summer study as well as an academic year program that includes application of their learning in school or district settings. Courses are designed and team taught by an NMSU mathematician and an educator, blending mathematical concepts with knowledge and skills in pedagogy and leadership.

Through involvement in the MC2 -LIFT project, the graduate program in mathematics education at NMSU is undergoing institutional change to include integrated coursework and application of learning in partner schools, with mathematics and education faculty collaborating to improve coursework for pre-service undergraduate teachers and develop a new graduate program to develop teacher leaders in mathematics.

Teacher Leader Candidates:

- Commit to a 2-Year Institute that leads to K-12 Mathematics Coach Certificate and a Master of Arts in Teaching.
- Participate in 3-Week Summer Institutes annually for two years (6 credit hours/ summer).
- Participate in four semesters of integrated education and mathematics coursework. Classes meet every other Saturday during the fall and spring semesters. (6 credit hours per semester)
- Implement learning from institute in school setting and agree to be coached and observed by MC^2 faculty and researchers.
- Partner with school principals to develop and implement plans for school mathematics improvement.
- Receive up to $20,000 stipend ($10,000 annually) for efforts beyond duties as a teacher. Teachers are responsible for payment of course tuition.

NM STATE UNIVERSITY

MC^2 – LIFT

Mathematically Connected Communities - Leadership Institute For Teachers

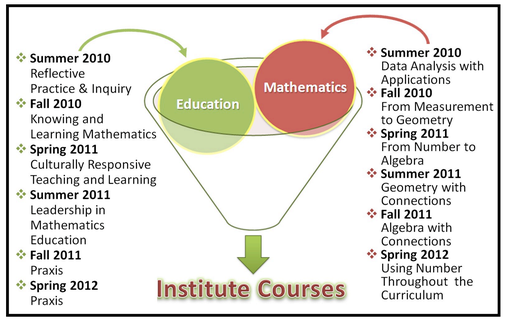
Project Research Questions:

1A. How do teachers change as a result of participation in the institute in relation to the following areas:
   a. knowledge of k-12 mathematics
   b. pedagogical practices
   c. leadership in their schools and districts
   d. problem solving
   e. Attitudes

1B. What is the affect of these changes on student learning and achievement.

2. How is the institute developed and enacted and what can be learned from the implementation of this institute that can be helpful to the larger field of mathematics education for teachers?
   a. How are the courses developed by education and mathematician partners?
   b. How does the course development team evaluate the success of their courses?
   c. How is the coursework applied to fieldwork in partner schools?

Institute Courses:



Benefits to Teachers:

- Deepen knowledge of K-12 mathematics content and develop an understanding of the connections of progression of mathematics concepts from elementary through high school.
- Expand and enrich pedagogical practices to develop a large repertoire of classroom management and teaching strategies which result in developing a "Standards Based Learning Environment".
- Increase students mathematics achievement and narrow gaps between subgroups.
- Serve as a leader among colleagues and able to build collaborative professional relationships.

Benefits to Schools and Kids:

- Highly engaged teachers who are continuously improving their mathematics instruction
- Active, problem-solving based math classrooms
- Teachers who are continually assessing students understanding of mathematics and differentiating instruction to support their learning styles
- Collaboration among teachers to make sense of student achievement data, diagnose strengths and weaknesses in the school's teaching of mathematics, and take actions steps that lead to increased student learning
- Teachers who are able to nurture and develop students' passion for mathematics

Principal Commitments:

- Attend Five-days of Math Institute for Principles (includes up to $1000 stipend for non-contract time.)
- Participate in monthly partnership planning meetings with Teacher Leader and MC^2 Field Mentor.
- Develop agreements with Teacher Leader candidates to develop and implement a school based plan for mathematics improvement.

Project Challenges:

◊ Teachers learning mathematics in K-12 groups. This is a strength of our grant, but also a challenge. How are we going to make this work effectively?

◊ Weaving the mathematics and pedagogy together effectively in our courses.

◊ Weaving together the course content with classroom practice.

◊ Making this a school and district effort, rather than just an individual teacher effort.

Questions:

1) How do other projects weave the coursework together with classroom practice? How do they give assignments and design assessments that are really meaningful in terms of classroom practice?

2) Are there other projects that have high school teachers and elementary teachers learning from each other? What challenges have they faced in making that work?

3) What mathematical content are other projects focusing on for their teacher leaders? How are they choosing content that builds deep mathematical understanding for teachers, and at the same time is relevant to children's classroom learning? Is anyone else focusing on conceptual vertical alignment?