

Conference on the Teaching of Mathematics 6–12 SHSU, Feb 2003

Mathematics Strategies and
Resources to Support the
TEKS and TAKS



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Mathematics Center for Educator Development



- Resources for mathematics and science teachers
- Resources for administrators
- Resources for districts

We are hearing a lot in No Child Left Behind about using research-based decision making, scientific-based research, and evidence-based research.

What does this mean ...

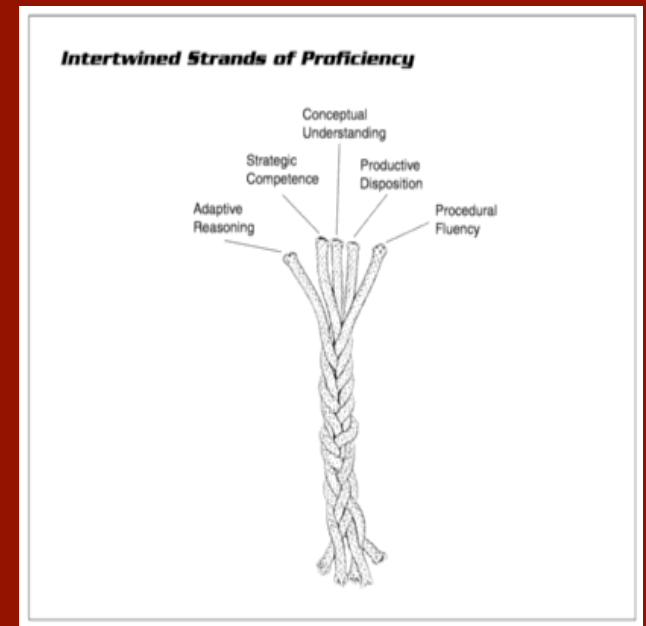
At the national level?

At the state level?

What does it mean to learn mathematics successfully?

Mathematical proficiency: interwoven strands developed together; emphasizing no strand over the others

- **Understanding** (conceptual understanding)
- **Computing** (procedural fluency)
- **Applying** (strategic competence)
- **Reasoning** (adaptive reasoning)
- **Engaging** (productive disposition)



- *Adding It Up*, NRC, 2001

What does research suggest?

- Opportunity to learn is considered the single most important predictor of student success.
- Students learn best when presented with academically challenging work focused on sense-making, problem solving, and skill building.
- Teacher beliefs about what students need to (and can) learn influence their instructional decisions.
- The same teaching and learning principles apply to all students, including those with special needs.

- *Adding It Up*, NRC, 2001

What does research suggest for improving Algebra I?

Factors for improving scores:

- sense of urgency and priority
- expectations for all students
- expectations for all teachers
- effective professional development
- appropriate resources and materials, such as graphing calculators.

*- Improving Algebra I End-of-Course Exam Scores:
Evidence from the Field, Charles A. Dana Center, 2000*

How is Texas responding to
No Child Left Behind?

The Instructional Program in Texas pre-2002

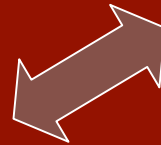
written
curriculum



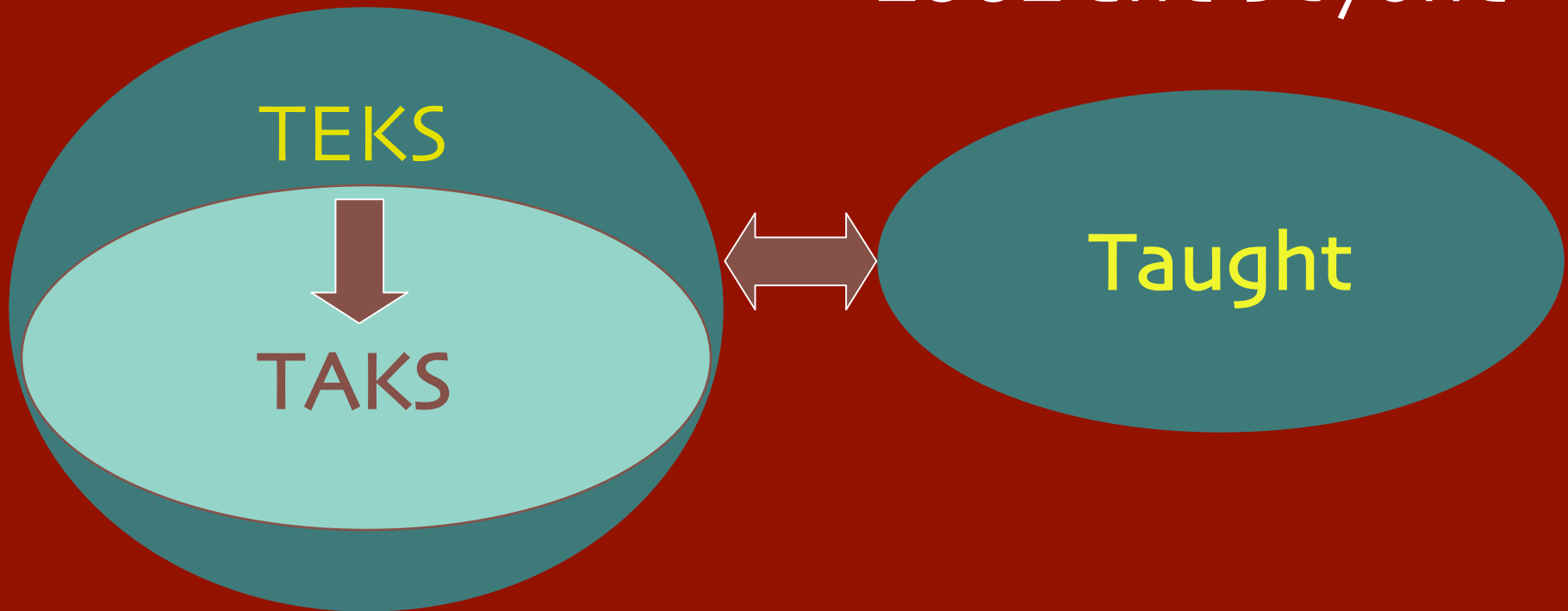
assessment



instruction



The Instructional Program in Texas 2002 and beyond



**Goal: Student Learning/
Student Achievement**

Teaching TEKS



Teaching TAKS

Mathematics Strategies to Support TEKS and TAKS

Why are we concerned about the TAKS?

- Grades 3-8
- Grade 5 & 8 assessment (SSI in 2005)
- High school content assessment
Grades 9-11 (Algebra I, Geometry, and some TEKS from grade 8)
- Accountability

Mathematics Strategies to Support TEKS and TAKS

Teach the TEKS

Teach the TEKS

Teach the TEKS

It's not about TAKS, it's about TEKS!

We have TAKS to assess
TEKS understanding.

But we hear a lot about other
assessments: diagnostics,
benchmarks, etc.

Help!

The Assessment Principle

Assessment should

- support the learning of important mathematics
- furnish useful information to both teachers and students
- be a valuable tool for making instructional decisions
- be a routine part of the ongoing classroom activity rather than an interruption

Principles and Standards for School Mathematics, NCTM, 2000, p. 22

Where and when to assess ...

Assessment Tools	Timing
Diagnostic assessments, state or district	Beginning of school year
Performance assessments	Ongoing; teachers continually monitor student progress
Benchmark assessments, campus or district	According to campus/district schedule
(TAKS) Texas Assessment of Academic Skills	End of school year, dates set by state

Resources for Mathematics TEKS Support available through the Math CED/Dana Center

Performance Assessments

Mathematics Standards in the Classroom,
Grades 3-5 and 6-8 (print, CD, web)

Algebra I Assessments (print, CD, web)

Geometry Assessments (print, CD, web)

Algebra II Assessments (coming 02-03)

Middle School Proportionality Assessments
(coming 02-03)

But assessments are just one piece.

What about instruction? How do we put this all together? What resources are available?

TEXTEAMS Mathematics Institutes

Statewide K-12 professional development
with an emphasis on ...

- Improving mathematical content knowledge of teachers
- In-depth attention to the TEKS
- Connections to classrooms and instructional practice

Developed by the Dana
Center; funded by TEA.

Mathematics TEXTTEAMS Institutes Middle School

Rethinking Middle School Mathematics series:

- Proportionality Across the TEKS
- Algebraic Reasoning Across the TEKS
- Numerical Reasoning Across the TEKS
- Geometry Across the TEKS (new)
- Statistical Reasoning Across the TEKS (6-12) (new)
- Problem-solving (summer 2003)

Practice-based Professional Development:

- Middle School Proportionality Assessments
(summer 2003)

Mathematics TEXTEAMS Institutes High School

- Algebra I: 2000 and Beyond
- Geometry: Supporting TEKS and TAKS (new)
- Algebra II/Precalculus (separate institutes 02-03)
- Rethinking Secondary Mathematics series:
 - Algebraic and Geometric Modeling
 - In-depth Secondary Mathematics
 - Statistics Across the TEKS (new)

Practice-based Professional Development:

Algebra I Assessments (new)

Geometry Assessments (new)

Algebra II Assessments (2002-03)

Resources for Mathematics TEKS Support available through the Math CED/Dana Center

Math TEKS booklets (print, web)

Math TEKS/TAAS/TAKS charts (print, web)

TEKS Trails (Algebra, Geometry, 3-5, 6-8)

K-12 TEKS → success for all in AP Calculus
(chart and pd)

Foundations for Functions (for vertical teams)

Charts, posters (print) & other resources

Mathematics TEKS Toolkit

www.mathtekstoolkit.org

Mathematics TEKS Toolkit

Center for Educator Development for Mathematics



TEA | CAMT | TASM | TCTM

Information Especially for...

 **Catalog** [About Us](#) [Other TEKS Toolkits](#) [Dana Center Websites](#) [Site Map](#) [Text Version](#)

What's New

[CAMT 2002 Program Online](#)

To order Mathematics Products and Publications, [download order form](#) or visit the Products and Publications section of the Dana Center website.

[TAKS Information Booklets](#) (new from the TEA site)

For a complete list of What's New archives, [click here](#).

Resources for implementing the mathematics Texas Essential Knowledge and Skills (TEKS) and for improving mathematics programs in Texas



Texas Essential Knowledge and Skills (TEKS)

Overview and History, Structure of the TEKS, and TEKS in English or Spanish

Supporting the TEKS and TAKS

Clarifying Activities, Clarifying Lessons, Assessment Connections K-8, TAKS Objectives, TEKS/TAAS/TAKS Comparison Charts, TEKS/TAKS Vertical Alignment Charts, and Algebra I Assessments

Instruction and Assessment

Resources for Teaching and Assessing as well as State, National, and International Assessment Information and Data

Professional Development

Professional Development Strategies and Opportunities, including TEXTEAMS, TEKS for Leaders, and Conferences

Resources

Classroom Tools and Technology, Dana Center Products and Services, Research, Articles, Conference and Meeting Presentations, and Professional Organizations and Agencies

Program Development: Quality Mathematics for All

Creating a Successful Mathematics Program and Mathematics for All

TEKS **Supporting TEKS and TAKS** **Instruction and Assessment** **Professional Development** **Resources** **Program Development**

[About Us](#) [Other TEKS Toolkits](#) [Dana Center Websites](#) [Site Map](#) [Home](#)

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Presentation available under Resources:
www.mathtekstoolkit.org

Reference List

- Charles A. Dana Center. (2000). *Improving Algebra I End-of-Course Exam scores: Evidence from the field*. Austin, TX: Author.
- Kilpatrick, J., Swafford, J., & Findell, B. (Eds.). (2001). *Adding it up: Helping children learn mathematics*. Washington, DC: National Academy Press, National Research Council, Mathematics Learning Study Committee.
- Kilpatrick, J., Swafford, J., & Findell, B. (Eds.). (2002). *Helping children learn mathematics*. Washington, DC: National Academy Press, National Research Council, Mathematics Learning Study Committee.