

VITAL SIGNS

SOUTH DAKOTA

Business leaders in South Dakota cannot find the science, technology, engineering and mathematics (STEM) talent they need to stay competitive. Students' lagging performance in K-12 is a critical reason why. The good news is that the nation's most effective STEM education programs can help turn the tide.

South Dakota students have made no gains in math over the past decade, and not enough have the chance to learn challenging content to prepare them for college and careers. The state's science teachers are more likely than peers in other states to have the resources they need, but elementary schools spend very little time on science.

SOUTH DAKOTA NEEDS MORE STEM TALENT

STEM fields are growing in South Dakota

Between 2017 and 2027:

STEM jobs will grow

Non-STEM jobs will grow

9%

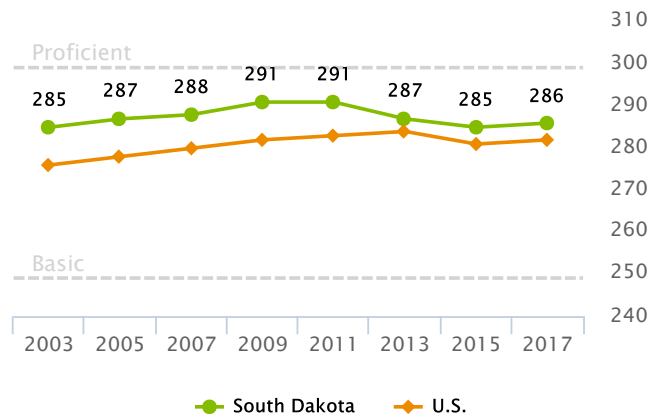
5%

THE SOUTH DAKOTA STEM SKILLS SHORTAGE STARTS EARLY

Performance in math has been flat

South Dakota has not made progress in K-12 math.

Trends in 8th grade math scores, 2003-2017

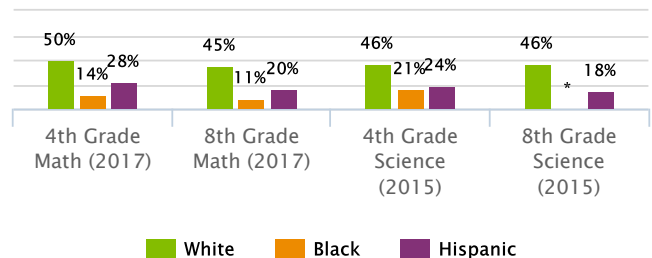


SOURCE: U.S. Department of Education, 2003-2017

Students of color lag farthest behind

Closing achievement gaps must remain a priority.

Percentage of South Dakota students at or above proficient, by race/ethnicity



SOURCE: U.S. Department of Education, 2015-2017

*Data not available or reporting requirements not met.

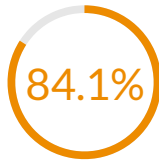
The state must plug the gaps in the STEM pipeline

The South Dakota STEM pipeline loses young people at every level of the education system. Low graduation rates from college narrow the pipeline of students who can gain advanced STEM skills. Of those students who do graduate, few get a post-secondary degree in STEM.

What percentage of high school students graduate? (2014-2015)



South Dakota

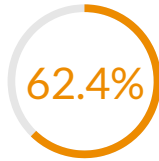


United States

Of high school graduates who enter a 4-year degree program, what percentage graduate? (2012-2013)



South Dakota

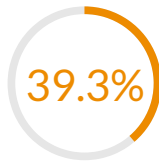


United States

Of high school graduates who enter a 2-year associate's degrees program, what percentage graduate? (2012-2013)

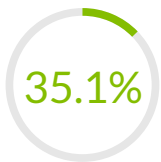


South Dakota

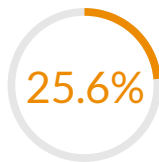


United States

What percentage of certificates and degrees is in STEM fields? (2014-2015)



South Dakota



United States

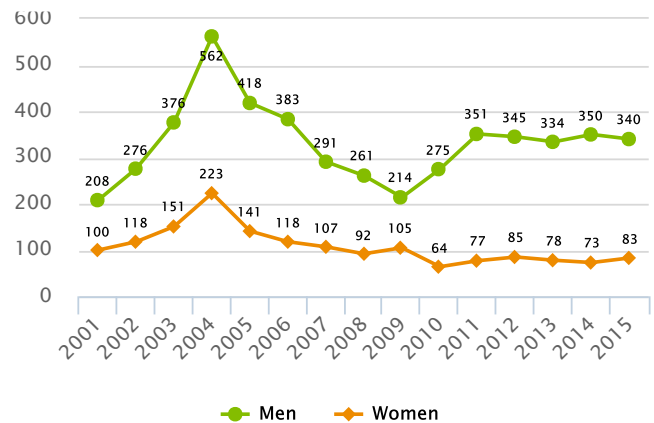
TAP SOUTH DAKOTA'S FEMALE AND MINORITY TALENT

Together, females and minorities make up more than half of South Dakota's population, yet they are much less likely to earn STEM degrees or become STEM professionals. Closing these gaps can pay big dividends in the state.

Women have lost ground in computing

The available talent in computer science would rise dramatically if the state simply closed the gender gap in these subjects.

Number of computing degrees/certificates in South Dakota

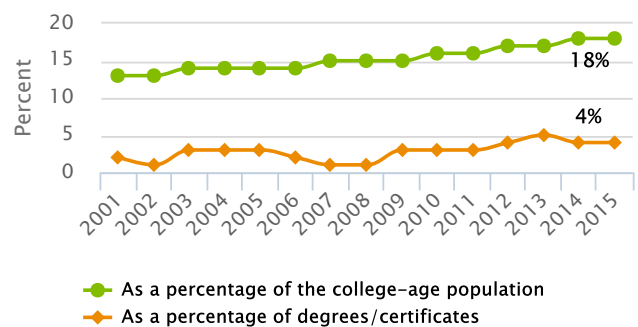


SOURCE: U.S. Department of Education, 2001-2015

People of color are not gaining ground in engineering degrees

It is critical to prepare and inspire many more students of color to pursue STEM subjects such as computer science and engineering.

Underrepresented minorities in South Dakota earning engineering degrees/certificates



SOURCE: U.S. Department of Education, 2001-2015

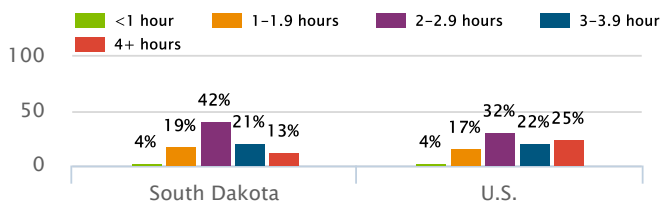
*Data not available or reporting requirements not met.

GIVE SOUTH DAKOTA STUDENTS ACCESS TO BETTER STEM LEARNING OPPORTUNITIES

Lack of access to such opportunities severely limits young people's college and career prospects.

The state should make time for elementary science

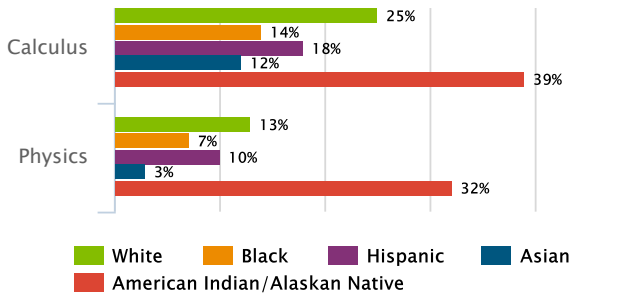
Hours per week spent on science, grades 1-4, 2015



The state should improve access to advanced courses

Many students lack access to such courses.

Students in South Dakota high schools that do not offer challenging math and science courses, 2013/14



Success in Advanced Placement courses can put more students on a path to STEM careers.

Of the high school graduating class of 2015 in South Dakota:

	Took AP Math Exam	Scored 3+ on AP Math Exam
All Students	8%	5%
White	8%	5%
Black	8%	3%
Hispanic	6%	4%
Asian	17%	13%
American Indian/Alaskan Native	2%	1%

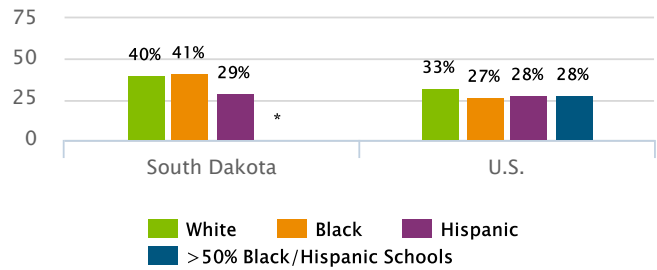


DEVELOP AND RETAIN TALENTED STEM TEACHERS IN SOUTH DAKOTA

Research shows that teachers' content knowledge and teaching experience can affect student performance

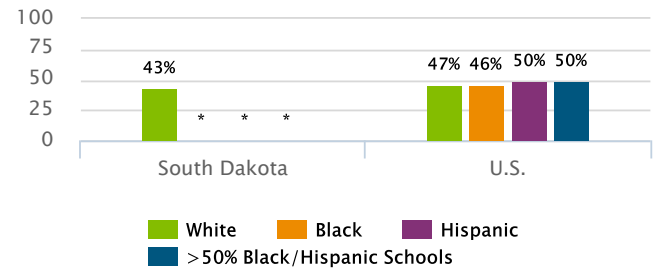
Boost teachers' content knowledge

Eighth-graders whose math teachers have an undergraduate major in math, 2017



SOURCE: U.S. Department of Education 2017

Eighth-graders whose science teachers have an undergraduate major in science, 2015

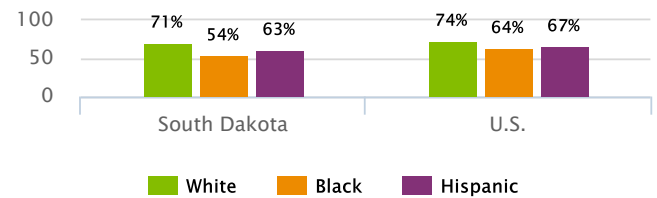


SOURCE: U.S. Department of Education 2015

Retain excellent teachers

Research shows that new teachers are less effective than teachers with three to five years of experience.

Eighth-graders whose math teachers have 6+ years of experience teaching their subject



SOURCE: U.S. Department of Education 2017

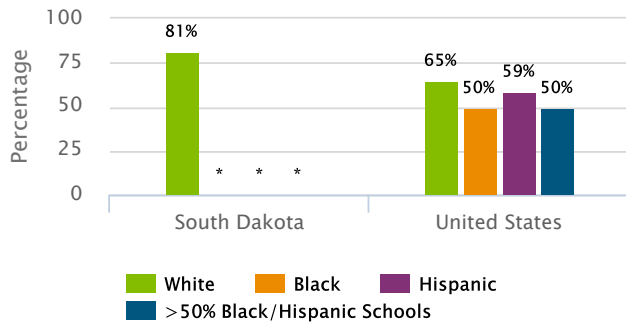
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GIVE SOUTH DAKOTA SCHOOLS AND TEACHERS THE RESOURCES THEY NEED

South Dakota stands out for providing teachers and students with the teaching materials and resources they need to succeed, but the state has far to go in providing universal access to important science facilities.

Some teachers lack the tools of their trade

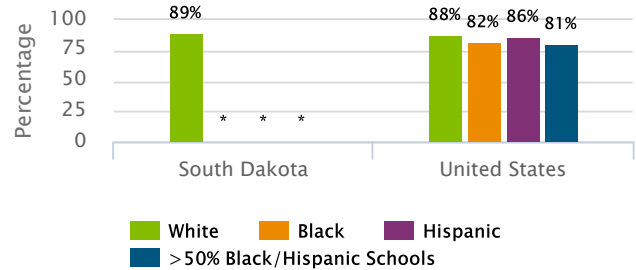
Eighth-graders whose science teachers say they have all or most of the resources they need, 2015



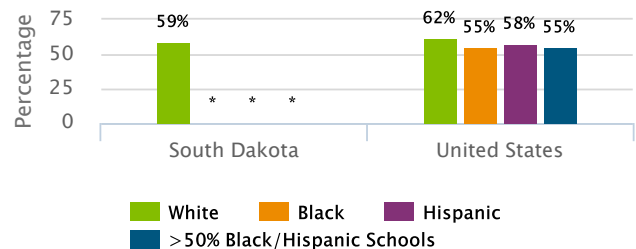
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The state should maintain access to science facilities and supplies

Eighth-graders whose schools have science labs, 2015



Eighth-graders whose schools report that supplies or materials for science labs are available "to a large extent," 2015



For the complete state report, methodology, and sources, see vitalsigns.ecs.org (vitalsigns.ecs.org)

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