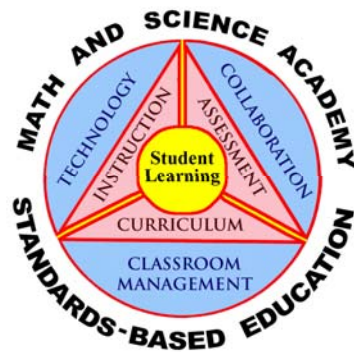


# *Math and Science Academy*

Presentation to  
Math and Science Bureau Advisory Council



**Carol Brown, Lorenzo Gonzales, Melissa Salazar,  
and Zachary Leonard**

Los Alamos National Laboratory  
Math and Science Academy  
September 18, 2009

# MSA Educational Partnerships

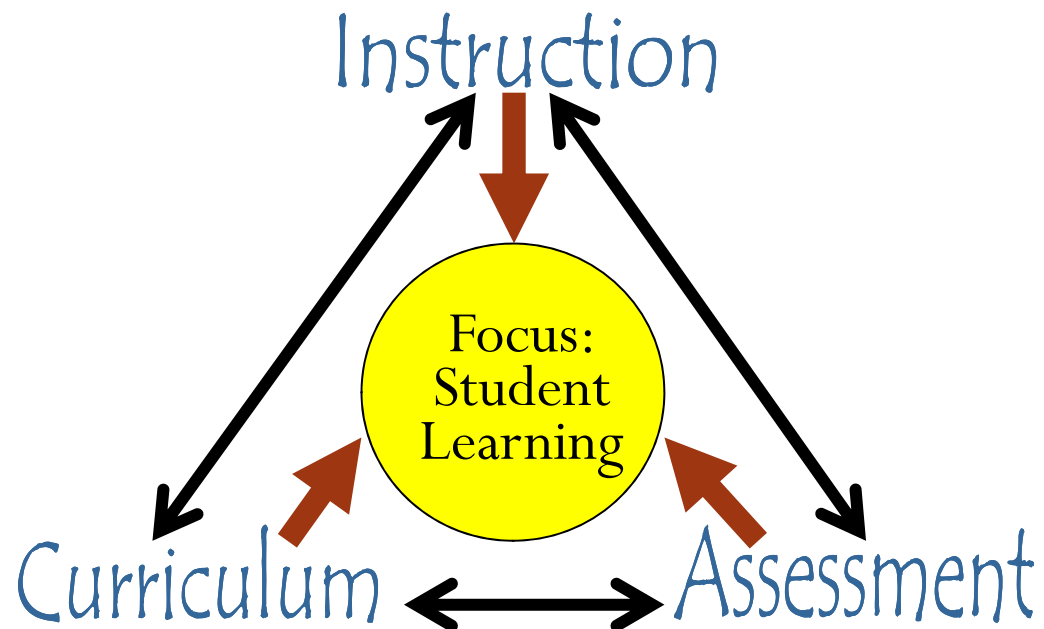
- Original School Districts 2000-2007:
  - **Chama Valley Schools, Española Public Schools, Mora Independent Schools, Pojoaque Valley Schools, and Taos Municipal Schools**
- Española Public Schools ME2
  - 2007-Present
- New Mexico State University
  - Mathematically Connected Communities
    - Drs. Karen Wiburg, Cathy Kinzer, and Ms. Wanda Guzman
- Dr. Rick Kitchen, UNM Professor Math Department and College of Education

# MSA Fiscal Partnerships

- Math and Science Bureau, Public Education Department
- New Mexico Legislature and Senator Richard Martinez, Representative Nick Salazar, Representative Debbie Rodela, Representative Jeannette Wallace
- LANL Foundation
- Northern New Mexico College
- Española Public Schools
- Chevron Corporation
- IBM, Microsoft and Efinity Networks
- Los Alamos National Security LLC (LANS)

# Standards-Based Education

**How** will students learn? What experiences, activities, practice will help them learn?



**What** will students be learning?  
Curriculum should be developed from NM Standards.

**How** will a teacher know whether or not a student is learning? **How** will students show what they are learning? Formative/Summative Assessments.

# The MSA Core Programs and Framework

- MSA Summer Institutes (68) – June-July
  - K-12, Two-Week Sessions
- Principals' Summer Institute (11) – June
  - K-8, Two-week Session
- MathCitement (84) – June-July
  - K-5<sup>th</sup> and 6<sup>th</sup>-8<sup>th</sup>, One-week Session
  - 9<sup>th</sup> – 12<sup>th</sup> One-week South Valley Academy
- MSA Days (All MSA Teachers) – December and May
- Classroom Follow-up during School Year
  - All MSA teachers and non-MSA teachers of Mathematics
- Reform Curricula
  - Investigations (K–5<sup>th</sup>)
  - Connected Math Project (6<sup>th</sup> – 8<sup>th</sup>)
  - Integrated Math Project/Traditional (9<sup>th</sup> –12<sup>th</sup>)

# 2008-2009 Participant Summary

- 1<sup>st</sup> Year MSA Participants (23)
- 2<sup>nd</sup> Year MSA participants (20)
- 3<sup>rd</sup> Year MSA participants (25)
- Inquiry Science Institute participants (9)
- MathCitement (Non-MSA) participants (12)
- Replication Model participants (4)
- Laptop Initiative (39)

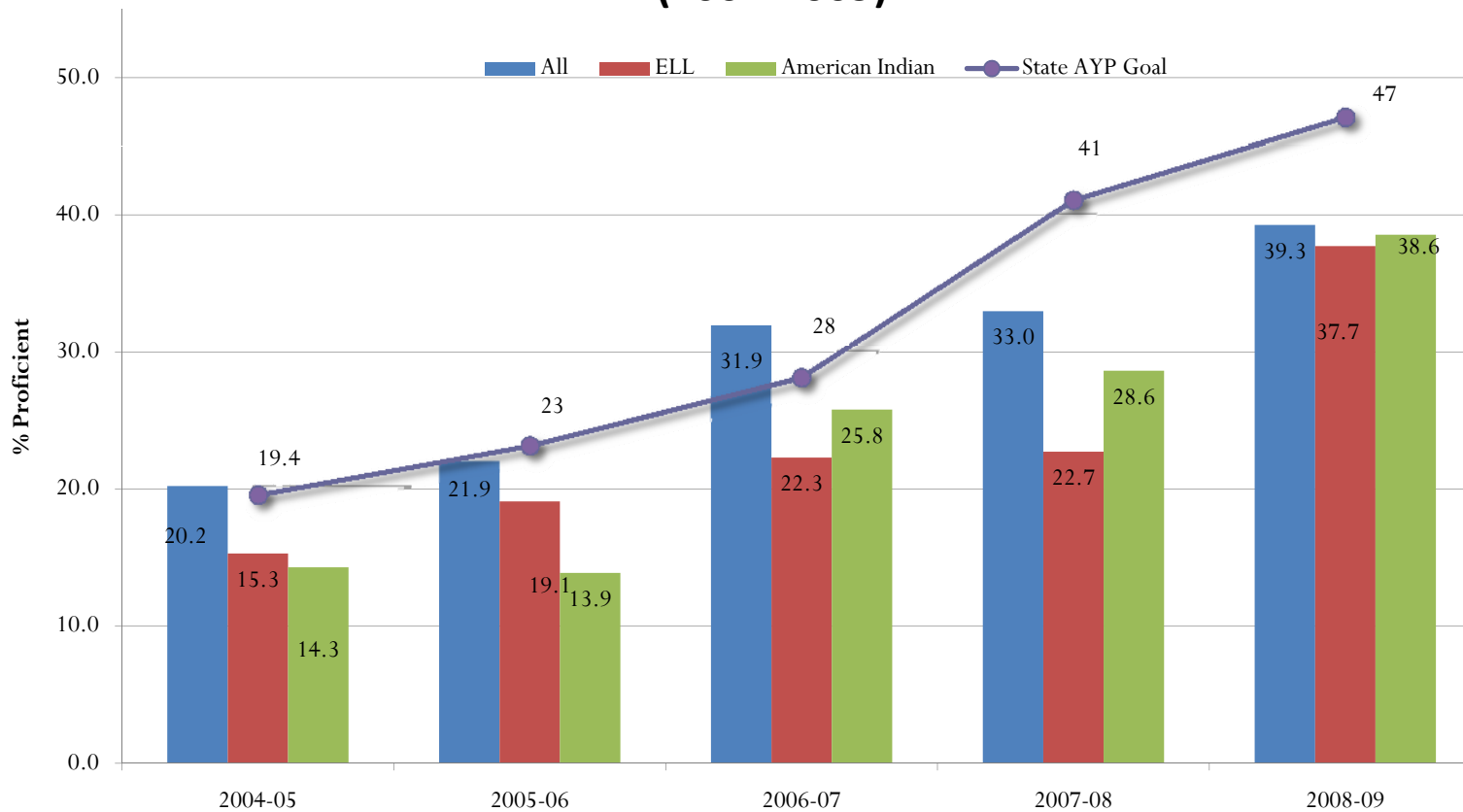
# Supporting and Contributing Programs

- NMSU/MSA Masters Program (48 Graduates/ 14 Candidates)
- Ir-Rational Number Institutes (Dr. Rick Kitchen)
  - 2009 *Rational and Irrational Number Systems* (30)
  - 2009-2010 *Algebra as Generalized Arithmetic* (38)
- Math Assessment Project and Videos (Dr. Rick Kitchen)
  - 3 MSA Teachers and 9 Students
- MSA Science Inquiry Initiative Pilot Program
  - 3 MSA Districts and 9 Participants
- MSA/Española Public Schools Principals Institute (11)

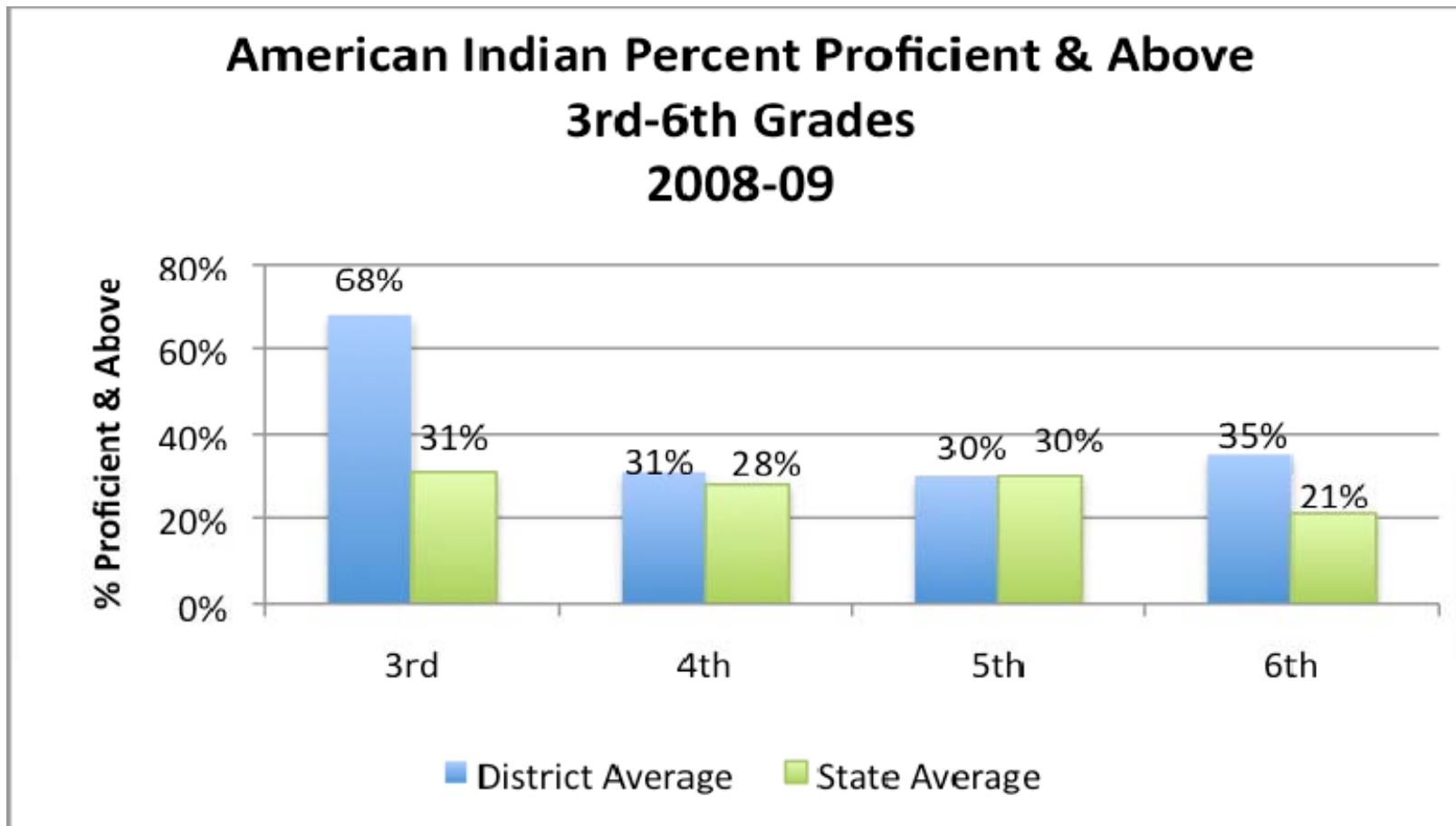
# MSA/NMSU/EPS

## Math Excellence In Española

### Española Public Schools 3<sup>rd</sup>-6<sup>th</sup> Grade Math % Proficient (2004-2009)

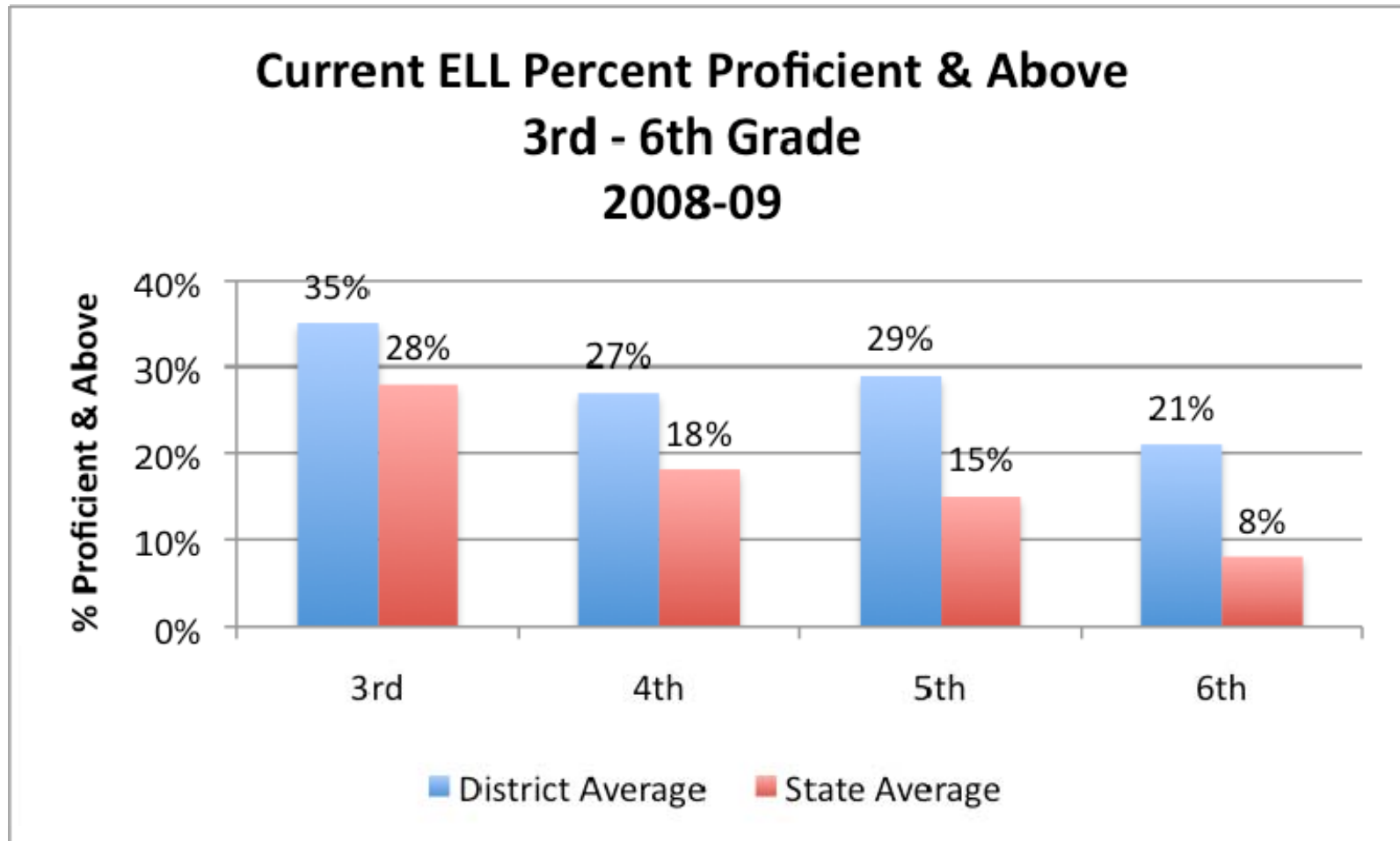


# MSA/NMSU/EPS Math Excellence In Española

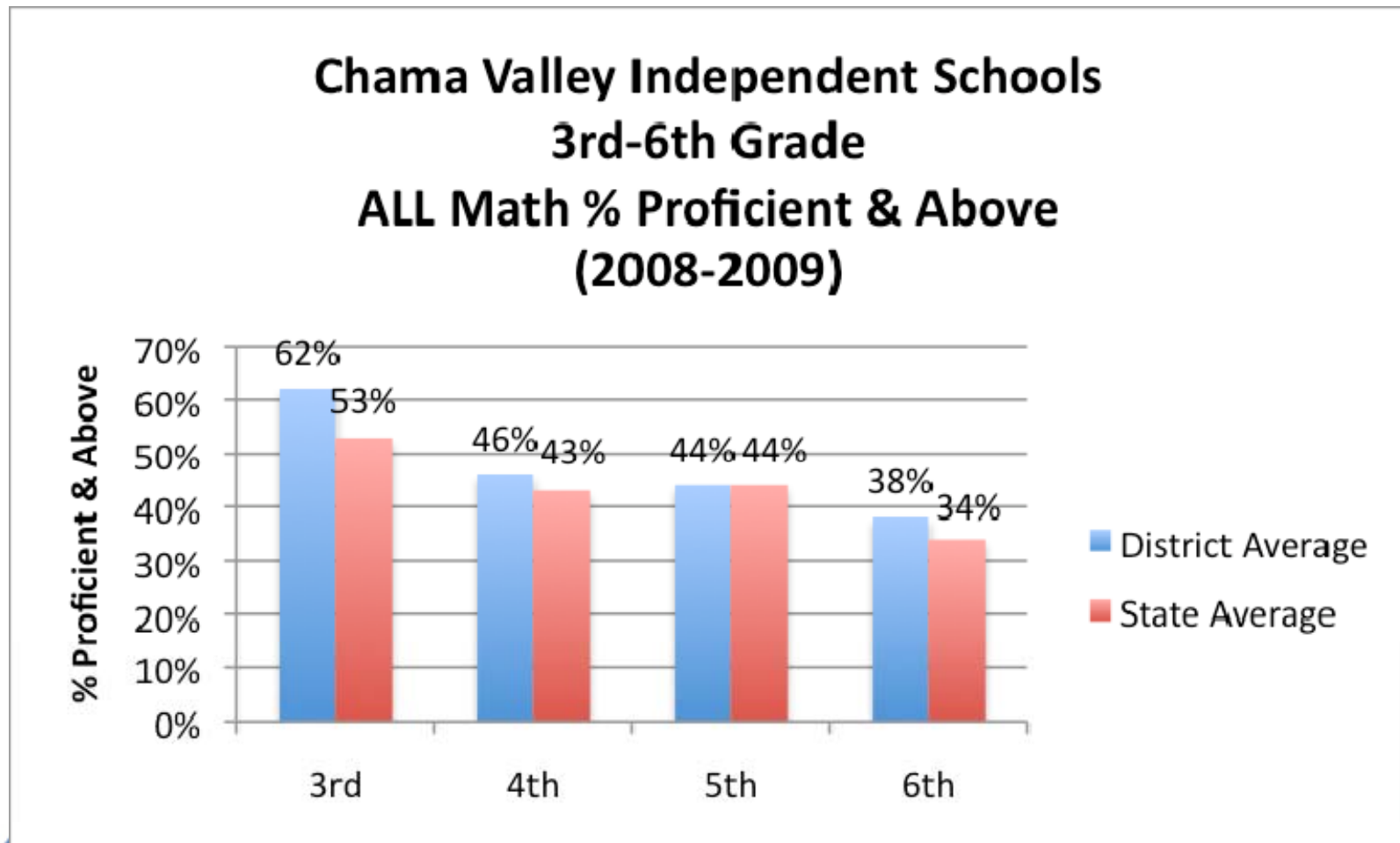


# MSA/NMSU/EPS

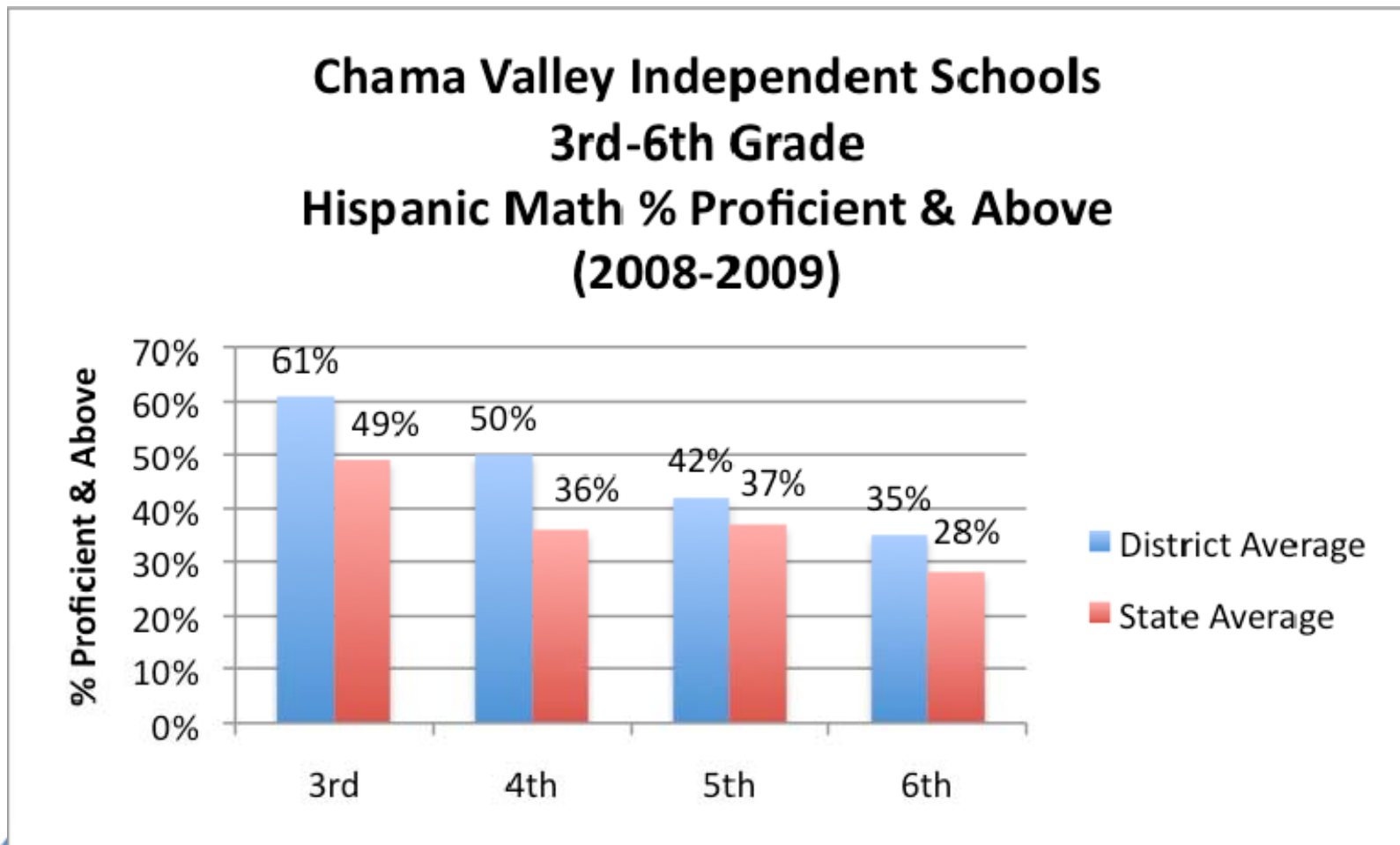
## Math Excellence In Española



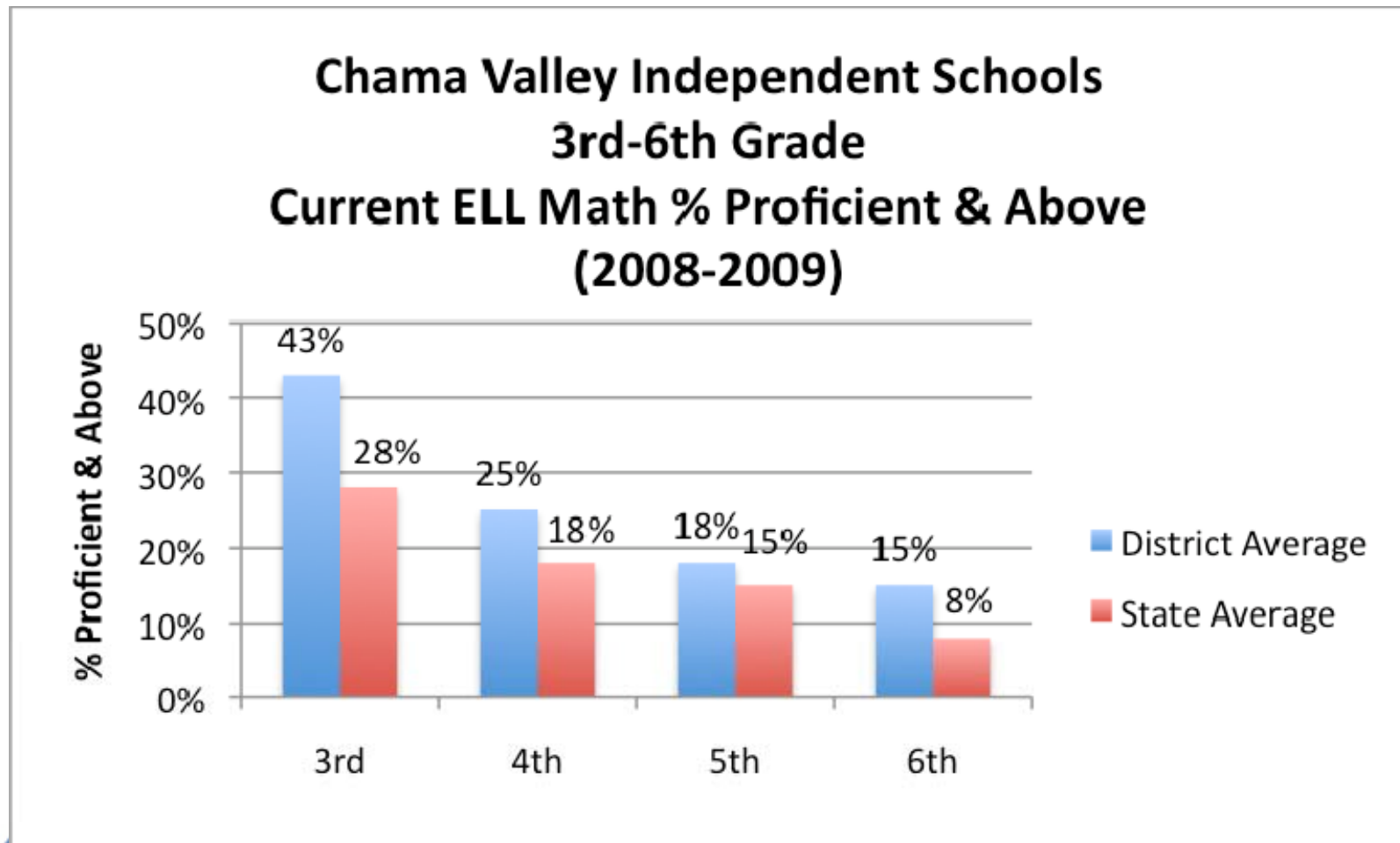
# Chama Valley Independent Schools vs. State % Proficient & Above



# Chama Valley Independent Schools vs State % Proficient & Above



# Chama Valley Independent Schools vs State % Proficient & Above





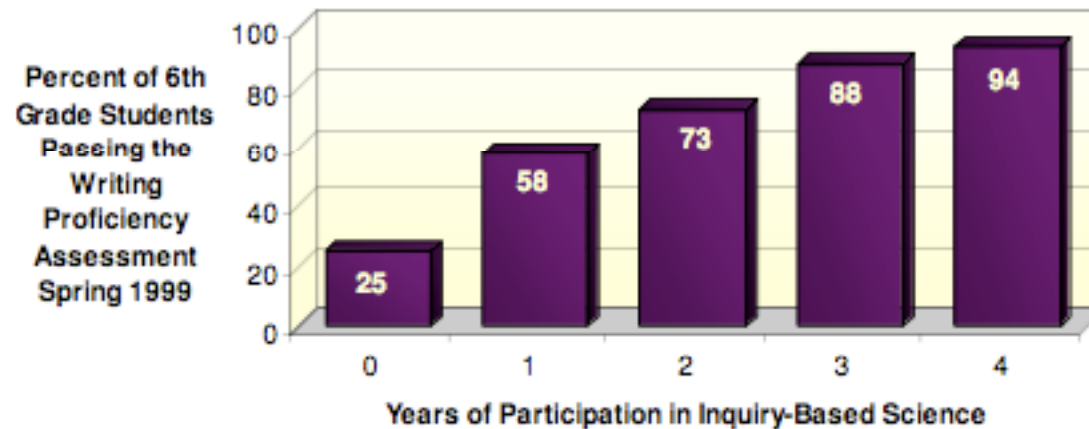
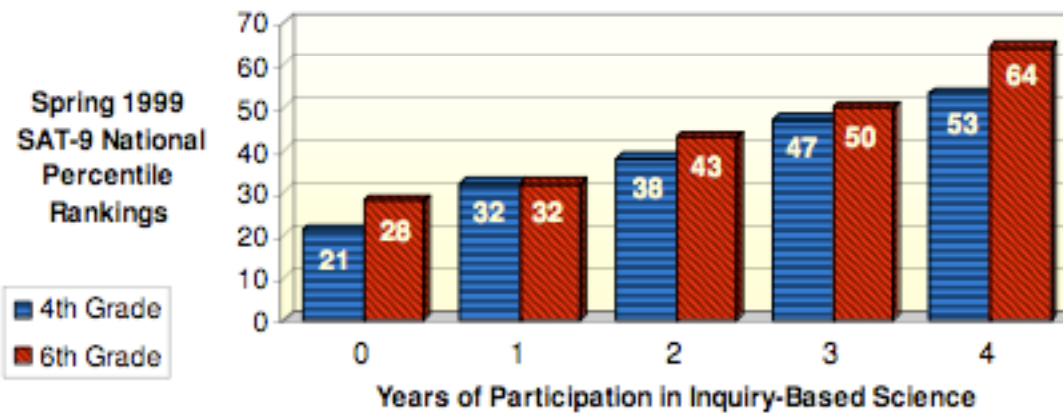
"Teacher effectiveness is the primary influence on student achievement, followed by principal effectiveness."

*—Building a High-Quality Education Workforce A Governor's Guide to Human Capital Development*

## *MSA Inquiry Science Initiative (MSA-ISI)*

- MSA begin an inquiry science initiative in the summer of 2009.
- The MSA-ISI is based on the National Science Resources Center model for science reform.
- The MSA-ISI is aligned to the New Mexico Project 2012.
- MSA/EPS visit to El Centro, California on March 26 and 27<sup>th</sup>.

# El Centro, California Science Reform



## *MSA Inquiry Science Initiative (MSA-ISI)*

- MSA hosted the Science Summer Institute in July 2009 to train 4<sup>th</sup> grade teachers on two inquiry science kits.
- MSA staff will do extensive classroom follow-up throughout the school year in order to support participating teachers.
- Additional grade levels will be introduced in 2010.

# The El Centro Program in Action!



# Thank You!

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▪ MSA: <http://www.lanl.gov/education/teachers/mathsci.shtml>



# MSA/NMSU/EPS Math Excellence In Española

## Los Alamos National Laboratory Math and Science Academy Essential Program Statistics (NMSBA) SY2008 - 2009

### Performance on NMSBA by Española Elementary School Students (3<sup>rd</sup> & 6<sup>th</sup> Grades)

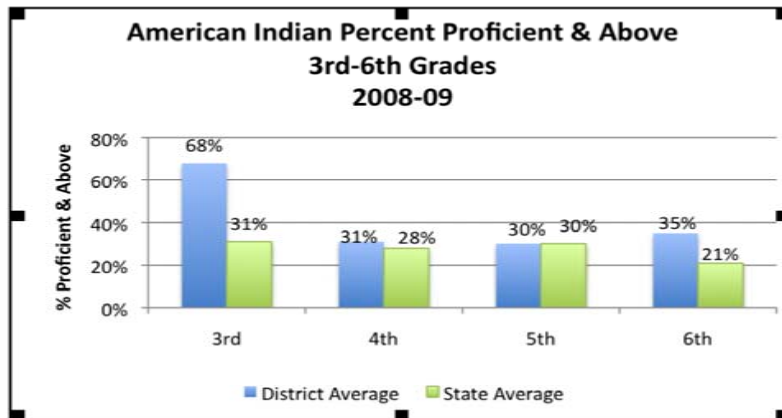


Figure 1. In 2008-09, the second year of the reform math curriculum, the Española Elementary American Indian student surpassed or equaled the State's average percent proficient & above in grades 3<sup>rd</sup> - 6<sup>th</sup>.

- **Factors contributing to both American Indian & ELL increase in proficiency levels:**
  - Strong Higher Education Partnership with NMSU
    - NMSU Masters of Arts Program for teachers
    - Ongoing professional development of math coaches and teachers
    - Focus on teacher's Math Content Knowledge/Pedagogy

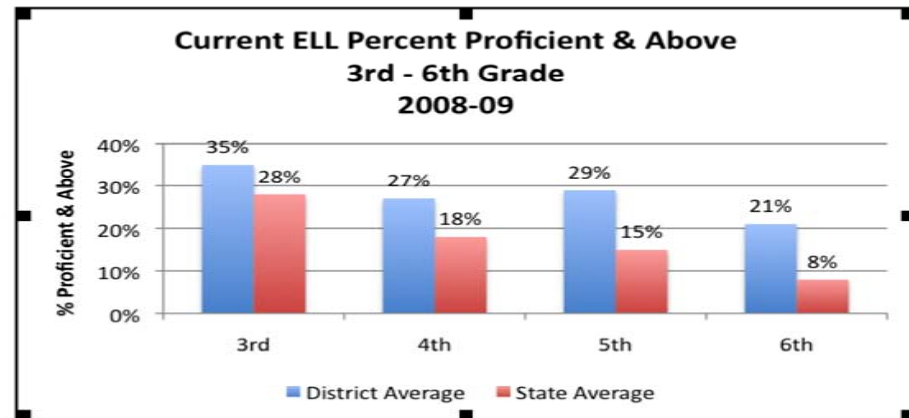


Figure 2. In 2008-09, the Española Elementary English Language Learner exceeded the State average percent proficient and above in grades 3<sup>rd</sup> - 6<sup>th</sup>.

- **Factors contributing to...**
  - Follow-up and classroom observations throughout school year.
  - Continuous MSA professional development for all teachers and leadership
  - "Viable, guaranteed curriculum" Teacher's Math Content Knowledge
  - Expanded/concentrated time with teacher