U.S. Business leaders 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.

We have our work cut out for us. Not enough students, particularly students of color, have access to challenging math and science content that would prepare them for STEM careers. Far too few eighth graders have teachers who majored in math or science. Teachers of low-income and minority students often lack the resources and support they need. Years of hard work have improved K-12 student performance in math and science, but not fast enough.

Programs in STEMworks, CTEq’s honor roll of STEM education programs that have proven their effectiveness, have the potential to address these and other challenges in states across the country.

THE UNITED STATES NEEDS MORE STEM TALENT

STEM fields are growing in United States

Between 2014 and 2024:

**STEM jobs will grow** 16%

**Non-STEM jobs will grow** 11%

**THE STEM SKILLS SHORTAGE STARTS EARLY**

Progress in math has faltered

After years of progress in K-12 math, U.S. students have lost ground.

Trends in 8th grade math scores, 2003-2015

United States trends in 8th grade math scores, 2003-2015

Students of color lag farthest behind

Closing achievement gaps must remain a priority.

Percentage of United States students at or above proficient, by race/ethnicity

For the complete state report, methodology, and sources, see vitalsigns.changetheequation.org (vitalsigns.changetheequation.org)
**The U.S. must plug the gaps in the STEM pipeline**

The national STEM pipeline loses young people at every level of the education system. Some fail to graduate from high school and many do not finish college, which narrows the pipeline of students who can gain advanced STEM skills. The 2-year college graduation rate is particularly low. Of those students who do graduate, few get a post-secondary degree in STEM.

What percentage of high school students graduate? (2013-2014)

- **United States**
  - 82.3%

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

- **United States**
  - 59.6%

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

- **United States**
  - 27.6%

What percentage of certificates and degrees is in STEM fields? (2012-2013)

- **United States**
  - 23.9%

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**TAP THE NATION'S FEMALE AND MINORITY TALENT**

Together, females and minorities make up more than half of The nation'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 U.S.

**Women have lost ground in computing**

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

**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 United States earning engineering degrees/certificates**

- **As a percentage of the college-age population**
  - 36%

- **As a percentage of degrees/certificates**
  - 11%

*Data not available or reporting requirements not met.*

For the complete state report, methodology, and sources, see vitalsigns.changetheequation.org (vitalsigns.changetheequation.org)
GIVE STUDENTS ACCESS TO BETTER STEM LEARNING OPPORTUNITIES

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

The nation should make time for elementary science

Hours per week spent on science, grades 1-4

The U.S. should improve access to advanced courses

Many students lack access to such courses.

Students in United States schools that do not offer challenging math and science courses, 2009/10

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

Of the high school graduating class of 2015 in United States:

<table>
<thead>
<tr>
<th></th>
<th>Took AP Math Exam</th>
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<tbody>
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<td>8%</td>
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<td>6%</td>
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DEVOLVE AND RETAIN TALENTED STEM U.S. TEACHERS

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, 2015

The U.S. should improve access to advanced courses

Many students lack access to such courses.

Students in United States schools that do not offer challenging math and science courses, 2009/10

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

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Retain excellent teachers

Minority students are most likely to have inexperienced teachers

Eighth-graders whose teachers have 5+ years of experience teaching their subject

United States

*Data not available or reporting requirements not met.
UNITED STATES

GIVE SCHOOLS AND TEACHERS THE RESOURCES THEY NEED

U.S. teachers need better resources, facilities, and teaching materials to succeed.

Too many teachers lack the tools of their trade

Eighth-graders whose science teachers say they have all or most of the resources they need, 2011

The nation should improve access to science resources

Eighth-graders whose schools have science labs, 2011

Eighth-graders whose schools report that supplies or materials for science labs are available “to a large extent,” 2011

*Data not available or reporting requirements not met.

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

STEMWORKS

Turn to STEMworks for proven solutions

The nation’s children and youth need immediate help to reach their potential. Change the Equation’s STEMworks honor roll of proven STEM education programs features programs that have been rigorously vetted for effectiveness and address critical issues as diverse as teacher training, school curriculum, and summer camp.