

# Best Practices Newsletter

## Advanced Career: Getting Students Ready for Real-World Employment

Real-world learning to prepare students for further study and a rewarding career is what the Advanced Career (AC) initiative is all about. Students who might lose interest in a traditional course sit up and take notice when teachers help them to master skills and knowledge they recognize as practical and meaningful to their futures.

AC was developed by High Schools That Work (HSTW), an initiative of the Southern Regional Education Board (SREB), in partnership with states, industry and postsecondary education to facilitate challenging and relevant career and technical education. AC pathway curricula give students a greater depth of knowledge and skills and prepare them for more options after high school. Each pathway offers a sequence of four courses in a high-wage, high-skill field important to the economy.

This newsletter showcases examples of how AC curricula are preparing students for an increasingly competitive world.



### SREB Offers AC Teacher Training Grants to Schools

The Southern Regional Education Board (SREB) is offering 100 teacher training grants to high schools and CTE centers in SREB or HSTW states that adopt one or more AC curricula for school year 2016-17. To adopt one or more AC curricula and apply for training grants for your school, contact Gene Bottoms, SREB's senior vice president, at [gene.bottoms@sreb.org](mailto:gene.bottoms@sreb.org) or call (404)875-9211.

## Industry Mentors Can Enhance Authentic Experiences

When it comes to learning, retaining and really “getting it,” nothing beats hands-on authentic learning experiences. That’s what the AC curricula provide.

AC combines college-ready academic content with hands-on project-based assignments. “It’s a standards-based curriculum,” said **Dick Blais**, AC senior adviser. Each of the AC pathway curricula consists of four courses that prepare students for high-wage, high-skill jobs or put them on a path toward a recognized industry certificate or an associate or bachelor’s degree. According to Blais, AC gives students the opportunity to design, build and evaluate solutions to real-world problems, and they do so with the help of industry mentors.

There are eight AC pathways or curricula, each having four courses intended for high school grades nine through 12.

- Aerospace Engineering
- Clean Energy Technology
- Energy and Power
- Global Logistics & Supply Chain Management
- Health Informatics
- Informatics
- Innovations in Science and Technology
- Integrated Production Technologies

This newsletter describes best practices presented at the 29th Annual HSTW Staff Development Conference in Atlanta, Georgia, in July 2015. **SAVE the DATE.** Join us for the 30th Annual HSTW Staff Development Conference July 13-16, 2016 in Louisville, Kentucky. Click [here](#) to register. Come early for the College- and Career Readiness Standards Networking Conference, July 11-13, 2016 in Louisville.

SREB has a Web-based or virtual mentor program for schools that adopt AC curricula. It is being piloted in 10 school sites during the 2015-16 school year.

## How the Virtual Mentor Program Works

Mentoring occurs during a typical school year, but Blais explained, the mentor does not need to be present in classrooms. They communicate with students via their teachers' email. "The teacher is always in the loop," he stressed.

SREB establishes a Web-based network of mentors from SREB-approved businesses. The mentor is selected by the business. In the 2016-17 school year, the AC mentor website will include a list of the mentors' names, the companies they represent and the AC programs they have selected to mentor. Each mentor must have expertise in the AC course content and post a biography for AC teachers and students to review. AC school teachers and students have access to the AC mentor website via a password and will be able to make contact with mentor(s) they select.

## The Role of Virtual Mentors

Mentors are content specialists in their AC programs. Students working on AC projects can utilize the mentor's content knowledge. Their purpose is to advise students on their projects' solutions by providing feedback. "We're a role model, not a substitute teacher. We're not going to trample on teachers' domain, said **Matt Bruce**, director of Solid Edge Academic Programs for Siemens PLM.

Siemens is a global powerhouse focusing on electrification, automation and digitalization. It's one of the world's largest producers of energy-efficient, resource-saving technologies, and it's taking part in the mentoring program. AC is of particular interest to Siemens because, as Bruce maintains, it has a "footprint in all of AC's eight curricula areas." Plus, mentors get something very personal out of helping students. "I think they are paying it forward. They had mentors themselves," noted Bruce.



*"We're a role model, not a substitute teacher."*

— Matt Bruce, Siemens

## Free Software for Students **SIEMENS**

According to Bruce, students in the AC program have access to Siemens software for free — not just AC students, but all students. Siemens' goal is to ensure as many students as possible are exposed to its software. "The sooner we engage with students, the sooner we can ignite their passion for engineering," he added. Offering Solid Edge CAD software to primary and secondary students at no cost achieves this and ensures the schools they attend no longer wrestle over how to pay for what can be very expensive educational tools. Individuals seeking to learn more about the Solid Edge academic program and the offer of free CAD software may contact Bruce at the email address below.

## National Instruments Corporation

Another valuable AC partner is National Instruments (NI), an innovative and unique company that transforms the way engineers and scientists around the world design, develop prototypes and deploy systems for test, control and embedded design applications.

Central to NI's participation is the utilization of NI's LabVIEW for Education software and myDAQ hardware. With these industry-standard tools and a project-based curriculum, students engage in hands-on learning techniques that make math and science come to life through real-world learning experiences.

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## Engaging and Preparing Students for a Data-Driven World

Classical physics tells us something cannot be created from nothing. This maxim also applies to forging futures for students moving beyond high school to further studies. Futures are built upon information and upon a body of knowledge and skills students must first acquire in their middle grades and secondary studies.

**Haldan Pflueger-Smith** teaches Advanced Career (AC) Informatics and algebra at the High School of Commerce in Springfield, Massachusetts, a large urban school with over 1,250 students in grades nine through 12. Ninety-two percent are minorities and the school was regarded as underperforming. Many students had become disenchanted and were not engaged with their learning.

## Advanced Career Lights the Way



Pflueger-Smith's challenge was to turn around students' perceptions of their own learning and, by extension, the school itself. In the 2014-15 school year, the High School of Commerce implemented the Southern Regional Education Board's (SREB's) AC Informatics curriculum, as part of the HSTW design, to ignite students' interests and provide them with a pathway program of study leading to high-wage jobs in high-demand fields.

AC combines the college-ready academic core with hands-on, real-world learning via project-based assignments. To meet workforce needs, training in technical, leadership and 21st-century skills is provided to students.

## Informatics: The Science of Information

Informatics draws students seeking a career field combining aspects of software engineering, human-computer interaction, decision theory, organizational behavior and information technology. Students in the Informatics pathway use software systems to collect, store and access data.

The four-course Informatics sequence is:

- Computers, Networks and Databases
- Design for the Digital World
- Databases in the Cloud
- Developing a Cloud Presence

## Brave New World

Informatics not only considers the nuts and bolts of information acquisition, it also delves into societal consequences. How do we store information, logically organize it, access it and analyze it? Data are useless unless analyzed, raising the issue of "digital ethics." How much should society be defined based on information and occupations? Should personal genetics be altered? Should insurance companies be allowed to determine your rates based on your medical data? "Devices are already linked – Microsoft and Google know a lot about any of us. Do we care how this information is used?" mused Pflueger-Smith.



***"We have an obligation to teach students how to succeed in a world where digital technology is constantly evolving."***

— Haldan Pflueger-Smith, Informatics teacher

## Informatics at the High School of Commerce

Currently, Courses 1 and 2 are offered at the school; Pflueger-Smith teaches both. He noted the four-course Informatics sequence begins with freshman in Course 1. Sophomores take Course 2, and the junior and senior years are melded into the school's International Baccalaureate (IB) course, information technologies in a global society, using Informatics Courses 3 and 4 curricula as its base.

The four courses cover the engineering design process, deliverables and essential questions. The Informatics curriculum also encompasses Excel and Access, and Web-design software. "We have an obligation to teach students how to succeed in a world where digital technology is constantly evolving," said Pflueger-Smith.

The curriculum emphasizes real-world connections between subjects. Science, math and English/language arts are all integrated and taught in real-world settings, noted Pflueger-Smith. "I'm engaging students in literacy, math and science every day, and they don't even realize it."

Project-based learning has enabled students to experience authentic learning through productive struggle. "For those who are fed up and want to do something about it, this really works. Students thrive in a student-driven environment," Pflueger-Smith said.

Maintaining accurate records is essential, hence keeping a technical notebook is critical. Students must capture the entire design process – necessary for getting a patent – in all Informatics curriculum courses.

## Informatics Outcomes for Students

"Students are always creating and showing me things that I didn't know," said Pflueger-Smith. He noted students with certain interests and aptitudes were most likely to succeed in the school's Informatics sequence. "Students need to be interested in technology – to have a sense of wonder about it." Despite the average freshman in his class having a fourth- to fifth-grade reading level, if they had the desire, they overcame due to their interest in technology. "It doesn't matter if they have the preconception that they can't do math, because they don't realize they are doing math," he said.

He noted students who at the beginning of the year turned in final reports of one page or less with incomplete sentences were participating in groups and turning in 10-page reports by year's end.

## Why Should Students Care?

As part of vertical integration, Pflueger-Smith said a local college promised guaranteed admissions for any student who completes the pathway. Because students completing the program have a taste of real-world experience, companies are willing to hire directly out of high school and groom them for promotion. Students benefit by getting their foot in the employment door; employers benefit by hiring employees who they can continue to develop.

## Challenges Experienced

Seeking buy-in from students comfortable with traditional instructional models was a major challenge. **The key was enabling students to see their teachers as managers and facilitators rather than transmitters of knowledge.**

Another challenge is the transient nature of the students. In the past year, Pflueger-Smith lost some 50 percent of his students due to various external factors such as families moving into another school district. The school is working with guidance counselors to find students who will be staying in the school to participate.

English language learners struggle with difficult research articles. Pflueger-Smith noted he is working to identify those students at beginning of the year and provide better interventions and more instructional scaffolding earlier.

## High School of Commerce Community Outreach

According to Pflueger-Smith, the school is actively building relationships with the broader community. "We are currently working on building partnerships with Springfield Technical Community College to provide up to eight credits for students completing the four AC courses." Pflueger-Smith said the school already has an agreement in the works with a local college for guaranteed admissions into its IT Security programs.

Finally, he noted the High School of Commerce is trying to build relationships with local businesses and seeking business mentors who can work with students on a one-to-one basis.

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## Teacher Recognition

Pflueger-Smith was presented the First-Year Advanced Career Exemplary Teacher Award at 29th Annual HSTW Staff Development Conference in 2015.

"He successfully implemented an Informatics class that incorporates a problem-solving pedagogy this year and is growing it to another section next year. What he has learned about facilitating student collaboration and differentiation through this work he is filtering into his Algebra I classes and his students are better for it," noted the school's website.

## The Georgia Academy Model: Building a Future That Works

The Georgia General Assembly mandated creation of 33 career academies with a state law passed in 2011. Among them is Heart of Georgia College & Career Academy. Awarded \$3.1 million for facilities and startup costs, Heart of Georgia operates in partnership with Dublin city schools and the school systems of Laurens, Wheeler and Bleckley Counties. The academy's goal is to increase students' graduation rates, employment opportunities and access to college.



Tiffany Lofton

### The Mission

Heart of Georgia College & Career Academy is a half-day charter program offered to students in grades nine through 12. The academy prepares students to compete and excel in the 21st-century workforce. Hands-on, project-based learning focuses on industry-specific curricula. **Tiffany Lofton**, CEO of Heart of Georgia, stated, "At the end of the day we are workforce driven." A 2012 survey of business and industry gave direction to planning the academy to meet business needs. Special consideration was given to skill shortages found to impact 80 percent of the companies surveyed.

## Getting Students Ready

To meet anticipated workforce needs, training in technical, leadership and 21st-century skills is provided to students, with SREB's Advanced Career (AC) program a key element in the mix. AC combines the college-ready academic core and hands-on real-world learning via project-based assignments. This past year, students at Heart of Georgia were offered two AC pathways: Innovations in Science and Technology and Global Logistics & Supply Chain Management.

These two AC career pathways match specific employers' needs in the academy's service area:

- Innovations in Science and Technology jobs are potentially available at Carl Vinson VA Medical Center and Fairview Park Hospital. Together, they employ nearly 2,000 people in the academy's service area.
- Global Logistics & Supply Chain Management jobs are available at Best Buy Distribution Center, Farmer's Furniture Distribution Center, Fred's Distribution Center, FlexSteel and Parker Aerospace.

The AC courses are designed around project-based learning experiences. The courses combine science, math, literacy and 21st-century skills with program content. After high school graduation, multiple options are available to students including employment, technical college and four-year college.

Lofton indicated students have responded to the AC courses with improved attendance and improved engagement. They learn how to use math, science, technology and other academic skills simultaneously rather than in isolation in a math or science classroom.

"The benefit of these rigorous courses help students prepare for entry-level jobs and college careers in the fields. Entry-level positions in Global Logistic & Supply Chain Management include warehouse workers and forklift drivers. Collegiate-level jobs include management and executive levels in supply chain and logistics. This program lets students go as far as they want into the field with project based- learning.



"Our Innovations in Science and Technology program is helping students get their feet wet with real-world models of engineering, science, technology and mathematics. This is a broad field and will help prepare our students for jobs in fields such as engineering, health care, science and computer technology."

Internships, job shadowing, mentorship, industry tours and guest speakers are work-based learning experiences that enhance student learning. "Our students have been exposed to many guest speakers from our local businesses and industries. Students attend industry tours that include businesses such as Farmer's Furniture Distribution Center and Best Buy Distribution Center in Dublin, Georgia. Also, college tours are provided as part of our program," noted Lofton.

## What Students Are Saying

Students have found value and inspiration from attending the academy. Here is a sampling of student quotes:

*"I'm learning a lot of things that I can use in my life and future career."*

*"The career academy inspires me to do better and be better."*

*"My attitude about school has changed a lot."*

*"I've learned you shouldn't give up. Keep trying, and once you succeed, it will seem as if it was the best thing you've ever done."*

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## Advanced Career and Generation Z: A Good Fit

Generation X — comprising the so-called "Millennials" — has become old hat. Trending today is "Generation Z," broadly defined as individuals born after 1996. This is the "wireless generation;" schools sometimes struggle with students who would rather text than talk.

Many "Gen Zers" live in diverse family compositions, such as with single parents, in blended families, in bi-racial or multiracial families, or have two fathers or two mothers. Gen Zer circles are more diverse than their predecessors and more embracing of America's increasing diversity. If current demographic trends continue, Generation Z will be the last American population cohort with a white majority.

Because this cohort was at a formative age in 2008 when the "Great Recession" began, Gen Zers are less likely to believe in the American dream of owning a home or advancing beyond their parents' financial status. This generation not only comprises digital natives; they are

hyper-connected with a smartphone, tablet or other electronic device at their fingertips. Today's driving-age teenagers prefer Internet service to obtaining a driver's license and independence associated owning a car. Further, they believe that Internet access is a right for all, rather than a privilege.

## Gen Z “Operating System”

So what does the rise of Gen Z mean for educators? According to **Beth Green**, project manager for SREB's Advanced Career (AC) initiative, districts, schools and teachers can adapt their policies and pedagogy to meet the needs of this turned-on and tuned-in generation.

One example is “gamification.” Today's youth (and more than a few adults) receive real-time feedback when playing video games, monitoring sports performances, or health and fitness goals via smart devices. The systems give specific feedback on their progress and make suggestions for improvement. Typically, the systems chart progress and goals by making data visually attractive and meaningful.

Teachers may share data with students regarding mastery of knowledge, skills, objectives and set meaningful goals. Sharing the information using graphics is helpful, and digitizing the feedback process through online grading provides students and parents access to students' progress. Using rubrics, checklists, and other tools allows students to see how they might improve.



Gen Zers are accustomed to having a voice and influence in household buying decisions. In the past, companies used traditional mass-marketing methods to sell products, such as print, radio and television advertising. Today, modern marketing strategies key on social media, with participants “liking” specific products on social sites or sharing information with followers. Students realize their influence and expect choices in school as well. It is important for schools to share information about their programs and give students some informed and appropriate choices about their studies.

## Plugging Gen Z Into AC: Power On!

AC's project-based learning framework is attractive to Gen Zers; its pathway curricula programs give students a chance at the American dream. The science, technology, engineering and math (STEM) pathways lead to careers in high-demand, high-wage fields by which students may support themselves and a family.

There are multiple entrance and exit points into the workforce once an AC pathway program of study is completed. According to Green, a student may select to enter the workforce upon high school graduation; attend a technical school or community college for a certificate or associate degree; and/or complete a bachelor's degree or advanced degree at a university.

“Some students need to complete programs in steps. The student may work for a while and then decide completing work at a community college gives her more opportunity for advancement and increased pay. The skill set for entering the workforce and attending college are the same. Students who complete an AC pathway including a rigorous academic core are ready for both. The student decides when to enter and exit the formal system,” Green stated.

“Students also like that AC projects connect them with their peers and they learn from their peers,” Green stated. When students participate in video games, they go online to ask their peers questions about the various levels. In the AC project-based learning model, students learn together and seek advice from their peers. They also connect with an adult mentor or authentic audience who can give them feedback in person or online. They use technology to complete the projects. This is very similar to the “gamification” experience. The AC projects contain rubrics, checklists and mini-workshops to learn necessary skills just as they need them.

For the teacher, the AC model includes a Summer Teacher Training Institute, curricula developed with the help of industry, and the necessary resources and equipment for students to compete the project. The assessment plan for providing feedback is embedded in the curriculum, as well as an end-of-project exam.

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