

## Two million for science studying



Robin Jacobowitz, The Benjamin Center's director of education programs. (Photo by Lauren Thomas)

It was about six years ago, maybe more by now, that assemblyperson Kevin Cahill was shown around the Rhinebeck Middle School by district school superintendent Joe Phelan. The school was buzzing with hands-on activity. A bunch of kids was studying aerodynamics by comparing the performance of miniature racing cars. One group of girls was building little bridges while another was busy smashing them. Another cluster of students was programming a computer to give instructions to a remote device. In another room kids were testing a wind tunnel. More girls were participating than boys.

Cahill was much impressed by the enthusiasm for learning of the students. The middle schoolers were doing projects, testing their work, developing new concepts and having fun. That's what STEM learning (science, technology, engineering and math) should be, Cahill remembers thinking.

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Originally supported in 2007 by contributions by Kingston cardiologist and Rhinebeck resident Ali Hammoud, his wife Jennifer, and many other locals, the Rhinebeck Science Foundation had already at that time developed into a formidable community-based organization to provide equipment and financial support for the Rhinebeck schools. The resources of that foundation had been augmented by \$50,000 in state money through Cahill.

Why couldn't the same effort be made in all school districts? Specifically, why couldn't all the school districts in the 103rd Assembly District have the same access to the kind of science equipment and learning styles as the Rhinebeck kids enjoyed?

At that point, the thought was just an idea to which the local assemblyperson was willing to commit his energy. Cahill knew that he could secure some capital funding for school equipment from Albany if it was an important enough priority for him. But how could he sustain the effort? Operating funds are much more difficult to obtain in the state budget than capital funds.

Cahill and The Benjamin Center director Gerald Benjamin have been friends for decades. They were both Ulster County legislators in the 1980s, Cahill serving as Democratic minority leader and Benjamin as Republican majority leader. From 1991 to 1993 Benjamin was legislature chairman, and in 1993 Cahill was elected for the first time to the state Assembly. For years, they commuted together from Ulster County to jobs in Albany. They've kept in touch over the years, and have been known frequently to discuss state government and state politics.

The final state budget for 2019-20 passed by the state legislature in the early hours of April Fool's Day included \$100,000 in funding for The Benjamin Center at SUNY New Paltz. According to Benjamin, the state funds will pay the salary of Robin Jacobowitz, The Benjamin Center's director of education programs, and provide other project support. Her main task will be to run the Science Lab Initiative (SLI), announced in September 2016 by Cahill and The Benjamin Center.

The SLI's mission at that time was "to encourage scientific curiosity and creativity, build student interest in science education in middle and high schools" in Cahill's Assembly district. The mandate was later extended to incorporate elementary schools as well.

The SLI came at the right time. In 2016 the State Education Department adopted

new science learning standards. Advocating for “a different approach to daily teaching and learning,” the revised standards cited the need for “21st-century science skills” combining abstract reasoning, collaboration skills, ability to learn from peers or through technology, and flexibility in learning. Students needed to learn how to think and solve problems for which there was no one solution.



The SLI has been awarded two \$500,000 state grants, and Cahill says a third grant for a similar amount is moving forward; its parameters are yet to be determined.

As well as being indispensable in the state screening process reviewing the Cahill-initiated grant applications, The Benjamin Center was able to add structure to Cahill’s vision. It was able to build in flexibility. Each district was able to focus its lab on an area of its scientific interest. Wallkill was all in on virtual reality. Rondout Valley wanted microscopes for enhancing instruction in biology, earth science and physics. Kingston wanted programmable drones. Rhinebeck, Red Hook and Ulster Boces were into data analysis for uses like weather forecasting, analysis of DNA, and water-quality testing.

Participating in the first phase of the SLI initiative to serve the middle and high schools by developing science labs and accompanying programs in them were the Kingston, Onteora, New Paltz, Rondout Valley, Wallkill, Red Hook and Rhinebeck school districts, plus Ulster Boces and the Woodstock Day School. For the second phase providing STEM resources to each of the elementary schools in all the participating districts, the Ellenville, Highland and Saugerties school districts were added. Ulster Boces, which doesn’t provide elementary education, and the Woodstock Day School were not included. Boces continues on the advisory board and provides professional development (which Jacobowitz says it does very well under the leadership of superintendent Joe Khoury).

Cahill would like SLI participation by other local non-public schools, but grant-source restrictions must be considered.



Each district has been charged with developing plans for its lab and working with teams of teachers, including STEM master teachers (there are about 800 in the state). The Benjamin Center's Jacobowitz, primary contact for the SLI, coordinates the work.

Each of the approximately 30 elementary school buildings in the consortium will receive \$20,000 in the second phase. Doesn't sound like much? Jacobowitz says the schools can do a lot with investments in such equipment as computers, drones, robots, microscopes, spectrophotometers and aquariums. "In the end," Jacobowitz, a member of the school board in Kingston for the past decade, "everyone agreed [the equipment] should be on site in all the schools." The districts are being encouraged to think in terms of linking their second-phase work to that done in the first phase.

District plans must be approved by the Science Lab Initiative's advisory board, after which supporting project teams implement them.

Kevin Cahill isn't done yet with his science initiative. There's more to come, he anticipates.

Some school districts have been more active in SLI than others. The assemblyperson envisages the third phase of SLI as bringing the districts all to the same level of participation. It will also examine how the local high schools are preparing their students for STEM subjects at the university level.

The integration of all aspects of regional public science education into one system is a worthy vision.

Bridges between levels of education are important.

So are bridges between education and employment. The combination of substantial public investment in STEM and robust outreach to the private economy will require the evolution of an even more holistic, self-sustaining vision. The fourth round of SLI funding follows the way some elite universities, such as Cornell and Stanford, have synergized academics and economic development. Cahill suggests private-companies match state contributions for scientific equipment crucial to their own future needs.

Cahill says SUNY New Paltz has spent \$100 million on science buildings and equipment in the past few years. At the same time, the college of which he is a



graduate has been strengthening its bonds with the private sector: internships, individual research projects, workforce development, and private-sector job opportunities for graduates. The school of science and engineering has been particularly active on the outreach front.

Cahill sees working with “what SUNY New Paltz comes up with” in terms of both the bridge between levels of science education in the Hudson Valley and the bridge between SUNY and the regional science-based economy as the fourth phase of the SLI.

