



SOUTH DAKOTA

Sciences & Life Sciences Achievement

STUDENT ACHIEVEMENT

| NAEP Grade 8 | SD | U.S. Avg. | State Rank |
|--|-------|-----------|------------|
| Science Average, 2005 | 161.0 | 147.1 | 5 |
| Science, 2005 (% at or above "proficient") | 40.8% | 27.3% | 3 |
| Life Sciences Average, 2005 | 161.9 | 148.2 | 5 |

| ACT | SD | U.S. Avg. | State Rank |
|---|------|-----------|------------|
| Science Average, 2008 | 22.0 | 20.8 | 10 |
| Biology, 2008 (% of students ready for college level) | 35% | 28% | 12 |

| AP | SD | U.S. Avg. | State Rank |
|--|-------|-----------|------------|
| Science Scores, 2008 (% with a score of 3 or higher) | 58.1% | 55.4% | 17 |
| Science Exams, 2008 (Exams as % of all H.S. grads) | 6.7% | 10.5% | 36 |
| Biology Scores, 2008 (% with a score of 3 or higher) | 48.9% | 49.8% | 27 |
| Biology Exams, 2008 (Exams as % of all H.S. grads) | 3.5% | 4.6% | 30 |

| SCIENCE TEACHER QUALITY and PROFESSIONAL DEVELOPMENT | SD | U.S. Avg. | State Rank |
|--|-----|-----------|------------|
| Science Teachers with Major in Assigned Field, 2003–04 (% , Grades 7–12) | 62% | 77% | 42 |
| Science Teachers Certified, 2006 (% , Grades 7–8) | 91% | N/A% | 9 |
| Biology Teachers Certified, 2006 (% , Grades 9–12) | 99% | 88% | 6 |

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

Examples of Bioscience Education Activities

Teacher Preparation and Professional Development

The **Distance Delivery of a Teacher Education Program for Mid-Career Professionals** enables individuals with a college degree who did not major in education to become a fully certified middle school or high school teacher in 12 months. The South Dakota teacher preparation programs at the public universities have

SD STATE SCIENCE STANDARDS & REQUIREMENTS

STANDARDS PROFILE

- Adoption of K-12 Science Standards: **2005**
- Next scheduled update: **2012**
- Research scientists provided input in development of standards

BIOSCIENCE-RELATED GRADUATION REQUIREMENTS:

Three units of laboratory science must include a minimum of biology and chemistry or physics required for graduation as of 2009

62% of 6th–9th graders; and 34% of 10th–12th graders met the “proficient” level under the No Child Left Behind (NCLB) Adequate Yearly Progress test



collaborated to prepare an online secondary certification program. Coursework is taken through online delivery with field experiences planned in local communities. The first cohort will begin in June 2009.

The **Center for the Advancement of Mathematics and Science Education** at Black Hills State University provides a number of opportunities for teachers to develop expertise in promoting the learning of mathematics and sciences. Professional development activities that focus on curriculum implementation, assessment, content, science processes, and equity are available. Currently, professional development is delivered during weeklong summer workshops, daylong academic year workshops, after-school meetings, and mentoring/peer coaching in the classroom.

South Dakota offers an **alternative teaching certification** for teachers who hold a bachelor's degree with a major in the subject to be taught.

Experiential Learning and Outreach

Science On The Move is a statewide project to provide students in South Dakota schools with high-quality science lab experiences. Two large semitrailers (Mobile Science Labs, or MSLs) are equipped with a broad range of equipment, from powerful microscopes to molecular biology tools

such as gel electrophoresis cells to interfaced computers. Students can use equipment inside the trailers or the equipment can be brought into classrooms for use. Science On The Move brings a hands-on science experience to students in small and/or rural South Dakota schools. The trailers circulate around the state and usually remain at a school for 2 to 5 days

The **South Dakota Rising Scholars in Math and Science program** is a 4-day summer enrichment program for high school juniors with a strong interest in math and science offered by Black Hills State University. The goal is to enrich the academic preparation of the most promising high school mathematicians and scientists across the state.

The **Davis-Bahcall Scholarships** enable South Dakota students who love science to study at the Sanford Lab at Homestake in Lead, South Dakota; the Gran Sasso National Underground Laboratory in Italy; and Princeton University in New Jersey. Up to 10 students are chosen to receive scholarships that cover tuition, room and board, and travel for the summer-study program. A total of \$25,000 in scholarship money is available.



Basic Skills Achievement and Other Summary Metrics

STUDENT ACHIEVEMENT

| NAEP Grade 8 | SD | U.S. Avg. | State Rank |
|--|-------|-----------|------------|
| Math Average, 2007 | 288.5 | 280.2 | 7 |
| Math, 2007 (% at or above "proficient") | 39.1% | 31.0% | 7 |
| Reading Average, 2007 | 269.6 | 261.0 | 7 |
| Reading, 2007 (% at or above "proficient") | 36.8% | 29.2% | 8 |
| Writing Average, 2007 | N/A | 154.3 | – |
| Writing, 2007 (% at or above "proficient") | N/A% | 30.6% | – |

| ACT | SD | U.S. Avg. | State Rank |
|--------------------------------|------|-----------|------------|
| Percentage of Graduates Tested | 77% | 43% | 9 |
| Math Average, 2008 | 21.9 | 21.0 | 19 |
| Reading Average, 2008 | 22.3 | 21.4 | 20 |
| English Average, 2008 | 21.2 | 20.6 | 25 |

| SAT | SD | U.S. Avg. | State Rank |
|--------------------------------|-----|-----------|------------|
| Percentage of Graduates Tested | 3% | 48% | 51 |
| Math Average, 2008 | 596 | 515 | 8 |
| Critical Reading Average, 2008 | 595 | 502 | 3 |
| Writing Average, 2008 | 575 | 494 | 6 |

| AP | SD | U.S. Avg. | State Rank |
|--|-------|-----------|------------|
| Math Scores, 2008 (% with a score of 3 or higher) | 63.9% | 65.2% | 30 |
| Math Exams, 2008 (Exams as % of all H.S. grads) | 6.4% | 8.7% | 35 |
| English Scores, 2008 (% with a score of 3 or higher) | 61.3% | 59.2% | 28 |
| English Exams, 2008 (Exams as % of all H.S. grads) | 11.8% | 18.9% | 39 |

SUMMARY STATE EDUCATION METRICS

| Selected Indicators | SD | U.S. Avg. | State Rank |
|--|---------|-----------|------------|
| High School Graduation Rate, 2005–06 | 84.5% | 73.4% | 6 |
| Student/Teacher Ratio, 2006–07 | 13.4 | 15.5 | 13* |
| Low-income Students, 2006–07 (% of all students) | 30.3% | 41.6% | – |
| Expenditure per Student (\$), 2005–06 | \$7,775 | \$9,154 | 40 |

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).

