PRIMING THE PIPELINE

Purdue Embraces Polytechnic Approach

By Symone C. Skrzycki

"Education is not the filling of a pail, but the lighting of a fire." — William Butler Yeats

The clock is ticking.

As the digital age continues to transform the workplace and the people within it at an epic pace, time is more precious than ever. Time on the job. Time in the classroom.

In short, there's no time to waste.

That poses a fundamental question: Is the traditional education model, which focuses on instruction time or credit hour completion, working?

Purdue University's Gary Bertoline and others "believe there's a different and better way to learn" – and it's coming to the inner city as the Purdue Polytechnic Indianapolis High School.

Curriculum will mirror what's taking place at the Purdue Polytechnic Institute (formerly the Purdue College of Technology, with nine statewide locations) and emphasize competency-based learning that combines teamwork, problem solving, STEM (science, technology, engineering and mathematics) disciplines and other areas such as liberal arts.

"There's just a tremendous amount of evidence that says if you take a more application-oriented, hands-on, integrated approach that's team based, where students learn from other students and you mentor students, there's huge evidence that you can prepare students much better," asserts Bertoline, dean of the Purdue Polytechnic Institute in West Lafayette. "They learn better. They're much more motivated."

Opening in fall 2017, the goal with the high school is to diversify Purdue's student body and prepare young adults for high-demand, high-wage professions.

"This school is really important," Bertoline declares. "It's going to serve as a flagship. It's where we're going to learn how to do it right and then move this throughout the state."

Purdue President Mitch Daniels puts it this way: "We hope we can start it up, shake it down, see enough success in it. … I wouldn't wait four or five years. If it looks really good after a couple of years, we ought to try to start school number two or three or four right away."

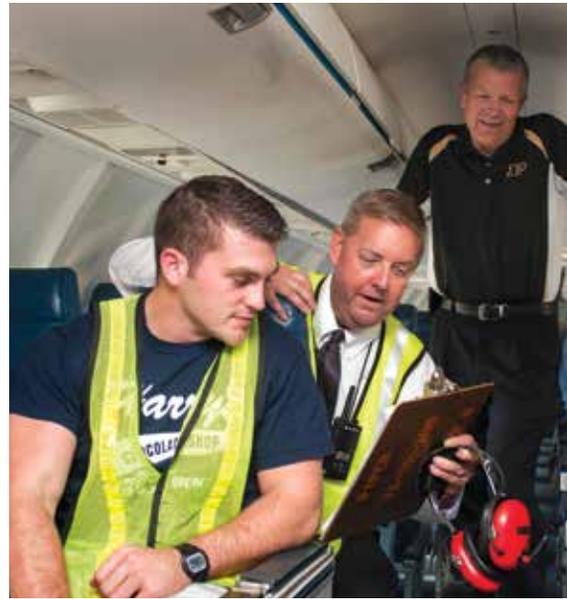## 'Bringing the classroom … to life'

Two numbers below highlight an education challenge for Purdue and students within the state's largest city.

According to the Indiana Department of Education, Indianapolis Public School graduates (year 2012) scored significantly below the national average on the college readiness benchmark on SAT exams. Within that group, only seven college-bound African Americans and 16 Latinos had SAT scores and high school GPAs in the range of the top 15% of Purdue freshmen.

"Shockingly few African-American students are coming out of Indiana high schools at even the minimum level of preparedness that a Purdue education takes," Daniels offers. "We're going to put that charter school in inner city Indianapolis in hopes of attracting and preparing at least some more first-generation, low-income and under-represented minority students."

Brooke Huntington, assistant dean for K-12 outreach for the Purdue Polytechnic Institute, is eager to dispel misconceptions about "what happens in a polytech over time."

"We talk about it being STEM focused (for instance), but I think what we really mean is there's a heavy emphasis on problem-based or design-based education that brings together science, technology, engineering and math with the humanities," she clarifies. "It's education that brings the classroom and the real world to life for students."

Huntington, who imparts that she "couldn't be more excited about what she does every day," previously led EmployIndy, Marion County's workforce development arm. The organization is represented on the Purdue Polytechnic Indianapolis High School steering committee, along with leaders from Purdue, the city of Indianapolis and USA Funds.

"We know our students may come from varying starting points," she reflects. "Some may be on track and ready to enter the ninth grade and sort of head forward without any issues. Others may come in behind grade level. Using competency-based education allows us to target the needs of the students and bring them to the point where they're really ready to learn in this new environment."

Through innovative experiences, students can earn college credits and industry credentials as freshmen and sophomores. Juniors choose one of three pathways — advanced manufacturing; computer and information technology; or supply chain and logistics.

Purdue will partner closely with employers to identify workforce gaps. Companies will provide mentors, contribute input regarding potential projects students can pursue, host internships (during students' senior year) and more.

Ideally, the high school will serve as a direct pipeline to Purdue. But that's not the only measure of success.

Innovation soars at the Purdue Polytechnic Institute, which will serve as a model for learning at the Purdue Polytechnic Indianapolis High School. The sky's the limit (left) during an exercise involving starting the engines on the School of Aviation and Transportation Technology's large jet *(Purdue University/Rebecca Wilcox)*. Students grasp a practical lesson from their instructor in the electronic systems lab *(Purdue University/Mark Simons)*.

Bertoline stresses, "We see it as being successful if students move on from their high school education and go directly into the workforce, but have high-value credentials, are well prepared educationally so they can grow with the company and maybe go onto a certificate program, an associate's degree later on, or maybe five, 10 years later, they do want to go on for a bachelor's degree.

"Of course, we want as many as possible to come to Purdue and gain a four-year degree. But it's open for all levels of academic ability, and I think that's one unique aspect of it."

Breaking down barriers

It all boils down to access.

That's how Ahmed Young, director of the Office of Education Innovation for the city of Indianapolis, describes the Purdue Polytechnic Indianapolis High School.

"It's all about access to resources, access to new experiences, and access to individuals that are closely aligned and associated with Purdue University and their Polytechnic Institute," he remarks. "I look at this as groundbreaking and revolutionary for the city of Indianapolis. With us being the Silicon Valley of the Midwest, we have to make sure that the workforce is aligned with our economy and the types of jobs we want to bring here — and this is part of that effort."

Young exudes a twinge of nostalgia recalling the years he spent as a teacher. His experiences are part of what makes him passionate about the high school's potential to impact the lives of first-generation, low-income and under-represented minority students.

"Being able to prepare them (undergraduates) adequately at the high school level for the rigors of that postsecondary education is essential to their success — not only their

educational attainment, but also as it relates to their financial success," Young comments.

And there's something else.

"It also lends itself directly to public safety," he shares. "When you have a thriving educational outlet for students that provides before, during and afterschool experiences, it limits their opportunities to get into mischief and other mayhem.

"There are a lot of great organizations within Central Indiana that offer mentoring and offer access to these experiences, but not to this level and not to this scale. I foresee this being a great neighborhood school that students can come to (not only) from throughout the city but also within that neighborhood, and be a hub for innovation and great thinking and a

great educational experience for our students. That's what it's all about."

Huntington seconds that.

"We believe that community engagement is probably one of the most critical aspects in our development and long-term success. It will be important to us to be 'of the community' and a part of not only the neighborhood in which we locate, but Indianapolis as a whole."

David Harris is founder and chief executive officer of Indianapolis-based The Mind Trust, which focuses on incubating new schools and education non-profits. He served as the first deputy mayor of charter schools under former Mayor Bart Peterson.

"A legitimate criticism of charters is that we haven't used the freedom to innovate enough,

Foundation Expands CBE Discussion

Is Competency-Based Education (CBE) the future of higher education or simply a currently popular alternative developed in response to the workforce skills gap?

The long-term answer is still to be determined. The Indiana Chamber Foundation completed work in 2015 to explore, educate and build awareness of CBE with higher education leaders in the state. The work was funded by the Lumina Foundation for Education.

"The Chamber Foundation mission is to provide thoughtful research to help policy leaders and decision-makers make more informed choices to enhance Indiana's economic future," notes executive director Christy Huston. "Taking a deeper look at CBE and its potential for impacting Indiana students and employers was a perfect fit."

CBE is traditionally defined as:
• Establishing expectations about the knowledge, abilities, skills and attitudes students must have
• Encouraging student and faculty engagement and learning outside the classroom setting
• Relying on reliable assessments that include both objective and performance-based tools
• Not necessarily following traditional academic calendars or the accumulation of credit hours
• Allowing students to progress at their own pace

Public Agenda, a national firm seeking to help organizations with solutions to complex issues for 40 years, conducted focus groups with leaders from Indiana's public colleges and universities. It shared results and additional analysis with the Indiana Commission for Higher Education and the Indiana Chamber's Business-Higher Education Forum.

but a school like this is pushing the envelope more," he affirms. "That's exciting and something we think is going to be an important addition to the landscape – both because it will provide a great education for the students, but it will also inform our thinking about what schooling might look like."

Obstacles beget opportunity

When Purdue Polytechnic Indianapolis High School opens as a charter school next fall, it will house an anticipated 150 freshmen. Enrollment capacity is expected to reach approximately 540 by the fall of 2020, when it will include all four grade levels.

Bertoline acknowledges good-naturedly that starting the school can be a bit daunting, but he and his team are up for the challenge.

Speaking of challenges …

"There's a lot of them. On the one hand, it's exciting to create a school from scratch. On the other hand, it's scarier than heck," he concedes with a chuckle. "You have to do everything! You have to pick the building site. You have to hire everyone. You have to put a business model together to make sure you can sustain all of the activities you want to do. You have to make sure you integrate this into the community so you're accepted.

"We're very excited about this opportunity. … We're very hopeful this will make a real difference."

RESOURCES: Gary Bertoline and Brooke Huntington, Purdue Polytechnic Institute, at www.polytechnic.purdue.edu | Purdue Polytechnic Indianapolis High School at www.polytechnic.purdue.edu/indianapolis-high-school | Ahmed Young, Office of Education Innovation, at oei.indy.gov | David Harris, The Mind Trust, at www.themindtrust.org

CBE Discussion

"Improving connections between educators and employers is essential," offers Indiana Chamber President and CEO Kevin Brinegar. "The Indiana Career Council has established a goal of significantly expanding experiential learning experiences, and the Indiana INTERNnet program continues to help to do that throughout the state."

Higher education interest in CBE has exploded. Public Agenda notes that 20 colleges and universities reported seriously working on such initiatives in 2012; that number was more than 250 a year later and continues to grow.

CBE takes on a variety of different models. Participants in three of the Indiana focus groups identified themselves as being from institutions that are building or currently have an existing competency-based program. Respondents from four other colleges and universities reported very little first-hand knowledge or experience with CBE.

Public Agenda further describes CBE as an alternative to the current credit hour approach and asserts that it has the potential to combat the fact that two-thirds of provosts and chief academic officers say that grade inflation is a serious problem.

"Member companies are telling us every day about the challenge of finding qualified workers," Brinegar says. "If expanded use of CBE can help address the challenges and provide a solution, it deserves to be further studied and examined. The Indiana Chamber, as always, is prepared to participate in those discussions."

The Indiana Commission for Higher Education is expected to include CBE in some form in the next version of its strategic plan, which is anticipated in the first half of this year.