



MICHIGAN

Sciences & Life Sciences Achievement

STUDENT ACHIEVEMENT

NAEP Grade 8	MI	U.S. Avg.	State Rank
Science Average, 2005	155.0	147.1	15
Science, 2005 (% at or above "proficient")	34.8%	27.3%	13
Life Sciences Average, 2005	154.4	148.2	19

ACT	MI	U.S. Avg.	State Rank
Science Average, 2008	19.9	20.8	47
Biology, 2008 (% of students ready for college level)	23%	28%	40

AP	MI	U.S. Avg.	State Rank
Science Scores, 2008 (% with a score of 3 or higher)	61.6%	55.4%	9
Science Exams, 2008 (Exams as % of all H.S. grads)	10.1%	10.5%	21
Biology Scores, 2008 (% with a score of 3 or higher)	56.8%	49.8%	10
Biology Exams, 2008 (Exams as % of all H.S. grads)	4.5%	4.6%	21

SCIENCE TEACHER QUALITY and PROFESSIONAL DEVELOPMENT	MI	U.S. Avg.	State Rank
Science Teachers with Major in Assigned Field, 2003–04 (% , Grades 7–12)	74%	77%	28
Science Teachers Certified, 2006 (% , Grades 7–8)	N/A%	N/A%	–
Biology Teachers Certified, 2006 (% , Grades 9–12)	N/A%	88%	–

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

Key Organization(s) Promoting Bioscience Education

MichBio has created an **affiliated MichBio Institute** to create educational programs and strategy.

The Van Andel Institute, a privately endowed biomedical research institution in Grand Rapids, has a companion **Van Andel Education Institute** that is very active in K-12 education statewide.

MI STATE SCIENCE STANDARDS & REQUIREMENTS

STANDARDS PROFILE

- Most recent update of K-12 Science Standards: **2007**
- Next scheduled update: **Post 2012**
- Research scientists provided input in development of standards
- Science standards (Content Expectations) include a unit on genetics with a recommended component on recombinant DNA and a unit on evolution and biodiversity covering the impact of biotechnology for species improvement

Michigan Department of Education, Office of School Improvement, High School Science Content Expectations/Biology, October 2006

BIOSCIENCE-RELATED GRADUATION REQUIREMENTS:

One unit of biology is required

79.1% of 6th–9th graders and 57.5% of 10th–12th graders met the “proficient level under No Child Left Behind Adequate Yearly Progress test



The State of Michigan supports 33 **Mathematics and Science Centers** as part of a network that provides professional development, curriculum support, direct student services, and a clearinghouse.

Examples of Bioscience Education Activities

Teacher Preparation and Professional Development

The Van Andel Education Institute offers professional development workshops for teachers year-round, and consulting to school systems on design of science education programs.

The Mathematics and Science Centers network offers a **Michigan Mathematics Leadership Academy** to train lead teachers and **Building a Presence in Science**, a partnership with the Michigan Science Teacher Association to groom science teachers as future leaders.

Experiential Learning and Outreach

The **Van Andel Education Institute's Science Academy** offers programs for elementary and middle school students and their teachers, including weekend and out-of-school projects.

MichBio offers an annual **High School Career Day** for juniors and seniors, coinciding with the association's annual conference.

Bioscience-focused Schools and Programs

The **Grand Rapids Area Pre-College Engineering Program (GRAPCEP)** is a regional pre-college science, engineering, and biomedicine program based at Creston High School in partnership with Davenport University. It directly serves 200 students at Creston and also provides outreach to 3,000 students in Grand Rapids Public Schools, many from economically disadvantaged backgrounds. It also provides teacher training.

Although the emphasis is more heavily on engineering, life science is also part of the curriculum at the **Detroit Area Pre-College Engineering Program (DAPCEP)** based at Wayne State University. The exclusive focus of this program is to increase the number of historically underrepresented minority students in science, technology, engineering, and mathematics (STEM) fields, in partnership with 33 middle schools and 18 high schools. DAPCEP also offers Saturday and summer programs.

The Michigan Department of Education supports a series of **eight "Middle College" schools with health science emphasis**. These are 5-year high schools located on the campus of a public university where students may attend as early as 9th grade and graduate with both a high school diploma and an associate's degree or 60 college credits.

Basic Skills Achievement and Other Summary Metrics

STUDENT ACHIEVEMENT

NAEP Grade 8	MI	U.S. Avg.	State Rank
Math Average, 2007	276.8	280.2	36
Math, 2007 (% at or above "proficient")	28.9%	31.0%	34
Reading Average, 2007	260.3	261.0	32
Reading, 2007 (% at or above "proficient")	28.2%	29.2%	30
Writing Average, 2007	151.1	154.3	34
Writing, 2007 (% at or above "proficient")	26.6%	30.6%	31

ACT	MI	U.S. Avg.	State Rank
Percentage of Graduates Tested	100%	43%	1
Math Average, 2008	19.5	21.0	48
Reading Average, 2008	19.8	21.4	49
English Average, 2008	18.7	20.6	50

SAT	MI	U.S. Avg.	State Rank
Percentage of Graduates Tested	9%	48%	35
Math Average, 2008	598	515	6
Critical Reading Average, 2008	581	502	8
Writing Average, 2008	572	494	7

AP	MI	U.S. Avg.	State Rank
Math Scores, 2008 (% with a score of 3 or higher)	67.6%	65.2%	21
Math Exams, 2008 (Exams as % of all H.S. grads)	7.9%	8.7%	26
English Scores, 2008 (% with a score of 3 or higher)	67.1%	59.2%	15
English Exams, 2008 (Exams as % of all H.S. grads)	13.0%	18.9%	32

SUMMARY STATE EDUCATION METRICS

Selected Indicators	MI	U.S. Avg.	State Rank
High School Graduation Rate, 2005–06	72.2%	73.4%	36
Student/Teacher Ratio, 2006–07	17.5	15.5	44*
Low-income Students, 2006–07 (% of all students)	36.2%	41.6%	–
Expenditure per Student (\$), 2005–06	\$9,575	\$9,154	18

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).