

CONNECTING POINTS

A S²TEM Centers SC e-newsletter

www.s2temsc.org

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STEM Education: The Economic Case

Currently in the United States and in South Carolina we are experiencing a depressed job market with an unemployment rate above 10 percent in the state and above 9 percent nationally. STEM education is a key to reversing this grim reality and setting us on the path to a prosperous and secure economic future. The ingenuity and innovation required to propel us forward will be driven by students proficient in the STEM subjects of science, technology, engineering, and mathematics.

Both former President George W. Bush and President Obama have cited the importance of STEM education for our nation's future. President Bush in a speech he gave in 2007 said, "We want to make sure we strengthen math and science because we can't be a competitive nation without more scientists and more mathematicians." He continued, "Making sure the best jobs are in

America requires us having mathematicians and scientists and engineers and physicists."

President Obama has advocated heavily for a greater emphasis on STEM. He says "Our success as a nation depends on strengthening America's role as the world's engine of discovery and innovation." (September, 2010) The president has set forth three overarching goals of the nation's initiative "Educate to Innovate." They are:

- Increase STEM literacy among U.S. students.
- Improve the quality of math and science teaching.
- Expand STEM education and career opportunities for underrepresented groups, including women and minorities.

Here are some STEM facts from a recent U. S. Commerce Department study, *STEM Jobs Now and for the Future*:

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"The ingenuity and innovation required to propel us forward will be driven by students proficient in the STEM subjects of science, technology, engineering, and mathematics."



What would you like to see in our newsletter? We want to hear from you! Send ideas to the S²TEM Centers SC Team Sustain at sustainteam@gmail.com.



S²TEM Centers SC

Solutions in Science, Technology, Engineering & Mathematics Education

SOUTH CAROLINA'S COALITION FOR MATHEMATICS & SCIENCE

SCCMS

- ACHIEVEMENT BY DESIGN -

S²TEM Centers SC is a statewide system of support for improving instruction and increasing student achievement in mathematics and science. The work of the [five Regional S²TEM Centers](#) is coordinated by SCCMS [South Carolina's Coalition for Mathematics and Science](#).

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Boeing's 3-year commitment of \$250,000 annually toward research in middle school disciplinary literacy demonstrates the capacity of S²TEM Centers SC to do impactful and compelling work.

- Over the past 10 years, growth in STEM jobs was three times as fast as growth in non-STEM jobs.
- STEM workers are less likely to experience joblessness than their non-STEM counterparts.
- Science, technology, engineering and mathematics workers play a key role in the sustained growth and stability of the U.S. economy, and are a critical component to helping the U.S. win the future.
- STEM occupations are projected to grow by 17 percent from 2008 to 2018, compared to 9.8 percent growth for non-STEM occupations.
- STEM workers command higher wages, earning 26 percent more than their non-STEM counterparts.
- More than two-thirds of STEM workers have at least a college degree, compared to less than one-third of non-STEM workers.
- STEM degree holders enjoy higher earnings, regardless of whether they work in STEM or non-STEM occupations. <http://www.esa.doc.gov/sites/default/files/reports/documents/stemfinaljuly14.pdf>

Carolina remains a state in which economic growth, education opportunities, and other resources that promote success and spawn innovation are unequally distributed.

The work of South Carolina's statewide STEM infrastructure has long been supported by the business/industry community through SCCMS. Boeing's 3-year commitment of \$250,000 annually toward research in middle school disciplinary literacy demonstrates the capacity of S²TEM Centers SC to do impactful and compelling work.

As we build on our eighteen year history, our goal is to make student success in college and careers the expected outcome for all students, thus improving the economic outlook for the citizens of our state. See Success Stories@ <http://www.s2temsc.org/success>

S²TEM Centers SC, through our statewide infrastructure for STEM education brings information, support, innovation and research to the education community with emphasis on K-12 schools.

Our statewide support of STEM content areas was formed in 1993, with initial funding from the National Science Foundation, in response to specific and persistent trends in both student performance and access to resources. South

What Others Are Saying About STEM



If you ask 10 people the question, "What is STEM?" you will likely get 10 different answers. As a nation we are in the process of defining STEM. What most agree on is that to remain a major player in the global economy, we must prepare students so they have a strong foundation in STEM subjects and are able to use this knowledge in their personal and professional lives. We must inspire students so that all are motivated to study STEM subjects in school and many are excited about the prospect of having careers in STEM fields. Here are some quotes highlighting the need for STEM education:

"While only four percent of the nation's work force is composed of scientists and engineers, this group disproportionately creates jobs for the other 96 percent." National Science Board, Science and Engineering Indicators 2010. Arlington, VA: National Science Foundation (NSB 10-01)

"A STEM-educated workforce is vital to the security and the prosperity of the U.S. as industry and government increasingly demand highly trained STEM professionals to compete in the global market." The Heritage Foundation

"When General Electric looked for workers 10 years ago they sought a specific skill set. Today's GE recruiters are looking for a completely different employee — robotics engineers, people with computer skills, productivity, problem-solving, creativity." Jim Reynolds, the 2011-2012 Chairman of the South Carolina Chamber of Commerce, in a speech given August 8, 2011 entitled, "Strategies to Prepare South Carolina's Knowledge Workforce,"

Keeping Current

Common Core State Standards for Mathematics (CCSS-M)

The S²TEM Centers SC has developed an implementation support page and a workshop series to help teachers make the transition to CCSS-M a smooth process. For more information visit <http://s2temsc.org>

The Next Generation Science Standards

On July 19, 2011, the National Research Council (NRC) released A Framework for K-12 Science Education that identifies the key scientific ideas and practices for all students. Now that the conceptual framework is completed, the next step is to develop the Next Generation Science Standards. Currently, the writing team from 20 states is writing the first draft of the standards slated to be available in public draft Winter, 2012. After a second public draft scheduled for spring 2012, and final state draft in summer, 2012, the Next Generation Science Standards will be released to states for adoption in fall 2012. For more information about these standards, visit <http://www.nextgenscience.org>.

Learning Opportunities

Online Courses:

- *Developing Mathematical Understanding through Common Core State Standards in Mathematics* - designed to aid teachers in reflecting on the major ideas of K-6 mathematics and examining how students develop those ideas as they relate to the base-ten number system.
- *Understanding Measurement and the Common Core State Standards in Mathematics* - designed to aid teachers in reflecting on the major ideas of K-5 mathematics and examining how students develop those ideas as they relate to measurement concepts.

Dates: January 9, 2012 through February 26, 2012

For more information—

<http://checkout.sctev.org>

Register online at:

<http://moodle.sctev.org>

Making Sense of Science – “Energy”

The first in a series, this professional development course focuses on the study of Energy

though K-8 Earth, Life, and Physical Science. Throughout the five learning modules, participants will explore the intersection of science knowledge, teaching, and literacy so that they are able to support students in making sense of essential science content. This course helps teachers facilitate hands-on science lessons, support evidence-based discussions, and develop students' academic language and literacy skills in science, as well as the habits of mind necessary for sense making and scientific reasoning.

Dates: TBD

For more information: Amy Threatt amythreatt@gmail.com

Highlights from STEM Summit



If you were not able to attend – you can read about the event or see archived video streaming: <http://scstem.ning.com/> OR on Facebook: <http://www.facebook.com/#!/SCSTEMSummit>

“We live in a society exquisitely dependent on science and technology, in which hardly anyone knows anything about science and technology.”
Carl Sagan

Share your thoughts on STEM education with us on Facebook & Twitter



<http://www.facebook.com/#!/s2tem.centers.southcarolina>



<http://twitter.com/#!/s2temcenterssc>

Read More About It...

To read more about the economic implications of STEM education check out these resources:

- STEMConnector™ Project: Purpose is to transform science, technology, engineering, and mathematics (STEM) education in the nation by encouraging collaboration and identifying and profiling key stakeholder groups in all areas of STEM education. www.stemconnector.org
- “Refueling the U.S. Innovation Economy: Fresh Approaches to STEM Education” — A report released by the Information Technology and Innovation Foundation intends to challenge our approach to STEM education and argues that reforms are urgently needed to better match the talents of students, the needs of employers, and our goals as a nation. <http://www.itif.org/files/2010-refueling-innovation-economy.pdf>

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For more information contact: sustainteam@gmail.com

Libby Baker
bakerl@winthrop.edu

Nan Dempsey
dempsey@upstatesc.org

Dorothy Earle
dearle@greenville.k12.sc.us
Donna Jackson
dojackson@york.k12.sc.us

Amy Threatt
amythreatt@gmail.com

Kathy White
whitek@berkeley.k12.sc.us

Deb Wallace
dwallace@anderson4.k12.sc.us