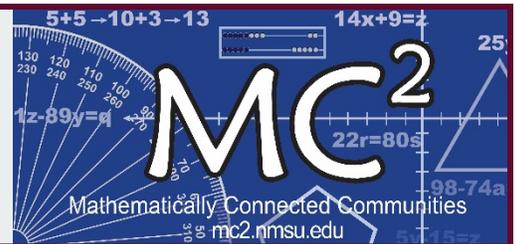


MC² Research and Impact 2015-2016 Executive Summary

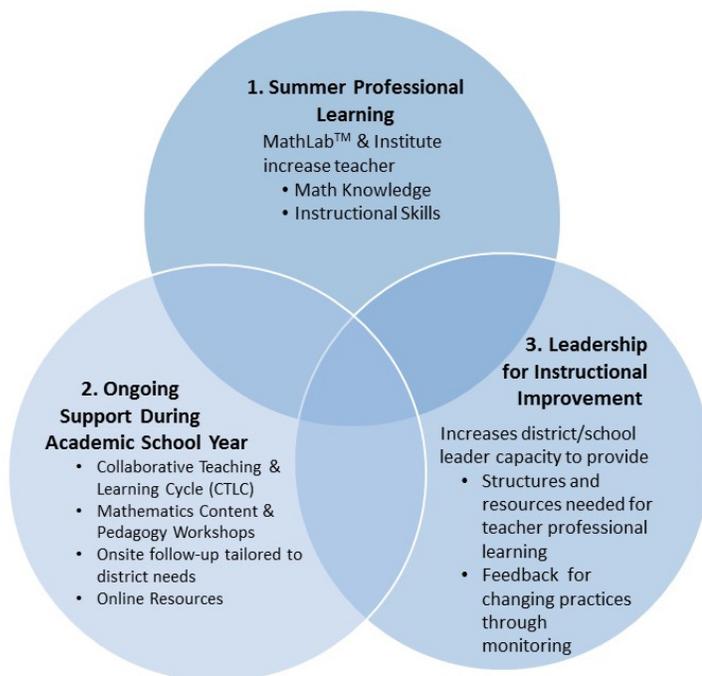


RESEARCH QUESTION

How does the enactment of the *Mathematically Connected Communities (MC²) Capacity-Building Model* impact changes in teacher practice and student achievement?

Data Collection and Analysis

MC² uses various types of data to plan, assess, and evaluate professional learning. Data from the following sources are collected, analyzed, and shared with MC² staff responsible for planning and implementing the *MC² Capacity-Building Model*. These data inform the design and delivery of future professional learning that will have greater impact on classrooms, schools, and districts.



MC² Capacity-Building Model

The following methods are used to evaluate **participant reactions**.

- **MathLab™ Participant Evaluation:** Reflects initial satisfaction/usefulness of professional learning.
- **Math Institute Participant Evaluation:** Reflects participant perceived understanding of math content and how to best promote deep mathematical understanding in their students.
- **Collaborative Teaching and Learning Cycle (CTLC) Feedback Form:** Reflects what transpires during planning, enactment, and review of specific teacher lessons, usefulness of CTLC process, and any challenges encountered.
- **Group Professional Learning Evaluation Form:** Reflects professional learning outside of CTLC consisting of a Likert-scale evaluation on professional learning objectives and participant-generated statements regarding their planned action steps.

The following methods are used to evaluate **participant learning**.

- **MathLab™ Participant Pre-/Post-Assessments:** Developed by partner mathematicians and MC² staff, the same assessment is used as a pre-and post- to determine change in participant's pedagogical math content knowledge during this week-long MC² summer professional learning opportunity.

- **Math Institute Participant Post-Assessments:** The same **MathLab™** post-assessment is used to determine change in participant’s pedagogical math content knowledge as the result of attending this additional week-long MC² summer professional learning opportunity.

The following methods are used to evaluate **organizational support and change.**

- **MC² Mathematics Education Specialists Reflection of Practice:** Three times yearly, Education Specialists report evidence of the influence or impact of professional learning at the school sites. These reflections are then analyzed by the MC² Research Team through the lens of the *MC² Capacity-Building Model*.
- **Administrator Surveys:** In spring, partner districts administrators complete an online survey regarding the impact MC² is having on teacher practices and professional learning at their schools.

“It seemed like more than ever the message about how important it is to develop conceptual knowledge in math has been received well by teachers.”

– Los Lunas Administrator

The following methods are used to evaluate **participant use of new knowledge and skills.**

- **Observation of Learning Environments (OLE2) Instrument:** Documents changes in teaching practice, student behaviors, and interactions with the mathematics learning environment. Determines if what is shared in professional learning sessions is reflected in what is happening in classrooms.
- **Teacher Focus Groups:** Teachers who participated in **MathLab™** and ongoing, follow-up professional learning discuss the impact this is having in their daily teaching practice. Discussion includes challenges and successes in implementation, their perceptions about MC², and future needs.

The following methods are used to evaluate **student learning outcomes.**

- **Matched Comparison Evaluation:** MC² External Evaluation, Center for Education Policy Research (CEPR) compares previous and current state assessment student scores to determine if students of teachers participating in MC² professional development score higher on PARCC than a group of students of teachers who do not attend.
- **Partnership for Assessment of Readiness for College and Careers (PARCC) District Results:** MC² Research Team examines assessment results to identify student achievement trends by analyzing scores and strengths/weaknesses in student learning.
- **School Accountability Report Cards:** Determine school ratings based on PARCC, End-of-Course Exam results, and other data collected by New Mexico Public Education Department. Report is used as District Leadership Teams reflection and to inform school action plans in improving student math learning.

2015-2016 Impact

MC² At a Glance

	2015-2016
New Mexico Partner Districts	20
New Mexico Educators Impacted	1,064
Students Impacted	~ 32,000
Summer 2015 MathLab™	
Regional Locations	Artesia, Española, Gallup, Las Cruces, Los Lunas, Roswell
Teacher Participants	349
Students Participants	303
Summer 2015 Leadership Academies	
Regional Locations	Artesia, Española, Las Cruces, Los Lunas, Roswell
District/School Leader Participants	68
Summer 2015 Math Institute	
Statewide Location	Las Cruces
Participants	71
Ongoing Support During School Year	
Teacher Leader Cadre Members	42
Content Workshop Attendees	165
CTLC Participants	331
Webinar Total Views	473

Improved Student Achievement:

Data for 2015-2016 is pending; however, Center for Education Policy Research (CEPR) at University of New Mexico findings for 2014-2015 showed:

- Significant gains in math scores comparing 2014 data to 2015 data for MC² vs non-MC² classrooms using an unbiased "nearest neighbor" comparison group. The researchers found that students in classrooms of teachers who participated in 2014 MC² summer institutes performed better than the matched comparison group in terms of mathematics achievement gains from 2014 to 2015 on standardized state tests.
- Significant rise in PARCC student math scores was tied to more MC² teacher follow-up professional learning.

Improved Student Outcome:

- Teachers reported significant impact on short-cycle assessments, student discourse/engagement, and student enthusiasm about mathematics.
- Students were most proficient talking with each other about the math and using appropriate mathematics vocabulary.



Enhanced Teacher Professional Learning:

- Collaborative development of action plans addressed current district needs, resources, and initiatives. Professional learning was customized based on district, school/grade-level needs.
- Collaborative Teaching and Learning Cycle

(CTLC) was a flexible process for addressing teacher-specific learning needs in authentic classroom settings.

- Teacher Leader Cadre increased collaboration in designing and implementing professional learning not only within schools/districts but among and across the state.
- Teachers participating in CTLC showed positive, productive dispositions about mathematics teaching and learning.

Enhanced Pedagogical Skills:

- Teachers implemented high-yield strategies in their classrooms:
 - Class/Group norms
 - Productive Struggle (allows students to make sense of mathematics as a necessary component of learning and understanding)
 - Purposeful Questioning
 - Number Talks (instructional process for building number sense and confidence with mathematical operations)
 - Math Talk Moves (strategies for facilitating math discussions)
 - Sentence Starters/Frames
 - Anchor Charts (posted visible support for just-in-time learning that includes only the essential information)
 - Student Discourse/Interaction
 - Launch/Explore/Summarize (lesson planning process)
- Teachers increased their strategies to differentiate instruction for diverse student needs (i.e., English Learners, Students with Disabilities, and/or Gifted and Talented students).
- Teachers were most proficient:
 - Sharing/maintaining lesson learning goals/targets with students.
 - Supporting students making sense of the math by using student work and communication of ideas.