

# Siemens Foundation and the STEM Challenge

By Jeniffer Harper-Taylor, Siemens Foundation

*Editor's Note: The following article is adapted from remarks made by Ms. Harper-Taylor at the 2010 NCSSMST Professional Conference Saturday Plenary Session on STEM Education. NCSSMST appreciates Siemens Foundation's sponsorship of the Plenary Session.*

## Successes

For more than 12 years, the Siemens Foundation has found unique ways to partner with organizations to support educational initiatives in science, technology, engineering and mathematics in the United States. Our focus is clear – to educate the next generation of innovators by supporting math and science education from grade school to grad school ...and ultimately to boost US competitiveness. To our delight, it seems that more of us are seeing how the dots are connected and how a dedication to science advancement from the early stages really benefits all of us.

We provide more than \$7 million annually in support of educational initiatives in STEM areas in the United States. What makes our foundation unique is that our long-term interest involves more than financial support; we provide innovative programs that help our youth develop a lifetime of interest that will possibly develop into future STEM careers. This has a tremendous impact on teaching and learning because we are providing key resources and support along with a vision for the future.

Here's what we aim to do:  
support outstanding students;  
recognize teachers and schools that inspire their excellence; and  
help nurture tomorrow's scientists and engineers.

Although we've heard more about STEM in recent months, our commitment is not new. As you all know, the White House recently launched the "Educate to Innovate" campaign to motivate students to excel in STEM subjects. This is a wonderful initiative. Although we have many great schools, excellent teachers, and successful students in America, there are also signs that overall, students need to do better in math and science.

The Siemens Foundation has provided millions of dollars in funding throughout its history in support of STEM education. Our interest as the nonprofit arm of Siemens, the global engineering company, is to do our part to inspire the next generation of innovators - scientists who will change the world. Its part of the DNA of the company and integral to what we do.

This is a huge undertaking, yet an incredibly rewarding one, and we've strategically aligned with partners with mutual interests and goals to help us achieve this. Some of our key educational outreach partners include: The College Board, Discovery Education, National Science Teacher Association and Thurgood Marshall College Fund.

Our ultimate goal is to establish a renewed culture of innovation within the U.S., combining resources from academia, government and the private sector –with Siemens Foundation leading the way – and we believe that this will help drive the ideas of tomorrow.

## Partnerships

Our longest partnership of more than 12 years is with the College Board, which administers the Siemens Awards for Advanced Placement and the Siemens Competition in Math, Science and Technology. Since 1998, the Siemens Awards for Advanced Placement has recognized outstanding students and teachers in all 50 states to foster AP interest in and commitment to STEM subjects. Each year, governors, senators and congressman honor their achievements with recognition ceremonies and letters of congratulations – this goes a long way towards showing local, state and national support for their hard work in STEM.

The Siemens Competition is America's premier science research competition for high school students with scholarships and awards ranging from \$1,000 to a grand prize of \$100,000. It is the only true national science research competition, where students are judged purely on research – grades and extracurricular activities are not considered. This gives a true focus on STEM unlike many other STEM competitions. We've also partnered with six leading research universities to host the regional competitions.

Let me share with you the impact of what these students accomplish. Last year's grand prize winner researched a way to develop a more complete understanding of how Taxol functions to kill tumor cells. The winning team advanced the infrastructure and knowledge of graph theory, shedding light on a problem that's been open in the mathematics community since 1978.

We also have the resources to share their stories nationwide. These teenage whiz kids have been featured on USA Today, the NY Times, CNN, and many more outlets. The media help to advance these incredible stories each time these students win, and by doing so, more students and parents are tuned into these fields.

Those are two of our most recognized signature programs, which primarily reward high achievers. Recently, we decided to stretch our boundaries to increase our outreach even further. Especially at this critical time for STEM education – we needed to find more ways to develop and reward talent that will make our nation more competitive globally, and do our part to position the U.S. to maintain its edge in innovation. We also recognized that we needed to leverage technology to empower and engage teachers and students in science education and to reach a broader demographic.

Let me give you an example of our most recent programs involving multiple partnerships to achieve this goal. The Siemens STEM Academy, just launched in February, will inspire and engage educators from across the country with hands-on and multimedia professional development opportunities that will ultimately improve STEM education for students nationwide.



*Jeniffer Harper-Taylor was appointed President of the Siemens Foundation in March 2010. She oversees the Foundation's daily management and signature programs that support, recognize and encourage the scientists and engineers of tomorrow.*

The Siemens STEM Academy involves the Siemens Foundation, Discovery Education, Oak Ridge Associated Universities, and The College Board. It is a nationwide initiative to support educators in their efforts to foster student achievement in STEM education. We'll be able to facilitate the first on-line shared repository of STEM best teaching practices, a national teacher academy bringing together science educators from across the country, and an ongoing webinar series featuring leading scientists and experts in their fields.

Another program launched more than a year ago is The Siemens We Can Change the World Challenge, a partnership with Siemens Foundation, Discovery Education and NSTA. Our mission is to educate, empower and engage students, teachers and communities in sustainability. This is an unprecedented partnership between a major corporation, media company and an association to advance student achievement in science and sustainability through a national and comprehensive K-12 sustainability competition.

Let me give you an example of how this partnership has advanced teaching and learning nationwide through a grassroots effort. Last year's grand prize winning team, a group of 12-year-olds from Iowa, decided to get the word out about the dangers of lead wheel weights in vehicles and to help to phase out this hazardous material in the tire industry.

This initiative started locally and grew to have a national impact. This group of Iowa students presented their research to their city council, community school district and other civic organizations. The community was convinced and agreed to phase out lead wheel weights in vehicles owned by the city and school district. In addition, the students teamed up with several Iowa legislators to develop three bills proposing to phase out the harmful metal.

The team met with Secretary of Education Arne Duncan, the President's science and technology czar Dr. John P. Holdren, and

EPA Administrator Lisa Jackson just a few months ago. As a result of their efforts, the Environmental Protection Agency said it would reverse its previous position and begin the process of writing rules to ban lead wheel weights in tires.

Through this program, we provided a venue for these students and hundreds like them to achieve their goals, starting locally and potentially expanding globally.

Another program is Siemens Science Days, which offers parents and teachers free downloadable science experiments developed by Discovery Education. These experiments are popular among educators nationwide. We've reached more than 54,000 elementary and middle school students in 36 states since the program's inception in 2006.

In fact, we've even found a way to integrate these experiments into our Siemens Teacher Scholarship program, a program in partnership with the Thurgood Marshall College Fund that provides scholarships to students enrolled in the nation's public and private Historically Black Colleges and Universities. These students are specifically pursuing teaching careers in STEM. Our Siemens Teacher Scholars conduct a Siemens Science Day as part of their scholarship requirements and many report that this is their first opportunity to teach in the classroom. The innovative experiments cover earth science, life science and physical science using easy-to-find and affordable materials. We offer videos and tools to help teachers reinvent and reenergize their science classes.

What I presented is just a snapshot of what we are committed to achieving. This is just the beginning for the Siemens Foundation. We know that the next 10-15 years will bring even more opportunities to reach more students and educators. The key for us is being flexible and adaptable to meet the challenges and respond to students and educators in ways that best inspire them to engage in these fields not just for a year or two, but for a lifetime.

