



BOCES –

Ecosystems for Innovation

By Kim M. Smithgall

“Do you know what my favorite renewable fuel is?
An ecosystem for innovation.”

– Thomas Friedman

It’s 8 p.m. on a warm Thursday evening in Westbury. A screened-in porch at the back of a house on a quiet residential street provides the perfect setting for a high school student to open his laptop and get some extra tutoring before a math test. Thanks to the Nassau BOCES Center for online learning, a virtual tutoring program is “open” for business.



Twelve hours later at Greenwood Lake Middle School in Orange County, a group of seventh-graders enthusiastically greets the teacher upon entering the classroom: ni hao (pronounced “nee-how”)! Today’s Mandarin Chinese class has begun. The teacher appears on a monitor, broadcasting to students in multiple school districts from a teaching studio at Orange-Ulster BOCES.

Take a peek inside today’s BOCES and you’ll see the quiet revolutions taking place, as new services are created and others reimagined in order to prepare students for success in a global marketplace.”

Meanwhile, a senior in the Sharon Springs Central School District is the only student in her district taking an advanced placement (AP) economics course. For this rural district with a total enrollment of 300 students, offering this class for one interested student would be impossible without the Virtual Advanced Placement (VAP) initiative available through Capital Region BOCES.

At Niagara Career and Technical Education (CTE) Center, juniors in the Animation and Video Production Program are creating medical simulations using 2-D and 3-D animation software.

And then there are the juniors and seniors in Mark Harris’s classes at the Ulster BOCES Career and Technical Center – they’re making metal parts that will be out of this world... literally.

You might be surprised that these inventive and cutting-edge programs and activities originate with BOCES. In many cases, BOCES across the state are still being defined as institutions focused on vocational training and special education programs – but there is so much more happening today, according to BOCES leaders.

“School administrators are so busy that it’s often hard for them to see everything that’s happening at BOCES and the programs that are available now,” said Elisa Barilla,

project coordinator at Nassau BOCES’ Center for Online Learning.

Take a peek inside today’s BOCES and you’ll see the quiet revolutions taking place, as new services are created and others reimagined in order to prepare students for success in a global marketplace. BOCES have become ecosystems for innovation...and that’s the new normal for participating students.

GOING GLOBAL

Orange-Ulster BOCES’ e-Learning Mandarin Chinese Program, offered to students in grades six through 12, is a perfect example. Currently,

there are 320 students from 11 school districts participating.

“Students are learning about Chinese culture, history, and government and, at the same time, learning to speak Mandarin Chinese. The program is offered through our distance learning service, but it’s live. We have teachers broadcasting using videoconferencing technology over the Internet and they’re able to interact with students,” explained Orange-Ulster BOCES Director of Instructional Support Services Diane E. Lang. “This really breaks down the boundaries of traditional classrooms.”

Teaching Mandarin Chinese is growing in popularity for a number of reasons – China is the second largest economy in the world and it’s one of the largest trading partners with the United States. “To be successful in a global economy, you need to have intercultural skills; you need to be aware of your own culture and anticipate the culture of others,” Lang said. “Our students are uniquely prepared to interact successfully in a multicultural

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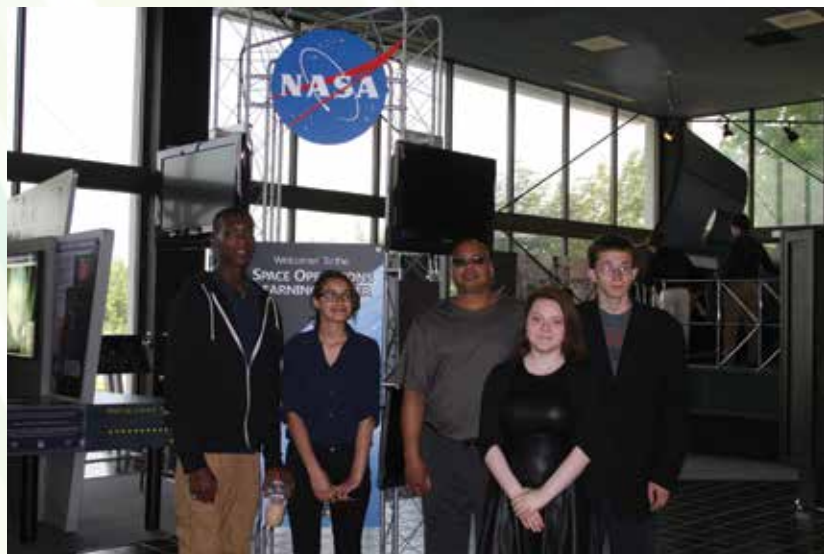
environment because of the projects they’re doing in the class.”

These projects include an extensive senior portfolio that must be digitally produced... and presented in Chinese to a panel of teachers. Last year, one student had a particular interest in Chinese architecture. “He did research, collected images and drawings and put together a detailed portfolio project, complete with text and a voiceover in Chinese. He added English subtitles for his parents, though,” Lang mused.

Lang, the winner of SAANYS’ 2015 Leadership and Support Award, feels the participating pupils not only enjoy learning a language that’s based in a different way of writing compared with English, but also using high-tech approaches. “They’re being taught in a technology-infused methodology, so they’re also expanding their technology skills along with their language skills,” she said.

RELEASING THE CONSTRAINTS

High-tech tools are also helping other BOCES across the state eliminate the constraints of classroom walls, limited class periods, and traditional grade configurations.





At Nassau BOCES' Center for Online Learning, client districts can choose from seemingly endless options for "anytime, anyplace" learning. This includes virtual courses yielding both high school and college credit, with classes ranging from multivariable calculus and AP psychology to high school English and personal fitness. The center's virtual tutoring courses can be accessed in multiple languages seven days a week, and webcams allow real-time, face-to-face interactions with the tutors; plus, the sessions can be recorded for later review.

"These are courses that districts wouldn't be able to offer on their own — perhaps because there are only a few students interested. However, by running the classes in a virtual setting, students from all participating districts benefit," said Beth McCoy, executive manager for curriculum, instruction and technology.

Nassau BOCES also offers blended learning classes, which allow in-district teachers to facilitate their students' virtual learning. Videoconferencing options can add even more options to classrooms by connecting them to such rich resources as museums...or even other classrooms around the world. "This brings the power of collaboration to life," Barilla said.

Capital Region BOCES and its affiliated Northeastern Regional Information Center (NERIC) see similar advantages with the state grant-funded Virtual Advanced Placement (VAP) program, which presented AP

classes in economics, psychology, English literature, and art history the first year of the grant and then added Spanish and statistics to the roster in the second year. Seven component school districts were part of the VAP consortium. The success of the venture means Capital Region BOCES/NERIC will open

up the program to all districts when the grant period ends in June 2015.

The results so far have been impressive, with participants not only earning high school and college credits, but also learning the soft skills that will be vital for success in college and in any career they may pursue.

"The students are connected one day per week via video with their peers in other schools and the teacher," explained NERIC's Managing Coordinator for eLearning Mike Syloski. "And the rest of the time, they're working online. This is how many college classes operate now and also how many businesses provide staff training, so it's giving the students valuable experience for the future."

Syloski added that the VAP program also helps students develop time-management skills, discipline, and the ability to be self-directed. "You don't have a teacher standing over your shoulder reminding you that you need to get your work done. Likewise, the online portion of the class can be done at any time, so it forces students to plan ahead and take ownership of their learning — just as they'll have to do in college and or in a job."

The teachers involved in the VAP program are reaping the rewards, as well. "Just as it is for the students, this is a different modality for the teachers," Syloski said. "They're excited about the professional development opportunities that allow them to be trained as AP

instructors by the College Board, as well as the chance to work in a blended technology environment. This environment lets them build camaraderie with teachers in other districts who are in the same subject area and also to learn techniques for engaging students in a virtual world."

ENHANCING LEARNING OPPORTUNITIES

BOCES educators are also re-imagining how academic subject matter is taught, allowing class time to become more relevant for all students. In Broome-Tioga BOCES, this re-imagining led to an option (Evertech Academy) for students to be immersed in a career and technical education program for four years in high school rather than the traditional two years.

The four-year experience at Evertech Academy was based on requests from area superintendents who wanted options for career education at younger ages/earlier grade levels. Evertech also grew out of Broome-Tioga BOCES' successful alternative high school model. The academy has 12 teachers serving 140 pupils. "Many of the students in this full-day program are at risk for not graduating from high school because of one circumstance or another," said Melissa Shade, supervisor of instructional programs. "We've set up a very tight-knit, welcoming, and supportive community and take a personalized approach to education."

This includes teachers acting as mentors for small groups of students based on mutual interests (photography, basketball, etc.) and, again, encouraging students to develop the soft skills they'll need for success in the business world; in this case, it's all about respect, responsibility, and taking advantage of opportunities to learn and grow. The academic approach at Evertech Academy focuses on project-based learning, meaning subject matter is embedded into hands-on activities and students learn by doing. And the "learning" and the "doing" relate directly to students' career interests.

"For example, we're now

embedding geometry into real-world learning experiences,” said Career and Technical Education Director Tom McNair. “The kids are getting excited...and you don’t hear them asking, ‘Why are we learning this?’”

MEETING EMPLOYER NEEDS

In the western part of the state, Erie 2-Chautauqua-Cattaraugus BOCES is taking things a step further. Its P-TECH program, funded by a state grant, requires a six-year commitment from students. The acronym stands for Pathways in Technology Early College High Schools, reflecting the initiative’s combination of high school, college, and career training to prepare at-risk or disadvantaged students for jobs in high-tech industries. The program also will feature mentoring, work study experiences, internships, and preferential hiring from local businesses that need the skills P-TECH students will gain.

Since being notified of the \$2.9 million grant award earlier this year, Erie 2 BOCES educators have been planning out all the details of the program, which is slated to open to students in a local consortium of school districts in fall 2015.

“Students will begin in ninth grade and culminate in the second year of a community college program. So, they will receive a high school diploma and an associate’s degree in applied science concurrently when they graduate,” said Suzette Benson, assistant superintendent for curriculum and instruction. “This is free of charge to the students.”

Filling middle-skills jobs is a common theme heard in BOCES career and tech centers lately. These are considered jobs that require some technical training or an associate’s degree, but not a four-year degree.

“Fifteen or 20 years ago, there was a big push from school guidance counselors for all students to go to college and not into careers,” said 2015 James E. Allen Award winner Anneda Trautman, principal at the Orleans Niagara BOCES Career and Technical Education Center. “Now we hear from employers that we’re suffering a gap in workers who have those middle-level skills, like welders, electricians,

and HVAC (heating, ventilation, and air conditioning) workers. Just as an example, in western New York with the RiverBend initiative, there will be nearly 3,000 middle-level jobs available and we can only truly support 900 of those because of the lack of skilled labor.”

BOCES are also attracting students interested in such diverse career areas as fitness and computer animation – again, preparing high school graduates to move directly into careers, further technical training, or two-year colleges.

Students interested in health fields may also find animation appealing... yes, animation. “Skills in animation and video production are needed in various business environments today, not just the traditional entertainment industry,” said Jennifer Licata, a teacher in the Animation and Video Production Program at O/N BOCES. “Medical and scientific simulation, forensic animation, corporate training, and engineering are just a few examples of fields where media skills are in demand.”

The program is college-level and students are creating 2-D and 3-D animation, video, and motion graphics with industry-standard software and hardware. “Students are prepared for the rigor and expectations of college and employment in this competitive and demanding field,” Licata added.

And that’s likely to be the newly emerging image of BOCES – an organization addressing local employment voids, as well as the needs of the high-tech, global economy.

READY FOR THE WORLD THAT’S ALREADY OUT OF THIS WORLD

Students in classes with Mark Harris at Ulster BOCES, though, might be ready for work that’s quite literally out of this world. Students from his New Visions Engineering and Robotics classes and those enrolled in the Computer Design and Manufacturing Program are making parts for lockers that astronauts will use on the international space station.

“NASA sent us blueprints of what they needed to have made and



my students and I went through them to find out what types of tools we’d need to cut the pieces,” Harris said. “Students then took the paper blueprints and put them into a CAD [computer-aided design] program on the computer. From there, we generated a program that our machines could read and we started machining parts.”

You can feel Harris’s excitement when he talks about this project and the valuable skills the students gained in this and other hands-on projects they’ve been involved with. “They’re learning about different materials because of the types of aluminum used in the space station lockers. They’re learning how precise they have to be in setting up their machines; there’s no room for mistakes. And they’re making a part that really means something,” Harris said. “Our technology at BOCES is astounding. People are amazed when they come into my room. I don’t think they realize the level of work these students are capable of doing. We’ve built a full-sized car from scratch that we drove halfway around the country. We’re building stuff for the space station. How many people can put that on their resumes?”

Thanks to ecosystems of innovation, BOCES students can.

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