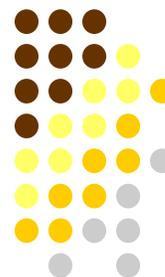
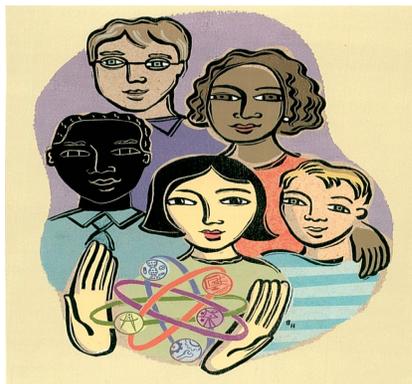


STEM NEWS



Computing Workforce Action Needed

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To create effective pathways, education policy makers and education organizations in each state should develop and expand computer science education and computing workforce plans that spread through all levels of the education system. These plans should foster increased opportunities for under-represented students and women in academic and career technical education programs to gain the computer science knowledge and skills needed to compete for high-wage employment.

Five Action Steps to Take

Key elements for achieving increased opportunities include: (1) the availability of and graduation credit for rigorous computer science courses in high school, (2) certified computer science teachers, (3) recognition of computer science courses in college admissions policies, (4) articulation agreements to allow for the efficient transfer of computer science courses across postsecondary institutions, and (5) actions to facilitate the full participation of women, minorities, and students with disabilities in computer science education and career pathways.



STEM Across the Curriculum

Here are a few concrete steps schools can take to infuse STEM throughout the curriculum:

Hire elementary teachers with experience in science, mathematics and engineering.

Use STEM curricula to provide a context for reading, writing, mathematics and the use of simple tools and technologies; there are many fine products available for free and for fee.

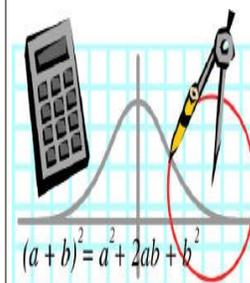
Engage the community to explain how and why STEM provides an important context for learning the 3Rs.

Increase the time allotted for STEM education; do science every day.

Develop and employ performance-based assessments; for teachers.

Develop relationships with local industry and higher education to provide elementary teachers with STEM professional development opportunities and resources.

Partner with post-secondary education institutions to participate or create programs designed to improve the teaching of science in primary schools.



“You can teach a student a lesson for a day; but if you can teach him to learn by creating curiosity, he will continue the learning process as long as he lives”. ~Clay P. Bedford

STEM GAP?

A new report has identified another issue in the nation’s STEM crisis – and, possibly, a way to steer more students into science, technology, engineering and math jobs. The report, by [ACT](#), the college readiness assessment testing company, points to a gap between the levels of students’ expressed interest in STEM areas and their intentions to pursue STEM careers. Here is the link to the report: <http://act.org/newsroom/releases/view.php?lang=english&p=3079>

Assessment – An Important Ingredient

A Racial Equity Impact Assessment — a systematic examination of how a proposed action or decision will likely affect different racial and ethnic groups — is a useful tool for assessing the actual or anticipated effect of public policies, budgets and decision making to maximize equity and minimize negative unintended consequences.

Improving equity and opportunity for children of color requires collecting and analyzing data to understand differential impacts of current policies on children of color and then using that analysis to target resources in ways that can improve their outcomes. **Dr. Deborah E King**, President DEBLAR & Associates, Inc. has focused her attention on K to PhD success for underrepresented minorities in science.

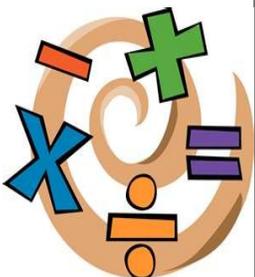
Dr. King serves as external evaluator for the Georgia Peach State, LSAMP program. The Peach State Louis Stokes Alliance for Minority Participation increases underrepresented minority student participation in STEM graduate studies and research under funding from NSF.

All to Common Story

It is sadly true that most elementary students aren't getting enough, if any, time to learn science content. This is especially the case for most minority students. Since the NCLB Act was passed in 2001, there has been an enormous amount of pressure put on teachers to reach the goals set for testing in math and reading, meaning that teachers no longer make time for Social Studies and Science content in most public schools.

There are schools where the students don't get any Science or Social Studies content unless it is integrated into another subject, usually ELA. This is not fair, not only to the students who aren't being readily prepared for the future, but also to the teachers that teach these subjects in Middle and High Schools because they have to now go back and teach the basics to catch the students up on the content they missed in Elementary School. Not only should teachers try to integrate Science content into their lessons more often, but schools should find a way to make time for Science in their class schedules.

All subjects are equally important to the future success of the students; we need to think about long term goals for the students, rather than just short term goals, like reaching certain scores on standardized tests.



One Classroom Perspective

At one Georgia 4th-5th-6th magnet school, one hour daily is spent in science, as is the same with other core areas. It is still not enough to get through the 6th grade curriculum in enough depth! Teachers and administrators must "check off" the state standards, while the goal is to provide enrichment above and beyond to our mostly gifted population.

It is unfortunate that the new science standards ask classroom leaders to teach and stretch children in rigorous ways, but are all evaluated on a watered down multiple choice. Students at this age across socio-economic class really love science, which is why it is fun to teach. There are a myriad of online resources and science is continually refreshing the content through new discoveries and changes in our world. Textbooks still have a place as a resource for additional reading and reference.

Teachers are always challenging these students to demonstrate to their parents that they know more than they do - something a 12 year old really takes delight in!

The Issue of Funding

"Science education is definitely underfunded--and in the middle schools, where they run on a middle school concept and don't change classrooms for science, rooms without adequate facilities for science teaching definitely leave kids at a disadvantage.

They've shortened the science time to a quick 40 minutes in many places, adding more time to reading and math. What happened to education is testing, and focusing on the test instead of teaching kids how to solve real problems has become--a real problem!

Plus, teachers don't really know how to teach it any more. Same with math--which is why they both suffer. We all suffer from undertrained teachers and/or teachers who aren't well-prepared for the classroom, and the policies that hold them back. I had a great science curriculum when I was in school, and I have used things I learned in daily life--including how to set up an experiment! We are seriously hurting our kids by taking away their opportunities."

Julie Koehler, MDE, MBA, Learning Development Consultant

Is there Enough Time to teach STEM?

"Teaching reading and writing and math skills & concepts through science engages elementary students and provides relevant content! We have just revised our science curriculum, spent thousands of dollars to update kits and inquiry investigations that bring in local resources and yet teachers have no time and no training to implement the curriculum. As an elementary science coach, I have been able to support many new teachers as they learn to integrate curriculum... but with no ongoing vision within the district I can see that these kits and resources will once again be buried in the basement to gather dust for another ten years! I'd love to be more positive but in my organization of materials this year, I found the kits that were purchased in 2000 - with many of them being BRAND NEW, never used... we never received PD at that time or had a vision of how to roll out the science curriculum. "

Primary Teacher in the Juneau School District



"Mathematics and science is the currency of our economy, the language of innovation and invention, and the language of our global economy"

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More Perspectives on Teaching Time

“As a middle school science teacher, I can attest to the issues surrounding the amount of time spent in the elementary school classroom dedicated to science. At the beginning of the year my students took a pre-assessment to measure their previous knowledge of science coming into the school year. I was shocked by the results as many students did not have the foundational understandings that should be expected.

I think the insufficient preparation is due in large part to the amount of time spent on specifically on science. This does not only affect their knowledge but as well as their perceptions of science and their abilities to engage in authentic scientific inquiry. Although I enjoy teaching middle school, I found during my student teaching experience that my fourth grade students were naturally inquisitive and excited about exploring science whilst my current sixth graders need more motivation to engage in investigations.

I think that teaching on student interest and natural curiosity of science in the elementary school will create a generation of scientifically literate and driven students.”

Katie Ethridge, Educator at Phoenix Academy Inc. NC Charter School

“Too many elementary schools across the country are concentrating most of their time on reading and mathematics, and pushing untested subjects such as science and social studies to the side. Standardized testing as created a huge shift in our curriculum, shifting the focus from a wide-spread curriculum that encompasses all core subjects, to a main focus on only the tested subjects. This causes several issues. Students are tested in mathematics and reading every year from the third grade on, but tested only twice in science between fourth and eighth grade. Teachers whose students are not tested in science tend to only focus on the other two subjects, yet when these students reach a grade that science is tested in, they will be unprepared for the test because their previous teachers neglected to teach that subject.

Science is also important to teach in school because of its connections with the real world. Many jobs deal with science concepts and skills that students acquire while learning about science. If student's are not able to learn about, and make connections with science at a young age, their interest in science will not fully develop, and will therefore have trouble in science-related fields in the future.”

Catharine Hadley , Teacher at Davidson County Schools

“Fresh approaches in Consulting Services for Science Education”