CGA-CPO, LANL Math and Science Academy (MSA) – Program Model

**LANL Resources**
- MSA Staff
- LANL Community Programs Office (CPO)
- Community and Government Affairs (CGA)
- LANS

**Regional, State, and National Partners**
- New Mexico Consortium
- University of New Mexico (UNM)
- Bureau of Indian Education (BIE)
- Northern NM College
- Bradbury Science Museum
- WestED
- LANL Foundation
- Inquiry Science Education Consortium (ISEC)
- LASER I3

**Short Term Outcomes**

**Enhanced Teacher Pedagogical and Content Knowledge**
- Teachers develop a deep foundation of usable knowledge and skills by demonstrating growth in a combination of the following areas:
  - Standards-based Education
  - Effective Instruction and content specific pedagogy
  - Math and science content knowledge
  - Assessment practices for student learning
  - Brain-based learning
  - Student engagement and classroom management
  - Math and science writing
  - Common Core Math Standards
  - Next Generation Science Standards
  - A collaborative culture

**Long Term Outcomes**

**Effective Learning Experiences**
- Teachers use research-based instructional practices, materials, and assessments so that each student:
  - Reveals preconceptions, initial reasoning, and beliefs
  - Is intellectually engaged
  - Uses evidence to generate explanations
  - Communicates and critiques mathematical and scientific ideas and the ideas of others
  - Makes sense of learning experience and draws appropriate understandings
  - Makes connections between new and existing math and science concepts by understanding and organizing facts and information in new ways.
  - Reflects on how personal understanding has changed over time and recognizes cognitive processes that lead to changes.

**Improve School-Based Policies and Practices**
- School leaders implement policies and practices that support research-based math and science instruction and a collaborative culture of shared responsibility for student learning. Examples include: Professional Learning Communities, ongoing professional development, and peer observation and coaching models.

**Increased STEM Participation in STEM**
- Increased student participation and success in rigorous STEM courses K-12

**Improving Student Learning & Achievement**

**Resources**

**Concrete Activity**

**Core MSA Program – 3 Years**
- Intensive Summer Institute
  - 2 weeks of research-based instruction
  - 1 week Science-Citement or Math-Citement
  - Coaching 2-3 sessions/semester
  - After school team meetings 8hrs./sem.
  - Video reflection and presentation 2x/yr.
  - MSA days 2x/yr.

**Instructional Coaching and PLC Support**
- Includes complete coaching cycles, video review, and modeling throughout school year
- Ongoing PLC support and PD based on student learning needs

**l-Rational Number Institute (Math PD)**
- Math content 6 Saturdays per school year
- UNM collaboration

**Science Professional Development**
- Kit and Content Training
  - Fundamentals of inquiry, effective instruction

**Math and Science Writing PD**
- Communication, concept development, and classroom modeling
- Science Notebooking

**UNM/BIE Partnership**
- Masters degree in Educational Leadership with a math and Native American focus
- Educational Leadership Doctorate

**Develop Robust Partnerships**
- Foster coherence among partners
- Team with partner organizations to provide high quality professional development

**Increased STEM Pursuits**
- Increase the number of students who seek further study in: STEM content, STEM careers

**Improved Student Learning**
- Participate in STEM
- Improved School-Based Leadership
- Improved School-Based Policies and Practices
- Improved Learning

**Impacts**