



Testimony from CITEC to the NY Education Reform Commission

Goal: To improve the delivery of education for STEM/Workforce readiness

My name is William Murray, and I am the Executive Director of CITEC, a Regional Technology Development Center under NYSTAR which is within the Empire State Development. CITEC receives partial funding from the State and Federal Government to support the growth and small and medium size manufacturing and technology companies in the North Country. I am also an active member of the group that is forming the North Country STEM network. Lastly, I am a member of the North Country Regional Economic Development Council, which strongly supports the STEM initiatives for the North Country. The challenge that the North Country Region faces is that it has the largest geographical area of all the 10 regions in New York State, and also has the smallest population. The challenges of school district remoteness and lack of a central metro focal point (e.g. – Syracuse in the Central Region) makes it very difficult to implement a STEM program without the resources to overcome these hurdles. In addition, most of the school districts are small, low-income, high cost institutions that are financially challenged. With the implementation of the recommendations we suggest below we can develop and execute a STEM program region-wide that would result in the long-term goal of a more technology-based workforce coming out of our region's secondary schools.

One of the areas of improvement that we feel should be targeted is High School guidance counselors, especially regarding advanced manufacturing jobs. Today, many guidance counselors think that manufacturers are low-paying, low benefits, poor working condition employers. By hosting regional forums and plant tours, we can transform them into avid supporters of STEM-based careers in advanced manufacturing. In fact, this year CITEC, along with the North Country STEM Council, and the regional Workforce Investment Boards, are preparing just such an event in three North Country communities for October 5 – National Manufacturing Day.

As a member of the North Country Regional Economic Development Council, please know that workforce development, through STEM programs and supporting higher education resources, is a high priority target for our region. Nationwide, the number 1 challenge cited by healthcare, manufacturing, and other industries is workforce. This is even more true for the North Country.

Below are specific proposals that CITEC and the North Country STEM Network are submitting for your approval. What is important to note about these proposals is that they are easy to implement on a smaller pilot basis and scale up as resources become available.



New NY Education Reform Commission Objective	STEM transformation – high level themes	North Country Region STEM Proposals
1. Find ways to improve teacher recruitment and performance, including the teacher evaluation system	<ul style="list-style-type: none"> <li>Imbed STEM in teacher preparation, certification and education programs from the early grades through high school</li> </ul>	<ul style="list-style-type: none"> <li>Develop and implement summer training sessions for teachers at local universities and colleges for STEM certification.</li> </ul>
2. Improve student achievement	<ul style="list-style-type: none"> <li>Institutionalize the interdisciplinary teaching and learning of STEM with real-world context such that it is the rule, not the exception, and begins at the early grades</li> <li>Scale STEM mentoring programs</li> </ul>	<ul style="list-style-type: none"> <li>Develop a mentoring roster for each school district comprised of STEM-based employers.</li> <li>Create at least two industry – school district partnerships per district in North Country Region.</li> </ul>
3. Examine education funding, distribution and costs	<ul style="list-style-type: none"> <li>Align and calibrate “STEM” funding to include technology and engineering – not just math and science</li> </ul>	<ul style="list-style-type: none"> <li>Create a STEM oversight consortium for the North Country that develops programs, provides STEM outreach, develops training modules, and STEM-based events. Led by Clarkson University and CITEC.</li> </ul>
4. Increase parent and family engagement in education	<ul style="list-style-type: none"> <li>Engage parents and families in after-school and out-of-school STEM learning experiences, including distance learning opportunities provided by museums, NGOs, and others</li> </ul>	<ul style="list-style-type: none"> <li>Identify tours, museums, events, etc., both in the North Country and nearby to encourage classes and parents to attend. Have budget for advertising, outreach and group bus travel.</li> </ul>
5. Examine the problem of high-need and low-wealth school communities	<ul style="list-style-type: none"> <li>Increase sharing of best practices in STEM education transformation from PK-20 among communities with similar demographic profiles within New York and with other states, leveraging the Empire State STEM Learning Network and STEMx communities</li> </ul>	<ul style="list-style-type: none"> <li>Create a STEM oversight consortium for the North Country that develops programs, provides STEM outreach, develops training modules, and STEM-based events. Led by Clarkson University and CITEC. This consortium would be the single point of contact with the Empire State Learning Network and provide the funding for STEM initiatives.               <ul style="list-style-type: none"> <li></li> </ul> </li> </ul>
6. Find the best use of technology in the classroom	<ul style="list-style-type: none"> <li>Utilize technology education (and educators) to help solve the educational technology</li> </ul>	<ul style="list-style-type: none"> <li>Look for best practices of technology use in the region’s school districts and share that</li> </ul>



	problem – a STEM learning experience in and of itself	information and knowledge with all school districts. Leverage use of Broadband-based technology to optimize distance-learning communication and sharing.
7. Examine the structure of New York’s education system to see if it meets the needs of our students while respecting the taxpayer	<ul style="list-style-type: none"> <li>Accelerate the development of STEM education capacity as a shared service - as is already being demonstrated in some communities</li> </ul>	<ul style="list-style-type: none"> <li>Include the STEM consortium in regional education initiatives.</li> </ul>

The good news for our region is that we have a strong and focused Regional Economic Development strategy that targets workforce development as a key priority. This region also boasts nine high quality higher education institutions and two research and development institutions that are committed to this STEM initiative. And with the STEM Network anchored by CITEC, Clarkson University and the 10 other higher education institutions as well as the Workforce Investment Boards, we have the expertise and leadership to make a regional STEM program successful.