



# MISSOURI

## Sciences & Life Sciences Achievement

### STUDENT ACHIEVEMENT

NAEP Grade 8	MO	U.S. Avg.	State Rank
Science Average, 2005	154.0	147.1	17
Science, 2005 (% at or above "proficient")	32.7%	27.3%	20
Life Sciences Average, 2005	154.9	148.2	16

ACT	MO	U.S. Avg.	State Rank
Science Average, 2008	21.4	20.8	22
Biology, 2008 (% of students ready for college level)	31%	28%	24

AP	MO	U.S. Avg.	State Rank
Science Scores, 2008 (% with a score of 3 or higher)	57.2%	55.4%	20
Science Exams, 2008 (Exams as % of all H.S. grads)	5.3%	10.5%	41
Biology Scores, 2008 (% with a score of 3 or higher)	49.5%	49.8%	26
Biology Exams, 2008 (Exams as % of all H.S. grads)	2.4%	4.6%	43

SCIENCE TEACHER QUALITY and PROFESSIONAL DEVELOPMENT	MO	U.S. Avg.	State Rank
Science Teachers with Major in Assigned Field, 2003–04 (% , Grades 7–12)	81%	77%	15
Science Teachers Certified, 2006 (% , Grades 7–8)	100%	N/A%	1
Biology Teachers Certified, 2006 (% , Grades 9–12)	100%	88%	1

**Note:** NAEP = National Assessment of Educational Progress, AP = Advanced Placement

N/A = Data not available.

### Key Organization(s) Promoting Bioscience Education

The **Missouri Biotechnology Association's (MOBIO's)** mission statement includes a commitment to educational partnerships, and its Web site includes K-12 curricular material developed by Monsanto.

## MO STATE SCIENCE STANDARDS & REQUIREMENTS

### STANDARDS PROFILE

- Most recent update of K-12 Science Standards: **2008**
- Next scheduled update: **2009**

### BIOSCIENCE-RELATED GRADUATION REQUIREMENTS:

One unit of biology is required

44% of 6th–9th graders and 47% of 10th–12th graders met "proficient" level under No Child Left Behind Adequate Yearly Progress test



## Examples of Bioscience Education Activities

### Teacher Preparation and Professional Development

The **Missouri Mathematics, Engineering, Technology and Science (METS) Coalition** provides competitive grants to teachers in Missouri public schools and charter schools.

The University of Missouri at St. Louis (UMSL) hosts the **Missouri Science Teaching and Education Partnership (MO-STEP)**, which connects high school faculty at five under-resourced urban high schools with faculty at UMSL and other St. Louis life-science institutions. UMSL also has a **St. Louis Teacher Enhancement Partnership** with the St. Louis public schools.

The University of Missouri Science Education Program sponsors the National Science Foundation (NSF) -funded **Science and Mathematics Academy for the Recruitment and Retention of Teachers (SMAR2T)**, which certifies baccalaureate holders in science and math to teach at the middle or secondary levels in 15 to 24 months.

The Washington University in St. Louis hosts an NSF-funded **Institute for Biology Teachers**, which provides a summer program leading to a no-cost master's degree for high school teachers.

The Washington University also has a **St. Louis Center for Inquiry in Science Teaching and Learning (CISTL)**, which provides professional development programs.

### Experiential Learning and Outreach

The **Kansas City Area Life Sciences Institute** includes as its vision for workforce development that all students in the region will participate in

rigorous science curricula that foster science literacy through inquiry-based instruction. In the region, Ewing Marion Kauffman Foundation supports **UpLink**, which connects students with mentors in science-based industry.

UMSL offers **Students and Teachers As Research Scientists**, a program to introduce rising high school juniors and seniors in the Greater St. Louis area and their teachers to aspects of the science enterprise (both life science and non-life science) as practiced in academic, private, or government labs. Participating sites include several universities and the Donald Danforth Plant Science Center. The project is co-funded by Solutia, Pfizer, and other companies.

The University of Missouri at Kansas City hosts a **Minority Outreach Science Enrichment Program**, which provides hands-on science-based learning for grades 8 and 9 in the Kansas City urban school districts.

### Bioscience-focused Schools and Programs

Funded by the Bayer Corporation, the Kansas City, Missouri School District is working with the Kansas City Area Life Sciences Institute to infuse a new science program into all 46 elementary schools and provide professional development.

The **Missouri Academy** is an early-entrance-to-college, 2-year residential program on the campus of Northwest Missouri State University in Maryville, targeting students with demonstrated high performance in science, technology, engineering, and mathematics (STEM) fields.

Sixty-four career and technical education high schools offer dual credit in bioscience areas.

## Basic Skills Achievement and Other Summary Metrics

### STUDENT ACHIEVEMENT

NAEP Grade 8	MO	U.S. Avg.	State Rank
Math Average, 2007	280.6	280.2	31
Math, 2007 (% at or above “proficient”)	29.9%	31.0%	33
Reading Average, 2007	263.4	261.0	27
Reading, 2007 (% at or above “proficient”)	31.0%	29.2%	26
Writing Average, 2007	152.8	154.3	29
Writing, 2007 (% at or above “proficient”)	26.2%	30.6%	34

ACT	MO	U.S. Avg.	State Rank
Percentage of Graduates Tested	69%	43%	16
Math Average, 2008	21.0	21.0	34
Reading Average, 2008	22.0	21.4	27
English Average, 2008	21.4	20.6	20

SAT	MO	U.S. Avg.	State Rank
Percentage of Graduates Tested	6%	48%	42
Math Average, 2008	597	515	7
Critical Reading Average, 2008	594	502	4
Writing Average, 2008	584	494	1

AP	MO	U.S. Avg.	State Rank
Math Scores, 2008 (% with a score of 3 or higher)	71.1%	65.2%	12
Math Exams, 2008 (Exams as % of all H.S. grads)	3.9%	8.7%	45
English Scores, 2008 (% with a score of 3 or higher)	65.0%	59.2%	18
English Exams, 2008 (Exams as % of all H.S. grads)	8.8%	18.9%	46

### SUMMARY STATE EDUCATION METRICS

Selected Indicators	MO	U.S. Avg.	State Rank
High School Graduation Rate, 2005–06	81.0%	73.4%	12
Student/Teacher Ratio, 2006–07	13.7	15.5	18*
Low-income Students, 2006–07 (% of all students)	39.1%	41.6%	–
Expenditure per Student (\$), 2005–06	\$8,273	\$9,154	34

**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).