

# Moving the Needle in Mathematics Performance



**Denton ISD**

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# Moving the Needle

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- ❑ Determined that we must start by making positive gains in math performance across the board in all grade levels and all courses
- ❑ Reviewed the current facts
- ❑ Reviewed current practices
- ❑ Developed a course of action and phase-in plan

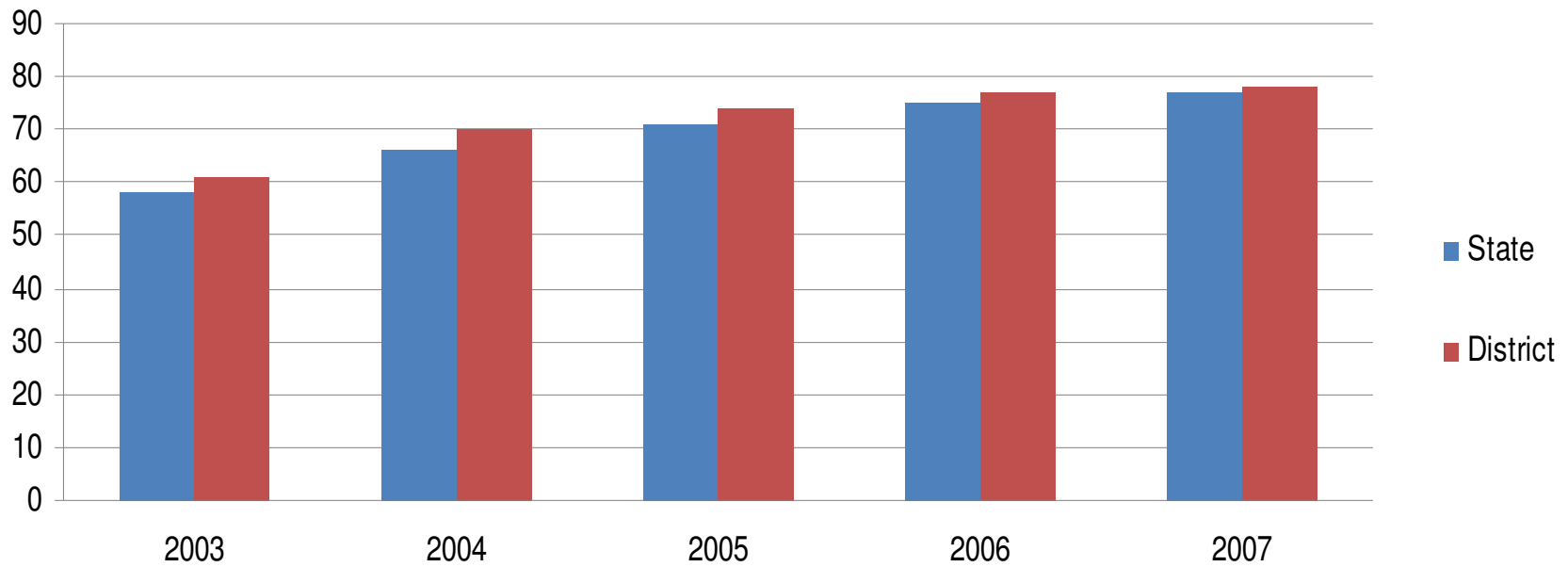


# The Math Facts: TAKS

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Comparing Denton ISD math  
“passing” performance against the  
state “passing” performance in  
grades 3-10

# TAKS Met Standard (Mathematics) All Students



At Panel Recommendation/ Data Source=TEA

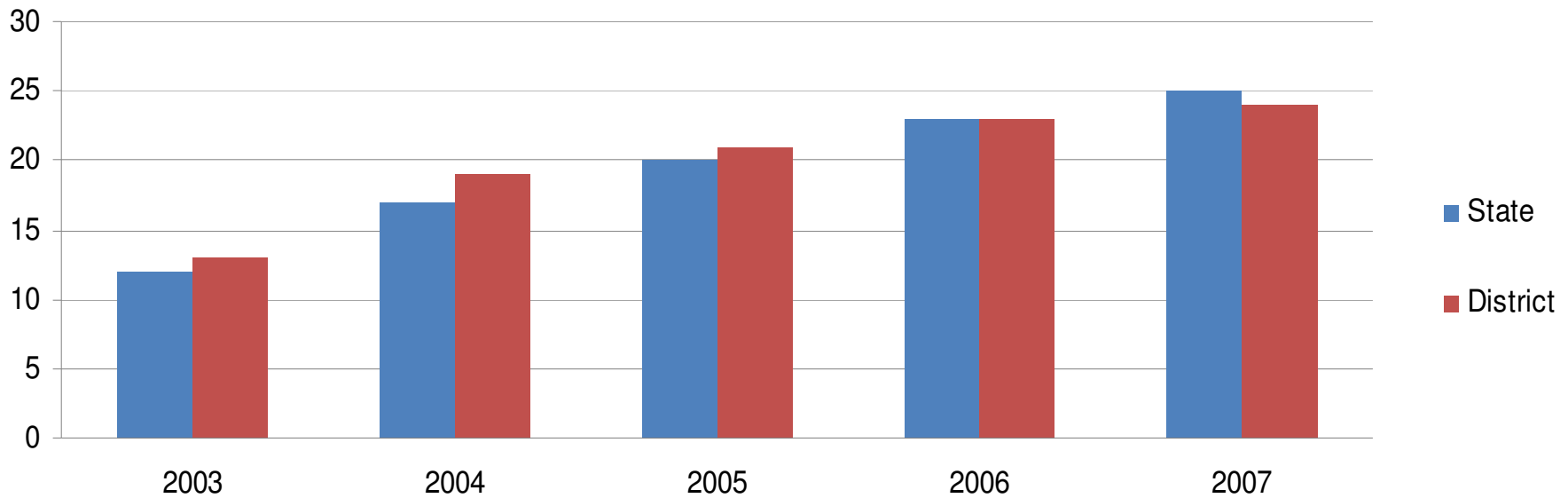
	2003	2004	2005	2006	2007
<b>State</b>	58	66	71	75	77
<b>District</b>	61	70	74	77	78

# The Math Facts: TAKS

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Comparing Denton ISD  
“commended” math performance  
against the state “commended”  
performance in grades 3-10

# TAKS Commended Performance (Mathematics) All Students



Data Source=TEA

	2003	2004	2005	2006	2007
State	12	17	20	23	25
District	13	19	21	23	24

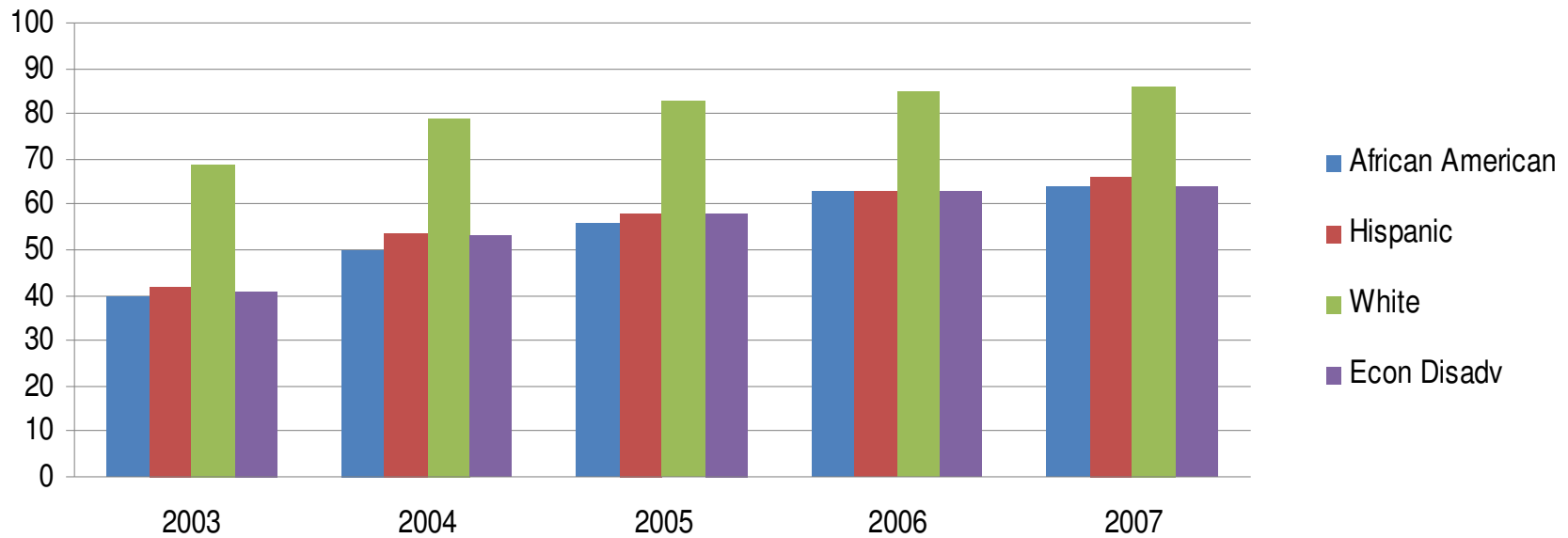
# Math Facts cont.

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## Denton ISD Achievement Gap Data

- Economically Disadvantaged: as defined by our Free/Reduced Lunch Percentages
- Ethnicity
  - African American
  - Hispanic
  - White

## TAKS Met Standard (Mathematics) By AEIS Student Groups

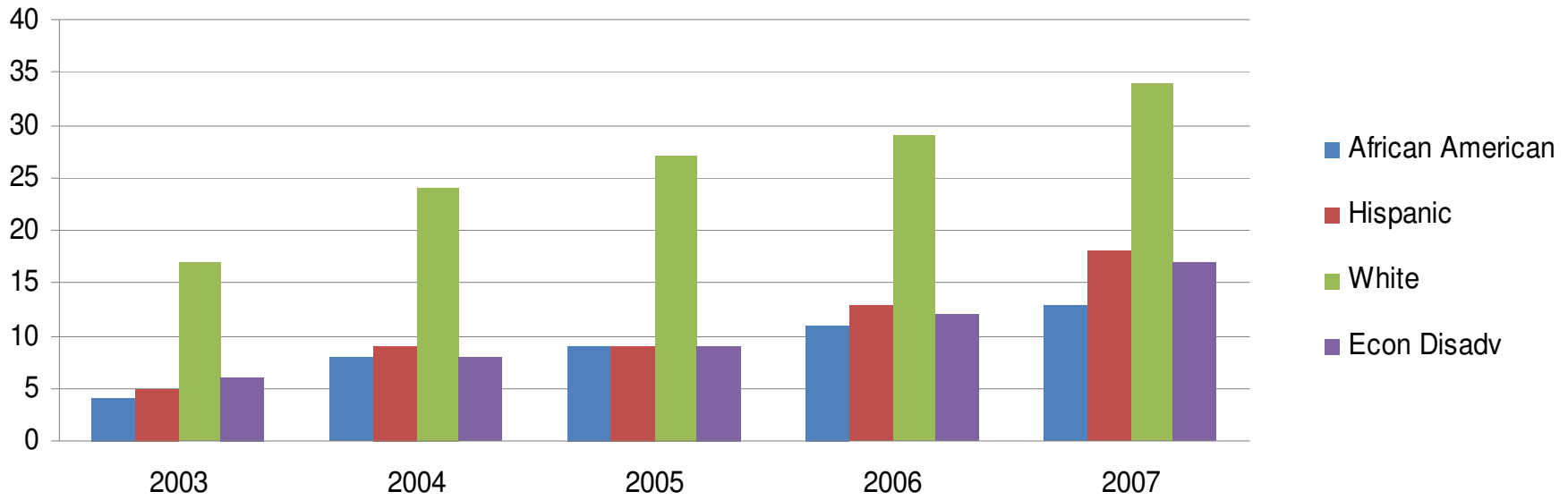


At Panel Recommendation/Data Source=TEA

	2003	2004	2005	2006	2007
<b>African American</b>	40	50	56	63	64
<b>Hispanic</b>	42	54	58	63	66
<b>White</b>	69	79	83	85	86
<b>Econ Disadv</b>	41	53	58	63	64



## TAKS Commended Performance (Mathematics) By AEIS Student Groups



Data Source=TEA

	2003	2004	2005	2006	2007
<b>African American</b>	4	8	9	11	13
<b>Hispanic</b>	5	9	9	13	18
<b>White</b>	17	24	27	29	34
<b>Econ Disadv</b>	6	8	9	12	17

# Measures of Success

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## SAT Performance

- SAT test takers up by 14.6%
- Minority test takers up (Afr Am 5%, Hisp 30%)
- Afr Am student math scores were +11 points
- Hisp student math scores were +13 points
- Students taking PSAT prior to the SAT were +60 points

## □ Advanced Placement

- Test takers increased by 45.3%
- Afr Am student participation increased 105%
- Hisp student participation increased 39%
- AP Statistics and AP Calculus scores increased

# Measures of Concern

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## □ Achievement Gaps

- Exist for practically all district-wide test results

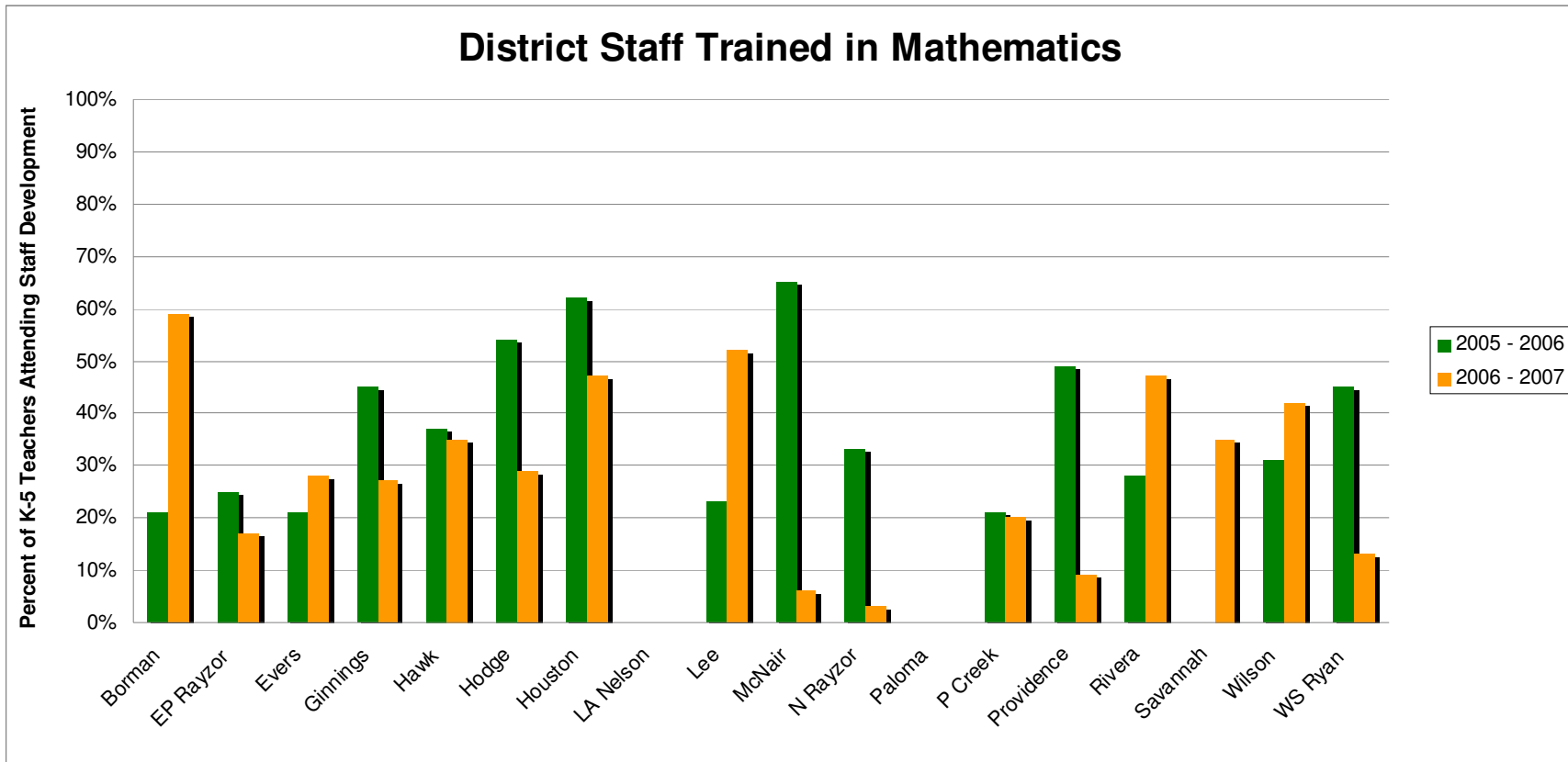
## □ SAT Performance

- Math Performance remained the same, whereas the state was up +1

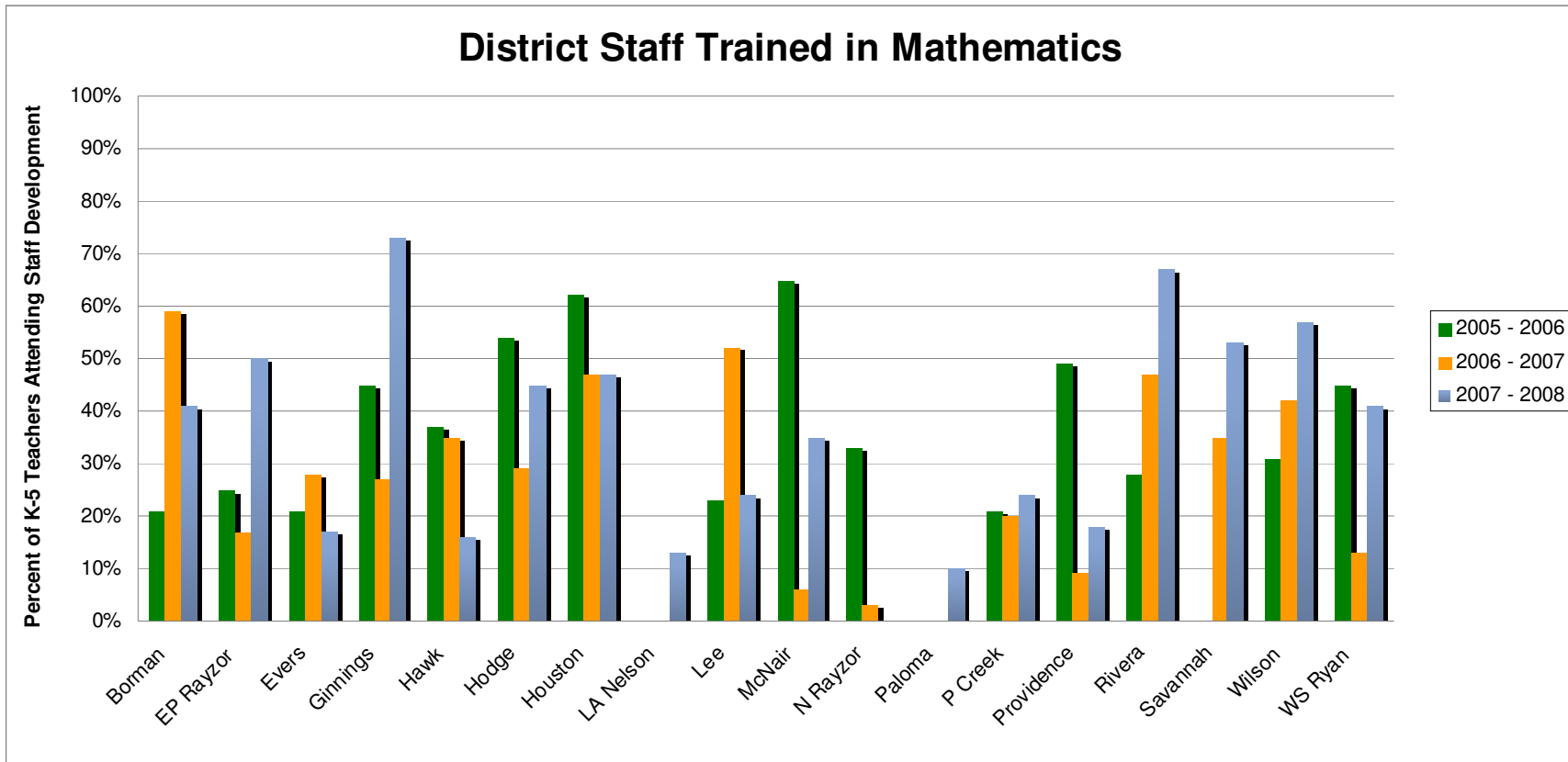
## □ AP Scores

- Only 66 students took mathematics AP exams

# Math Professional Learning



# Math Professional Learning including this school year



# Professional Development

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## From the field:

*"I'm glad I learned more interactive ways to work in the classroom and connect TEKS, TAKS, curriculum and real life." HS Teacher*

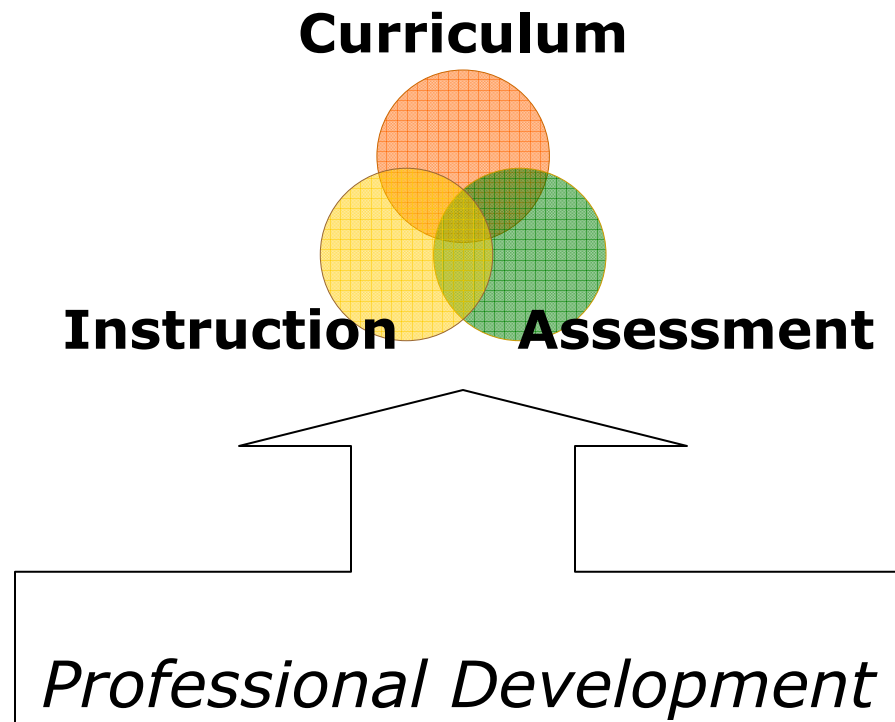
*"I'm glad I learned how to connect among all grade levels."  
HS Teacher*

*"Everything I saw today can be used in the classroom. I liked the usefulness of the material!" MS Teacher*

*"I am a more confident teacher and I am more willing to try new ways of teaching. I believe my students have benefited from my participation in the grant." TWU Teacher Quality Grant Participant*

# Our Work

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# Additional Concerns

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- ❑ Disconnect between professional development and embedding the new learning into practice (known as the **“Knowing-Doing Gap”**)
- ❑ Inconsistent implementation of the curriculum
- ❑ Curriculum monitoring system is not in place (classroom walk-throughs are not enough)



# Current Strategies and Practices

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- Providing strategic staff development that targets areas of weakness, for example
  - Algebra
  - Problem-solving
  - Measurement

# Current Strategies and Practices cont.

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- Identifying and providing intervention for math students
  - Use of Mathematics Tutoring Intervention Program (TIPs) is an intervention plan for grade 3-7 students developed by teachers from Denton, Lewisville, and Plano.
  - Two components:
    - Assessment designed to identify areas of concern
    - Intervention that provides lessons tied to specific TEKS

## Current Strategies and Practices cont.

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- Assessing Math Concepts by Kathy Richardson, is a series of assessments that informs teachers of students' mathematical learning needs and provides tools to better accelerate learning. Lessons are tailored to fit the instructional needs of any child. This is new for our system this year.

# Current Strategies and Practices cont.

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Data from TIPs and Assessing Math Concepts are currently being used to identify students as at-risk. Instructional decisions and teacher intervention is then relied upon to ensure that all students are on grade level by the end of the instructional year.

# Current Strategies and Practices cont.

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## Title I Professional Learning--

- **Focused Universal Strategies for Everyone (FUSE)** training provided for all elementary Title I campuses –focus on “ELL”
- **Pinpointing Student Learning** training provided for all secondary Title I campuses – focus on “assessment”

# Current Strategies and Practices cont.

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- TWU Teacher Quality Grant
  - Focus on Middle School Algebra
  - Purpose is to increase teacher content knowledge



*"I never had the complete understanding of concepts as I do now. Being able to understand allows a deeper thinking and ability to solve problems. I also now know how to properly teach these same concepts to students so they can successfully understand as well."*

*TWU Teacher Quality  
Grant Participant*

# Current Strategies and Practices cont.

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- ❑ Developing and enhancing the quality of current mathematics' scope and sequence documents to include more resources and assessment pieces
- ❑ Aligning curriculum
- ❑ Creating mini-training piece that assists grade level or course teams in better understanding the implementation of the TEKS using their scope and sequence.
- ❑ Ensuring accessibility to the scope and sequence for all teachers

# Current Strategies and Practices cont.

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The Core Plan is the professional development plan that has been created to ensure that all teachers new to Denton ISD have a prescribed pathway of learning for their development.

For example:

Year 1 First Year Teacher Academy

Year 2 Inquiry in Math / 5E Model



# Current Strategies and Practices cont.

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## **University of Texas' Charles Dana Center**

- Will work with a cohort of 8<sup>th</sup> grade teachers and a cohort of Algebra I teachers -- about 30-35 teachers
- Target professional learning based on needs of Denton ISD
- 20 days of instruction/assessment training
- Anticipated launch date in spring 2008

# Current Strategies and Practices cont.

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## Benchmarking & On-going Assessments

- Teacher-made assessments
- Common Assessments across teams/courses
- 1<sup>st</sup> Grade Report Card
- Released TAKS
- WebCcat
- ePath
- Region IV Benchmarks: in development

# Current Strategies and Practices cont.

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- Elementary Math Textbook Adoption-- currently in process and will be presented to the board in March 2008
  
- Using Cycle Replacement Funding to upgrade and replace mathematics materials on an annual basis
  - Math manipulatives
  - Graphing calculators

# Current Strategies and Practices cont.

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## □ Mathematics Coordinator Support

Secondary and Elementary Mathematics Coordinators routinely work with grade level and math course teams for the purpose of refining instructional practices and studying the curriculum for delivery. The work includes discussion groups, modeling, observing, action research, analyzing student work, and lesson plan development among many other activities.

# Proposed Action

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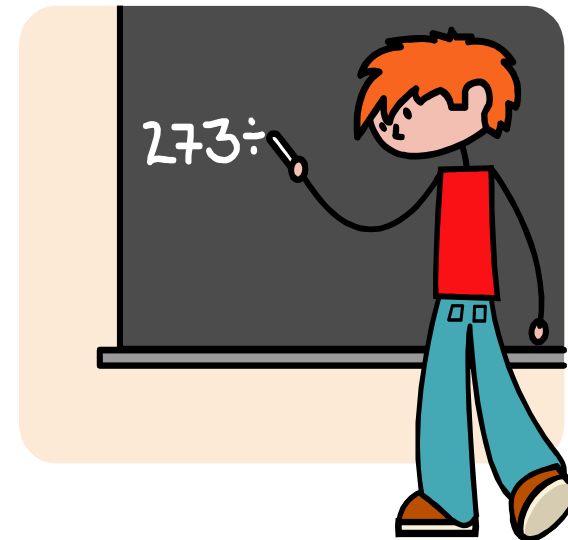
## □ Using Teacher Quality Grants

- TWU- used for M.S. problem-solving and measurement
- UNT- used for H.S. Algebra professional development
- Provides pipeline for future math teachers into our system

# Proposed Actions

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Use the seven current Elementary Math Instructional Specialists which are currently assigned to campuses for the purposes of monitoring and assisting with the quality of curriculum delivery. Guidance would be provided by the math coordinators



# Proposed Actions

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- **Acquire three Math Support Specialists.** One each for high school, middle school, and elementary. The specialists would provide on-going support while teachers begin the process of implementing new instructional strategies with someone that can give them *specific feedback* in a risk-free environment.

# Proposed Actions

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- ▣ **Using Assistant Principals** as a liaison between coordinators and campuses. As benchmark assessments become more prevalent, the implementation and analysis of the assessments will be important yet time consuming work. Specialized training will be provided. Additionally, the assistant principals will have an avenue to be more directly involved in instructional improvement.



# Proposed Actions

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## □ Curriculum Work

- Building a mathematical vocabulary that is universal among schools
- Create numerical fluency
- Curriculum Orientation Sessions
- Use New Teacher Induction to share how to use curriculum documents
- Explore monitoring mechanisms to ensure consistent implementation of the curriculum

# For Further Study

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## □ Review practices

- More instructional time needed for math in the elementary school day
- Possible double-blocking in the middle schools for the purpose of adding mathematics instruction
- Process for sharing data from school to school needs to be reviewed
- Create a Math Vertical Team
- Secure Math Intervention Teachers

# For Future Study

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- **High School Course** Selection and Sequence
- **Hiring Highly Qualified Mathematics Teachers** immediately in preparation of the 4X4 graduation requirement– teachers may be used to reduce class size in the interim before the new semester starts.

# Moving the Needle!

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Our commitment from the Division of Curriculum, Instruction, and Staff Development is to work with a laser-like focus for the purpose of ***moving the needle*** on school performance!

