



Minnesota Must Build on Its Leadership in Science Education – Not Slide Backwards

OpEd

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Turning Point

Minnesota schools today face a critical turning point for science education in our state – the results of which will shape the future lives of our students, our workforce and, ultimately, our state economy.

Minnesota Academic Standards for Science are in place and assessment of Minnesota students' progress toward achieving those standards will first be measured in 2007. Will Minnesota continue to serve as a national role model for science education programs around the country?

The time to answer this question is now.

What do we
stand to lose?

What do we stand to lose? For nearly a decade, Minnesota has been a national leader in shaping the way science is taught. Our state's students have regularly scored at or near the top in leading science tests. Results from the 1995 Third International Mathematics and Science Study (TIMSS) – the largest such study ever conducted – showed that Minnesota fourth and eighth graders were among the worldwide leaders in science scores, outperformed only by Korea at the fourth-grade level and Singapore at the eighth-grade level.

More recent tests show that Minnesota students continue their strong performance in the sciences. According to the National Assessment of Educational Progress, Minnesota eighth graders in 2000 ranked second in the nation overall in science achievement. At eighth grade, 42 percent of Minnesota's students scored at the highest two levels in science, compared to 30 percent nationally.

Minnesota's leadership has not gone unnoticed. Educators from around the country look to our state to see what we're doing to produce such excellent science scores. Science educators and policy makers nationwide consider our state a model for how science should be taught.

What are we
doing right?

What are we doing right? Plenty. The National Education Goals Panel, <http://govinfo.library.unt.edu/negp/reports/mntimss.pdf> a federal review agency, found that middle school science courses in Minnesota focus on life science one year and earth science the next – a system that enables students to explore new content and learn it in depth over a significant period of time. Such a process helps “lock in” science learning. The panel also found that Minnesota science educators have a legacy of involving students in hands-on

inquiry about our world. Instead of just reading about science in a textbook, students have the opportunity to experience first-hand the intricacies of science. Textbooks are still a solid source for learning, but not the sole source.

Going forward, science and educational leaders nationwide will be watching carefully to see if Minnesota's revised standards propel us forward to a new level of performance, or take a step backwards – a direction Minnesota cannot afford to go if it wants to create a world class workforce in the future. The quality of our state's future workforce will depend on the education our children receive today. And the proposed statewide science standards will affect what children learn and how teachers teach. If we do not place high expectations on our K-12 education system, we cannot expect our state's leading technology and biotech firms to find the workers they need in Minnesota.

National Science Standards

As we assess the Minnesota Academic Standards for Science, we must ensure they meet the guiding principles of the national science standards, which are designed to encourage students to focus on problem-solving as opposed to the traditional focus that's geared toward testing – which often involves memorizing answers and regurgitating facts. Parents, community leaders and policy makers alike need to unite around national standards like the National Science Education Standards (www.nap.edu/readingroom/books/nse) and the Atlas of Science Literacy (www.project2061.org).

Instead of submitting our students to an outdated routine of memorization and multiple choice tests that fail to build critical thinking skills, we must develop our teaching and testing from standards that challenge our students to think independently and creatively, encouraging:

- Student investigation of natural phenomena, utilizing both laboratory and field experiences;
- Time for students to make meaning of what they investigate and study – not just memorization of the “best” answers; and
- Curriculum that is relevant to the student, connecting the world of science with the real-world examples of why its study is important.

Will Minnesota's Standards and Assessment for Science measure up to national standards? To do less means not only losing our national reputation as a leader; it means running the risk of depriving our state's students of the chance to be their best. The strength of our state's science education correlates directly with the strength of the future Minnesota workforce. And we all know that now more than ever before, we must strive to create a scientifically literate population capable of doing the work of the future.

The nation is watching. And Minnesota has its chance to shine. Let's build on what we've done right – and continue to raise the bar.
