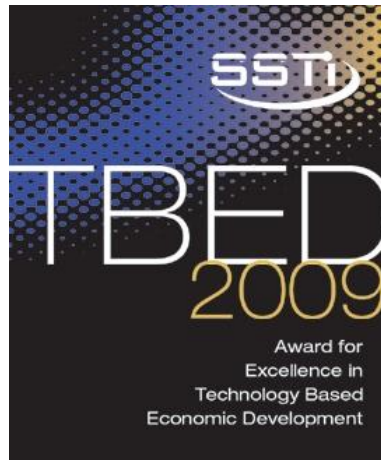


Podcast Interview



Sue Palisano, Director,
The Connecticut Center for Advanced
Technology (CCAT)
Education Initiative
Interviewed by: Phillip Battle, SSTI

*2009 Excellence in TBED Award Winner:
Enhancing the Science and Technology Workforce*

Mr. Battle: Hi, this is Phillip Battle with SSTI and this is an SSTI podcast. I'm speaking today with Sue Palisano, Director of the Connecticut Center for Advanced Technology Education Initiative. CCAT's Education Initiative was the 2009 winner of SSTI's Excellence in TBED Award in the category Enhancing the Science and Technology Workforce.

Hi Sue, thank you for talking with us today.

Ms. Palisano: Hi folks, nice to be here.

Mr. Battle: Maybe you could just start by telling us a little bit about CCAT's Education Initiative and why it was started.

Ms. Palisano: Sure. The Education Initiative is actually part of CCAT's Workforce Development Programs. Workforce Development is one of CCAT's core concentration areas and these programs support Connecticut's talent pipeline both today and tomorrow. We develop manufacturing curriculum and advanced training for today's workforce and help organizations improve their quality level, productivity and efficiency. Our Education Initiative was created to support tomorrow's workforce with a little bit different focus. We all recognize that there is a clear need to engage more students in high quality STEM, that's science technology engineering and mathematics learning. Improving STEM achievement here in Connecticut is extremely urgent as many students, especially those in high need districts and among minority sub-groups are not meeting science and math standards.

An even more critical scenario is that Connecticut's future young workers are expected to be less prepared for the 21st century careers than those they are replacing, largely because nearly half of that future workforce is anticipated to be coming out of the state's urban centers. Unfortunately here in Connecticut, we have a significant achievement gap. So we all know that a stronger foundation in science and mathematics among this cohort is essential for success in secondary school and higher education and of course once these young people get out into the workforce if Connecticut and the US is to maintain a competitive edge in the global economy, we know this pipeline of interested and qualified students who are prepared to enter STEM careers has to be increased.

So CCAT does certainly solve this need and with our broad based initiatives and network of partnerships, I believe that we are uniquely positioned to address the problem. We have established a core philosophy for program

implementation that focuses on meeting the demands of that 21st century work place. I think what distinguishes our approach to addressing the STEM workforce crisis, because of course we're not the only folks who are looking at it, is our ability to leverage both our internal resources and our broad base network of partners and bring them to bear directly upon our educational programming for students and teachers as well. These resources and partnerships have given us a really unique capability to augment traditional STEM curriculum in the schools and introduce a real world authentic learning component and really better engage that diverse student body.

Mr. Battle: You said the initiative is working to try to engage students in STEM fields and STEM careers. What is some of the projects the students are involved with?

Ms. Palisano: Sure, you know over all our goal is to develop project based K-12 STEM programming that inspires students, that enhances their technical competence and overall – and I have to say this really is the theme in all our programming – promotes awareness of STEM related careers. So as an example of some of these initiatives, this is the third year we've been running a program called CATALYST Exploration in Sustainable Energy and the Environment. CATALYST Energy is a program that is run out of school, Saturdays after school. It engages students from diverse urban and suburban school districts in the greater Hartford area in hands-on inquiry based science and engineering design activities. They use a lot of online collaboration and what they're doing is investigating sustainable energy and global climate change. This is a program that is funded through the State Department of Education inter district cooperative grant.

Also funded through another inter district grant that we have is a program that we have is a program called the Young Manufacturers Summer Academy or YMSA. YMSA is a manufacturing- themed experiential eight day summer program that is geared towards students actually in grades seven, eight and nine. They are young for manufacturing career awareness and we pull these students from three technical high school district areas, this is a partnership with the state's technical high school system. The YMSA introduces students to Connecticut's high tech advanced manufacturing industry through hands-on activities. The kids are actually on their shop floor, they do make a product. We use some simulation based learning with them, virtual machining environments, they travel to industry locations for on-site interaction with manufacturers and at the end of the program we actually hold a mock career fair for students and their families.

Another CATALYST model program that we have that integrates in school curriculum, out of school programming, teaches them professional development and mentoring is a new program called CATALYST: Explorations in Aerospace and Innovation. CATALYST Aerospace is a NASA grant funded program that is designed to teach essential STEM concepts and skills with an engaging aerospace-theme. So there is in-school curriculum that's standards aligned and it emphasizes hands-on, minds-on learning and collaboration. There is another school piece that provides additional enrichment opportunities and the program is targeting traditionally underrepresented students and engaging them in scientific research, technology and real world applications. We have industry mentorships as part of this and of course, again we're promoting awareness of STEM career opportunities especially in aerospace and related high-technology fields.

I feel that one of the most important lessons we've learned is that the most direct route to improving mathematics and science achievement for students is actually better mathematics and science teaching. So CCAT went about making sure that we were designated as a state approved continuing education unit provider for teachers. We are implementing innovative professional development programs that equips teachers with tools needed to generate student interest in emerging science in high-tech fields and especially increase participation and achievement in STEM content areas.

An example of a couple of those programs, for four years now we've been running a program called the NASA Plan Teacher's Academy. It's an eight day summer program that includes course work and hands-on activities in photonics and lasers, aerospace and nanotechnology and that's the P-L-A-N in plan. The workshop is taught by industry experts, university faculty, my staff at CCAT here delivers instruction in educational pedagogy in the areas of 21st century skills development include base teaching, student assessment, core STEM career pathways. We help teachers develop new classroom curriculum, we of course conduct program assessment evaluation. This is a partnership with Connecticut's NASA Space Grant College Consortium. We also have two teacher quality partnership grants with the Connecticut Department of Higher Education. One of them A Path to the Future equips grade 4-6 teachers to better teach science framework topics. We're increasing contact knowledge of optics, telescopes, aerodynamics, and rocketry best practices in 21st century skill development. Again inquiries based teaching and of course STEM engagement. The second program is starting this summer, it's called PRISM: Promoting Rigor in Secondary Mathematics. This is a partnership with the University of Hartford,

Connecticut's Community College System and the East Hartford and Hartford Public School Systems and will be focusing on enhancing high school mathematics teaching and approving student college readiness.

Mr. Battle: You mentioned before that CCAT's partnerships with other Connecticut organizations have been important in your success. What sort of role are they playing and how do you keep them involved?

Ms. Palisano: They do play a big role. We have relationship that really spans the State Department of Education, as I mentioned Connecticut Department of Higher Education, four year colleges and universities, the community college system, the State Technical High School system, informal science organizations across the state, the Urban League of Greater Hartford, Department of Labor, NASA Space Grant Consortium, First Robotics and others that can readily be leveraged to support our educational programs. Through our air force grant funded National Leadership Initiative we also have established connections with a wide range of local industry partners such as United Technologies, Pratt & Whitney, Hamilton Sumstrand as well as additional partners across Connecticut's small to medium size enterprises from the aerospace and defense manufacturing supply chain as well as alternative energy and laser companies and organizations.

These partners and partnerships are absolutely critical for the success we've enjoyed with both our student and teacher programs. Not only do folks from these companies really rise to the occasion to provide site locations for our students to visit, but they also provide mentoring opportunities, they really bring that real world element to our programing that I think has distinguished what CCAT is doing from other organizations have done.

Mr. Battle: So have learned any lessons along the way that might be useful for another organization trying to replicate your success?

Ms. Palisano: Well I'd like to think so. What I would say is first and foremost address the workforce pipeline at an early age. We know research proves we're not inventing the wheel here. That student often loses interest in STEM content areas by the time they get to the middle grades. It's never too early to develop awareness of educational and career pathways. We also know that teachers and other stakeholders, parents, guidance counselors, principals need to be informed and aware of STEM career opportunities as well. As I just mentioned, it's critical to establish strong partnerships across academia, across industry, across government organizations. We also believe that in-

school curriculum is important and those programs certainly serve a purpose, but we also know that out of school experiences provide a critical component of student STEM engagement. It's that sometimes that extra push to get to a student who might not otherwise think that there is a future for them in a STEM career to really get inspired and to get engaged.

We also know that in order for educational programming to be transformative it has to be comprehensive and sustained. One off kind of high volume, low impact, one day events we believe have very little true impact on student engagement and student achievement. So that emphasis on authentic sustained learning we believe is a crucial element in developing long term student interest in science and technology. Students and really again teachers as well, we also know will learn best by experiencing a direct application of high-technology to relevant contemporary issues. So we try and hope that others would agree that those are elements that we include in all of our programming.

Mr. Battle: Well Sue, thanks very much for speaking with us today about CCAT's Education Initiative. If our listeners would like more information about the program they can visit the website at www.ccat.us and for more information about SSTI's Award Program they can visit our website at <http://www.sstiawards.org>.