Economic Impact of Education Through the Lens of PISA
Alliance for Excellent Education
December 7, 2016
STEM = Good Salaries

Computer science is a gateway to a prosperous future
Computing jobs pay almost twice as much as all other jobs, and they are growing nearly twice as fast.

<table>
<thead>
<tr>
<th>Median earnings, 2015</th>
<th>Projected job growth, 2015-2025</th>
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</thead>
<tbody>
<tr>
<td>Computing jobs</td>
<td>$39/hr</td>
</tr>
<tr>
<td>All other jobs:</td>
<td>$21/hour</td>
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<tr>
<td></td>
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<tr>
<td>Computing jobs</td>
<td>+19%</td>
</tr>
<tr>
<td>All other jobs:</td>
<td>+11%</td>
</tr>
</tbody>
</table>

SOURCE: CTEq analysis of data provided by Economic Modeling Specialists International, 2016
How many computing jobs?

Computing jobs span the economy

According to the U.S. Bureau of Labor Statistics, 3.8 million people in the U.S. work in computing occupations. Yet Change the Equation finds that more than twice as many—7.7 million Americans—say they use computers in complex ways in their jobs. Many of these jobs are in non-STEM fields.

SOURCE: CTEq 2015 analysis of OECD’s Programme for the International Assessment of Adult Competencies, 2012
STEM skills are scarce

Proportions saying they/recent college graduates

- Working with numbers/statistics
  - Students: 56%
  - Employers: 28%

- Staying current on technologies
  - Students: 37%
  - Employers: 46%

SOURCE: American Association of Colleges and Universities, 2015
Too few females

Women fell farthest in computing

Degrees/Certificates in:
- Biological Sciences
- Mathematics And Statistics
- Physics
- Computer/Information Technology
- Engineering
- Engineering Technology

Too little racial diversity

Whites and Asians still dominate the STEM workforce

Between 2001 and 2014, whites and Asians declined from 74 to 69 percent of the working-age population. Yet their dominance in critical STEM occupations continues unabated.

Source: Change the Equation, “The Diversity Dilemma,” 2015
Some Good News

Growth in computer science and engineering degrees outstrips population growth

Bachelor's and advanced degrees have grown faster than the college-age population for white, Latino, and black students.

White percentage growth from 2009 to 2015
- College-age population: 6%
- Computer science degrees: 39%
- Engineering degrees: 46%

Latino percentage growth from 2009 to 2015
- College-age population: 33%
- Computer science degrees: 155%
- Engineering degrees: 176%

Black percentage growth from 2009 to 2015
- College-age population: 25%
- Computer science degrees: 64%
- Engineering degrees: 40%

Opportunity to Tinker

In school, how often have you ever done the following activities?

- Figured out why something is not working in order to fix it
- Taken something apart in order to fix it or see how it works
- Used different tools, machines, or materials to see which are best for the given purpose
- Built or tested a model to see if it solves a problem

SOURCE: National Assessment of Educational Progress, Technology and Engineering Literacy Assessment, 2015
Opportunity to learn

Race determines access to computer science classes
Percentage of 12th-graders whose high schools offer computer science classes, 2015

Any CS class*
- 59% Asian
- 44% White
- 43% Latino
- 34% Black
- 22% Native American

AP CS class
- 31% Asian
- 22% White
- 24% Latino
- 19% Black
- 14% Native American

SOURCE: CTEq analysis of data from the U.S. Department of Education, National Assessment of Educational Progress, 2015 Mathematics Assessment
*Includes AP and non-AP classes
Opportunity to imagine
State STEMworks Partnerships

- 6 current state STEMworks partnerships
- 4 possible new state STEMworks partnerships
- Outreach continuing to dozens more states