Business leaders in Ohio 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.

Ohio Students have made some progress in math over the past decade, yet not enough students—least of all minorities—have the chance to learn challenging content to prepare them for college and careers. Few eighth graders—especially low-income students—have teachers with an undergraduate major in math or science. Science teachers of low-income, black and Hispanic students are most likely to say they don’t have the resources they need, and their schools are most likely to lack facilities and materials for science instruction.

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 the state.

**OHIO NEEDS MORE STEM TALENT**

**STEM fields are growing in Ohio**

Between 2014 and 2024:

<table>
<thead>
<tr>
<th>STEM jobs will grow</th>
<th>Non-STEM jobs will grow</th>
</tr>
</thead>
<tbody>
<tr>
<td>15%</td>
<td>9%</td>
</tr>
</tbody>
</table>

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

The Ohio STEM pipeline loses young people at every level of the education system. Low graduation rates from high school and 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? (2013-2014)

- Ohio: 81.8%
- United States: 82.3%

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

- Ohio: 57.8%
- United States: 59.6%

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

- Ohio: 21.7%
- United States: 27.6%

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

- Ohio: 28.9%
- United States: 23.9%

TAP OHIO’S FEMALE AND MINORITY TALENT

Together, females and minorities make up more than half of Ohio’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 Ohio

Women 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 Ohio earning engineering degrees/certificates

People of color are not gaining ground in engineering degrees

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

**Give Ohio 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

![Graph showing average hours per week spent on science, grades 1-4 in Ohio and the U.S.](image)

**The state should improve access to advanced courses**

Many students lack access to such courses.

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

![Graph showing the percentage of schools in Ohio and the U.S. that do not offer challenging math and science courses](image)

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

Of the high school graduating class of 2015 in Ohio:

<table>
<thead>
<tr>
<th></th>
<th>Took AP Math Exam</th>
<th>Scored 3+ on AP Math Exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Students</td>
<td>11%</td>
<td>7%</td>
</tr>
<tr>
<td>White</td>
<td>11%</td>
<td>7%</td>
</tr>
<tr>
<td>Black</td>
<td>4%</td>
<td>1%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>9%</td>
<td>5%</td>
</tr>
<tr>
<td>Asian</td>
<td>46%</td>
<td>34%</td>
</tr>
<tr>
<td>American Indian/Alaskan Native</td>
<td>15%</td>
<td>8%</td>
</tr>
</tbody>
</table>

**Develop and Retain Talented STEM Teachers in Ohio**

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

![Graph showing the percentage of eighth-graders whose math teachers have an undergraduate major in math](image)

**Retain excellent teachers**

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

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

![Graph showing the percentage of eighth-graders whose teachers have 5+ years of experience teaching their subject](image)

*Data not available or reporting requirements not met.*
Teachers in Ohio need better resources, facilities, and teaching materials to succeed.

**Too many teachers lack the tools of their trade**

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

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**The state should improve access to science resources**

Eleventh-graders whose schools have science labs, 2011

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*Data not available or reporting requirements not met.

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

**Turn to STEMworks for proven solutions**

Ohio'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.