

Texas Regional Collaboratives for Excellence in Science and Mathematics Teaching



*Dynamic
Partnerships
for 21st Century
Science and
Mathematics
Education*

*Headquartered at the
Center for Science and
Mathematics Education
College of Education
The University of Texas at Austin*

BRIEF HISTORY

In 1990-91, major science education reform activities were underway in Texas. Changes necessitated that teachers adopt new methods of teaching and teach a wide variety of sciences for which they were not prepared. Dr. Kamil A. Jbeily, then at the Texas Education Agency (TEA), initiated a series of regional meetings across the state to explore ways to create ongoing regional support systems of professional development for Texas science teachers. The meetings included representatives from education service centers, colleges and universities, school districts, and community leadership. The goal was to create partnerships that are built on collaboration, cost-sharing (using Eisenhower funds as seed money), and synergistic relationships to provide science teachers with relevant, meaningful, sustained, and high-intensity professional development that will have positive impact on student achievement. The partnerships gave birth to the Texas Regional Collaboratives for Excellence in Science Teaching.

On March 2, 1996, with the reorganization of the Texas Education Agency, and under a TEA-UT partnership agreement, the statewide administrative office of the Texas Regional Collaboratives was moved to the Science Education Center (now Center for Science and Mathematics Education) at The University of Texas at Austin. The program now enjoys support from a wide spectrum of local, state, and national partners.

In July 2006, the Texas Regional Collaboratives (TRC) launched a new initiative funded by the Texas Education Agency to provide high quality professional development for Texas mathematics teachers. After a competitive process, grants were awarded to 20 partnerships across Texas to establish the Texas Regional Collaboratives for Excellence in Mathematics Teaching.

Texas Regional Collaboratives for Excellence in Science and Mathematics Teaching



Who We Are

The Texas Regional Collaboratives for Excellence in Science and Mathematics Teaching (TRC) is an award-winning statewide network of sixty P-16 partnerships that provide sustained and high intensity professional development to P-12 teachers of science and mathematics across the state. This infrastructure of over 56 institutions of higher education collaborating with the Texas Education Agency, Education Service Centers, school districts, and business partners, has an 18-year track record of designing and implementing exemplary professional development using research-based instructional models, materials, and best practices.

Our Mission

To provide Texas science and mathematics teachers with support systems of scientifically researched, sustained, and high intensity professional development and mentoring to assist them in the successful implementation of the Texas Essential Knowledge and Skills (TEKS). TRC programs equip teachers with the knowledge and skills to engage students in meaningful science and mathematics learning experiences. Activities are designed to improve students' scientific, mathematical and technological literacy, and inspire them to pursue science and engineering related careers.

Achievements

- Served over two million students across Texas through improved instruction and performance of participating teachers; developed the leadership capacity of approximately 17,000 Science Teacher Mentors (STMs) through sustained and high intensity professional development. These STMs are in turn sharing their experiences with thousands of teachers through mentoring, peer coaching, technical assistance, and workshops at the campus, district, and regional levels. In addition, approximately 1,000 Mathematics Teacher Mentors (MTMs) have received sustained and high intensity professional development sponsored by the Texas Education Agency, and supported several thousand additional math teachers with mentoring and outreach. Science and mathematics teachers in almost all of the State's 254 counties have been the beneficiaries of this extensive statewide network.
- Transformed the culture of professional development into one that commits to a high quality, sustained, and results-driven support system that has a positive impact on teacher performance and student achievement.
- Received commendation from U.S. Department of Education, National Science Foundation, policy makers, legislators, and business partners; inducted into the Texas Science Hall of Fame, and recognized by the Governor, the Senate and House of Representatives for distinguished achievements and contributions to supporting excellence in science education.

Values

- We **serve** the teachers and students of Texas.
- We **treasure** our people.
- We **operate** with integrity.
- We **reward** our partners.
- We **contribute** to systemic reform and to the community.

Texas Regional Collaboratives

As part of its charge to build leadership capacity and develop the knowledge and skills of science and mathematics teachers and educators, the TRC continues to offer Professional Development Academies (PDAs) in content areas and at grade levels consistent with state priorities and student achievement data. The content and instructional strategies acquired during these PDAs are shared with teachers through Professional Development Programs (PDPs) designed and implemented by the local Regional Collaborative partnering institutions.



Early Childhood Science and Mathematics

2010-2011 PROGRAM GOALS

Numerous large-scale studies have identified teacher quality, more than any other factor, as a key determinant of student success. Studies have consistently documented the important connection between a teacher's verbal ability/content knowledge and student achievement.

Research suggests that in order to have a positive and lasting impact on classroom instruction and student learning, professional development should be sustained, intensive, and classroom-focused. The TRC is committed to assisting partnerships in providing high quality professional development in support of teachers' efforts to raise student achievement. Successful programs generally include:

- Summer institutes coupled with follow-up training over a sustained period throughout the school year to support classroom implementation and schoolwide dissemination.
- Ongoing opportunities for enhanced professional development that improves teachers' subject matter knowledge and promotes strong teaching skills.
- Opportunities for teachers to build leadership capacity and collaborative skills through the development of professional learning communities in each Regional Collaborative.

The design of professional development at all levels of the TRC network centers on content knowledge, the principles of effective instruction and student learning, a commitment of time and resources for implementing development over an extended period of time, and the employment of professional development styles that engage teachers collaboratively rather than only focusing on them as individuals.

PROGRAM STRUCTURE

Each Science Teacher Mentor (STM) and Mathematics Teacher Mentor (MTM) is expected to take the subject area content knowledge, classroom skills, and leadership skills back to their respective campus, district, or region and provide mentoring, technical assistance, peer coaching and leadership to additional teachers of science or mathematics. Teachers who receive this outreach are referred to as Cadre Members (CMs).

MENTORING

Mentors participate in an average of 85 (mathematics) to 105 (science) hours of professional development.

Mentors use their knowledge and understanding of teaching and learning to support other teachers in a variety of ways such as:

- Serving as instructional leaders for their campus or district, particularly in small, rural district administrations that do not have science or mathematics curriculum specialists positions,
- Encouraging other teachers to benefit from Collaborative professional development activities, and
- Sharing research-based lessons and strategies with peers.

Cadre Members participate in the Collaboratives by attending an average of 12 hours of professional development. In some cases, they attend workshops along with mentor teachers, and in other cases, they receive the training directly from the mentor teachers. This mentor-cadre relationship provides a venue for key ideas on science and mathematics teaching to be shared throughout the schools.

Professional Development Academies (PDAs)



Each Regional Collaborative designs its program based on the needs of teachers' and students' test data in the region. All professional development must have a research base that shows effective strategies for improving students' learning. During the program year, Collaboratives must also have an assessment plan in place that evaluates teachers' academic knowledge growth as a result of their participation in the program as well as a positive impact on student achievement.

The TRC offers a series of Professional Development Academies (PDAs) for Instructional Team Members (ITMs) to support Collaboratives in implementing research-based professional development with their teachers. PDAs proposed for 2010-2011 include the following:

Science Topics

Integrated Biological Sciences (PK-12)

This institute will focus on TEKS-aligned instruction for teachers needing to strengthen their conceptual understanding in the biological sciences. Particular attention will be given to the flow of matter and energy through biological systems, integration of the big ideas in biology with other science disciplines, and inquiry approaches to developing conceptual understandings of foundational concepts in biology.

Inquiry Institute (PK-12)

Participants will explore the theory and practice of inquiry-based teaching and learning.

Technology Integration in Secondary Classrooms (6-12)

This workshop will focus on the use of technology as a tool for science inquiry. Topics include Geographic Information System (GIS), Global Positioning System (GPS), and Robotics.

TXESS (TeXas Earth and Space Science) Revolution

A rigorous, high quality, 5-year geoscience professional development program for high school teachers who teach or are preparing to teach an Earth Science course.

Mathematics Topics

Formative Assessments in K-5 Mathematics

Participants will learn about one-on-one interviews to assess children's mathematical thinking. Learning about children's thinking supports whole class and small group instruction. Assessments in eight different math topics will be introduced.

Engineering and Mathematics (6-8)

Engineering makes many uses of algebraic thinking and data analysis to solve engineering problems in real world settings. This PDA will introduce approaches to the topic of engineering designed to support students' understanding of mathematics.

Best Practices in Mathematics for Administrators

This training will provide support for administrators to become instructional leaders in mathematics.

Early Childhood Mathematics

Participants will learn what research has shown about very young children's understanding of number, and how to construct opportunities through centers and lessons that build on that knowledge.

Integrated Science and Mathematics Topics

Mathematics, Science and Informal Sites

Hosted at the Houston Museum of Natural Science, the focus of this PDA is the use of informal sites to promote learning of science and mathematics.

Early Childhood Physical Science and Mathematics Integration (PK-2)

Activity-intensive professional development based on Pre-K standards and focused on the process skills to teach science and mathematics to preschool children.

Art/STEM Integration (4-8)

Upper elementary and middle school teachers will experience an integrated curriculum based on the content of space science.

Integrate Math and Science Meaningfully (3-8)

This PDA is designed to help teachers give students a solid conceptual understanding of math and science built on research in best practices and brain-based learning.

PROFESSIONAL DEVELOPMENT ACADEMIES (PDAs)



GLOBE Watersheds PDA



*SECO (State Energy Conservation Office)
Water Wheel PDA Activity*



Young Children's Thinking in Fractions PDA



High School Chemistry Year 2 PDA

Professional Development Academies (PDAs) serve professors of science and mathematics, instructional specialists, science and mathematics education professors, and master teachers.

PDAs enhance the participants' knowledge and skills necessary to develop, sustain and facilitate high quality professional development programs.

PDAs activities are aligned with state standards and priorities.

PDAs afford providers of professional development across the state opportunities to model life-long learning.

PROFESSIONAL DEVELOPMENT PROGRAMS (PDPs)



NCTC Environmental Education PDP



*"Make and Take" TAMU International
Regional Science Collaborative PDP*

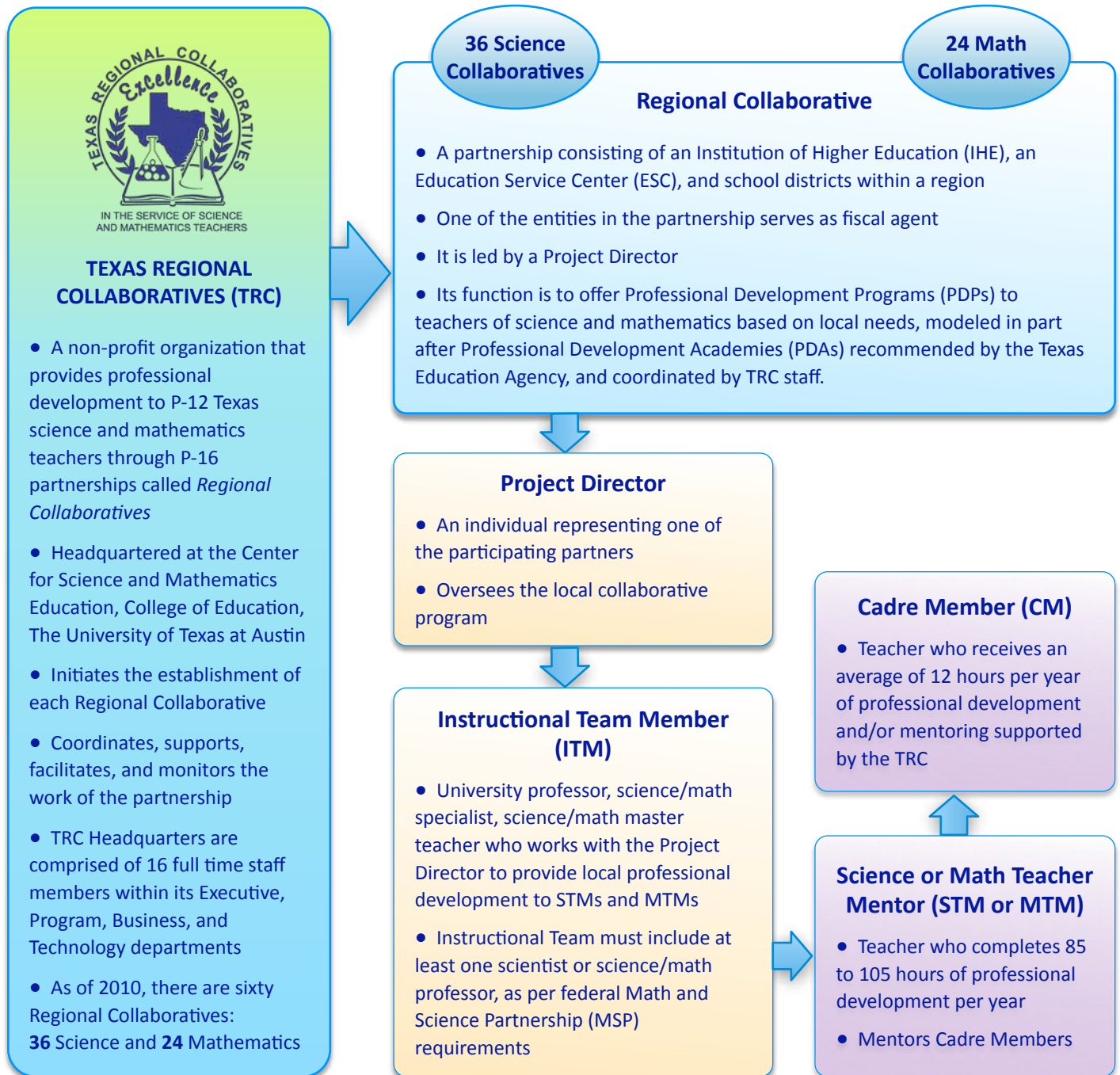


Secondary Math Success PDP

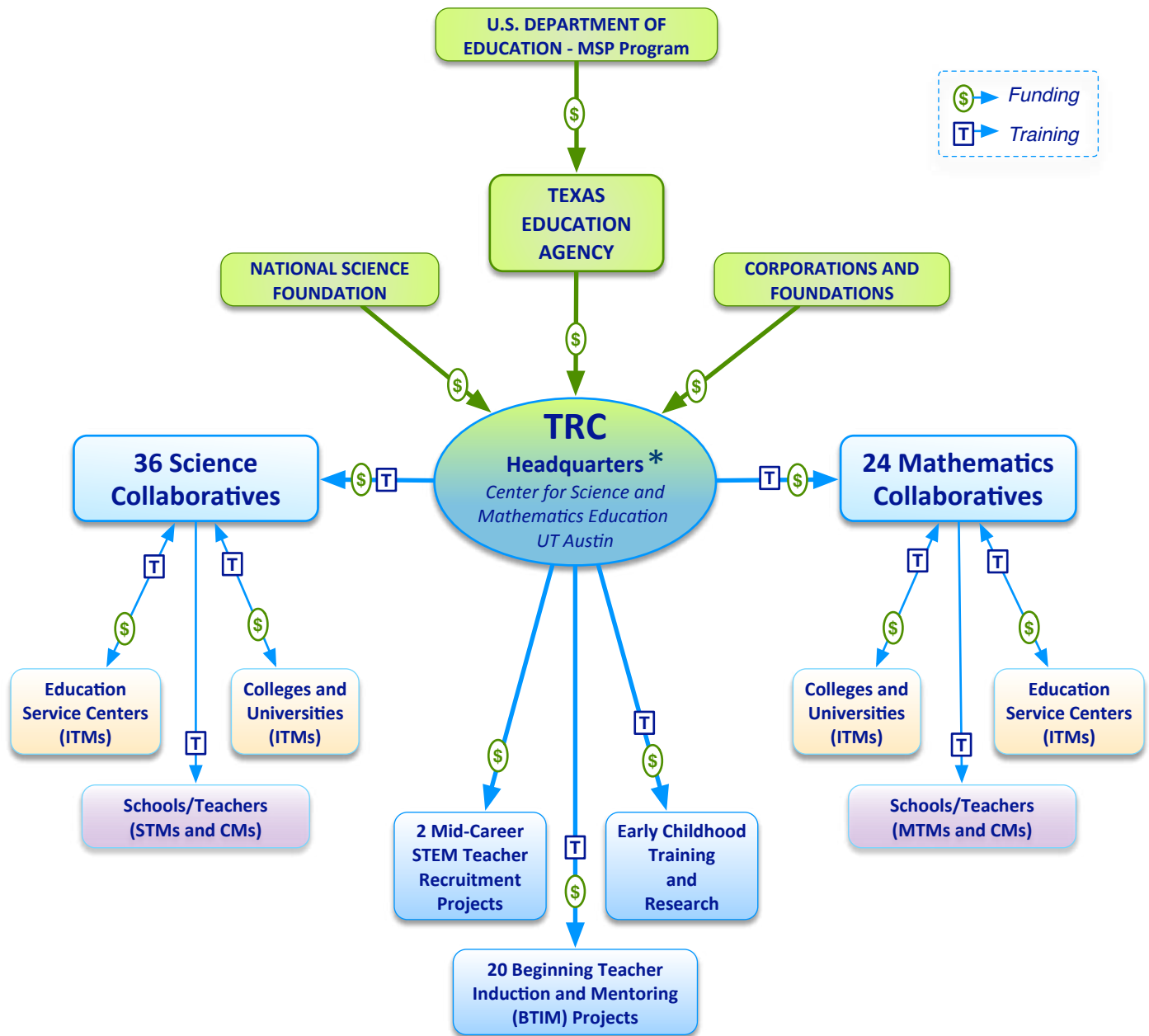
Professional Development Programs (PDPs) at each Regional Collaborative provide a comprehensive set of research-based experiences for Science and Mathematics Teacher Mentors. Mentors are supported by their schools, districts, and the Regional Collaborative to serve other teachers in their districts.

The mentorship design is validated by research that confirms that the effectiveness of extended sustained professional development for teachers results in actual change in teacher content knowledge and improvement in students' understanding of subject matter content and applications.

TRC Program Components



TRC Relationships and Flow of Funding



* An Advisory Board provides the TRC input, feedback, advice, and suggestions regarding current activities and future action plans. The Board includes TEA representatives, corporate partners, teachers, project directors, administrators, professors, and community leaders.

HONORING THE TEACHERS

These regional events recognize and honor participating teachers and engage administrators, policy makers, legislators and business leaders in the program.

Through these events, the Regional Collaborative leaders thank business partners, celebrate the partnerships in the community, acknowledge support of administrators, and publicize the program through media outlets in the region.



Teacher Leaders receive certificates from The State of Texas House of Representatives



(l to r) **Dr. Brenda Weiser**, *Project Director*, UHCL/EIH Regional Science Collaborative; **Angela Ruggeri**, *Teacher*, Pasadena ISD, and **Senator Mike Jackson** at UHCL/EIH Regional Collaborative Honoring the Teachers (2006)



LaJuan Garrett, *Teacher*, Simms ISD, and **Representative Stephen J. Frost**, District 1, at TAMU Texarkana Regional Science Collaborative Honoring the Teachers (2008)

Celebrating the Partnerships



(l to r) **Dr. Joseph Meynsse**, *Project Director*, Louisiana State University/Southern University Regional Collaborative; **Dr. James McCoy**, *Vice Provost*, Louisiana State University; **Dr. Ralph Slaughter**, *President*, Southern University System; **Dr. Brenda Nixon**, *Project Director*, Louisiana State University/Southern University Regional Collaborative; **The Honorable Ben Nevers**, *Chair, Senate Education Committee*, Louisiana State Senate; **Dr. Kamil A. Jbeily**; **Dr. Frazier Wilson**, *Manager, Social Investment*, Shell Oil Company, and **Dr. Mwalimu Shujaa**, *Executive Vice Chancellor & Provost*, Southern University-Baton Rouge



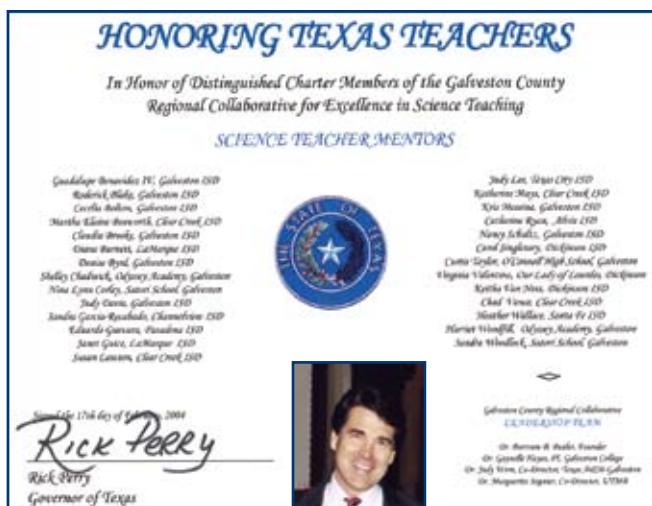
Senator Florence Shapiro and **Dr. Kamil Jbeily** at UNT Regional Science Collaborative Honoring the Teachers (2006)



Representative Alma Allen, District 131, and **Tracy Ward Whatley**, *Teacher*, Pasadena ISD, at UHCL/EIH Regional Science Collaborative Honoring the Teachers (2008)



Patricia Kehler-Moncur, *Teacher*, Houston ISD, and **Representative John Davis**, District 129, at UHCL/EIH Regional Science Collaborative Honoring the Teachers (2006)



Rick Perry
Governor of Texas



(l to r) **Bruce Connery**, *Vice President of Investor and Media Relations*, El Paso Corporation; **Dr. James Barufaldi**, *Principal Investigator*, TRC; **Dr. William Staples**, *President*, University of Houston-Clear Lake; **Dr. Carl Stockton**, *Provost*, UHCL; **Leticia Konigsberg**, *Educational Program Coordinator*, Corporate Foundation, El Paso Corporation, and **Dr. Jbeily** at the UHCL/EIH Regional Science Collaborative Honoring the Teachers (2007)

ANNUAL MEETING

This statewide event brings together teachers, education and business leaders, policy makers, and legislators to celebrate and recognize the achievements of the Collaboratives. The meeting provides opportunities for interregional sharing of ideas, collaboration, and networking. Participants learn about state-of-the-art trends and recent developments in science, technology, engineering, and mathematics (STEM) education.

Fifteenth Annual Meeting

June 30, 2009



“It is a pleasure to be with those who excel. You are truly the future of Texas. Without this Collaborative and these partnerships, we could not position the State of Texas to meet the needs of our country in the future. We are eternally grateful to your commitment in education.”

Texas Representative
Drew Darby

Teaching Excellence Award



James Lydon, Executive Director of External Affairs, AT&T Texas; **Dr. Jbeily**, and **Bob Digneo**, Executive Director, AT&T Texas



Dr. Frazier Wilson, Manager, Social Investment, Shell Oil Company; **Leslie Patrick**, Project Director, Region 9 Science Collaborative; **David Holbert**, Wichita Falls ISD, and **Dr. Jbeily**



Dr. Jbeily, and **Norma Torres-Martinez**, Deputy Associate Commissioner, Standards and Alignments, TEA

Thirteenth Annual Meeting

June 27, 2007



“I want to thank the Collaboratives for doing such an excellent job in educating our students to compete in a global community and economy.”

Texas Senator
Kirk Watson

“Thousands of Texas teachers have benefitted from this remarkable program. We need to replicate this for every other subject that’s taught: what the Collaboratives accomplish makes our teachers strong, and Texas is very proud and grateful.”

Texas Representative
Geanie Morrison



El Paso Corporation Contribution



John Sousa, Vice President for Communication and Community Relations at El Paso Corporation, presented a check for \$100,000 to the Texas Regional Collaboratives during the Fifteenth Annual Meeting on June 30, 2009.

Engaging Policy Makers, Business & Education Leaders

Distinguished Service Awards Winners

2003



The Honorable Geanie Morrison
Texas House of Representatives

2006



James Barufaldi, Ph.D.
Director, Center for Science and Mathematics Edu.
College of Education
The University of Texas at Austin

2007



Gina Day
Deputy Associate Commissioner
Texas Education Agency

2009



Dr. Jesús Chávez
Superintendent
Round Rock ISD

Nationally recognized education leaders speak on trends and systemic reform in STEM education. Teacher leaders and community partners are recognized and honored with distinguished teaching, mentoring, and service awards.

Twelfth Annual Meeting



William C. Powers, Jr.
President
The University of Texas at Austin

Twelfth Annual Meeting



The Honorable Mark Strama
State Representative, District 50
Texas House of Representatives

Fourteenth Annual Meeting



The Honorable Donna Howard
State Representative, District 48
Texas House of Representatives

Eleventh Annual Meeting



John Hofmeister
Former President
Shell Oil Company

Ninth Annual Meeting



Sandy Kress
Former Senior Advisor
to President Bush on Education

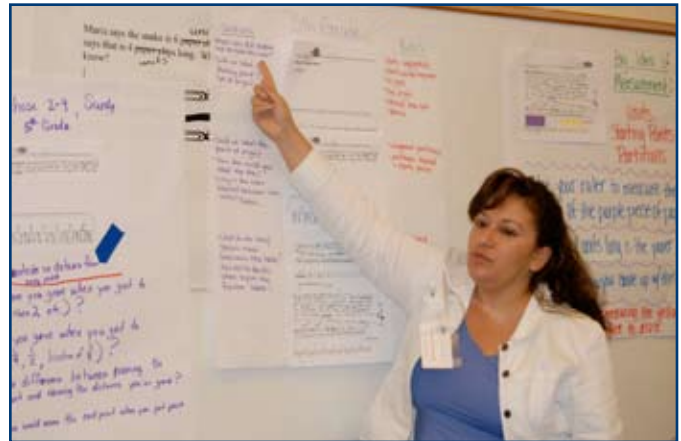
Fifteenth Annual Meeting



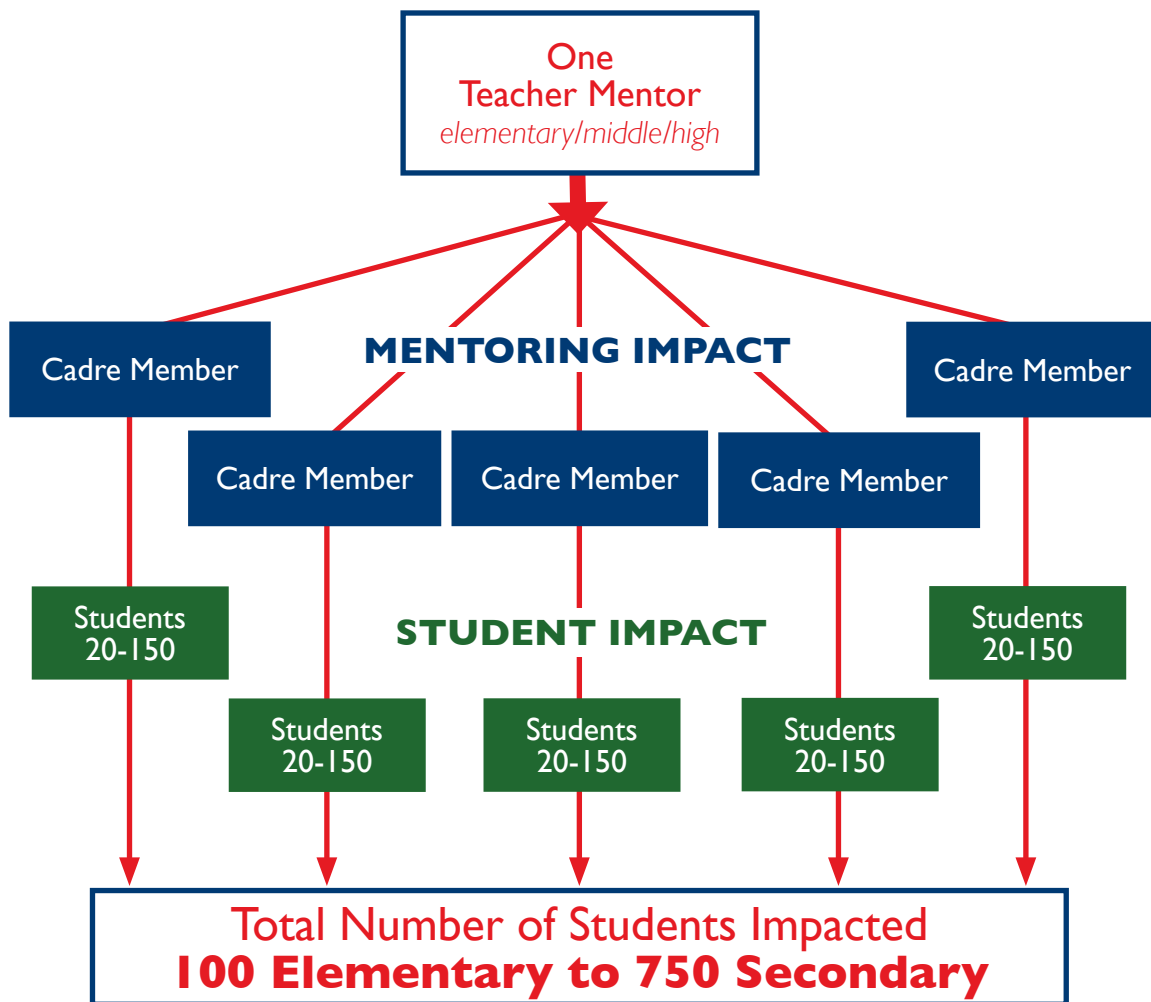
Susan Dawson
President and Executive Director
E³ Alliance

Teachers Mentoring Teachers

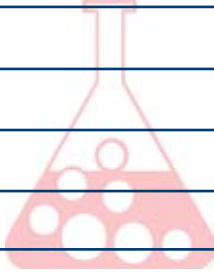
TRC innovative professional development programs prepare teachers to mentor other teachers. Science Teacher Mentors (STMs) and Mathematics Teacher Mentors (MTMs) extend the reach of TRC programs far beyond their immediate impact. The programs nurture learning communities within schools and support networks among P-12 schools, community colleges, and universities. These connections develop and retain beginning teachers while rejuvenating experienced professionals.



Sharing Instructional Strategies



Mentoring Multiplies the Reach of TRC

SCIENCE		2008-2009		MATHEMATICS	
	36	←	COLLABORATIVES	→	24
	746	←	DISTRICTS	→	778
	2,371	←	CAMPUSES	→	2,244
	1,306	←	TEACHER MENTORS	→	929
	5,781	←	TEACHERS	→	6,124
	474,829	←	STUDENTS	→	373,809

One Year Data: September 2008 - July 2009

Student numbers based on an average student/teacher ratio of 67:1 in science and 53:1 in mathematics

For over thirteen years, Texas Regional Science Collaboratives have used a mentorship model to conduct extensive professional development for teachers.

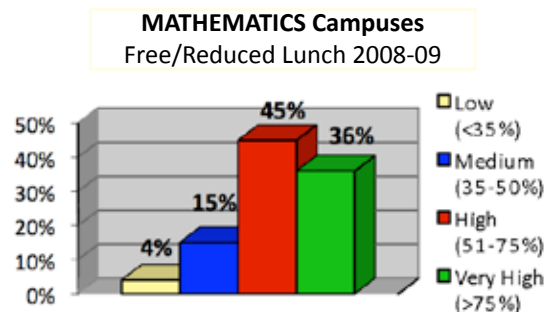
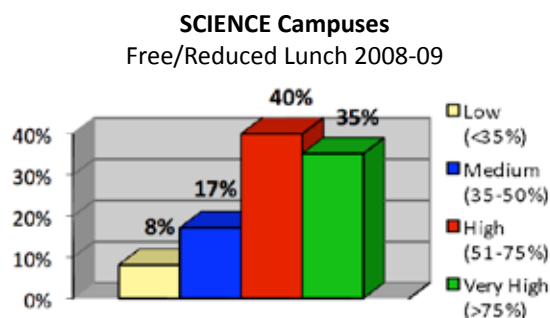
SCIENCE Collaborative programs require STMs to attend an average of 105 hours of professional development. These professional developments provide teachers the opportunity to learn new science content, conduct field experiences and science explorations, and improve their instructional strategies to enhance the vigor and relevance of STEM education.

MATHEMATICS Collaborative programs require MTMs to attend an average of 85 hours of professional development. Mathematics professional development programs help teachers strengthen their content knowledge through problem solving, investigations, and connecting what they learn to classroom instruction, to everyday life, and to STEM careers.



Engineering is Elementary

Socioeconomic Levels of Participating Campuses (2008-09)



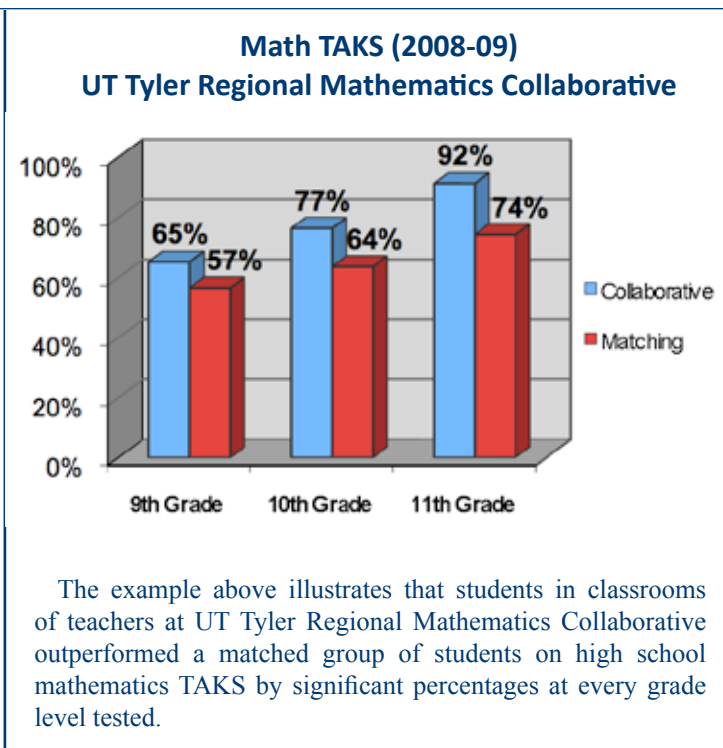
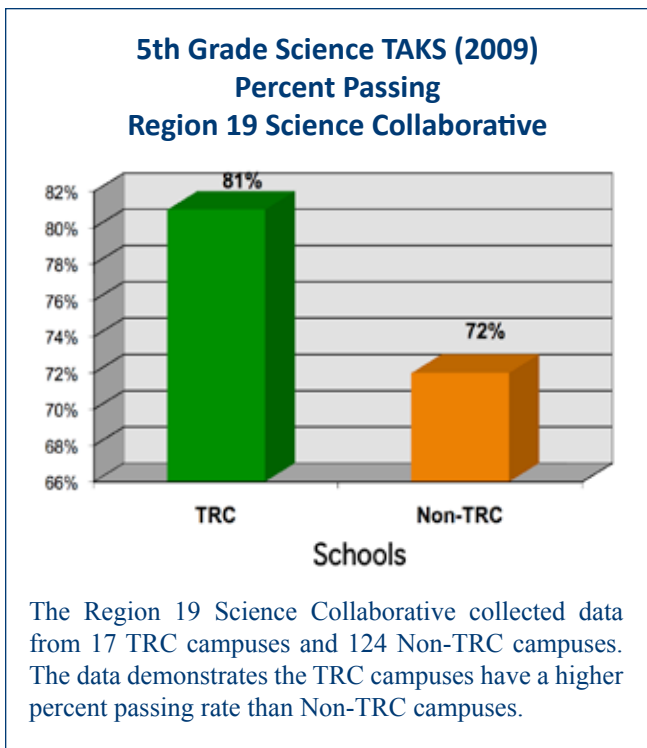
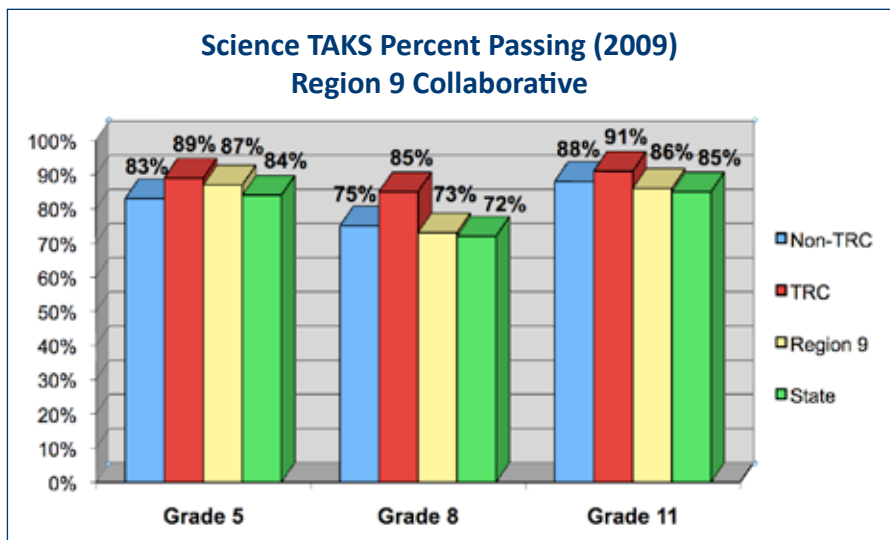
TRC teachers work primarily with high needs schools in both Science and Mathematics Regional Collaboratives.

Effectiveness and Results

The bottom line in measuring the effectiveness of teacher professional development is the impact it has on student achievement. Research data from the field indicates a positive correlation between Texas Regional Collaboratives teacher participation and student achievement.

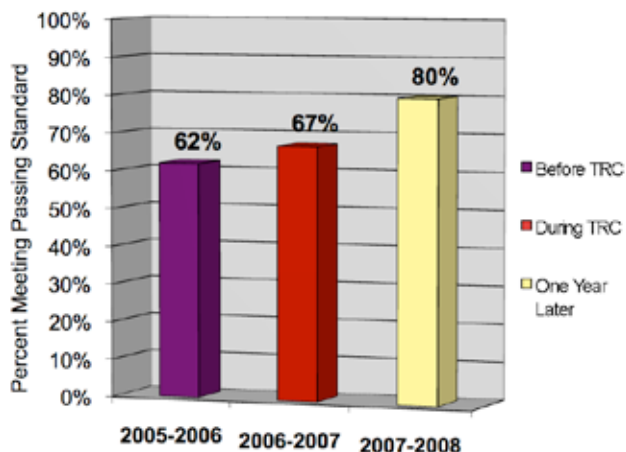


High School Chemistry



Impact on Students and Teachers

Student Achievement on TAKS (2005-08) Rice University Regional Science Collaborative

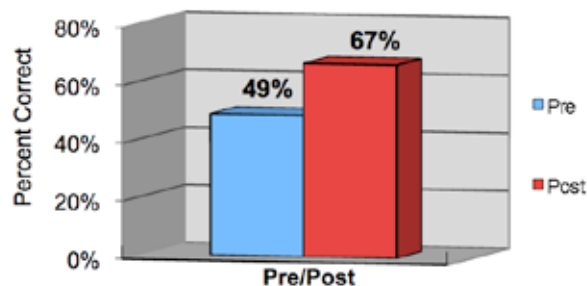


The Rice University Regional Science Collaborative collected 5th grade data from 75 campuses in the Greater Houston area, representing approximately 9,000 students. The data illustrates improved passing percentages both during the year of teacher participation, and even greater effects in the subsequent year.



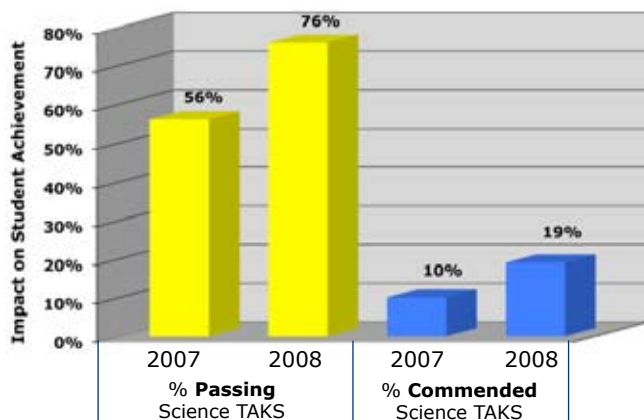
Elementary Mathematics

Average Science Teacher Mentor Content Knowledge Gains (2008-09) 36 Collaboratives



Many of the Regional Collaboratives developed formal procedures for identifying changes in teacher science content knowledge as a result of TRC training. These Collaboratives administered 77 different tests in a pre/post test format. Test content covered a range of topics including physics, chemistry, biology, earth science, and science process skills. Pre/post test data comparison shows a significant 18-point gain in teacher content knowledge.

Grade 5 Science TAKS (2007-08) (N=3) Hutto ISD Elementary Schools



Hutto ISD schools participated for the first time in the ACC Regional Science Collaborative during the 2007-2008 school year. Passing percentage increased by 20 points and commended by 9 points after teacher participation in the Texas Regional Collaboratives.

Commendations



"I feel so indebted to the TRC organization for my personal growth in science content as well as purposeful pedagogy. The networking, the support, and exposure to a group of like-minded science teachers has impacted not only my life, but that of my students and the students of teachers with whom I have shared information. My success as an educator is a direct result of my affiliation with this amazing organization."

Stef Paramoure
Science Middle School Teacher
New Braunfels ISD



"The Collaboratives advance the professional development of science teachers throughout our state, and ultimately improve the quality of science and mathematics teaching and learning across the state."

Dr. Manuel J. Justiz
Dean
College of Education
The University of Texas at Austin

"We, at The University of Texas, have placed a special emphasis on the University's role in supporting schools and teachers in schools to allow them to improve their effectiveness. An important part of that is the Texas Regional Collaboratives, led ably by Kamil Jbeily."

Dr. Larry Faulkner
Former President
The University of Texas at Austin



"The Texas Regional Collaboratives are a prime example of how The University of Texas is reaching out to the entire state. As I spread the word about how much UT does for the people of Texas, the outstanding science teachers that we're helping, the Collaboratives are always first on my list of examples."

Gwen Grigsby
Associate Vice President
Governmental Relations
The University of Texas at Austin



Texas Science Hall of Fame - January 16, 2001

Recognition by the Texas Senate, the Texas House of Representatives and Governor Rick Perry.



In the Senate Chamber from left to right:

Former Senator David Cain (resolution sponsor), Dr. Bernard Harris, Charles Duke, Dr. Jack Christie, Dr. William C. Davis, Dr. Manuel P. Berriozabal, Former Lt. Governor Bill Ratliff, Dr. Robert F. Curl, Dr. Gerald D. Skoog, the late Jack S. Kilby, Arleen Lawson, Dr. Kamil A. Jbeily, John Blaha, and Eugene A. Cernan

State, Federal, and Corporate Partners

State and Federal Partners

Texas Education Agency
U.S. Department of Education
National Science Foundation
Texas Higher Education Coordinating Board

Statewide Corporate and Foundation Partners

AT&T Foundation
El Paso Corporation
Shell
Toyota USA Foundation
The Cynthia and George Mitchell Foundation

Statewide Corporate and Foundation Program Officers



James Lydon
Executive Director
External Affairs
AT&T



Leticia Konigsberg
Community Relations Manager
El Paso Corporation



Dr. Frazier Wilson
Vice President
Shell Oil Company
Foundation



Yrthya Dinzey
Assistant Manager
Philanthropy
Toyota USA Foundation



Meredith Dreiss
President
The Cynthia and George
Mitchell Foundation

Project Contributors

Fluor; Abilene Education Foundation;
The Bob Bullock Texas State History Museum;
Central West Texas Charitable Foundation/Jack Ramsey;
Community Foundation of Abilene/Bob and Maggy Morford;
Dian Graves Owen Foundation; Eleanor and Robert Hoppe Endowment DA Fund;
J.E. Connally/Virginia H. Boyd;
G. Philip Morehead, P.C.; Robert Gooch;
Scott Taliaferro, Jr.; Sydney E. Niblo; Walter F. Johnson;
William Wright Jr.; Zachry Group, Inc.

Significant Contributions



Texas Education Agency

“TEA has been pleased to support the Texas Regional Collaboratives for over 18 years. The content-rich, data-driven training and mentoring provided by the Collaboratives has a strong record of effectiveness that should be a model for mathematics and science partnerships between colleges, universities, education service centers, and school districts across the country.”



Robert Scott
Commissioner of Education

Robert Scott



Gina Day

“Working in partnership with the Texas Regional Collaboratives has been an extraordinarily rewarding experience. Their track record of service to Texas science and mathematics teachers and established leadership network are making possible the delivery of high quality staff development in proven strategies for over 30,000 science and mathematics teachers across Texas.”

Gina Day
Deputy Associate Commissioner



El Paso Corporation

“El Paso Corporation proudly supports the TRC, whose efforts provide math and science teachers with the support systems and professional development needed to achieve excellence in the classroom. Kamil and his team have had a positive impact on teacher performance and student achievement throughout the state. It is incumbent upon the business community to ensure that the TRC continues to empower educators and offer the resources needed to help develop the next generation of scientists and engineers.”



John Sousa
Vice President for Corporate Communication and Community Relations

John Sousa

Government and Business Joining Forces



“It takes collaborative efforts and commitment of industry and academia to educate and train the workforce of the future. For that reason, Shell is pleased to support Texas Regional Collaboratives programs that enhance teacher skills and student understanding of math and science. These two disciplines are critical to addressing the energy and environmental challenges of the future.”



Marvin Odum

Marvin E. Odum
President, Shell Oil Company



AT&T Foundation



Don Cain

“Today’s classrooms hold our future employees, customers and community leaders. That alone is sufficient reason to be an active partner in providing our teachers with the tools they need to make that future a bright one. It is only natural to partner with a quality organization that shares our reach and our concern for quality education. AT&T is proud to work with Dr. Jbeily and the Texas Regional Collaboratives.”

Don Cain
President, AT&T-Texas



Toyota USA Foundation

“The Toyota USA Foundation is proud to support quality programs that improve the teaching and learning of mathematics, science, and environmental education. The Texas Regional Collaboratives network has shown years of success by creating innovative programs that are broad in scope, incorporate inter-disciplinary learning, and use ‘real-world’ classroom applications.”



Patricia Pineda

Patricia Pineda
Group Vice President, National Philanthropy and the Toyota USA Foundation

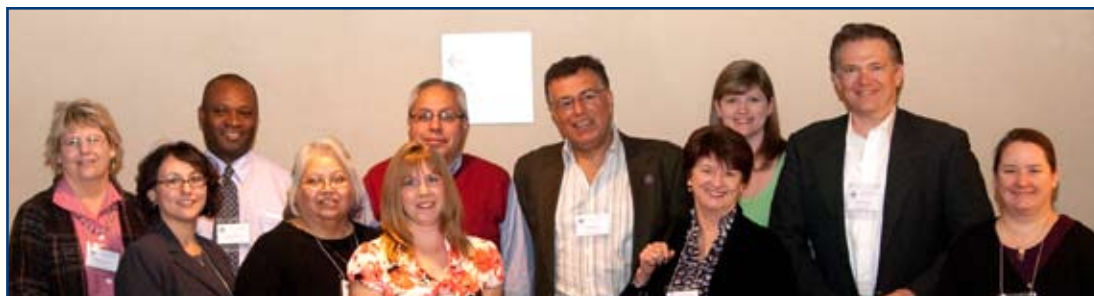
Teacher Preparation and Mentoring Programs

Mid-Career Teacher Recruitment Program

The Texas Regional Collaboratives (TRC) Mid-Career Teacher Recruitment Program began in September 2008 with funding from the Texas Education Agency (TEA) to address the ongoing shortage of science and mathematics teachers in Texas schools. Recently, the State Board of Education increased high school graduation requirements to four years for both science and mathematics for students to graduate under the recommended graduation plan. Approximately 75% of students graduate under this plan and, therefore, the demand will increase beyond the current shortage to accommodate additional students in the future. The Mid-Career Teacher Recruitment Program seeks to recruit established professionals with strong backgrounds and degrees in science, mathematics, and technology areas to enter teaching.

The goals for the program are to increase the number of certified science and mathematics teachers in Texas during the grant period through recruitment of mid-career professionals with degrees in science, mathematics, engineering, and technology fields to teach in Texas schools; teacher training and certification in science and mathematics; job placement of new science and mathematics teachers into high-needs LEAs; and mentoring after certification and placement.

To date, 69 science and mathematics teachers have received certification through the Mid-Career Teacher Recruitment Program and 57 recruits are currently in the program to become Texas science and mathematics teachers.



(l to r) **Christine Moseley, Ph.D.**, Project Director, University of Texas at San Antonio; **Lorena Claeys**, Executive Director, Accelerated Teacher Education Project mentor, UTSA; **Samuel Ebong**, Accelerated Teacher Education Project student, UTSA; **Effie Mata**, Accelerated Teacher Education Project mentor, UTSA; **Stephanie Klein**, Accelerated Teacher Education Project mentor, UTSA; **Roy Narvaez**, Accelerated Teacher Education Project mentor, UTSA; **Kamil A. Jbeily, Ph.D.**; **Anne Vexler, Manager**, Math and Science Partnerships, TEA; **Janice Meyer, Ph.D.**, Project Director, Texas A&M University System Mid-Career Grant; **Karl Hereim**, Grants and Contracts Specialist, TRC; and **Amy Werst**, Coordinator for Special Projects, TRC

Beginning Teacher Induction and Mentoring Program (BTIM)

TRC implemented a Beginning Teacher Induction and Mentoring (BTIM) program for science and mathematics in September 2009. The program is designed to increase retention of beginning science and mathematics teachers by assigning a qualified mentor teacher to each classroom teacher who has less than two years of teaching experience.

The Texas Education Agency (TEA) provided funding in excess of \$4 Million to the Texas Regional Collaboratives (TRC) to develop and support comprehensive induction for science and mathematics classroom teachers. This is a combination of mentoring; professional development that addresses the process, content, and context necessary for the success of the beginning science and mathematics teacher; and formal formative assessments for beginning science and mathematics teachers. Induction includes high-quality mentoring, common planning to collaborate on student achievement, ongoing professional development tailored for the beginning science and mathematics teacher, and learning communities.

As of January 2010, TRC is supporting 342 mentor teachers that are mentoring 581 beginning science and mathematics teachers in the state of Texas.



Kamil A. Jbeily, Ph.D.; **Cecilia Morgan Pierce, Ph.D.**; **David Radford, Ph.D.**, Associate Professors Education, University of Alabama at Birmingham

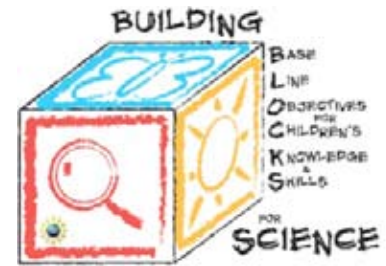
Research and Diagnostic Systems

Early Childhood Science Research



The NSF-funded *Building BLOCKS for Science* research study involves extensive classroom observation by teachers and researchers of Prekindergarten children’s ability to learn science processes and content, delivery of intensive professional development and mentoring support for Pre-K teachers to learn science, and development of qualitative and quantitative assessment strategies.

This TRC project offers a unique opportunity to investigate the boundary between Pre-K and K-2 science understanding and build a foundation for subsequent knowledge and skills acquisition, asking and answering the question: “What can we expect children entering Kindergarten to know and be able to do in science?” Data collection is ongoing in a variety of Austin area “school” settings, including public and private preschool classrooms, head start programs, and day care facilities where children are exposed to hands-on science activities, giving them an opportunity to demonstrate their science skills and indicate their science conceptual understanding.



<http://thetrc.org/web/blocks.html>

Teacher Empowerment Research



Teachers can take the survey at www.empoweredteacher.org

The purpose of the NSF-funded research on empowerment entitled *Instrument Development for Exploring the Professional Growth Continuum (Project I.D.)* was to identify those pivotal experiences of career science teachers that have promoted their advancement along the teacher professional continuum. Phase One of the research used interview techniques and behavior over time graphing as a way to capture the empowering professional growth opportunities TRC teachers recall experiencing over the entire course of their careers, looking for patterns in those experiences.

The ultimate outcome of this study was the development and pilot testing of a survey instrument that can be used to identify pivotal experiences that contribute to long-term teacher retention in a larger teacher sample. Implications for use of the data include the identification and implementation of effective professional development models and experiences that enhance TRC science teachers’ retention and effectiveness at the appropriate career intervals.



Texas Mathematics and Science Diagnostic System (TMSDS)



www.tmsds.org

The Texas Mathematics and Science Diagnostic System (TMSDS) is an online formative assessment tool that assesses student strengths and weaknesses in relation to the Texas Essential Knowledge and Skills (TEKS). TMSDS provides school districts in Texas with preconfigured full-length diagnostics (30 items), and preconfigured mini-diagnostics (5 questions) that are aligned to state standards. The TRC serves as a quality control team to ensure the items are of the highest quality. These assessments are available in English and Spanish and can be administered online or on paper. TMSDS provides a platform and content to create, administer, and report on formative diagnostics that provide current, relevant, and actionable data into the hands of teachers and administrators on a daily basis. TMSDS is free to Texas public and charter school districts.

Special Projects

The TRC Podcast Network

The podcasting project is one component of the TRC Online Learning Community (TOLC) funded and supported collaboratively by El Paso Corporation, Toyota USA Foundation, AT&T Foundation, and Shell. Training on the use of podcasting to support professional development has been offered at PDAs attended by representatives from across the state. Podcasting content authoring is supported at selected sites as well. As an overall and comprehensive system, TOLC provides an online infrastructure to help build community and provide ongoing professional development opportunities and support for participants. TOLC has been constructed using easy-to-support Web 2.0 tools. The online community provides a collaborative environment, bringing together TRC staff, project directors and their leadership teams, and classroom teachers who participate in TRC professional development programs. The TOLC supports increased communications across the TRC by providing multiple tools for synchronous and asynchronous communication.

The functionality provided by this evolving infrastructure currently supports:

- journaling by all participants,
- webinars to provide online meetings and instruction,
- email lists to support ongoing communication for working groups,
- forums for threaded discussion,
- chat rooms available any time for live discussion,
- online courseware for professional development,
- a state-wide podcasting network for distribution of media-based professional development, and
- a Virtual 3D online meeting area, the TOLC Mountain Campus.

Sponsored by: Toyota USA Foundation, AT&T Foundation, El Paso Corporation, and Shell



www.thetric.org/trc/tolc

UT-Austin Jackson School of Geosciences/Shell-TRC Partnership



Sponsored by: TRC, NSF, and Shell



TXESS Revolution (TeXas Earth & Space Science) Cohort 3 - 2010-2011

Educators across Texas are preparing for the new capstone course, Earth and Space Science, by participating in the TXESS Revolution. The program, headquartered at The University of Texas at Austin, received \$1.48 Million from the National Science Foundation with additional funding from the Jackson School of Geosciences and the Shell-TRC Partnership.

One hundred and sixty-six teachers make up the three cohorts that participate in this wonderful program. Each cohort member attends four 24-hour workshops over two years. The teachers also have the opportunity to attend optional Summer Institutes. The Shell-TRC Partnership generously co-sponsors the workshops and Summer Institutes. This past summer, The Petroleum Science and Technology Institute provided a week of intense training that included field experiences at the Wiess Energy Hall in The Houston Museum of Natural Science, Schlumberger, and the Ocean Star Offshore Drilling Rig in Galveston, Texas.

Interstate Activities



Louisiana Regional Collaboratives for Excellence in Science and Mathematics Teaching



The Louisiana Outreach Project

Two Regional Collaboratives Funded Through the Shell-TRC Partnership

LSU/Southern University Regional Collaborative

The LSU/Southern University Regional Collaborative has enjoyed outstanding success during its second funding cycle. The program is based on a Mentor/Mentee model that has proven to be highly effective in disseminating and enhancing the initiative. In addition to providing 130 hours of direct services and 600 hours of indirect services in mathematics and science leadership/professional development to teachers across the service area, the Collaborative has also served as a catalyst for additional professional development programs and services at the two universities.

Honoring the Teachers Event (2009) Southern University, Baton Rouge, LA



(l to r) **Dr. Joseph Meyinsse**, Interim Dean of Graduate Studies, Southern University, and LRC Project Director; **Dr. Ralph Slaughter**, President, Southern University System; **Dr. Mwalimu Shujaa**, Executive Vice Chancellor and Provost, Southern University-Baton Rouge; and **Dr. Jbeily**

The Honorable Ben Nevers, Chair, Senate Education Committee, Louisiana State Senate; **Mrs. Nevers**; and **Dr. Brenda Nixon**, Director, Gordon A. Cain Center for Scientific, Technological, Engineering and Mathematical Literacy, Louisiana State University, and LRC Project Director



Dr. Habib Mohamadian, Dean, College of Engineering, SU; **Janifer Peters**, Assistant to the Dean, College of Engineering, SU; and **Dr. Frazier Wilson**, Manager, Social Investment, Shell Oil Company

Louisiana Tech University/Grambling State University Regional Collaborative

The Louisiana Tech University/Grambling State University Regional Collaborative program has had a significant impact. A total of 423 teachers participated in professional development programs offered through the Collaborative. Matching funds of approximately \$123,200 supported Collaborative activities. Thirty-two outstanding science teachers from across northern Louisiana were honored at an Honoring the Teachers banquet.

Honoring the Teachers Event (2009) Louisiana Tech University, Ruston, LA



(l to r) **Gary Lacombe**, External Affairs Manager, Shell Oil Company; **Dr. Kenneth Rea**, Vice-President for Academic Affairs, Louisiana Tech University; **Dr. James P. Barufaldi**, Director, Center for Science and Mathematics Education, College of Education, The University of Texas at Austin; **Dr. Jbeily**; **The Honorable Hollis Downs**, Louisiana House of Representatives; **Dr. Leslie Guice**, Vice-President, Louisiana Tech University; **Dr. James Liberatos**, Dean, College of Applied and Natural Sciences, Louisiana Tech University

Certificate Presentation to LRC Teachers by Project Directors

Dr. Danny Hubbard, Head, Department of Chemistry, Grambling State University



Dr. David K. Mills, Professor, Biological Sciences, Louisiana Tech University

36 Regional Science Collaboratives

REGION SCIENCE COLLABORATIVE NAME

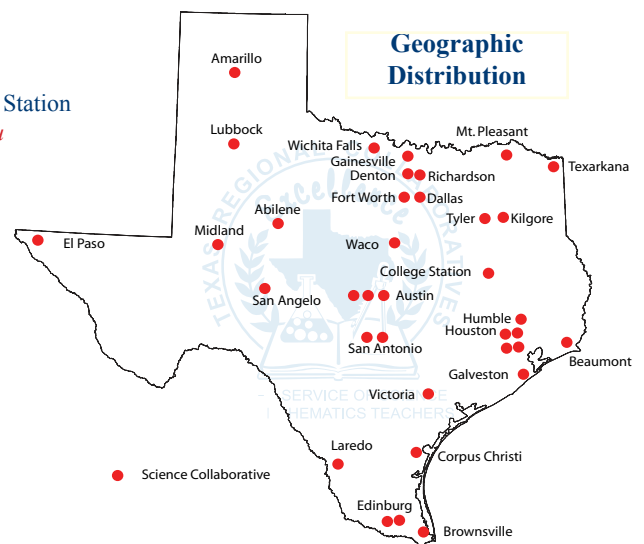
Project Director / Phone Number / Email

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Julie Reynolds / 956-984-6247 / jreynolds@esc1.net
UT-Pan American Regional Science Collaborative/Edinburg
John McBride / 956-381-3401 / jwm1303@utpa.edu
UT-Brownsville Regional Science Collaborative/Brownsville
Rey Ramirez, Jr. / 956-882-7255 / reynaldo.ramirez@utb.edu
Eli Pena / 956-882-7262 / Eli.E.Pena@utb.edu
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Dalia Trevino / 956-326-2410 / dtrevino@tamiu.edu
Idania Domniguez / 956-326-3098 / idominguez@tamiu.edu
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Margaret Bolick / 361-825-2674 / Margaret.Bolick@tamucc.edu
- 3 **Region 3 Science Collaborative/Victoria**
Susan Stehling / 361-573-0731 x291 / sstehling@esc3.net
- 4 **Region 4 Science Collaborative/Houston**
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Mary Ingle / 713-744-8186 / mingle@esc4.net
Rice University Regional Science Collaborative/Houston
Wallace Dominey / 713-348-5461 / wdominey@gmail.com
Galveston County Regional Science Collaborative/Galveston
Marguerite Sognier / 832-216-0001 / masognie@utmb.edu
Michele Marquette / 409-772-6972 / mlmarque@utmb.edu
Lake Houston Regional Science Collaborative/Humble
Paul Edwards / 281-641-8346 / paul.edwards@humble.k12.tx.us
UHCL Regional Science Collaborative/Houston
Brenda Weiser / 281-283-3522 / weiser@uhcl.edu
Aldine ISD Regional Science Collaborative/Houston
Linda Scott / 281-985-6416 / lscott2@aldine.k12.tx.us
- 5 **Region 5 Science Collaborative/Beaumont**
Roxanne Minix-Wilkins / 409-923-5445 / rminix-wilkins@esc5.net
- 6 **TAMU-College Station Regional Science Collaborative/College Station**
Carolyn Schroeder / 979-458-4450 / c Schroeder@science.tamu.edu
- 7 **Region 7 Science Collaborative/Kilgore**
Donna Wise / 903-988-6700 / dwise@esc7.net
Judy Grubbs / 903-988-6771 / jgrubbs@exch.esc7.net
UT-Tyler Regional Science Collaborative/Tyler
Fredericka Brown / 903-565-5828 / fbrown@uttyler.edu
Michael Odell / 208-301-0542 / modell@uttyler.edu
Kristian Trampus / 903-565-5881 / ktrampus@uttyler.edu
- 8 **Region 8 Science Collaborative/Mount Pleasant**
Karen Phillips / 903-575-2675 / kphillips@reg8.net
Scott Hanes / 903-575-2736 / shanes@reg8.net
TAMU-Textarkana Regional Science Collaborative/Texarkana
David Allard / 903-334-6672 / david.allard@tamuu.edu
- 9 **Region 9 Science Collaborative/Wichita Falls**
Leslie Patrick / 940-322-6928 x340 / leslie.patrick@esc9.net



Science Project Directors - June 2009

2009-2010 Regional Science Collaboratives Sites (36)



Across the State of Texas

REGION	SCIENCE COLLABORATIVE NAME	<i>(continued)</i>
		<i>Project Director / Phone Number / Email</i>
10	Region 10 Science Collaborative/Richardson <i>Doni Cash / 972-348-1352 / doni.cash@region10.org</i> <i>Deborah Brendel / 972-348-1512 / deborah.brendel@gmail.com</i>	
	UT-Dallas Regional Science Collaborative/Dallas <i>Barbara Curry / 972-883-4008 / barbc@utdallas.edu</i>	
11	Region 11 Science Collaborative/Fort Worth <i>Becky Yarbrough / 817-740-7635 / byarbrough@esc11.net</i>	
	North Central Texas College Regional Science Collaborative/Gainesville <i>Lisa Bellows / 940-668-4252 / lbellows@nctc.edu</i> <i>Sara Flusche / 940-668-7731 x4332 / sflusche@nctc.edu</i>	
	University of North Texas Regional Science Collaborative/Denton <i>Jim Roberts / 940-565-3022 / roberts@unt.edu</i>	
12	Region 12 Science Collaborative/Waco <i>Laura Calhoun / 254-297-1133 / lcalhoun@esc12.net</i>	
13	Region 13 Science Collaborative/Austin <i>Jennifer Jordan-Kaszuba / 512-919-5368 / jennifer.jordan-kaszuba@esc13.txed.net</i>	
	Capital City Regional Science Collaborative/Austin <i>David Guffey / 512-414-4662 / dgguffey@austinisd.org</i> <i>Martha Lee / 512-414-4840 / martha.lee@austinisd.org</i> <i>Carl Seagren / 512-414-4222 / cseagren@austinisd.org</i>	
	ACC Regional Science Collaborative/Austin <i>Margaret Reid / 512-223-3313 / mreid@austincc.edu</i> <i>Patty McLelland / 512-759-5472 / patricia.mclelland@hutto.txed.net</i>	
14	Region 14 Science Collaborative/Abilene <i>John Lineweaver / 325-675-8667 / jlineweaver@esc14.net</i>	
15	Region 15 Science Collaborative/San Angelo <i>Amy Rutherford / 325-658-6571 x140 / amy.rutherford@netxv.net</i> <i>Cynthia Holcomb / 325-658-6571 x123 / cynthia.holcomb@netxv.net</i>	
16	Region 16 Science Collaborative/Amarillo <i>Susan Smith / 806-677-5173 / susan.smith@esc16.net</i>	
17	Region 17 Science Collaborative/Lubbock <i>Tobi McMillan / 806-281-5881 / tmcmillan@esc17.net</i>	
18	Region 18 Science Collaborative/Midland <i>James Collett / 432-567-3220 / jcollett@esc18.net</i> <i>Sandy Casimir / 432-567-3208 / scasimir@esc18.net</i>	
19	Region 19 Science Collaborative/El Paso <i>Carmen Imai / 915-780-5069 / cimai@esc19.net</i>	
20	Region 20 Collaborative/San Antonio <i>Gina Christenson / 210-370-5611 / Gina.Christenson@esc20.net</i>	
	OLLU Regional Collaborative/San Antonio <i>Peggy Carnahan / 210-434-6711 x2743 / carnp@lake.ollusa.edu</i> <i>Tom Gadsden / 210-434-6711 x2233 / tgadsden@lake.ollusa.edu</i>	

2010-2011 New Science Collaboratives

UTSA Regional Science Collaborative/San Antonio
UT-M.D. Anderson Regional Science Collaborative/Smithville

Please visit www.theTRC.org for updated
Project Directors Contact Information

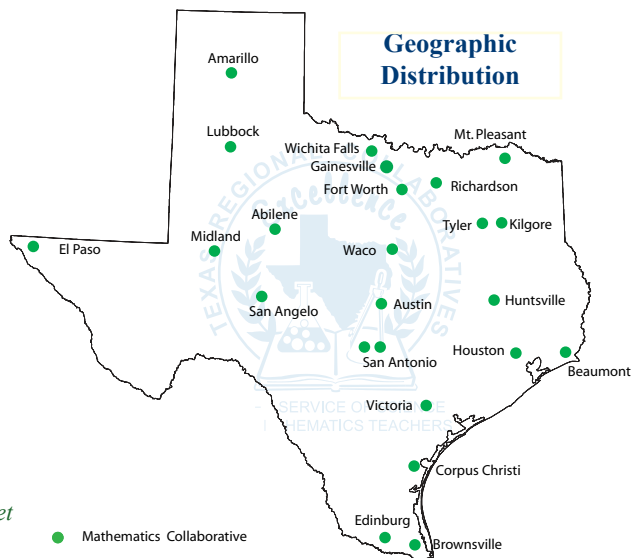
24 Regional Mathematics Collaboratives

REGION	MATHEMATICS COLLABORATIVE NAME	Project Director / Phone Number / Email
1	Region 1 Mathematics Collaborative/Edinburg UT-Brownsville Regional Mathematics Collaborative/Brownsville	<i>Gerbie Rodriguez / 956-984-6114 / grodriguez@esc1.net</i> <i>James Telese / 956-882-7669 / james.telese@utb.edu</i>
2	Region 2 Mathematics Collaborative/Corpus Christi	<i>Gaye Glenn / 361-561-8569 / gaye.glenn@esc2.us</i>
3	Region 3 Mathematics Collaborative/Victoria	<i>Cindy Marshall / 361-573-0731 / cmarshall@esc3.net</i>
4	Region 4 Mathematics Collaborative/Houston	<i>Sharon Benson / 713-744-6815 / sbenson@esc4.net</i> <i>Shelley Bolen-Abbott / 713-744-6521 / sbolenabbott@esc4.net</i>
5	Region 5 Mathematics Collaborative/Beaumont	<i>Kay Olds / 409-923-5412 / kolds@esc5.net</i>
6	Region 6 Mathematics Collaborative/Huntsville	<i>Susan Bohan / 936-435-8211 / sbohan@esc6.net</i>
7	Region 7 Mathematics Collaborative/Kilgore UT-Tyler Regional Mathematics Collaborative/Tyler	<i>Liz Scott / 903-988-6768 / lscott@exch.esc7.net</i> <i>Jane Silvey / 903-988-6796 / jsilvey@exch.esc7.net</i> <i>John Lamb / 903-566-7390 / jlamb@uttyler.edu</i>
8	Region 8 Mathematics Collaborative/Mount Pleasant	<i>Shane Wright / 903-575-2733 / swright@reg8.net</i>
9	Region 9 Mathematics Collaborative/Wichita Falls	<i>Leslie Patrick / 940-322-6928 / leslie.patrick@esc9.net</i> <i>Sherri Lane / 940-322-6928 / sherri.lane@esc9.net</i>
10	Region 10 Mathematics Collaborative/Richardson	<i>Debbie Dethrage / 972-348-1368 / debbie.dethrage@region10.org</i>
11	Region 11 Mathematics Collaborative/Ft. Worth NCTC Regional Mathematics Collaborative/Gainesville	<i>Patty Copeland / 817-740-7528 / pcpeland@esc11.net</i> <i>Sara Flusche / 940-668-7731 x4332 / sflusche@nctc.edu</i> <i>Lisa Bellows / 940-668-4252 / lbellows@nctc.edu</i>
12	Region 12 Mathematics Collaborative/Waco	<i>Jenny Dixon / 254-297-1272 / jdixon@esc12.net</i> <i>Charla Rudd / 254-297-1126 / crudd@esc12.net</i> <i>Kristin Arterbury / 254-297-1115 / karterbury@esc12.net</i>
13	Region 13 Mathematics Collaborative/Austin	<i>Carol Gautier / 512-919-5148 / Carol.Gautier@esc13.txed.net</i>
14	Region 14 Mathematics Collaborative/Abilene	<i>Kathy Hale / 325-675-8679 / khale@esc14.net</i> <i>Kayla Swanzy / 325-675-8679 / kswanzy@esc14.net</i>
15	Region 15 Mathematics Collaborative/San Angelo	<i>Marifrances Mackey / 325-481-4038 / marifrances.mackey@netxv.net</i> <i>Leslie Martin / 325-481-4040 / leslie.martin@netxv.net</i> <i>Mandy Smetana / 325-481-4037 / mandy.smetana@netxv.net</i>
16	Region 16 Mathematics Collaborative/Amarillo	<i>Angie Watson / 806-677-5135 / angie.watson@esc16.net</i>
17	Region 17 Mathematics Collaborative/Lubbock	<i>Karen Marshall / 806-281-5806 / kmarshall@esc17.net</i>
18	Region 18 Mathematics Collaborative/Midland	<i>Jim Collett / 432-567-3220 / jcollett@esc18.net</i> <i>Warren Koepf / 432-567-3233 / wkoepf@esc18.net</i>
19	Region 19 Mathematics Collaborative/El Paso	<i>Veronica Hernandez / 915-780-6512 / vhernandez@esc19.net</i>
20	Region 20 Mathematics Collaborative/San Antonio OLLU Regional Mathematics Collaborative/San Antonio	<i>Kymerly Faircloth / 210-370-5496 / kymerly.faircloth@esc20.net</i> <i>Tori Austin / 210-370-5200 / tori.austin@esc20.net</i> <i>Karen Harrower / 210-434-6711 / harrk@lake.ollusa.edu</i>



Mathematics Project Directors - June 2009

2009-2010 Regional Mathematics Collaboratives Sites (24)



2010-2011 New Mathematics Collaboratives

Lake Houston Regional Mathematics Collaborative/Humble
UTSA Regional Mathematics Collaborative/San Antonio
UHCL Regional Mathematics Collaborative/Houston

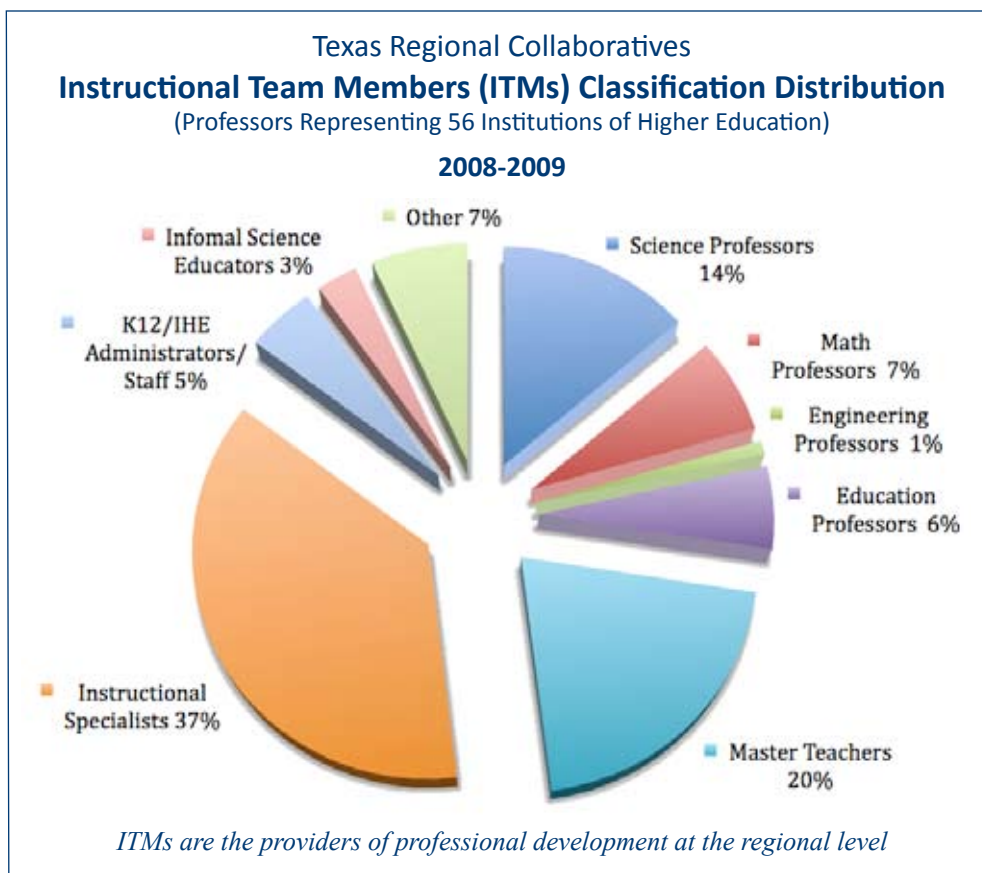
Please visit www.theTRC.org for updated
Project Directors Contact Information

56 Partnering Institutions of Higher Education (2008-09)

Abilene Christian University
 Amarillo College
 Angelo State University
 Austin Community College
 Baylor University
 Concordia University Texas
 Del Mar College
 Hardin-Simmons University
 Kansas University
 Lamar University
 Lee College
 Lone Star College-Kingwood
 Midland College
 Midwestern State University
 North Central Texas College
 Our Lady of the Lake University
 Rice University
 Sam Houston State University
 Stephen F. Austin State University
 Sul Ross State University

Texarkana College
 Texas A&M University
 - TAMU International
 - TAMU-Agricultural Research and Extension Center at Beaumont
 - TAMU-College Station
 - TAMU-Commerce
 - TAMU-Corpus Christi
 - TAMU-Galveston
 - TAMU-Texarkana
 Texas Christian University
 Texas Southern University
 Texas State University
 Texas Tech T-STEM
 Texas Tech University
 Texas Women's University
 University of Houston
 University of Houston-Clear Lake
 UH-Clear Lake/Environmental Institute of Houston

University of Northern Iowa
 University of Dallas
 University of North Texas
 The University of Texas System
 - University of Texas at Arlington
 - University of Texas at Austin
 - University of Texas at Austin, Bureau of Economic Geology
 - University of Texas at Austin, McDonald Observatory
 - University of Texas at Brownsville
 - University of Texas at Dallas
 - University of Texas at El Paso
 - University of Texas-Pan American
 - University of Texas-Permian Basin
 - University of Texas at Tyler
 - University of Texas Medical Branch
 University of the Incarnate Word
 Victoria College
 West Texas A&M University



Texas Regional Collaboratives Team



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Texas Science Hall of Fame*



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Effective Professional Development*

- Focuses on teachers and respects and nurtures the capacity of teachers.
- Reflects best available research and practice.
- Is planned collaboratively with teachers.
- Develops content and pedagogy.
- Enhances leadership.
- Is long-term, sustained, and of high intensity.
- Makes a positive impact on teacher performance and student achievement.
- Requires ample time.
- Promotes commitment to continue inquiry and improvement.
- Is driven by a coherent long-term plan.
- Is evaluated on the basis of its impact on teachers and students, and this assessment guides subsequent effort.

**U.S. Department of Education Principles of Professional Development*



**Texas Regional Collaboratives
for Excellence in Science and Mathematics Teaching**

Center for Science and Mathematics Education

College of Education

The University of Texas at Austin

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