

State of Mathematics and Science Education

*Texas Regional Collaboratives Annual Meeting
June 30, 2011 – Austin, Texas*

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- Higher Expectations and STAAR
- Mathematics Professional Development
- Mathematics TEKS Revision
- PAEMST
- Fine Arts Integration
- Project Share and iTunes U
- Science Professional Development
- Supplemental Science Instructional Materials
- Science TAKS Results

Higher Expectations

- College and Career Readiness Standards

<http://www.thecb.state.tx.us/index.cfm?objectid=E5BD0010-0283-9964-C73B36395837970A>

- STAAR

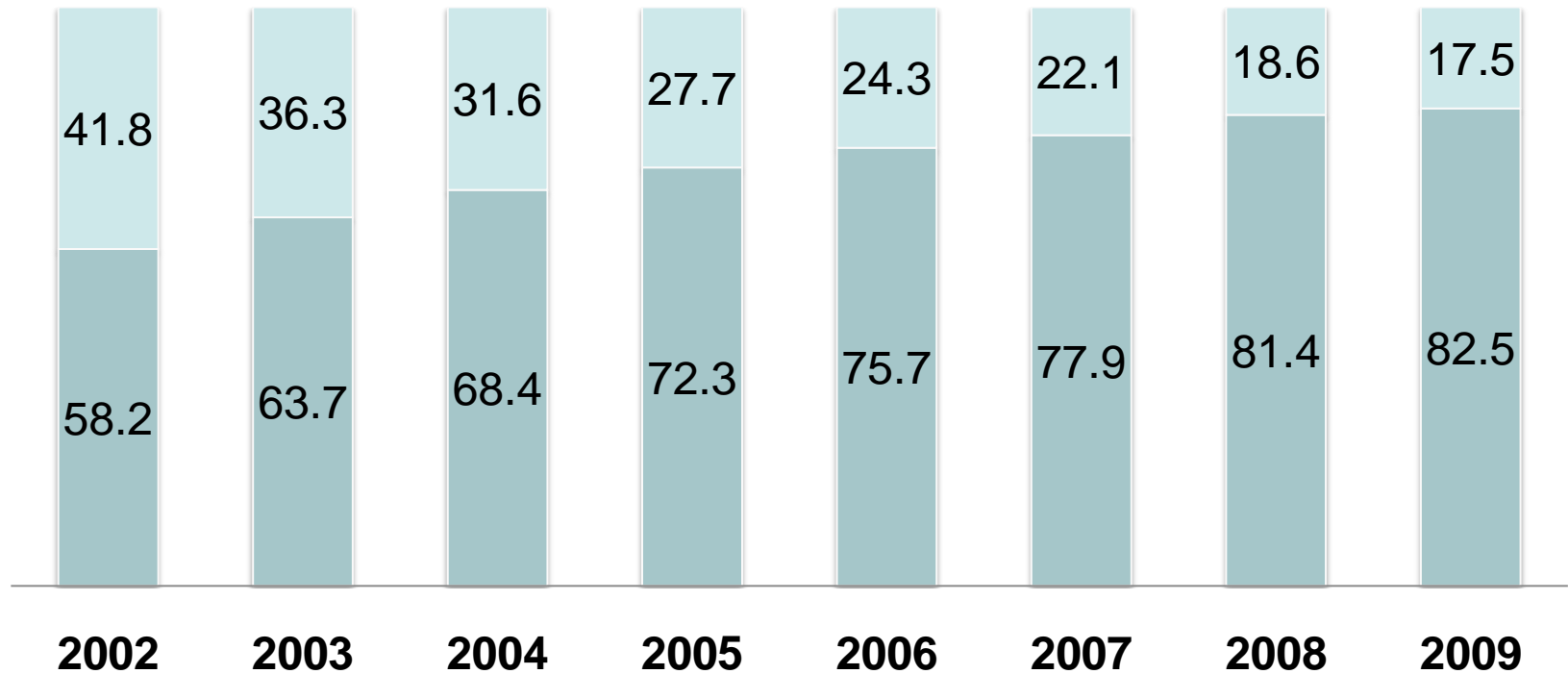
<http://www.tea.state.tx.us/student.assessment/staar/>

- Graduation Requirements

<http://www.tea.state.tx.us/graduation.aspx>

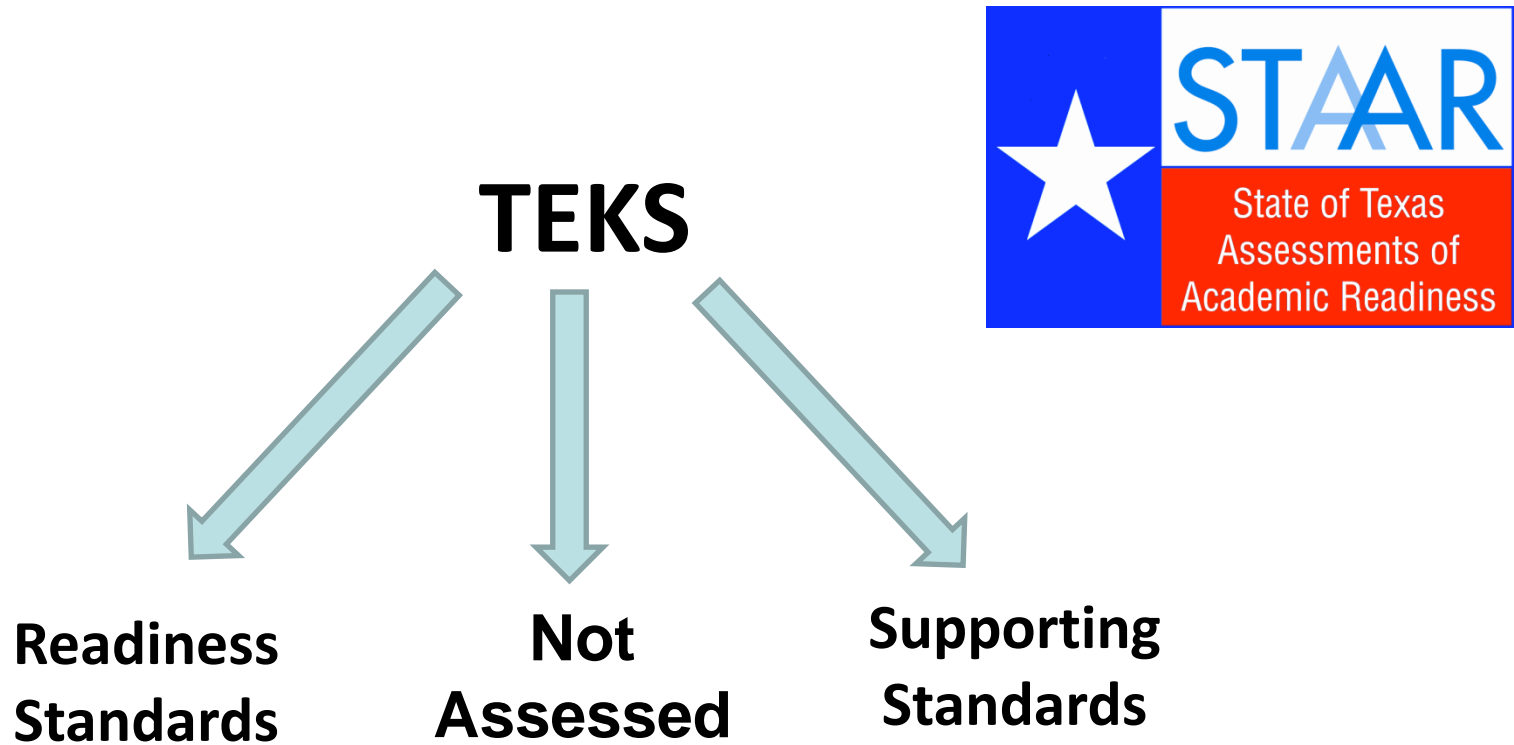
Texas Students Graduating on College and Career Ready Plans

- Recommended High School Program/Distinguished Achievement Program
- Minimum High School Program

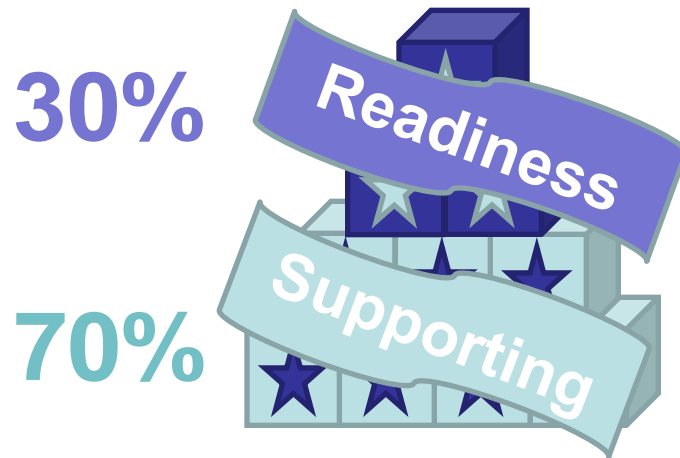


Source: http://www.tea.state.tx.us/acctres/home_index.html

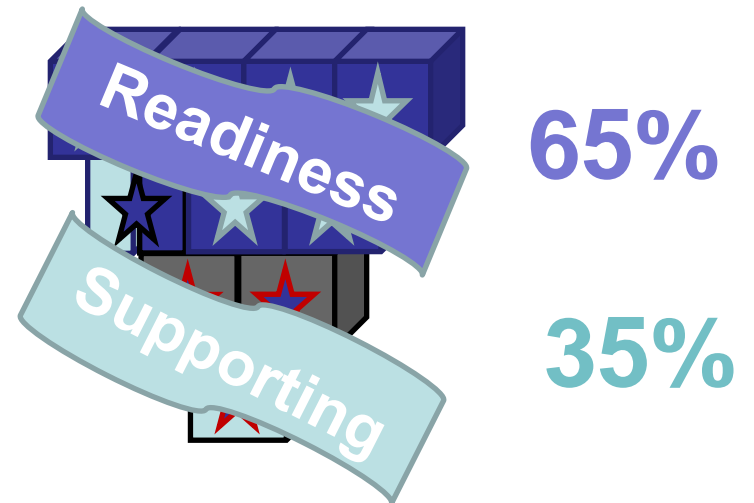
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Eligible content standards



Assessment



Algebra I EOC Assessment Performance

| YEAR | MET STANDARD | COMMENDED PERFORMANCE | NUMBER TESTED |
|-------------|---------------------|------------------------------|----------------------|
| 2005 | 49% | 6% | 20,844 |
| 2006 | 50% | 7% | 21,206 |
| 2007 | 53% | 8% | 32,812 |
| 2008 | 56% | 11% | 52,462 |
| 2009 | 57% | 11% | 78,419 |
| 2010 | 57% | 12% | 101,887 |

Advanced Quantitative Reasoning (AQR)

- At its January 2011 meeting, the State Board of Education approved for second reading and final adoption 19 TAC Chapter 111, Texas Essential Knowledge and Skills for Mathematics, Subchapter C, High School, § 111.37, **Advanced Quantitative Reasoning** (One Credit).
- TEKS are posted as adopted at <http://www.tea.state.tx.us/index4.aspx?id=2206>.

Where are they in 2011-2012?

- **Twelfth Graders**
Second class to have 4 X 4 RHSP
- **Ninth graders**
First class to have end-of-course assessments
as a graduation requirement

Algebra Readiness Components

- Texas Response to Curriculum Focal Points (TxRCFP)
- Professional Development
- Math supplemental diagnostic screening instrument
- Grants to districts

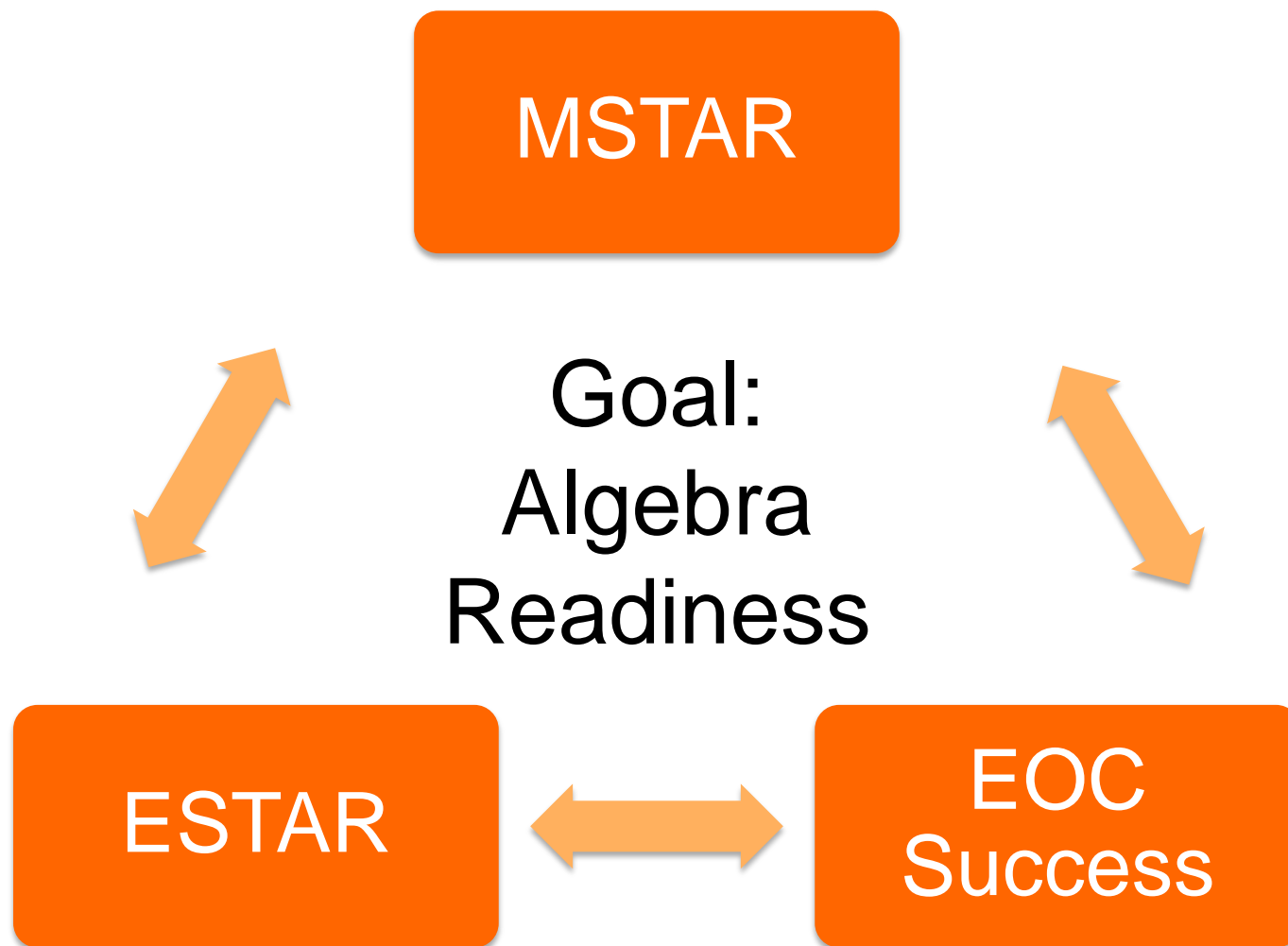
Website: (TXAR) Texas Algebra Ready---

<http://txar.org/>

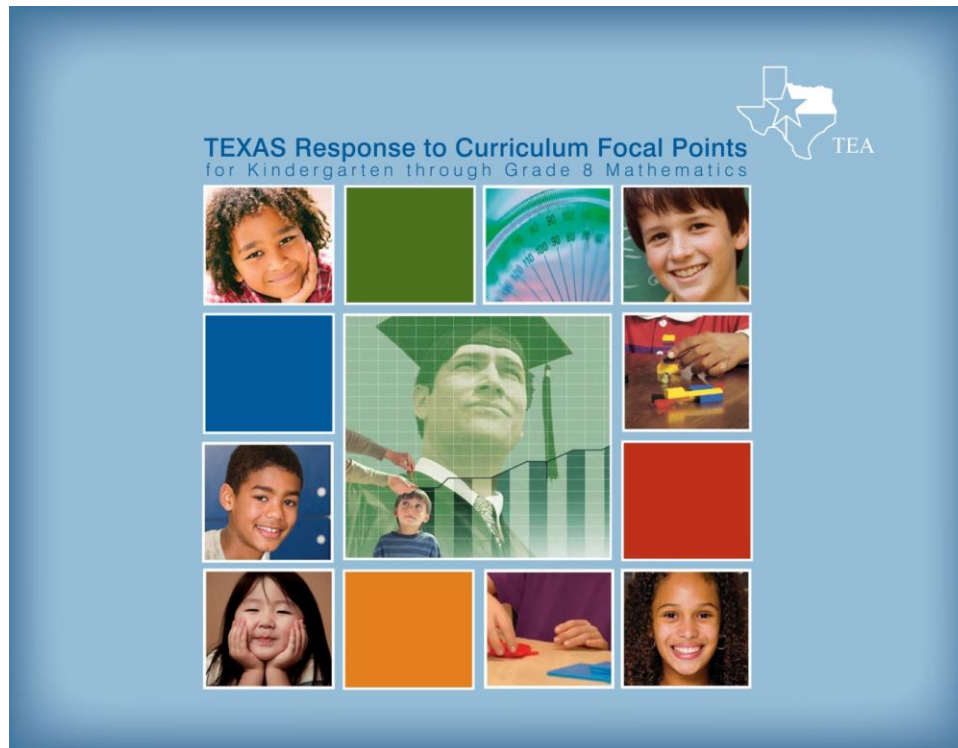
Systemic Approach to Professional Development

- Initial Focus on Middle Grades (5-8)
- Series of Professional Development Opportunities with Online Follow-up
 - Curriculum Focal Areas
 - Tier I Instruction
 - Tier II Instruction

Mathematics Professional Development Academies

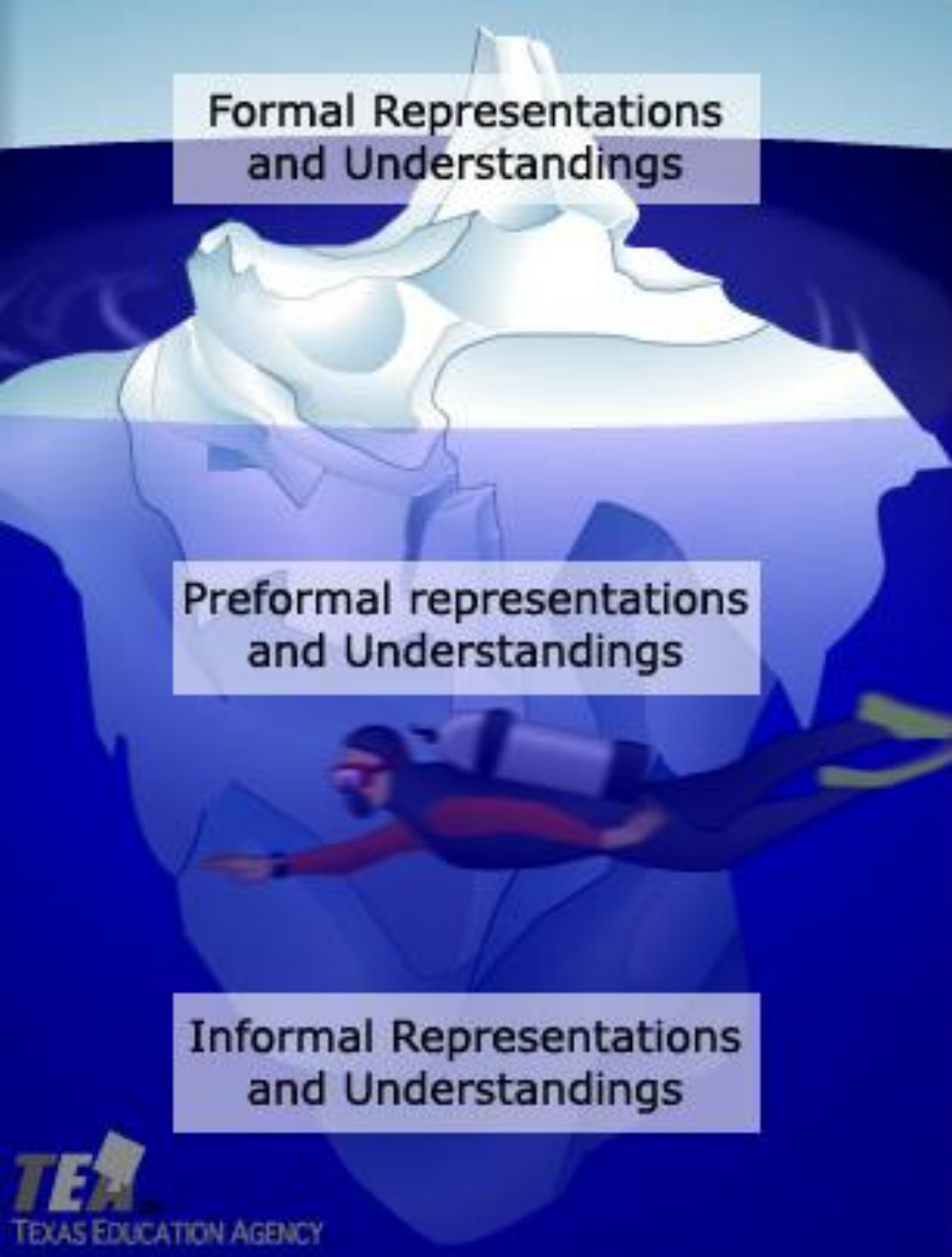


Texas Response to Curriculum Focal Points



<http://www.txar.org/focalpoints.html>

- Aligns student expectations to key topics (focal points)
- Emphasizes integration of concepts across the strands/skills that naturally leads to mathematical connections and higher-level thinking
- Identifies critical areas that connect and integrate mathematical proficiency and understanding

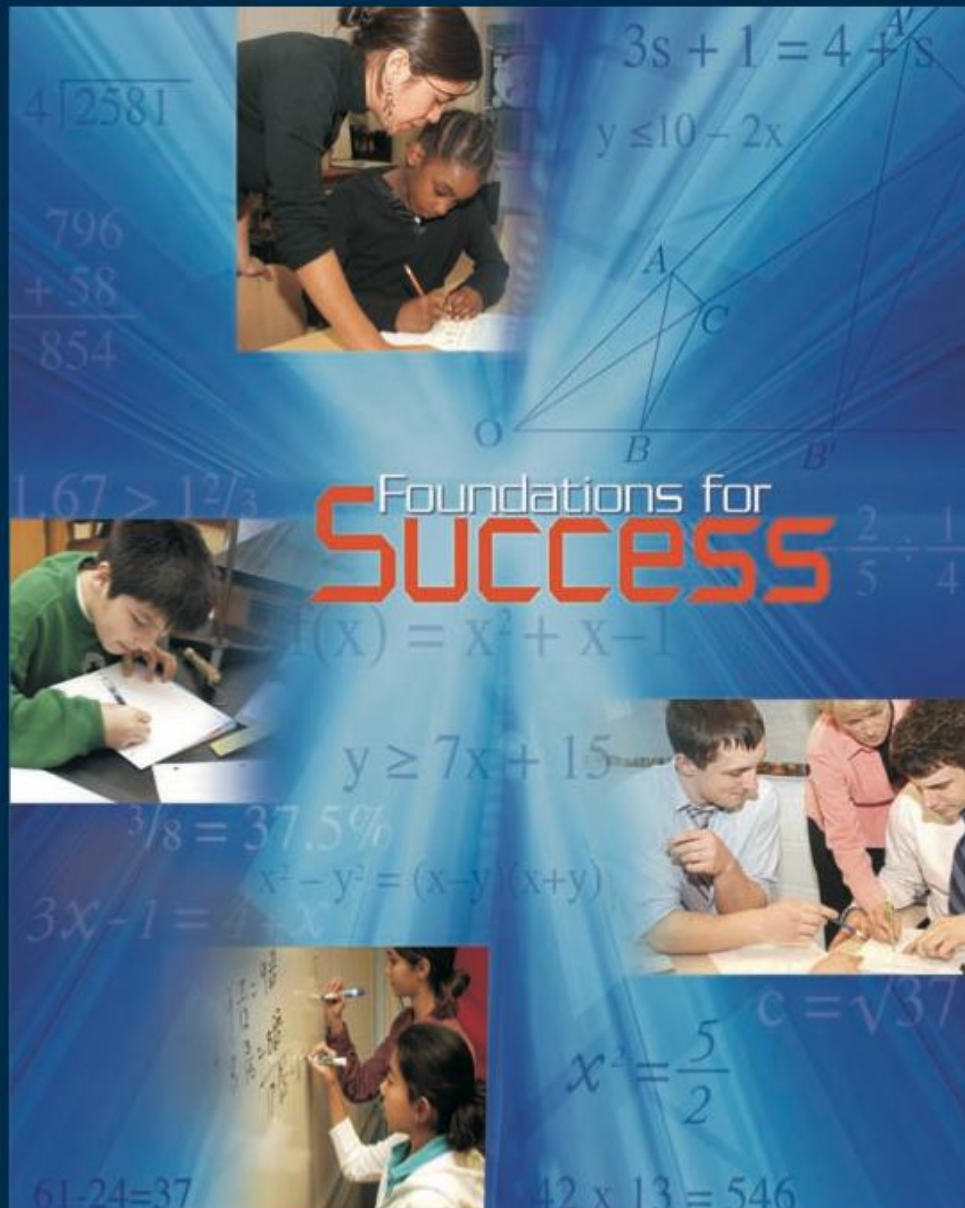
An iceberg floating in the ocean. The tip of the iceberg is above the water surface, and the much larger base is submerged. A diver is visible underwater near the submerged part. Three text boxes are overlaid on the image: one on the tip, one on the submerged part, and one at the bottom.

Formal Representations
and Understandings

Preformal representations
and Understandings

Informal Representations
and Understandings

All of the
Algebra
Readiness
Professional
Development
emphasizes
levels of
understanding.



National Mathematics Advisory Panel

Final Report 2008

The National Mathematics Advisory Panel

Final Report • 2008

- MSTAR Academy I (Part B) Completion
- MSTAR Academy II
- Geometry EOC Success
- Algebra II EOC Success

Professional Development Promotional Videos

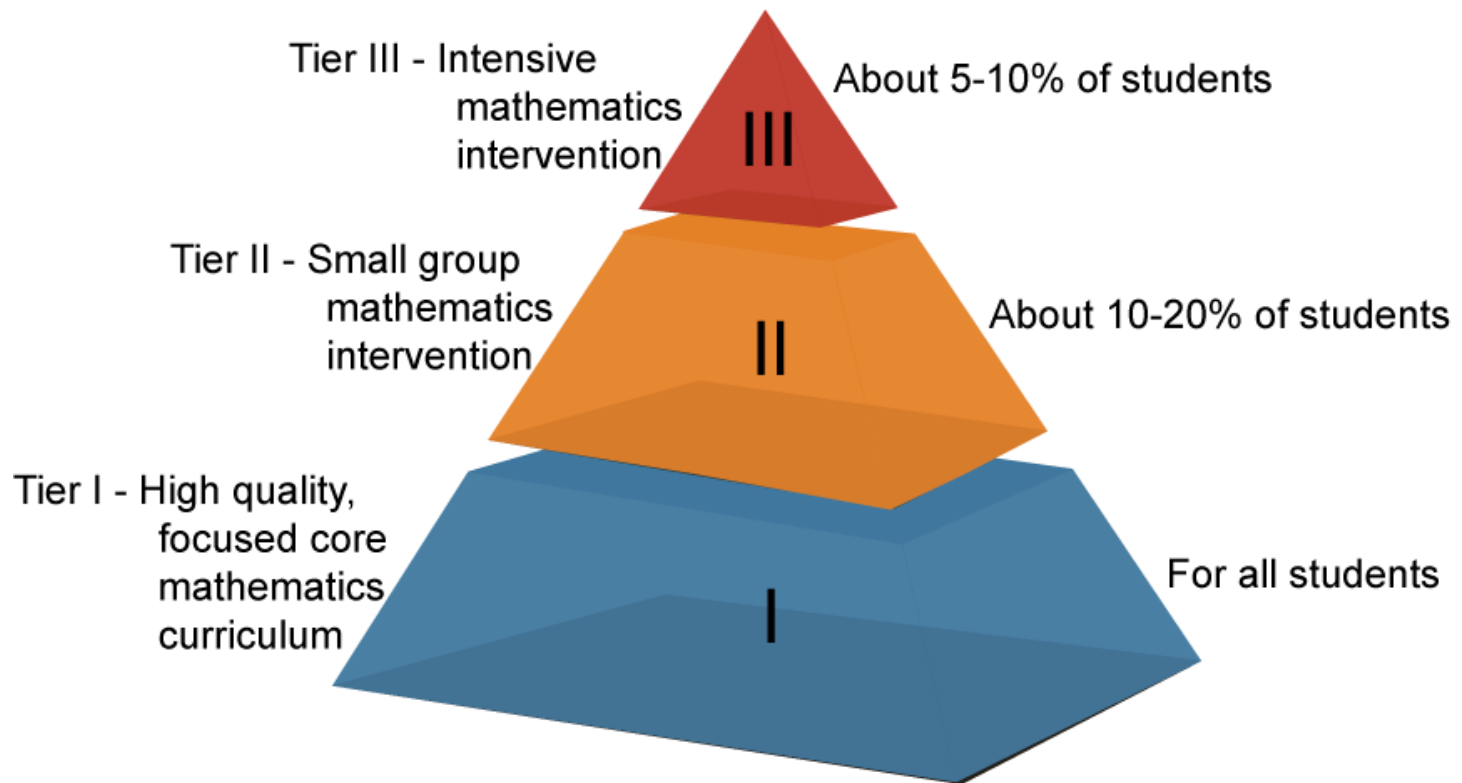
- MSTAR Academy Overview

<http://itunes.apple.com/us/podcast/mstar-academy-overview/id435787150?i=94066617>

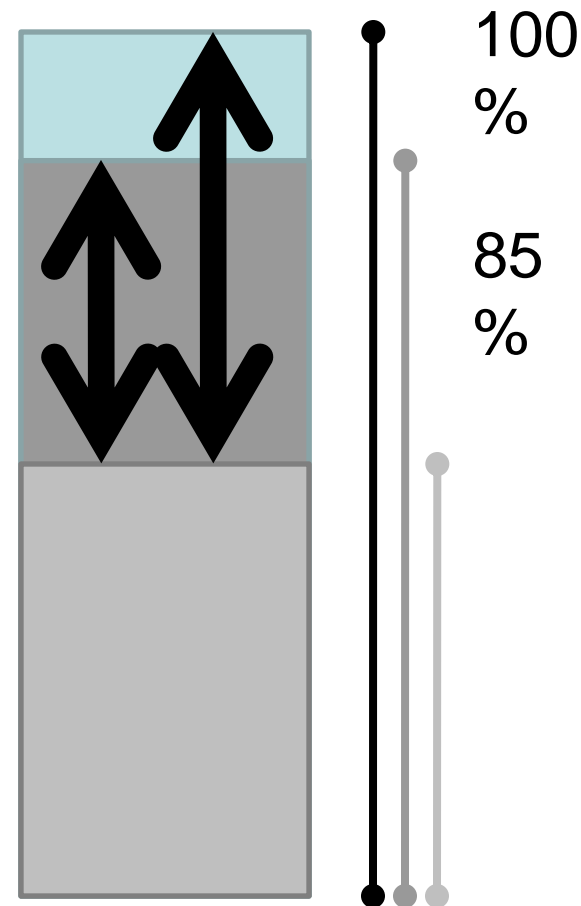
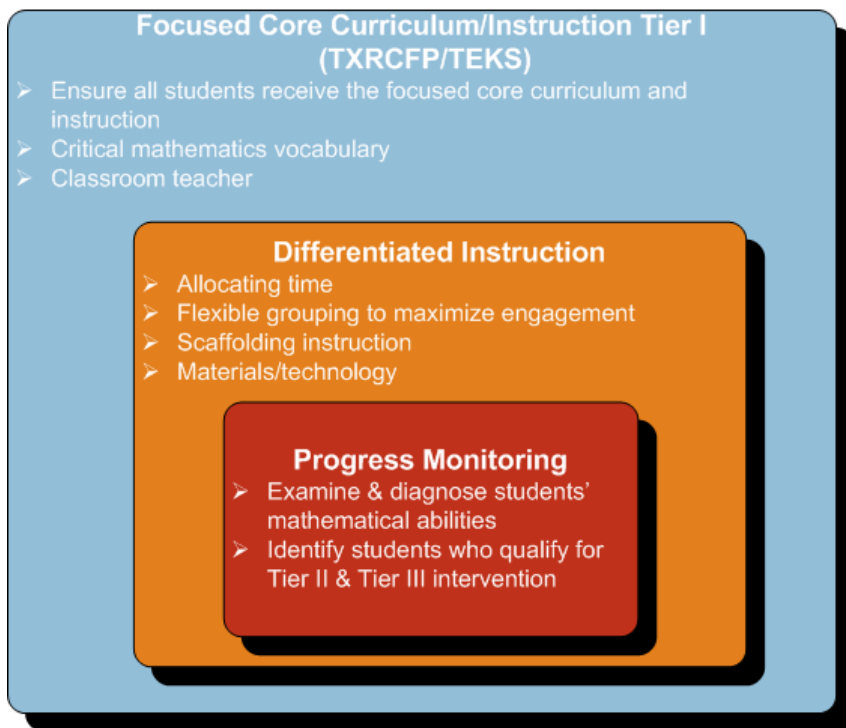
- Math Academies—Promotional Video

<http://itunes.apple.com/us/podcast/math-academies-promotional/id435787150?i=94574955>

3 - Tier Intervention Model



Focused Core Curriculum/Instruction Tier I Texas Response to Curriculum Focal Points (TXRCFP/TEKS)



Lesson Plan Summary Template

Geometry EOC Success
Lesson Plan Summary: *Triangular Thinking* Lesson

Topic: Using the constructions of midpoints of the sides of triangles to form conjectures.

CCRS: In this lesson, the student will

- Make and validate geometric conjectures
- Develop and evaluate convincing arguments
- Use various types of reasoning
- Use mathematics as a language for reasoning, problem solving, making connections, and generalizing



Content Objective: The student uses geometric constructions to make, test, and justify conjectures.

Language Objective: C3(C) The student is expected to learn new language structures, expressions, and basic and academic vocabulary heard during classroom instruction and interactions.

Vocabulary: midpoint, congruent, similar

Prior Knowledge: Students are expected to be familiar with the triangle congruency relationships and proving techniques.

Lesson Plan Summary Template

**Rtl Tier I
Differentiation Activity**

* **Mini-teach:** Similarity is first introduced in 7th grade and congruency in 5th grade. Explicit instruction* of these concepts will facilitate students' understanding of the triangular midpoint theorem.

Engage:
Students having difficulty with vocabulary will develop a Frayer model small group poster.

Explore:
Groups may be assigned based on student level to allow more directed guidance where needed using a selection of the activities provided below.

- * Explicit Instruction includes teaching components such as
 - clear modeling of the solution specific to the problem;
 - thinking the specific steps aloud during modeling;
 - presenting multiple examples of the problem and applying the solution to the problems; and
 - providing immediate corrective feedback to the students on their accuracy.

- **MSTAR Academies**
 - Academy Part I: Core instruction
 - Academy Part II: Supplemental instruction
- **MSTAR Universal Screener**
 - Enables data-based decision making
- **MSTAR Intervention Project**
 - Provides sample intervention lessons

- Based on algebra-readiness content from TxRCFP, grades 5-8
- Designed to be administered in fall, winter, and spring
- Used as a formative assessment system to support instructional decisions
- Created to assess Foundation, Bridging, and Target knowledge representations

[http://www.txar.org/assessment/mstar_screener.
htm](http://www.txar.org/assessment/mstar_screener.htm)

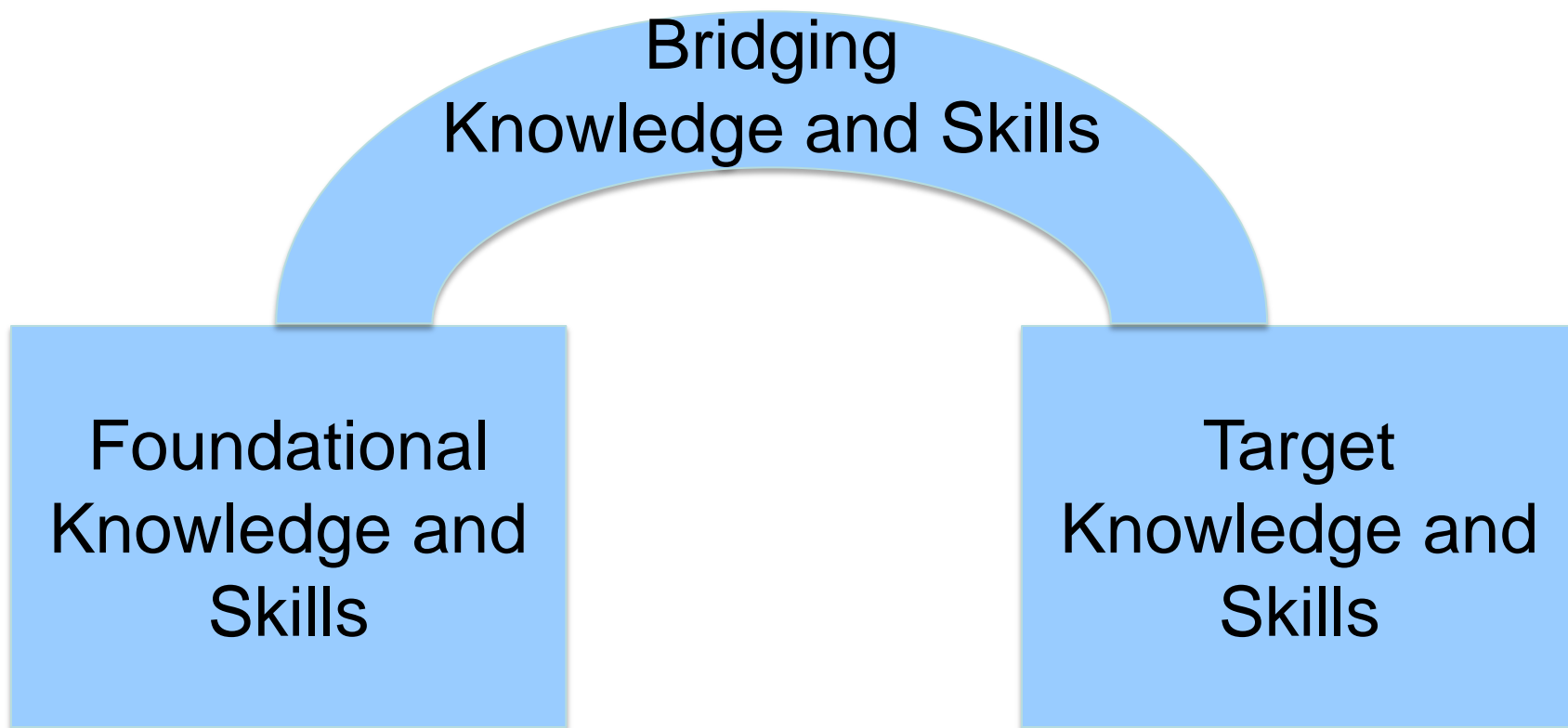
Purpose of MSTAR Universal Screener

Identify students who are at-risk for struggling with algebra-related core instruction

- Determine ***IF*** interventions are needed
- Determine ***DEGREE OF INTENSITY*** of the intervention needed
- Monitor students' ***RISK STATUS***

Not intended to provide diagnostic information

Connections Across the Knowledge Representations



- **Class Performance Summary Report**
- **MSTAR Comparison Reports**
 - **Comparisons Over Time**
 - **Comparisons Across Classes**
 - **Comparisons Across Grades**
 - **Comparisons Across Teachers**

MSTAR Universal Screener Performance Levels

Tier III: **Intensive**
Instructional Support



B: 1-5th Percentile Rank

A: 6-14th Percentile Rank

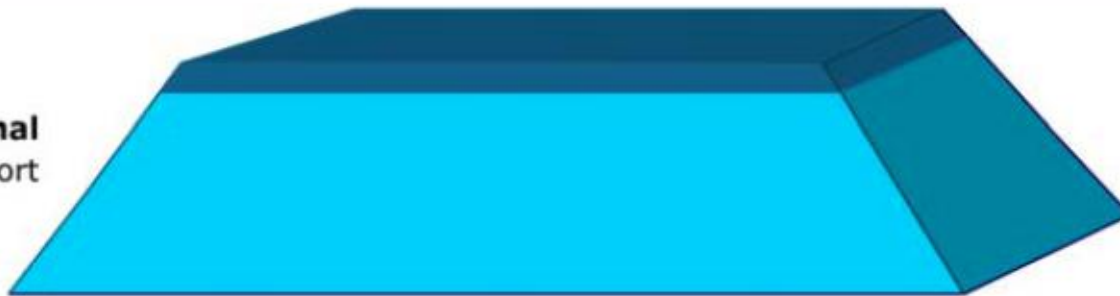
Tier II: **Strategic**
Instructional Support



B: 15-24th Percentile Rank

A: 25-39th Percentile Rank

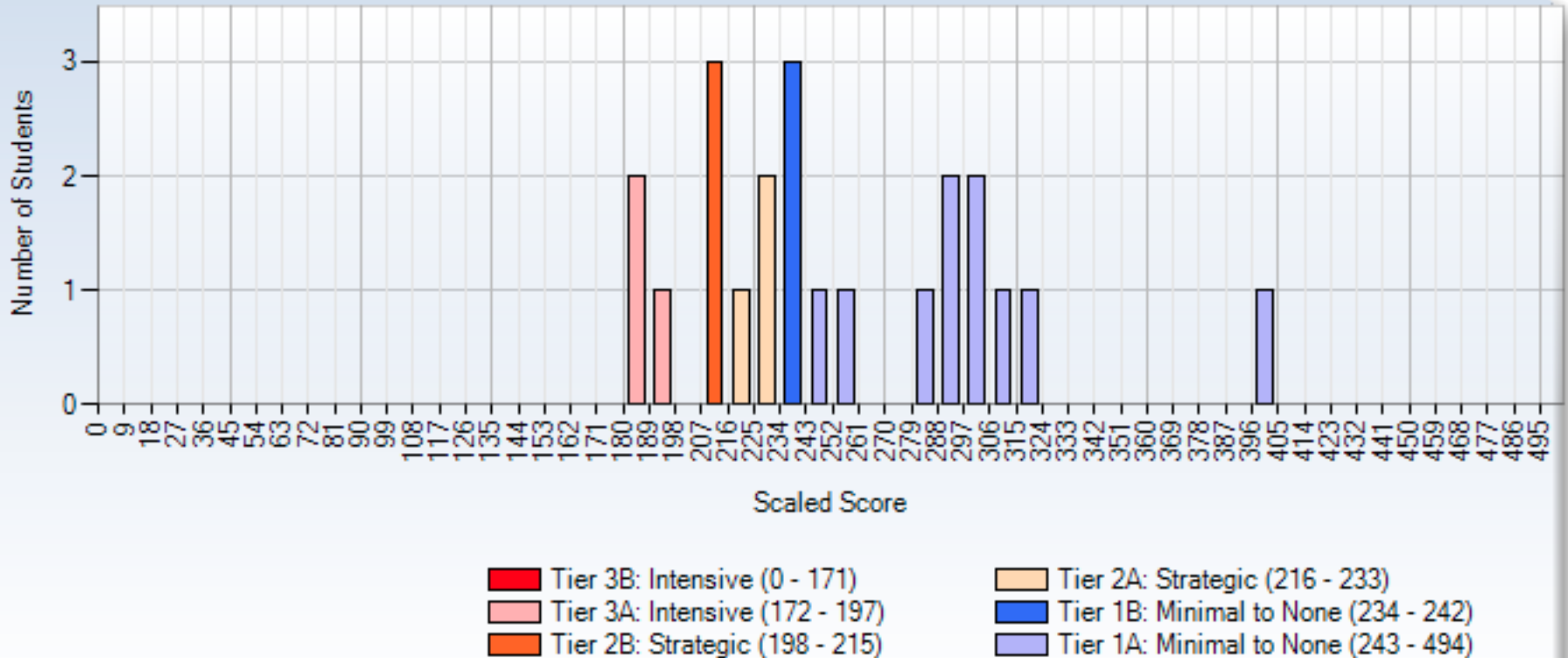
Tier I: **Minimal**
Instructional Support



B: 40-49th Percentile Rank

A: 50-99th Percentile Rank

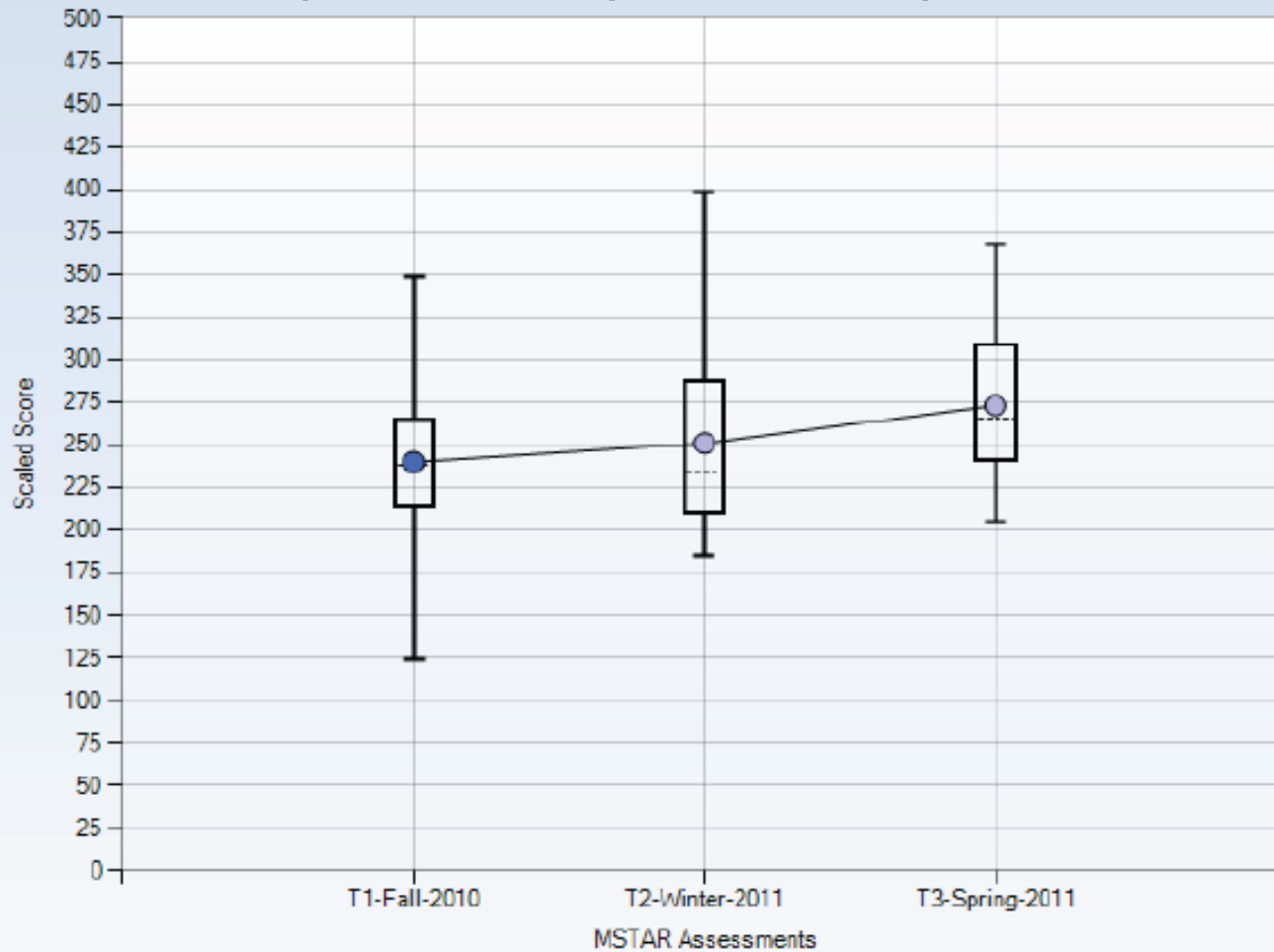
Classroom Performance Summary Report



● Tier 3A: Intensive (3 Students)

| Student | Scaled Score | Measurement Error ⁱ |
|--------------------|--------------|--------------------------------|
| Chism, Christopher | 185 | 30 |
| Evans, Laney | 196 | 30 |

MSTAR Comparison Report – Comparison Over Time



Box and Whisker ○ Averages

REPORT KEY

| | |
|--|--|
| ■ Tier 3B: Intensive (0 - 171) | ■ Tier 2A: Strategic (216 - 233) |
| ■ Tier 3A: Intensive (172 - 197) | ■ Tier 1B: Minimal to None (234 - 242) |
| ■ Tier 2B: Strategic (198 - 215) | ■ Tier 1A: Minimal to None (243 - 494) |

August 29, 2011 - September, 27, 2011

January 2 - 31, 2012

April 2, 2012 - May 9, 2012

Funded by the Meadows Foundation in Dallas

- Lesson plans for teachers working with grade 7/8 students
- Help for teachers to intervene with Tier II students
- Pre/post assessments for each unit
- Units based on concepts and skills which prohibit learning

Available in the Project Share Platform

- ***Equivalent Fractions***
 - Topic One: The meaning of fractions, 7 lessons
 - Topic Two: Equivalence, 7 lessons
- ***Multiplication and Division Facts with Understanding***
 - Topic One: Meaning of multiplication, division and the equal sign, 5 lessons
 - Topic Two: Patterns in multiplication and division, 9 lessons
- ***Ratios and Rates***
 - Topic One: Ratios and rates, 8 lessons
 - Topic Two: Equivalent ratios and rates, 8 lessons

- State Board of Education (SBOE) process
- Review committees meetings: May, July, October
- Beginning point - “The Commissioner’s Draft of the Texas Mathematics Standards”

<http://www.tea.state.tx.us/index2.aspx?id=2147499971>



Presidential Awards (PAEMST)

The National Science Foundation, under the direction of the White House, approves the Texas candidates as finalists for the national Presidential Awards for Excellence in Math and Science Teaching (PAEMST) award. If chosen as a national winner, the state finalists will receive \$10,000 and an all-expense-paid trip for two to Washington D.C. for ceremonies that include recognition from the President of the United States at the Capital.

- Nominations (K-6) will open Fall 2011.
- Applications (K-6) are due May 1, 2012.
- More information is available at

www.PAEMST.org.



2010 Texas Elementary **Mathematics** Finalists

- **Lorene Wallace** is a 1st grade teacher at Bryker Woods Elementary School in Austin ISD and has 6 years of teaching experience.
- **Stephanie Weaver** is a 3rd grade teacher at Shadycrest Elementary School in Pearland ISD and has 14 years of teaching experience.



2010 PAEMST Awardee for Texas Mathematics



Elizabeth Hudgins

Elizabeth Hudgins is a 5th grade teacher at Eanes Elementary School in Eanes ISD and has 8 years of teaching experience.

2011 Texas Secondary **Mathematics** Finalists

- **Cynthia Knowles** is a Pre-AP Geometry teacher at Eisenhower Senior High School in Aldine ISD and has 14 years of teaching experience. Her principal is Benjamin Ibarra and her superintendent is Wanda Bamberg.
- **Dixie Ross** is an AP Calculus teacher at Pflugerville High School in Pflugerville ISD and has 27 years of teaching experience. Her principal is Kirk Wrinkle and her superintendent is Charles Dupre.
- **Jill Stevens** is a high school mathematics teacher who teaches AP Calculus, IB courses, and Algebra II at Trinity High School in Hurst-Euless-Bedford ISD and has 35 years of teaching experience. Her principal is Mike Harris and her superintendent is Gene Buinger.

2010 Texas Elementary Science Finalists

- **Nancy Douglas** is a 5th grade teacher at Andrews Elementary School in Austin ISD and has 18 years of teaching experience.
- **Kent Page** is 5th grade teacher at Carnahan Elementary School in Northside ISD and has 10 years of teaching experience.



**2010
PAEMST
Awardee
for Texas
Science**



Martha McLeod

Mrs. McLeod is 5th grade teacher at Fulton 4-5 Learning Center in Aransas County ISD and has 18 years of teaching experience.

2011 Texas Secondary Science Finalists

- **Gianluca Corsi** is an Environmental Science teacher at Haltom High School in Birdville ISD and has 19 years of teaching experience. His principal is Mike Jasso and his superintendent is Jay Thompson.
- **Joy Killough** is a Biology teacher at Westwood High School in Round Rock ISD and has 31 years of teaching experience. Her principal is Rebecca Donald and her superintendent is Jesus Chavez.
- **Mary Tykoski** is an 8th grade science teacher at Cooper Junior High School in Wylie ISD and has 16 years of teaching experience. Her principal is Tami Nauyokas and her superintendent is John Fuller.

Fine Arts Integration Lessons



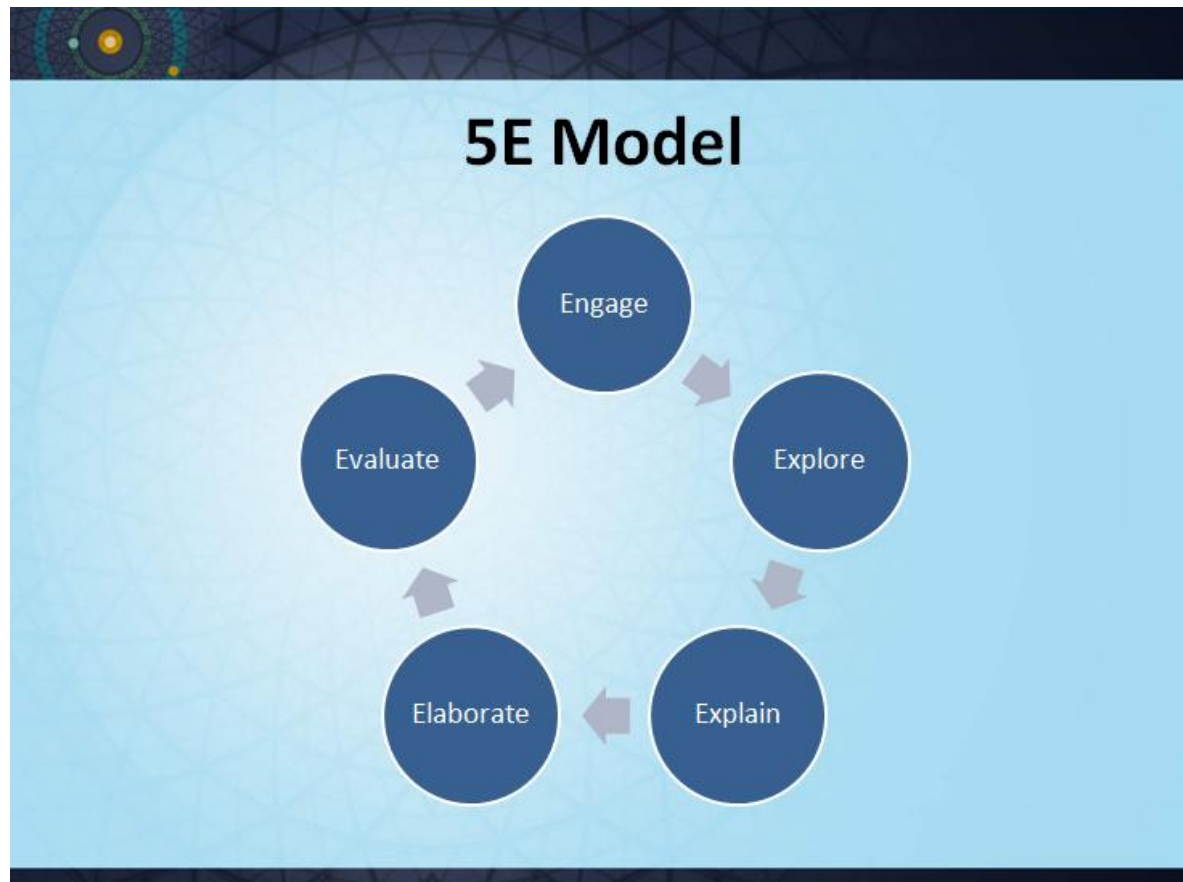
Examples of Integration Lessons

- Grade 4 Science and Music
 - Themes and Variation and the Lunar Cycle
- Grade 8 Science and Art
 - Looking at the Earth
- Chemistry and Theatre
 - The Periodic Table
- Physics and Dance
 - Accelerated Motion in Dance



Examples of Integration Lessons

- Grade 3 Math and Music
 - Moving to the Number Line
- Grade 8 Math and Art
 - Math is for Squares (proportional relationships)
- Algebra II and Theater
 - Can I afford this car? A Dramatic Exploration of Exponential Functions



Introducing a global online learning community where educators collaborate, share resources, and showcase accomplishments:

<http://www.projectsharetexas.org/index.html>

The screenshot shows the Project Share website interface. At the top center is the logo for "project Share" with the tagline "Knowledge knows no boundaries". To the right of the logo is a login form with fields for "Username" and "Password", a "Login" button, and a link for "Forgot Username or Password?". Below the logo and login form is a navigation bar with three tabs: "ABOUT", "EDUCATORS", and "STUDENTS". The main content area features a blue background with white clouds and the text "EDUCATED IN TEXAS, CONNECTED TO THE WORLD." at the bottom.

- Complete online professional development courses
- Collaborate and share resources with other teachers
- Access digital content
 - Online repositories
 - State-owned instructional materials

Welcome: **Everly Broadway**
<http://www.epsilen.com/ebroadwa>

Add your favorite tools by dragging the links from left navigation

Courses ?

Use the Courses tool (Epsilen Global Learning System, or GLS) to access and manage your courses. [Create a new course](#)

Courses

Archived
Courses

Courses Open to
My Institution

Courses Open to
All Epsilen

Course
License Status

| Course | Description | My Role | Messages | Forums | Starts/Ends | Action |
|--|---|---------------|----------|--------|-------------------------|--------|
| MSTAR Academy I: More About Tier II for the Math Learner, Version 1.0 | The purpose of this course is to help you more ful development/institution release copy | Student | | | 1/6/2011 7/6/2015 | |
| MSTAR Academy I: Addressing the G/T Math Learner through RtI, Version 1.0 | The purpose of this course, MSTAR Academy I: Addre institution release copy | Student | | | 1/6/2011 7/6/2015 | |
| MSTAR Academy I: Fraction/Decimal Relationships and Operations Version 1.0 | This course is a continuation of the content addre Institution Release Copy | Student | | | 12/6/2010 6/6/2015 | |
| Algebra I End of Course Success (self-paced) | The Algebra I End of Course Success training | Administrator | | | 10/5/2010 12/31/2015 | |

My Portal

My ePortfolio

Groups

Calendar

Courses

Create Course

Search Courses

My Invitations

My Requests

Learning Matrix

Epsilen Mail

Files / Folders

My Networks

Share It

Take Notes

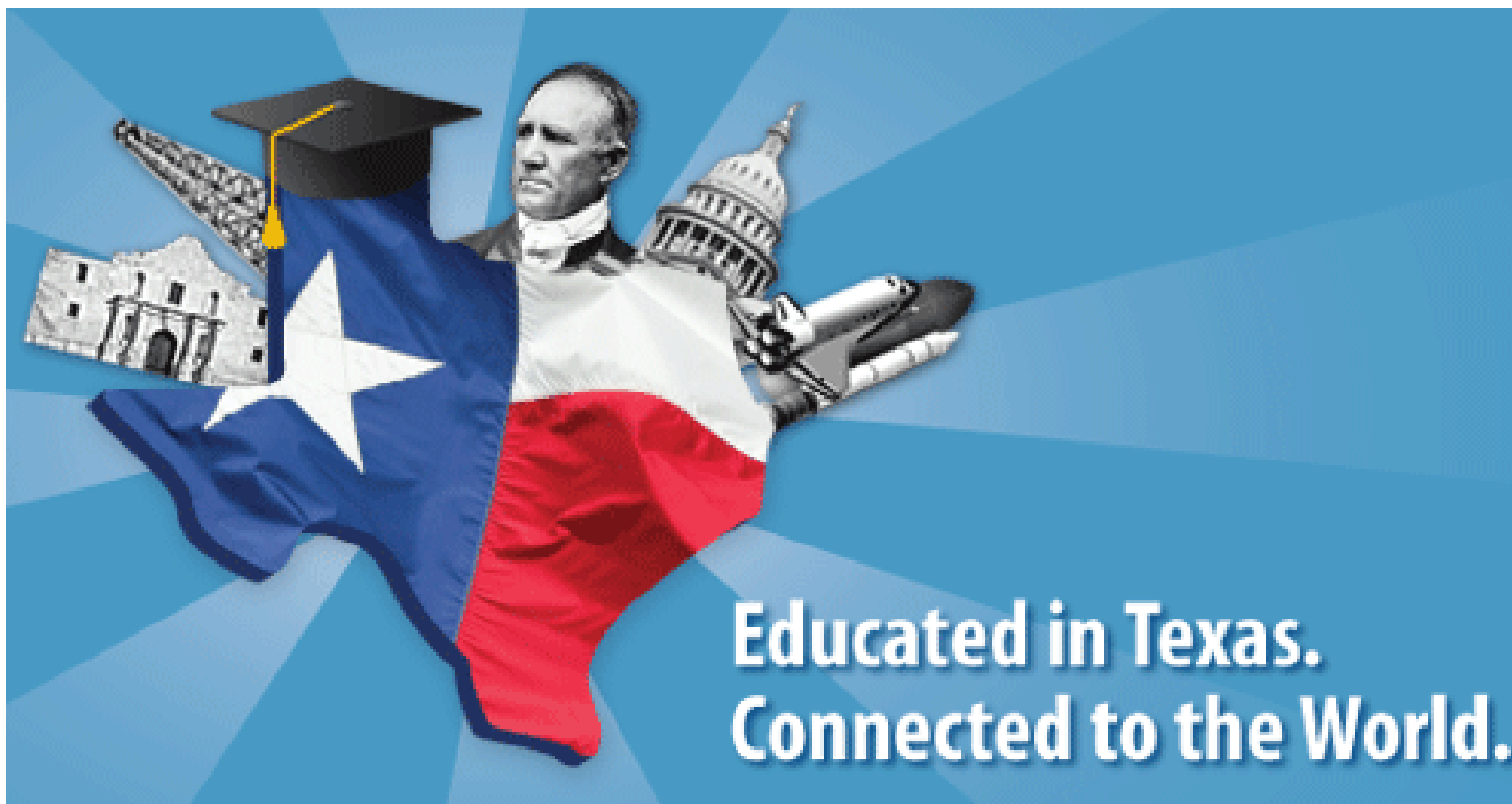
Search Epsilen

Time Tracker

Rubrics

- Questions may be sent to the Project Share mailbox: projectshare@tea.state.tx.us
- TEA Contact is Kerry Ballast: kerry.ballast@tea.state.tx.us
- More information is available on the Project Share website: www.projectsharetexas.org/

Texas Education on iTunes U



**Educated in Texas.
Connected to the World.**

<http://www.tea.state.tx.us/itunesu/>

Texas English Language Learners Instructional Tool (TELLIT)

- Sixteen 2-hour online courses for teachers of ELL students
- Video segments of teachers using effective strategies targeting cognitive, linguistic and affective learning environments
- <http://www.elltx.org/trainings.html>

Texas Math and Science Diagnostic System (TMSDS)

- Math - Grades 3–8, Algebra I and II, and Geometry
- Science - Grades 3–8, IPC, Biology, Chemistry, and Physics
- New Spanish items (soon)
- 3 diagnostic tests for each grade level/course - 30 questions each
- 5-question “mini-assessments” for most student expectations
- No cost for school districts and charter schools
- Technical assistance from ESCs

www.tmsds.org/

- Chemistry EOC Success and Physics EOC Success begin in summer 2011.
- Contact the science specialist at your ESC for sessions and registration information.
- Project Share hosts online professional development at <http://www.projectsharetexas.org/>:
 - Science TEKS K-12 Overview
 - Science Grades 5-8 Academy
 - Biology EOC Success

Supplemental Science Instructional Materials

- Request for supplemental instructional materials that meet all of the new and expanded TEKS
- Grades 5-8, Biology, Chemistry, Integrated Physics and Chemistry (IPC), and Physics
- Statewide review of online materials June 6 – 17
- SBOE action expected in July
- Implementation in schools beginning with the 2011-2012 school year
- Information available at <http://www.tea.state.tx.us/index2.aspx?id=2147487077>

Supplemental Science Instructional Materials

Review panels identify each submission:

- **Recommended for Adoption** (sufficient information to teach and/or learn the new and expanded concepts)
- **Not Recommended for Adoption**



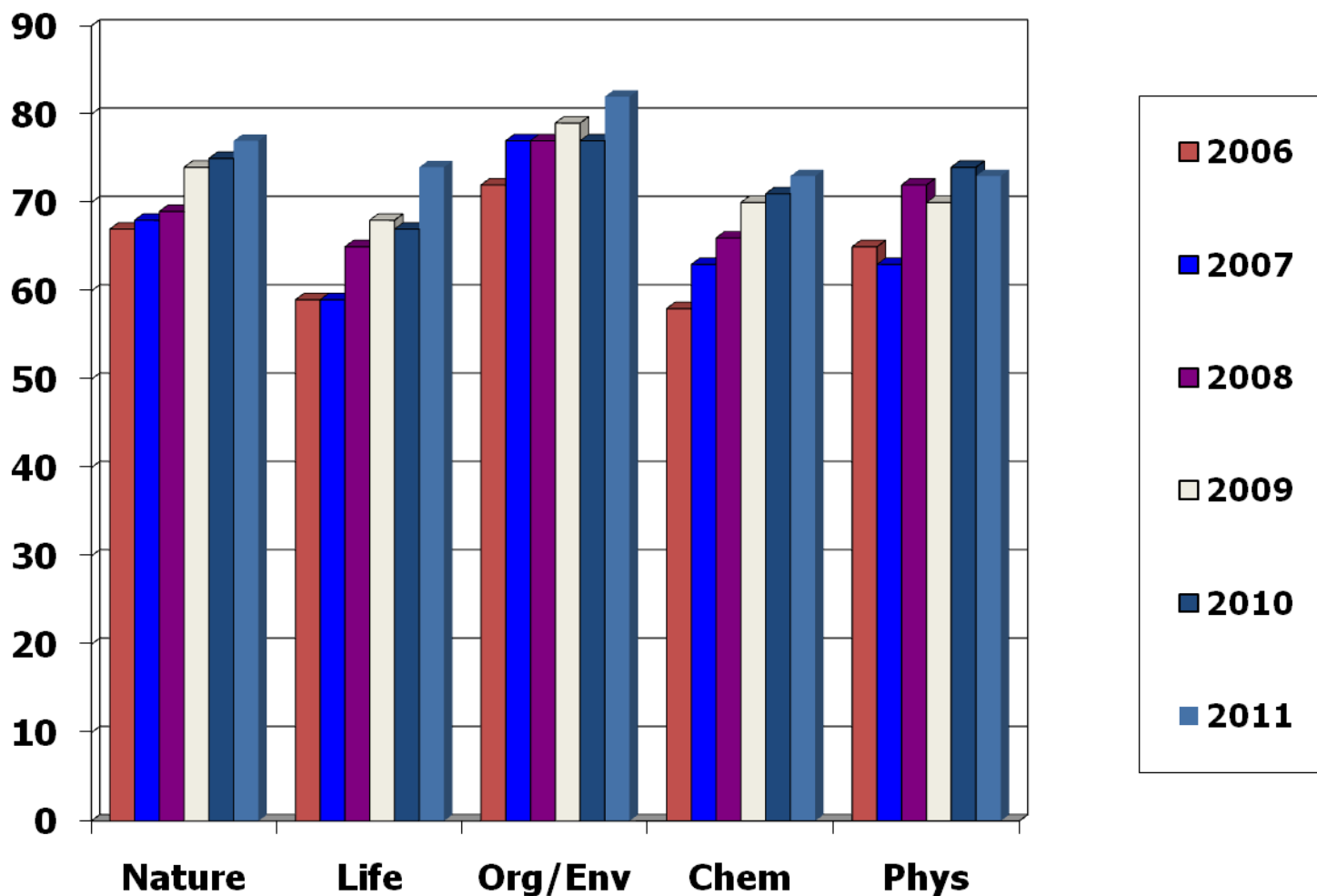
SCIENCE

2006–2011 TAKS Statewide Summary Reports

Preliminary – as of May 26, 2011
<http://www.tea.state.tx.us/student.assessment/taks/rpt/sum/yr11/>

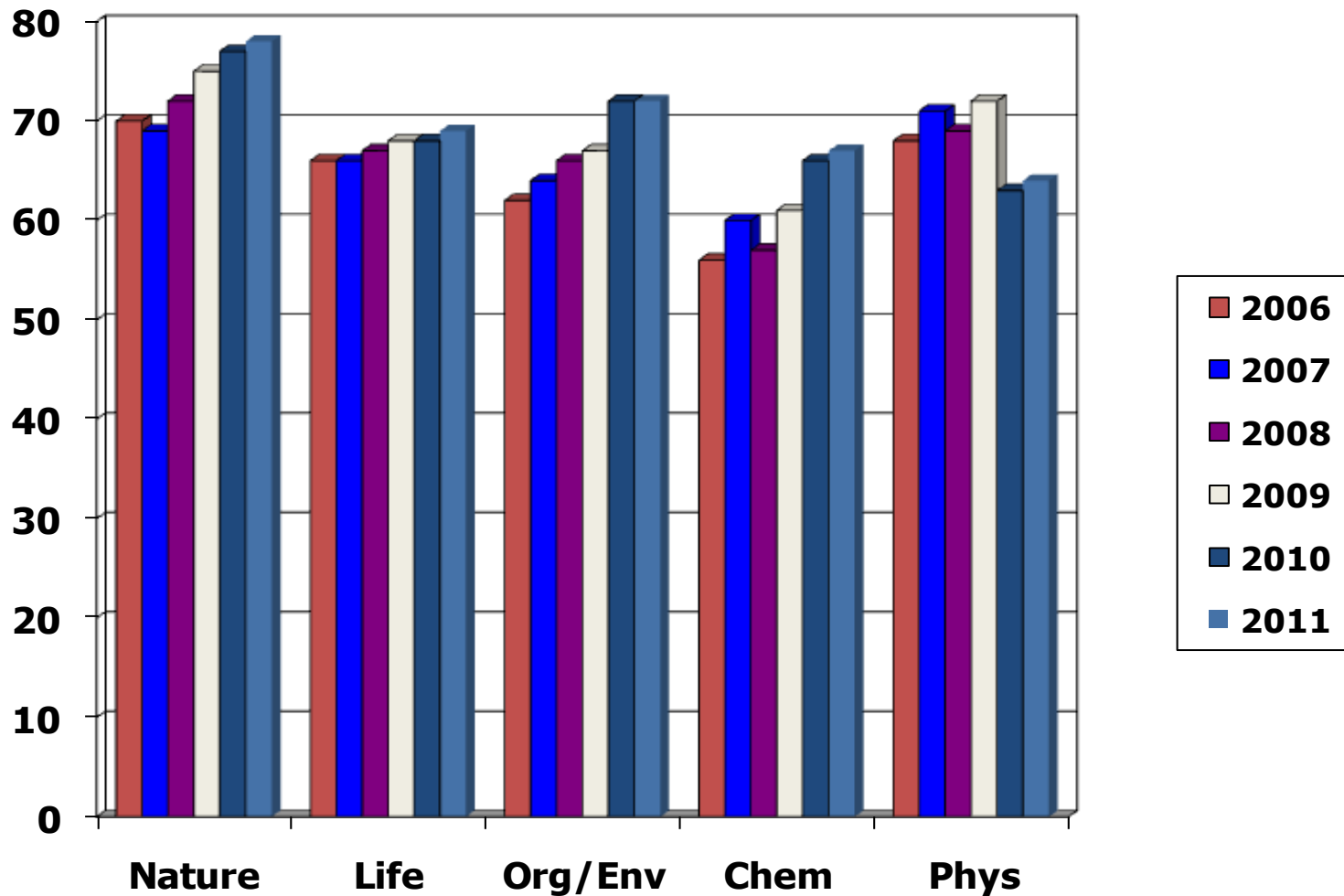
11th Grade TAKS Items - % Correct by Objectives

2006 - 2011 (Preliminary)



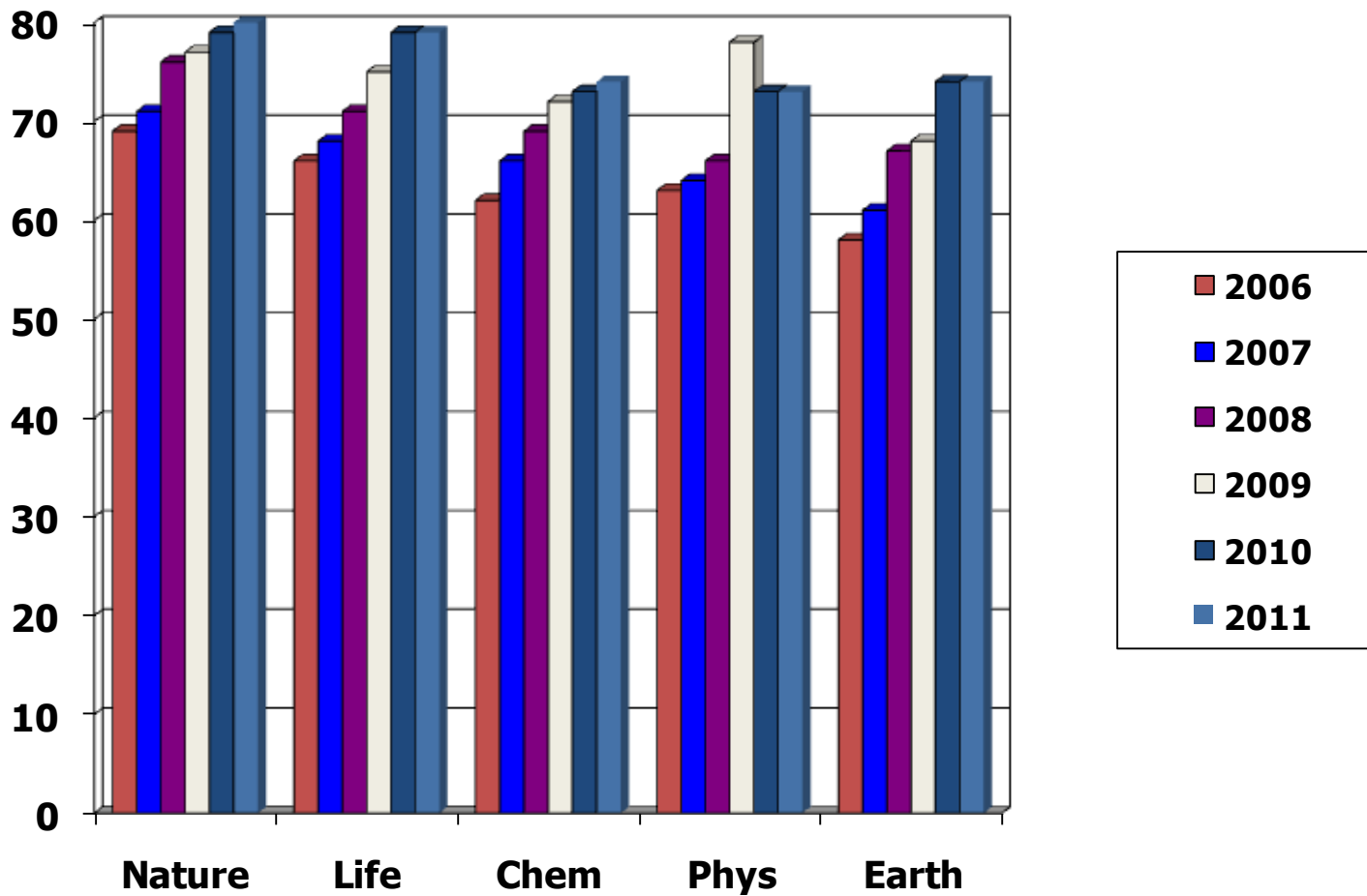
10th Grade TAKS Items - % Correct by Objectives

2006 - 2011 (Preliminary)



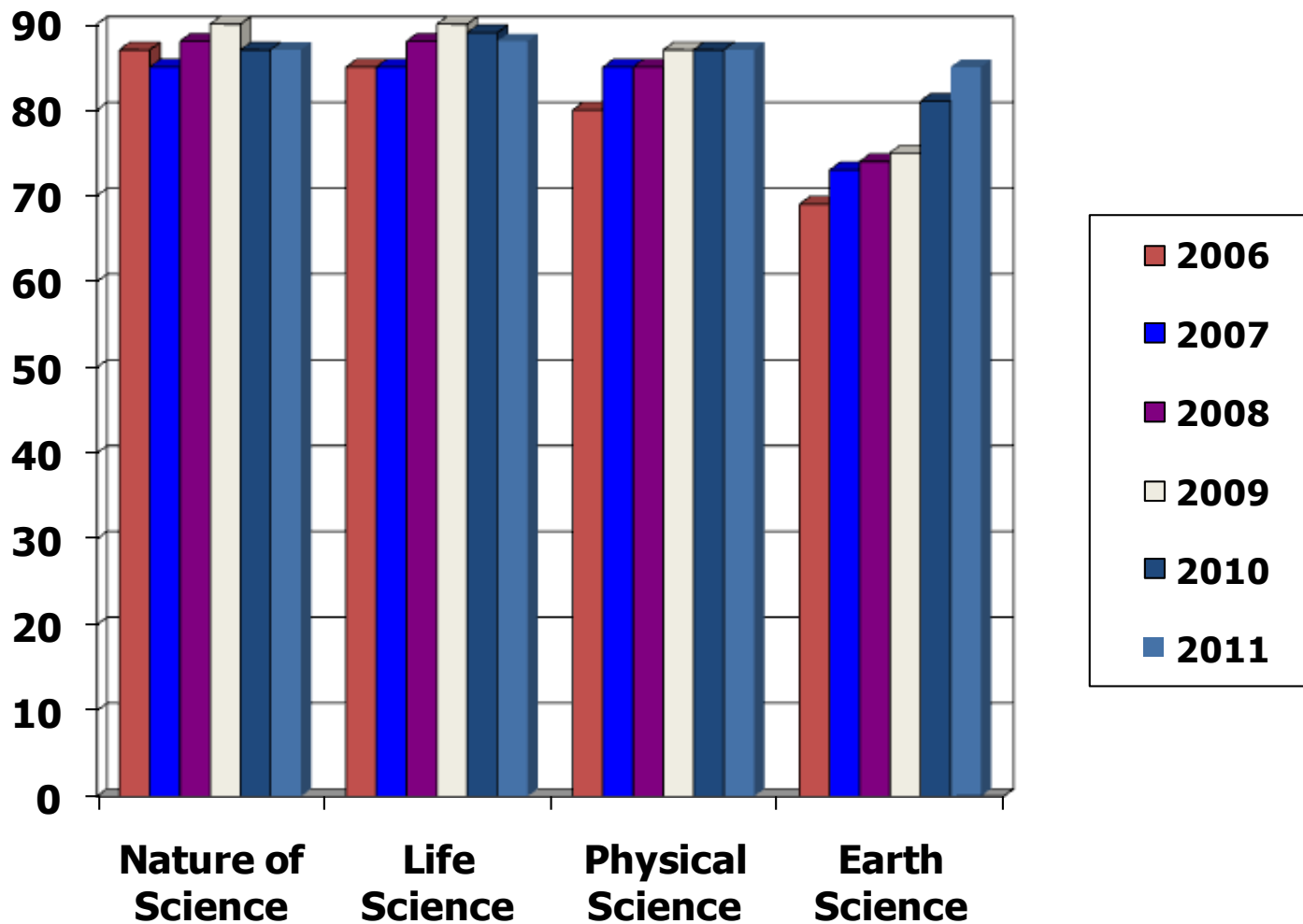
8th Grade TAKS Items - % Correct by Objectives

2006 - 2011 (Preliminary)



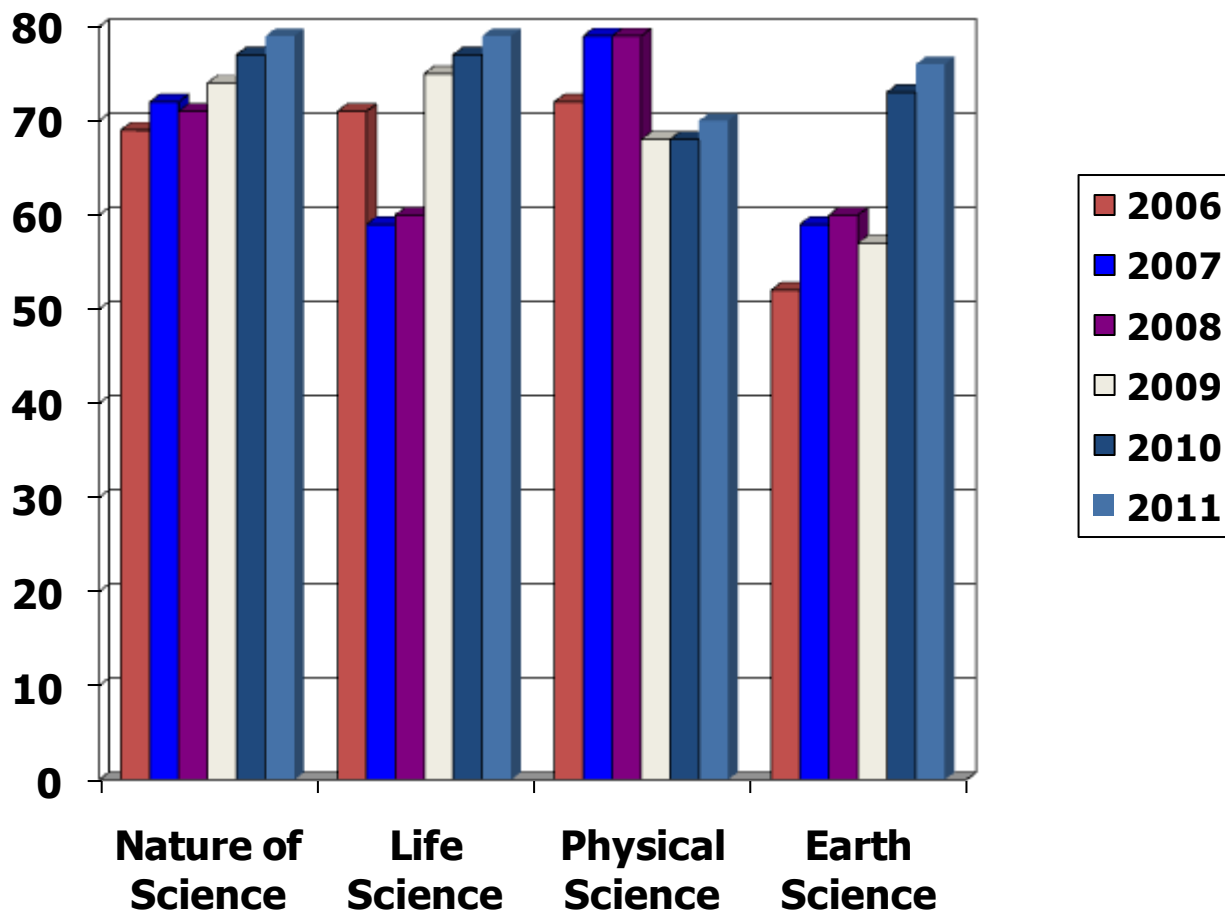
5th Grade TAKS Items - % Correct by Objectives

All Students: 2006-2011 (Preliminary)

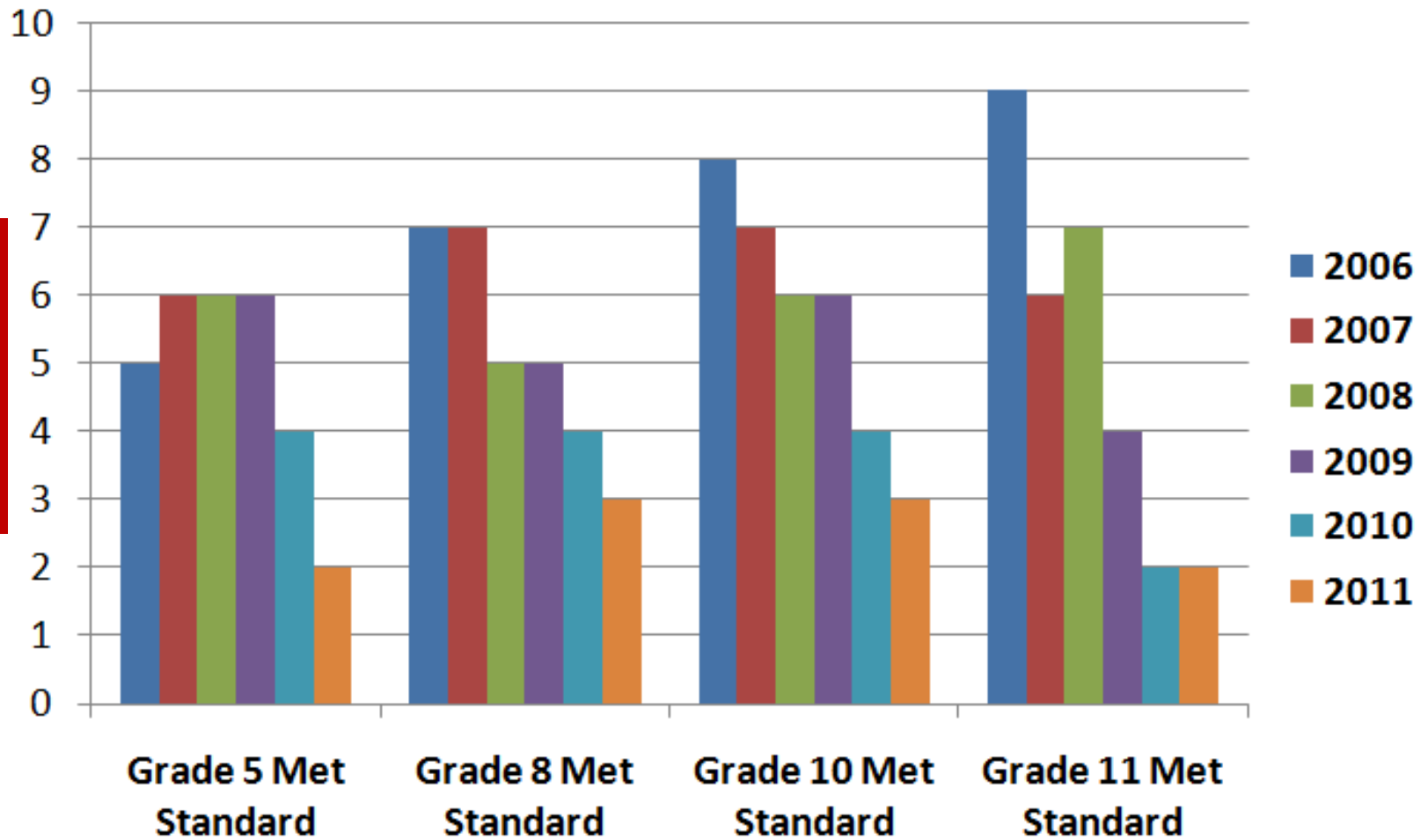


5th Grade Spanish TAKS Items - % Correct by Objectives

All Students: 2006-2011 (Preliminary)



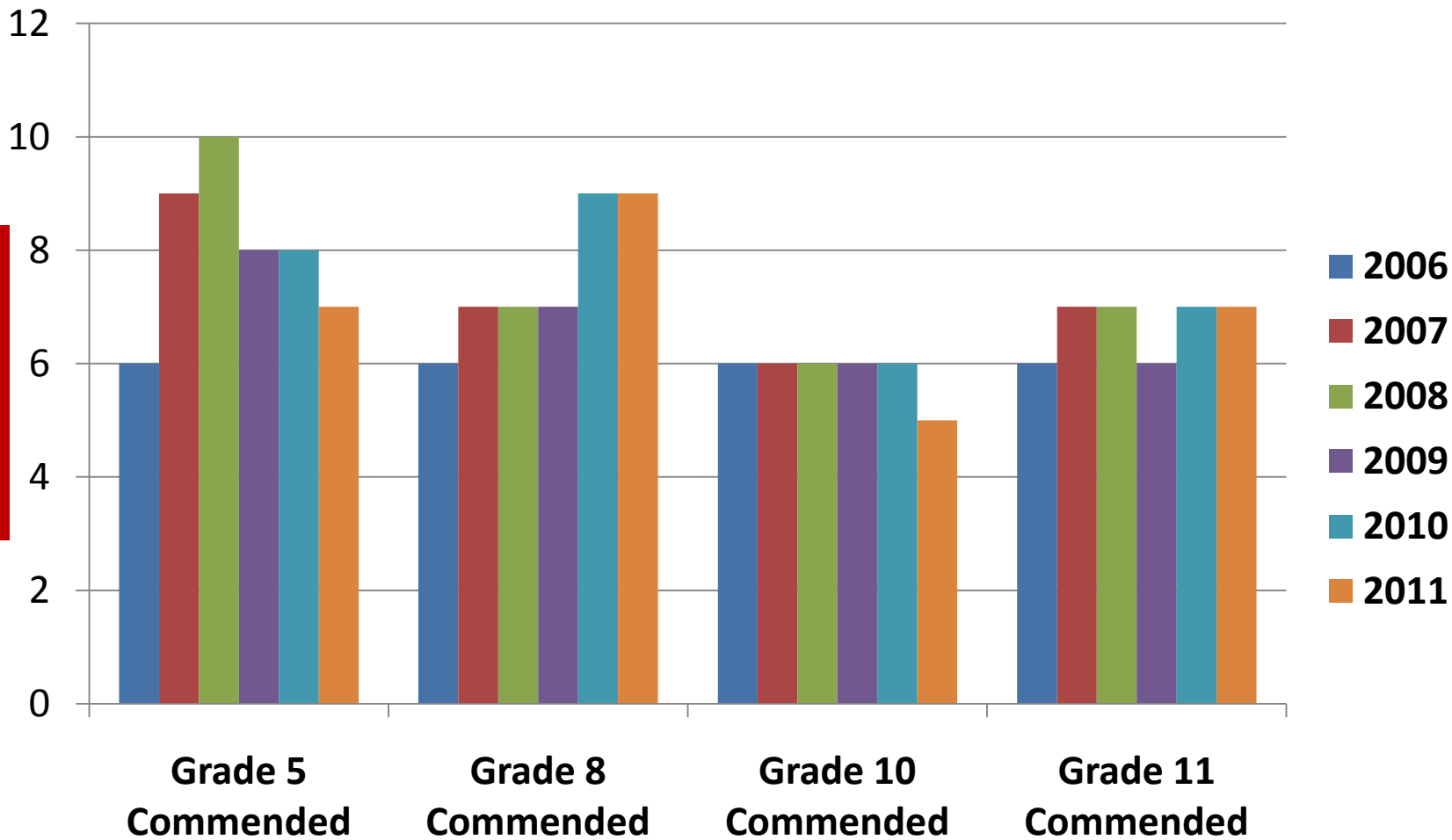
Gap Between Male and Female Performance on 2006-2011 Science TAKS - Met Standard



Percentage Points Difference Between Male and Female Performance, Statewide Results for All Students

Gap Between Male and Female Performance on 2006-2011 Science TAKS - Commended

Percentage Points Difference Between Male and Female Performance, Statewide Results for All Students



Join All Agency LISTSERV Groups:

<http://miller.tea.state.tx.us/list/>

Contact the Division of Curriculum:

Website <http://www.tea.state.tx.us/index2.aspx?id=2147486096>

Phone (512) 463-9581

Email curriculum@tea.state.tx.us

**Thank you. We appreciate your
service to the students of Texas.**



We strive to provide leadership, guidance, and resources to help schools meet the educational needs of all students.