



# TEXAS

## Sciences & Life Sciences Achievement

### STUDENT ACHIEVEMENT

NAEP Grade 8	TX	U.S. Avg.	State Rank
Science Average, 2005	143.3	147.1	35
Science, 2005 (% at or above "proficient")	23.1%	27.3%	33
Life Sciences Average, 2005	143.7	148.2	35

ACT	TX	U.S. Avg.	State Rank
Science Average, 2008	20.5	20.8	36
Biology, 2008 (% of students ready for college level)	25%	28%	36

AP	TX	U.S. Avg.	State Rank
Science Scores, 2008 (% with a score of 3 or higher)	45.4%	55.4%	41
Science Exams, 2008 (Exams as % of all H.S. grads)	8.9%	10.5%	27
Biology Scores, 2008 (% with a score of 3 or higher)	40.0%	49.8%	41
Biology Exams, 2008 (Exams as % of all H.S. grads)	3.3%	4.6%	35

### SCIENCE TEACHER QUALITY and PROFESSIONAL DEVELOPMENT

	TX	U.S. Avg.	State Rank
Science Teachers with Major in Assigned Field, 2003–04 (% , Grades 7–12)	80%	77%	17
Science Teachers Certified, 2006 (% , Grades 7–8)	N/A%	N/A%	–
Biology Teachers Certified, 2006 (% , Grades 9–12)	72%	88%	27

**Note:** NAEP = National Assessment of Educational Progress, AP = Advanced Placement  
N/A = Data not available.

## Key Organization(s) Promoting Bioscience Education

The **Texas Life Science Foundation (TLSF)** is a 501(c)(3) nonprofit foundation founded by the Texas Healthcare and Bioscience Institute in 1997 to serve as a base for its nonprofit programs and research in biosciences and education. TLSF works with healthcare advocacy groups, government, Texas's academic medical institutions, and the bioscience industry to

## TX STATE SCIENCE STANDARDS & REQUIREMENTS

### STANDARDS PROFILE

- Most recent update of K-12 Science Standards: **Prior to 2005**
- Next scheduled update: **2009**
- Research scientists provided input in development of standards

### BIOSCIENCE-RELATED GRADUATION REQUIREMENTS:

One unit of biology is required for graduation



design, develop, and deliver programs in education and patient and public services to serve Texas' citizens and communities.

### Examples of Bioscience Education Activities

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#### Teacher Preparation and Professional Development

The **Center for Science and Mathematics Education** at The University of Texas at Austin is a research, teaching, and service unit located in the College of Education. The Center designs and implements activities that enhance P-16 teaching and learning of science and mathematics.

**Texas Regional Collaboratives for Excellence in Science and Mathematics Teaching** is a network of P-16 partnerships that provide professional development to P-12 math and science teachers. The network, which includes more than 33 institutions of higher education collaborating with the Texas Education Agency, education service centers, school districts, and business partners, designs and implements exemplary professional development using research-based instructional models, materials, and best practices.

During the 17 years the Collaboratives have been in existence, they have served more than 14,000 Texas science teachers who, in turn, shared their experiences with thousands of teachers through mentoring, peer coaching, and technical assistance. Science and mathematics teachers across 244 out of a total of 254 Texas counties have been the beneficiaries of this extensive statewide support system.

The Texas High School Project supports the development of seven **T-STEM Centers** tasked with supporting **T-STEM Academies** and all Texas schools by designing innovative science,

technology, engineering, and mathematics (STEM) curricula, delivering professional development, and creating strategic partnerships among businesses, higher education entities, and school districts. T-STEM Centers are located at universities and regional education service centers throughout the state.

The Texas Higher Education Coordinating Board provides funding to universities to host **Mathematics, Science and Technology Teacher Prep Academies** that are designed to improve the instructional skills of experienced teachers and students enrolled in teacher preparation programs in mathematics, science, and technology.

**UTeach**, started at The University of Texas at Austin in 1997 as a new way to prepare secondary science, math, and computer science teachers, is a collaboration between UT's Colleges of Natural Sciences and Education and the Austin Independent School District (AISD). Its goal is to attract interested students to explore secondary teaching early with limited initial commitment of time and money. As early as their freshman year, UTeach students receive their first experience in the public school classroom, working with experienced AISD teachers who mentor them.

From modest beginnings as a Natural Sciences pilot program of 28 students in the fall 1997, UTeach has grown to a current enrollment of more than 450 students, graduating approximately 70 certified mathematics and science teachers this past year. The UTeach program is now being replicated at universities across the country and is offered by the University of Texas at Dallas, the University of Northern Texas, and the University of Houston.



### Experiential Learning and Outreach

Many Texas colleges and universities offer experiential learning activities for K-12 teachers and students. The following are some examples.

The University of Texas Health Science Center at San Antonio (UTHSCSA) offers

- A **Student Internship Program**—A year-round program for high school, college, pre-med or pre-Ph.D. students designed to provide an intensive, hands-on, interdisciplinary research experience. Students work with senior investigators in one of three broad areas: immunology, molecular pathogenesis, or genetics/clinical epidemiology.
- **Med Ed Field Experience II**—Junior and senior high school students, as well as undergraduate college freshman students, in the Laredo area or in the Lower Rio Grande Valley are eligible to participate in a week-long summer program on the UTHSCSA campus. The program includes career exploration experiences in the fields of allied health sciences, biomedical sciences, dentistry, medicine, and nursing.

Texas A&M University offers a number of Science Outreach Programs designed to interest students in K-12 in science, including the following:

- **Expanding Your Horizons**, a workshop-structured conference for 6th-grade girls is designed to help young women open new doors of opportunity by encouraging them to continue taking mathematics and science classes and introducing them to female role models in related careers.
- **Future Scientists-Student Outreach Initiative**, a U.S. Department of Agriculture K-12 model, introduces agricultural research into local schools (grades 4-10) and

communities with hands-on, inquiry-based activities designed to inspire future scientists.

UT Austin also offers a number of science outreach programs, including the following:

- The **Environmental Science Outreach GK-12 program**, which provides K-12 teachers and students with recent knowledge and innovative learning activities in the areas of biology, environmental science, aquatic science, geology, meteorology, and oceanography and helps to relate these topics to the impacts of environmental change on Texas habitats and residents.

### Bioscience-focused Schools and Programs

Temple College's **Texas Bioscience Institute (TBI)** offers classes for high school students through the Middle College program, as well as a 2-year associate of applied science degree, and advanced certificates and apprenticeship programs for both traditional and nontraditional college students. TBI provides students with hands-on experience in biotechnology or research laboratories at the end of their degree program. The first class of students was admitted in the fall of 2006. A new state-of-the-art classroom and laboratory facility opened in January 2007. The 27,000-square-foot facility features five state-of-the-art science laboratories, six "smart" classrooms wired with high-tech presentation capabilities, a large lecture hall with interactive capabilities for distance learning, and one classroom/lab combination.

Texas has created a network of **T-STEM Academies** that are designed to serve as model programs that provide a rigorous, well-rounded, education with outstanding STEM instruction. Current academy models are small learning communities, schools-within-schools, new





traditional and charter schools, and T-STEM Early College High Schools. These STEM-focused school models seek to graduate students who are prepared to pursue post-secondary-level

coursework and careers in STEM. T-STEM Academies will serve as demonstration sites to showcase best practices in STEM teaching and learning.

## Basic Skills Achievement and Other Summary Metrics

### STUDENT ACHIEVEMENT

NAEP Grade 8	TX	U.S. Avg.	State Rank
Math Average, 2007	285.9	280.2	15
Math, 2007 (% at or above "proficient")	34.7%	31.0%	22
Reading Average, 2007	260.8	261.0	31
Reading, 2007 (% at or above "proficient")	27.5%	29.2%	34
Writing Average, 2007	151.1	154.3	33
Writing, 2007 (% at or above "proficient")	26.5%	30.6%	32

ACT	TX	U.S. Avg.	State Rank
Percentage of Graduates Tested	29%	43%	32
Math Average, 2008	21.2	21.0	31
Reading Average, 2008	20.9	21.4	41
English Average, 2008	19.8	20.6	44

SAT	TX	U.S. Avg.	State Rank
Percentage of Graduates Tested	52%	48%	22
Math Average, 2008	505	515	39
Critical Reading Average, 2008	488	502	46
Writing Average, 2008	480	494	46

AP	TX	U.S. Avg.	State Rank
Math Scores, 2008 (% with a score of 3 or higher)	54.3%	65.2%	44
Math Exams, 2008 (Exams as % of all H.S. grads)	8.2%	8.7%	24
English Scores, 2008 (% with a score of 3 or higher)	46.9%	59.2%	45
English Exams, 2008 (Exams as % of all H.S. grads)	28.1%	18.9%	5

### SUMMARY STATE EDUCATION METRICS

Selected Indicators	TX	U.S. Avg.	State Rank
High School Graduation Rate, 2005–06	72.5%	73.4%	35
Student/Teacher Ratio, 2006–07	14.8	15.5	27*
Low-income Students, 2006–07 (% of all students)	47.6%	41.6%	–
Expenditure per Student (\$), 2005–06	\$7,480	\$9,154	43

**Note:** NAEP = National Assessment of Educational Progress, AP = Advanced Placement  
N/A = Data not available. \* Lowest value receives highest ranking.

#### TABLE SOURCE NOTES:

**NAEP Assessments, grade 8:** U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics (NCES), National Assessment of Educational Progress (NAEP), 2005; **ACT Exam:** ACT, Inc., 2008; **SAT Reasoning Test:** The College Board, 2008.

**Advanced Placement (AP):** Battelle analysis of data from the College Board, 2008; AP test takers as a share of high school graduates includes graduate data from U.S. Department of Education, NCES for both public (Common Core of Data) and private high schools (Private School Survey).

**Science Teacher Indicators:** Council of Chief State School Officers (CCSSO) analysis of State Departments of Education data on public schools, 2007; U.S. Department of Education, NCES Schools and Staffing Survey, 2003–04 as reported by CCSSO, 2007.

**Summary State Education Metrics:** U.S. Department of Education, National Center for Education Statistics (NCES), Common Core of Data (CCD) on public elementary and secondary education.

**Note:** High school graduation rates are averaged freshman graduation rates—the rate is the number of graduates divided by the estimated count of freshmen 4 years earlier. U.S. figure for share of students eligible for free or reduced-price school lunch ("low-income" students) is available for 2005–06 only (state data are for 2006–07).