

Best Practices Newsletter

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Preparing Students for Multiple Options Beyond High School



Too often school leaders, teachers and counselors invest their energies into preparing students for college. In today's society, that's not enough. Students must be prepared for multiple options after high school including gainful employment. This newsletter looks at ways schools can ensure more students are college- and career-ready by creating optional career pathways aligned to high-demand, high-wage careers.

Making the Career and Technical Education Classroom a Simulated Workplace

In West Virginia, many career and technical education (CTE) students do not walk into a typical classroom. They walk into their workplace. To ensure students have authentic learning experiences, the West Virginia Department of Education's (WVDE) Division of Adult and Technical Education collaborated with businesses,

postsecondary institutions and educators to create a simulated workplace.

"A simulated workplace is where the curriculum and environment mirror reality," said **Kathy D'Antoni**, the associate state superintendent of schools in West Virginia.

All too often, West Virginia educators heard employers complain they had openings for technician-level jobs in the state, but they could not find enough qualified employees to fill them. Sought were individuals with the required skills and who routinely showed up for work, could pass a drug test and possessed a positive work ethic.

The department of education realized there had to be a cultural shift in the way schools did business. In the 2013-14 school year, the state began a pilot program to transform the culture of CTE by creating high quality business and industry learning environments in schools.

“The curriculum does not change; the environment changes,” said D’Antoni.

Being successful as a simulated workplace requires adherence to certain “rules of engagement.”

The 12 Simulated Workplace Protocols

1. Transform the CTE classroom by replicating a business and industry work environment.
2. Utilize time clocks; have students clock in and out.
3. Develop and adhere to a county-developed random drug-testing policy. “We didn’t have any pushback from students,” said **Clinton Burch**, an initiative leader of the simulated workplace program. “They knew it would help them get a job.”
4. Conduct an application/interview process for enrolling students. This process is designed to help students focus on their career plans, not weed out students, according to Burch.
5. Develop a company name and handbook.
6. Ensure all students receive quality safety training.
7. Begin each class period/session with a short company meeting. In the beginning, teachers lead the meetings but eventually turn the daily meetings over to students.
8. Require service learning projects. Students in West Virginia must complete 200 hours of community service over two years.
9. Establish work teams and an organizational system with students rotating across teams. Students start work as a janitor then move on to a supervisory role, etc.
10. Integrate the 5S continuous quality improvement principals (sort, straighten, shine, standardize, sustain and safety).
11. Participate in yearly business and industry on-site evaluations. In West Virginia, representatives from business and industry visit schools and rate the simulated workplace program, the school, the environment, students and teachers. If a simulated workplace program scores high enough, it will be receive a West Virginia industry endorsement. Potential employers know what to expect from students who graduate from the program.
12. Utilize a portfolio system for students to document learning, credentials earned and projects completed.



Students Gain Valuable Lessons

In each simulated workplace company, students earn “income” (not real money) through a balanced scorecard with established dollar values for each matrix. Students earn income for each day they are in attendance or lose money for each unexcused absence.

The simulated workplace company also has an evaluation system or annual report, and students realize what they do in the classroom impacts their paychecks and the company’s bottom line. Students also wear uniforms.

“A simulated workplace is where the curriculum and environment mirror reality.”

Kathy D’Antoni

By the end of the year “it changed the students,” said D’Antoni. “They belonged to something. Students loved it.”

A Thumbs Up From Students

The simulated workplace program has been piloted in West Virginia for less than two years. All of the pilot work sites were surveyed, and it proved a big hit among students. Ninety-eight percent of those enrolled say they are satisfied with the program and feel they are better prepared for their futures. One student said, “Simulated workplace is not just preparing me for the next four years, but for the next 40 years.”

Kathy D’Antoni: kdantoni@access.k12.wv.us

Clinton Burch: ccburch@access.k12.wv.us

Design and Implement a STEM Advanced Career Academy

Authentic, real-world projects and assignments that engage students in learning and prepare them for further study and a career is what Advanced Career (AC) is all about. AC curricula were developed by the Southern Regional Education Board's (SREB) High Schools That Work (HSTW) initiative and a consortium of states to provide new types of CTE programs relevant to the 21st-century workplace.

Advanced Career's STEM (science, technology, engineering and mathematics)-based pathways in Aerospace Engineering, Clean Energy Technology, Energy and Power, Global Logistics and Supply Chain Management, Health Informatics, Informatics, Innovations in Science and Technology and Integrated Production Technologies blend technology-intensive, hands-on projects with rigorous math, science, reading and writing skills. Although high schools can adopt AC courses individually, AC pathways are ideally suited to implementation in wall-to-wall career academies or pocket academies in comprehensive high schools.

At the 28th Annual High Schools That Work Staff Development Conference in Nashville, Tennessee, SREB Senior Vice President Gene Bottoms shared 13 essential actions that states, districts or schools can take to successfully implement STEM AC academies:

1. **Offer a fully developed four-course AC curriculum as one pathway within a theme-based STEM small learning community (SLC):** Career academies create personalized learning experiences for students in which each SLC or academy has a dedicated counselor and English, math and science teachers who work together to align and integrate instruction.
2. **Select an AC pathway that meets local workforce needs and aligns with postsecondary programs:** Pathways fit the school's overall portfolio of programs and prepare students for a broad range of career- and college-options.
3. **Commit to teaching all four courses in the project-based AC curriculum:** Schools may opt to offer one course per year across grades nine through 12; two courses each in grades 11 and 12; or one course each in grades nine or 10, two courses in grade 11 and additional advanced studies at the community college level in grade 12.
4. **Require the completion of a college-ready academic core:** All students complete a minimum of four English, four math and three lab science courses in preparation for graduation. Math courses suit students' chosen pathways.
5. **Select the right teacher:** Successful AC teachers may have a background in the physical sciences, chemistry or engineering. All AC teachers participate in a two-week Summer Teacher Training Institute (STTI) in years one and two.
6. **Offer cohort scheduling and common teacher planning time:** AC students take all of their courses together with academic and career and technical education (CTE) teachers who have time to meet and integrate their instruction.
7. **Target mainstream students with an interest in STEM for participation:** Schools, teachers and counselors educate students and parents about the career opportunities available to students who pursue further education and training in STEM fields.
8. **Structure guidance and advisement around a counseling for careers approach:** College and career counseling is an integral component of all aspects of the academy curriculum. Students take career exploration courses and experience a range of career development and exploration activities.
9. **Provide supports for struggling students:** The academy curriculum stresses literacy-based assignments and a balanced approach to math instruction. Extended instructional time and senior transition courses are available for students needing extra help.
10. **Align AC pathways with postsecondary programs:** The third and fourth courses in the AC curriculum are designed to align with postsecondary standards and, where appropriate, carry transferrable college credit and lead to industry-recognized credentials. States, districts and schools work with postsecondary partners to identify which courses will carry college credit.
11. **Build relationships with industry partners:** Industry partners worked with SREB to design projects and ensure AC courses align with industry standards. Local businesses can support AC academies by serving as authentic audiences at student presentations and offering work-based learning.

12. **Ensure support:** All members of the school community buy into the academy concept. Before implementing AC, schools may wish to conduct an audit of their labs, classrooms and equipment.

13. **Use data for continuous improvement:** AC courses include formative assessments within units, end-of-project and end-of-course summative assessments, and student and teacher surveys.

Gene Bottoms: gene.bottoms@sreb.org

Goose Creek High School: A STEM Career Academy Success Story

Goose Creek High School in the Berkeley County School District in South Carolina, offers one example of a traditional comprehensive high school that has successfully transitioned to wall-to-wall career academies, including a STEM academy that serves 374 students in such pathways as air conditioning and refrigeration technology, mechatronics, welding technology, math, pre-engineering/Project Lead The Way (PLTW) and science.

Goose Creek's STEM academy began offering AC's Clean Energy Technology pathway in 2014. As STEM academy Principal **Paul Herman** explained, the school is pairing Clean Energy Technology with physical science to strengthen students' science skills and prepare them for the challenging AC curriculum.

Herman said Goose Creek adopted many of the strategies described by SREB Senior Vice President Gene Bottoms as it designed its career academies. First, the school partnered academic teachers with career and technical education (CTE) teachers within its academies. Teachers meet twice weekly in professional learning communities to plan curriculum, identify standards, create assessments, use data to improve instruction, develop targeted learning interventions and integrate curriculum and instruction across academic and CTE content areas. As teachers developed more expertise in integrating their curriculum, they worked together to design academy projects.

Second, Goose Creek redesigned its bell schedule to allow students to participate in a daily academy advisory period. The school uses this period to hold academy meetings, host business partner presentations, address guidance needs and engage in college- and career-readiness planning.

Third, all pathways were designed to lead to industry certifications and/or college credits. All academy students are prepared to earn the WorkKeys certification, and STEM academy students in mechatronics, welding, electronics and air conditioning, refrigeration technology pathways can earn an entry-level NCCER (National Center for Construction Education and Research) certification. College credit is available to PLTW students who score high enough on end-of-course exams.

Fourth, business and postsecondary partnerships are a key element of Goose Creek's success. As Herman noted, the STEM academy worked with STEM Premier to create an online platform for academy students to generate a profile and brand their skills.

Students Showcase Skills in Online Platform

"Although this platform is still in its infancy stages, it has an enormous amount of potential," said Herman. "The students in our programs can upload projects and transcripts, receive scholarship information and research STEM careers and two- and four-year college options. We actually had a business partner award a \$1,000 scholarship to a student from our school who used the STEM Premier platform to upload a video explaining why STEM education is important in today's schools."

Internships Provide Real-World Experiences

Business partners also provide internships, apprenticeships and externships to STEM academy students. As Herman explained, the school works with Trident Technical College to allow apprenticeship students to spend half of the school day on Trident's campus where they can earn their two-year degrees and journeymen certifications.

Further, the Charleston Chamber of Commerce is partnering with Goose Creek to help students who do not meet lottery assistance criteria continue their education at Trident. In 2013-14, the pilot year of this partnership, seven Goose Creek students were awarded full scholarships to study mechanical engineering, civil engineering, electrical engineering and aircraft maintenance technology.

“It’s been exciting to be part of the transition away from the old-school version of ‘sit and get’ toward an academy model that uses student interests to drive its design,” said Herman. “Students are equal stakeholders in this model and reap the reward of real-world experience and knowledge.”

Paul Herman: hermanp@bcsdschools.net

Into the Future: The AC Clean Energy Technology Pathway

When **Patrick Smallwood**, a Clean Energy Technology and STEM instructor, got his first driver’s license, \$10 could fill the tank of his car. In recent years with gasoline prices fluctuating and sometimes topping \$4 a gallon, some students in Smallwood’s classes at the **Center for Advanced Technical Studies (CATS)** in Chapin, South Carolina, can’t afford to drive. That reality brings a particular urgency to the real-world problems they strive to solve in his Advanced Career (AC) clean energy classes and the curriculum’s challenging, multi-week projects.



Patrick Smallwood, Clean Energy Technology and STEM instructor at the Center for Advanced Technical Studies (CATS) in Chapin, South Carolina, chats with a HSTW conference attendee

Developed by SREB and the state of South Carolina with the help of postsecondary and industry partners, the AC Clean Energy Technology curriculum empowers students to use engineering design processes to solve authentic problems. These involve motors and generators, photovoltaic systems, energy conservation and sustainability, wind turbines, biofuel generation,

bioreactors, water power, energy harvesting, fuel cells and nuclear power.

CATS is the first school in the nation to implement and field test all four courses in the curriculum — clean energy systems, clean energy applications, clean energy strategies and clean energy innovations, a research and development (R&D) capstone. In the spring of 2014, CATS also graduated the first class of students to have completed the full pathway.

Smallwood, a former chemistry teacher who now holds an AC Master Teacher Certification in Clean Energy Technologies, taught all four courses. During summer 2014, he trained teachers from six new schools in Georgia, Kentucky and South Carolina to deliver them.

Smallwood said that many kinds of students — not just those who enjoy STEM — thrive in these hands-on courses. As he noted, Clean Energy Technology attracts budding environmentalists, prospective engineers, students who enjoy working independently and students who prefer learning in teams.

All four courses in the pathway blend core math, science and literacy standards with technical education in project-based and problem-based units of study. Classrooms are “a little messy” and feature little direct instruction: “At the center, I have a lab room and a classroom. Students come here for three hours a day every other day. We probably spend no more than 15 minutes in the classroom, but two and a half hours or more in the lab,” said Smallwood.

Student Awarded Grant to Research Roof Shingles

Projects challenge students to think unconventionally. **Sam Rennick**, a Chapin High School student in Smallwood's senior R&D class, clean energy innovations, approached him with a thought that had puzzled him over the long, hot summer. "You may think this is stupid," Rennick said, "but I have no idea why people in South Carolina build their houses with black shingled roofs."



Sam Rennick, a senior in Patrick Smallwood's Clean Energy Innovations class, received a \$2,000 research grant from the South Carolina Department of Health and Environmental Control.

Rennick submitted a grant proposal to the South Carolina Department of Health and Environmental Control and won a \$2,000 Champions of the Environment award to research the idea. With the money he received, Rennick built a complete, highly detailed scale model house with two removable roofs with which he tested the effects of dark- versus light-colored shingles. In the process of sourcing materials for the model, Rennick and Smallwood discovered that just two vendors in the entire state stocked light-colored shingles.

By the end of the project, Rennick's work evolved into a valuable consumer science lesson. Results suggested that light-colored shingles not only significantly reduced energy consumption during the summer, but could also be installed without increasing a home's heat load during the winter. As a result of Rennick's research, **Bob Couch**, director of CATS, recently replaced his own roof — and the local school board president was planning to do the same, according to Couch.

A young woman in the top 10 percent of her class enrolled in CATS to take the Clean Energy Technology pathway in addition to her full load of AP courses. She said, "In other classes, when you make mistakes, that costs you points. In this class, when you make mistakes, you're learning."

Patrick Smallwood: plsmallw@lexrich5.org

Career and Technical Education (CTE) Improvement Strategies That Work

Mary Flint, director of **Trumbull Career and Technical Center (TCTC)** in Ohio, is justifiably proud of her center's accomplishments. Providing 32 CTE programs for 19 associate schools, TCTC graduates 99 percent of its students and outscores comparable sites in five of 11 indicators. Flint credits 10 strategies for her center's achievements and status as a HSTW Platinum High Achievement Schools Award winner.*

Data: TCTC uses an annual program audit rubric to track trends, credentialing, standards, syllabi, enrollment and other data. The center uses data gathered from the audit for information purposes, not as an evaluation tool.

Extra help: Flint cites "The Dugout" extra-help program as one of its primary improvement strategies. This program helps students to dig out of problems at school. Students who do not turn in work attend a

mandatory lunch-time program where they complete their assignments in a special lab. The school sends an informational letter to parents or guardians to let them know the student is making up missed work while eating lunch. Flint said initially referrals to the lunch program were high; however, students did not like being separated from their friends during lunch and quickly started turning in their assignments.

Students who consistently miss the make-up opportunity must participate in a parent meeting. The parents must sign a form stating they understand that failure to participate in the program could result in poor school performance.

In addition to extra help, TCTC provides an online credit recovery program. The cost to students is around \$100 a course, and nearly 80 students have taken advantage

of the program in the last two school years. The credit recovery program reinforces the center's practice of denying admission to students who are more than two credits behind.

Attendance and retention: TCTC's Program Pride initiative aims at increasing attendance and retention. The program provides incentives for making the honor roll and attending regularly while assigning penalties for poor attendance and tardiness. Students consistently tardy receive an automatic wake-up call at 6 a.m., and parents receive a letter if their child is absent 10 times. If a student misses 10 days of school, parents are asked to come to a meeting with the director to discuss the attendance issue. If a student accrues 15 days of absences, the parent and student meet with the superintendent.

Challenging courses: TCTC offers challenging courses on its campus. In addition to offering all traditional high school academic courses except foreign language, TCTC offers the following: Honors English, dual credit English, dual credit calculus and zoology articulated with the local university. The center provides additional support to the quality of its courses by assigning counselors to students from the same home school so they can develop an understanding of that school's courses, culture, rules, schedule, etc.

Numeracy cross the curriculum: The center's Numeracy Across the Curriculum initiative is another effective strategy. Students receive a numeracy challenge by email each day. They also work on a problem of the week.

Literacy plan: In addition to numeracy, the school has adopted a solid literacy plan. TCTC has adopted the HSTW literacy goals of reading the equivalent of 25 books per year across the curriculum, writing weekly in all classes, using reading and writing strategies to enhance learning, doing research each year and taking rigorous courses.

Senior project: All students at TCTC complete a senior project. Faculty members use their project manual as a basis for their bimonthly committee meetings so that they can assist students in completing a paper, product, presentation and portfolio. Juniors start school a day before the seniors so they can have off the day seniors deliver their presentations.

Technology: Encouraging students to learn via technology is another of the center's effective practices. With an Apple Distinguished Educator on staff, the center has support for effectively using iPad carts in 12 classrooms and iTunes University. The iPad pilot program involving the use of iPad carts was the first phase of technology integration at TCTC. For the 2014-15 school year, TCTC has implemented a 1:1 iPad initiative. All staff and students have been issued iPads for use in their classrooms.

Transition: To provide a smooth transition for middle grades students, the TCTC participates in a middle grades outreach. Students from the center make presentations at the middle grades schools that feed into all 19 sending schools.

Community outreach: Each program has an opportunity to showcase its offerings and achievements at the county fair, and students provide free services in their labs during an annual open house.

TCTC's effective CTE strategies align with SREB's Technology Centers That Work (TCTW) Priorities for technical centers include: Improve the overall quality of CTE; provide guidance and counseling for careers; provide extra help to students with support for rigorous academics and for making transitions; work with sending schools to increase communication and collaboration; and provide leadership to support a culture of continuous improvement.

HSTW Platinum High Achievement Award Criteria*

- At least 85 percent of students met one or more readiness goals.
- At least 85 percent of students completed one or more parts of the recommended curriculum.
- At least 85 percent of students completed at least one recommended concentration.
- School is classified as a high implementation site
- At least 50 students completed the 2014 HSTW Assessment (or at least 75 percent of the senior class if it is fewer than 60 seniors).
- The school met state AYP or a graduation rate of at least 85 percent (state-reported data).
- The school did not earn HSTW Platinum High Achievement Award in 2012.

Mary Flint: mary.flint@neomin.org

Students With a Career Focus Can Help Your School

Queens Vocational and Technical High School (VTHS) is a comprehensive high school and a career and technical education (CTE) center all in one in Long Island City, New York. For years it failed to meet adequately yearly progress (AYP) on state accountability standards and was labeled a “needs improvement school.”

Principal **Melissa Burg** said the “pressure was on” to turn things around before the state stepped in and imposed consequences. In 2005 the school applied for and received a grant to establish small learning communities (SLCs). In the 2009-10 school year, Queens VTHS was deemed a school in good standing.

So what changed? Before SLCs, teachers met by departments; there was poor communications and a great divide between academics and CTE teachers. The teachers had no accountability to ensure students were successful, and students saw no connections between their classes and their futures.



Once the SLC grant was obtained, the school (including academic and CTE teachers and students) was reorganized into four SLCs, or schools within a school. The CTE pathway of plumbing and electrical installation became the School of Skilled Building Trades. Business,

cosmetology and graphic arts formed The School of Entrepreneurial Studies. Computer repair and computer networking formed the School of Electronic Engineering Technologies, and the ninth-grade SLC was named the School of Exploration and Discovery. Burg explained getting students connected to a pathway made all the difference; it was a win for the students and the school, she maintained.

Common Planning Time

Teachers in each of the four SLCs also had common planning time on a daily basis — something Burg sees as invaluable. “It gave teachers the opportunity to work together, plan together, meet with students together and meet with parents together. Everything, including professional development and attendance outreach, was driven by common planning time,” she said.

It helped teachers to become more accountable to the students and the students more accountable to teachers. Teachers might tell students, “You were present in his class and not my class today,” or “You did his homework and not my homework.” “The kids realized teachers were actually talking to each other, and teachers felt empowered by talking to each other, said Burg.

Exploring Pathways in Ninth Grade

Students have the opportunity in the ninth-grade School of Exploration and Discovery to experience CTE pathways available to them as possible majors in 10th, 11th and 12th grades. They investigate and explore careers that interest them. Near the end of the freshman year, students and their parents attend CTE night. They get a final chance to review all of the pathways or schools, talk to junior and senior students and then together the parent and student choose which SLC is deemed most appropriate.

Part of the ninth-grade year is also spent working on various activities with college/career counselors and a specially trained teacher on career and college advisement. The focus is for students to determine the career field they wish to pursue and then determine the path they will take to achieve it.

Getting Results

“It took about three to four years to actually see significant growth,” said Burg. “We could feel the changes as staff. The building felt different.” Data didn’t register the change until 2008-09 when Queens VTHS made AYP again.

For the 2012-2013 school year, 80 percent of the cohort of ninth-graders graduated on time; the attendance rate increased to 89 percent, and 78 percent of the students received a CTE-endorsed diploma.

Queens Vocational and Technical High School

	ON-TIME GRADUATION RATE	ATTENDANCE RATE
2006-2007	58%	82%
2012-2013	80	89

Source: New York State Progress Report

Continuous Improvement

“The work isn’t done until 100 percent of kids are passing or graduating 100 percent of the time college and career ready,” maintained Burg, adding, “We have a long way to go.”

In an effort to keep students on the right academic and career path and promote continuous improvement, the school increased parent engagement and formed new community and industry-based partnerships. School leadership believes these three stakeholders are necessary to provide students access to work-based learning.

Melissa Burg: mburg2@schools.nyc.gov.

This newsletter describes best practices in implementing the High Schools that Work (HSTW), Making Middle Grades Work (MMGW) and Technology Centers That Work (TCTW) school improvement models based on presentations at the 28th Annual HSTW Staff Development Conference in Nashville, Tennessee in summer 2014. For more information about the school improvement models offered by SREB, contact: Gene Bottoms, senior vice president, at gene.bottoms@sreb.org or call (404) 875-9211.