Lead Teachers'
Competence, Confidence, Credentials
and their Students' Academic Achievement

National Council of Teachers of Mathematics
American Educational Research Association
Special Interest Group
Research Presession

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2004-05 to 2009-10
Aldine and Houston ISDs
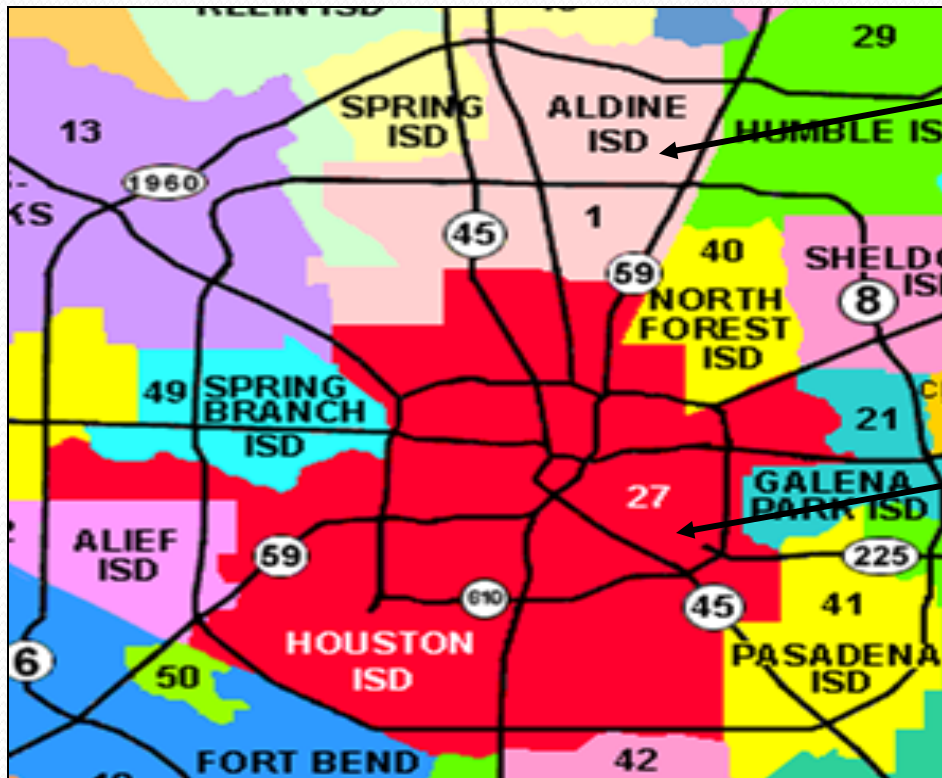
Aldine ISD

From: 56,255 students
Texas' 12th largest school district

To: 62,532 students
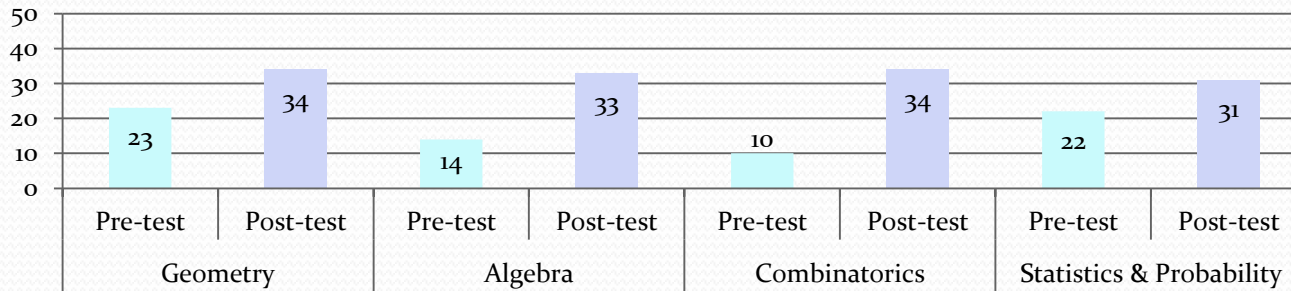Texas' 11th largest school district

Houston ISD

From: 208,454 students
To: 200,944 students

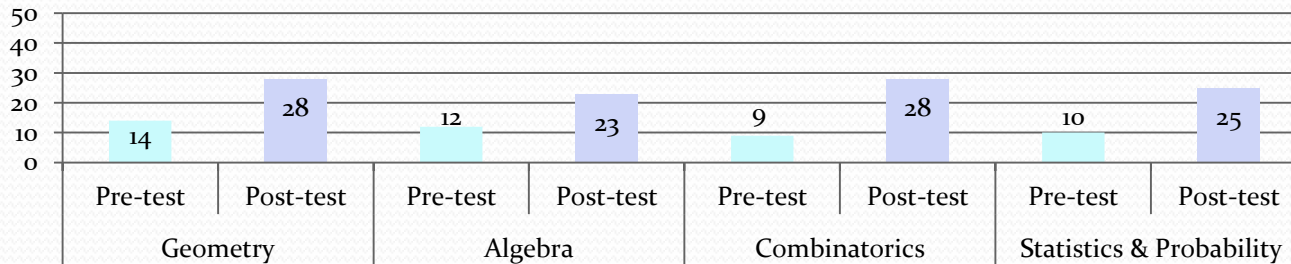Texas' largest and the nation's 7th largest public school district

MLI Vision and Goals

- Strengthen lead teachers' mathematics content, pedagogical content knowledge, and leadership skills.

- Develop school-based intellectual leaders in mathematics content and pedagogy.

- Implement high-quality mathematics instruction school-wide.

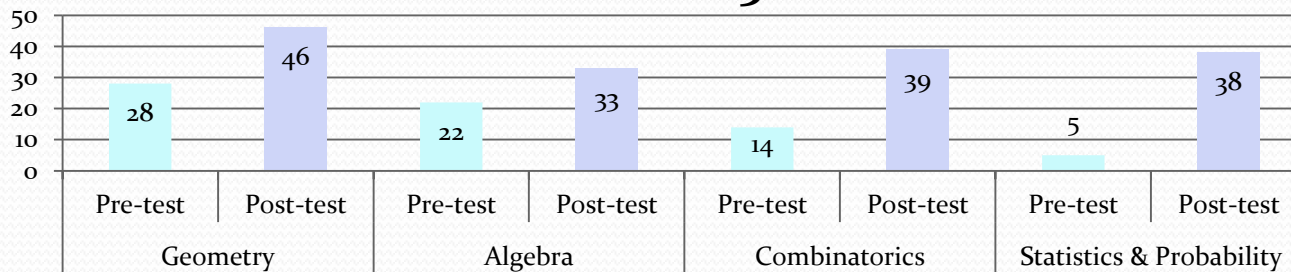- Increase lead teachers' students' and schools' mathematics achievement.

Cohort 1

	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
	23	34	14	33	10	34	22	31
	Geometry		Algebra		Combinatorics		Statistics & Probability	

Cohort 2

	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
	14	28	12	23	9	28	10	25
	Geometry		Algebra		Combinatorics		Statistics & Probability	

Cohort 3

	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
	28	46	22	33	14	39	5	38
	Geometry		Algebra		Combinatorics		Statistics & Probability	

All raw score gains were statistically significant at p = 0.000.

Competence

"We expanded our knowledge in mathematics and pedagogy, and evolved into highly-qualified mathematics leaders."

Increases in lead teachers' preparedness to teach mathematics

- Present the applications of mathematical concepts.
- Use cooperative learning groups.
- Consider students' prior conceptions about mathematics when planning curriculum and instruction.
- Use hands-on activities to introduce and develop math concepts.

Statistically significant rating increases reported in external evaluator's Year 4 report

Increases in lead teachers' preparedness to teach mathematics

- Use cooperative learning groups.
- Consider students' prior conceptions about mathematics when planning curriculum and instruction.
- Use hands-on activities to introduce and develop mathematics concepts.
- Manage a class of students who are using manipulatives.
- Use technology as an integral part of math instruction.
- Use a variety of methods to assess students' mathematical knowledge.

Statistically significant rating increases reported in external evaluator's Year 6 report

Increases in lead teachers' efficacy to teach mathematics

- How much can you express your views freely on important school matters?
- How much can you do to increase students' memory of what they have been taught in previous lessons?
- How much can you do to get students to do their homework?
- How much can you do to make students enjoy coming to school?
- How much can you do to get students to believe they can do well in school?

Statistically significant rating increases reported in external evaluator's Year 4 report

Increases in lead teachers' efficacy to teach mathematics

- How much can you do to increase students' memory of what they have been taught in previous lessons?

- How much can you do to motivate students who show little interest in their schoolwork?

- How much can you do to get students to do their homework?

- How much can you help other teachers with their teaching skills?

Statistically significant rating increases reported in external evaluator's Year 6 report

Confidence

"My confidence allowed me to provide model mathematics classrooms which demonstrated student engagement, rigorous learning opportunities, and the effective use of technology."
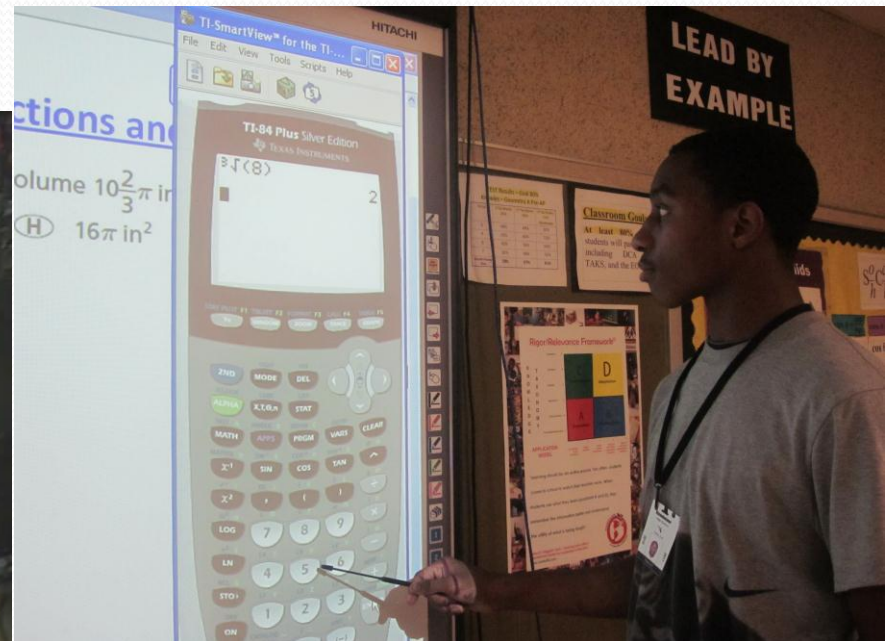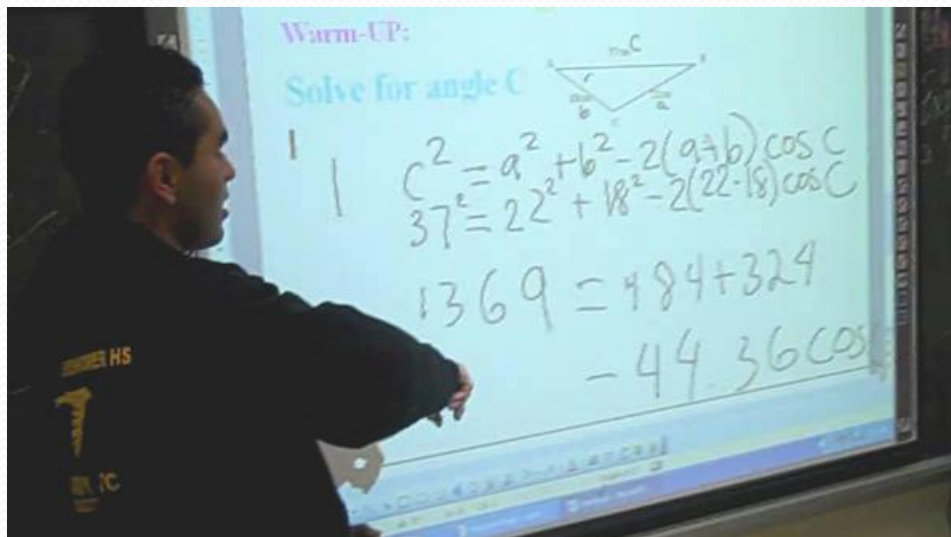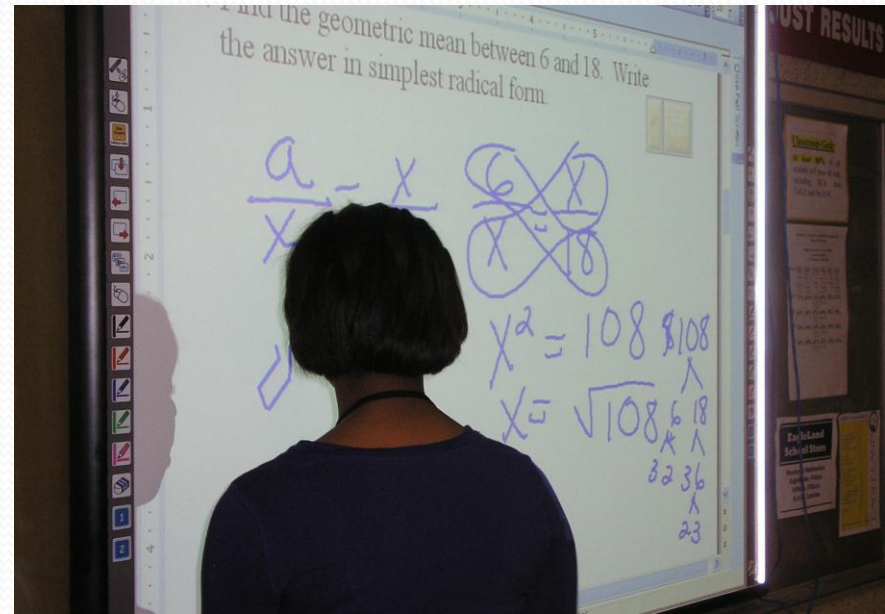
Confidence

"As an MLI lead teacher and a Texas Master Mathematics Teacher, my experience as a presenter for teachers has allowed me to become more comfortable when sharing valuable information with colleagues. I have gained the confidence and the ability to share instructional strategies and teaching methods with teachers building-wide, district-wide, and nation-wide."

Credentials
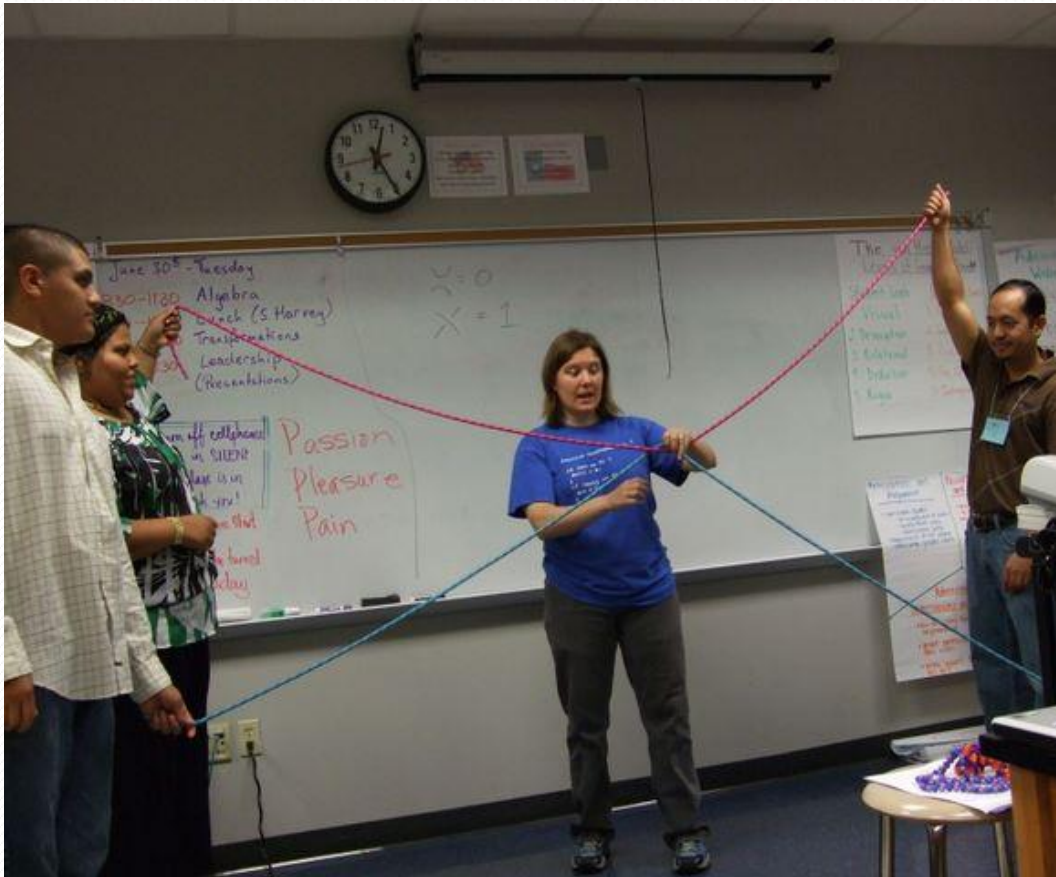
- 89% of lead teachers received 8-12 hours of graduate credit from Rice University

- 100% of lead teachers received 30 hours of Gifted and Talented credit for each summer completed

- 22% of lead teachers received Texas Master Mathematics Teacher Certification (Grades 8-12)

11th-Grade
Mean TAKS* Mathematics Scale Score Comparisons

	Baseline 2004-05	2008-09	Point Increase
MLI	2139	2282	143
MLI Schools (non-MLI teachers)	2110	2225	115
AISD	2184	2243	59
HISD	2153	2255	102
Texas	2201	2264	63

Based on external evaluations, Pearson Education Assessment Summary Results, and Texas Education Agency Texas Assessment of Knowledge and Skills (TAKS)* Summary Reports

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