

# 'Sandbox' Success

## Community Internships Offer Many Benefits

By Charlee Beasor

Bowman Creek is one of the most polluted tributaries to the St. Joseph River, which spans about 42 miles through northern Indiana and along cities that include Bristol, Elkhart, Mishawaka and South Bend.

And the neighborhood of Bowman Creek, just to the southeast of the heart of South Bend, has its own challenges, including vacant homes and poverty, caused by an economic decline and urban sprawl.

But the Bowman Creek Educational Ecosystem (also known as BCE2) is providing students of all ages and disciplines the opportunity to help change the ecological condition of the creek – and the problems of the surrounding community – while also getting plenty of experiential learning.

The interns – 22 high school, college and adult interns spanning ages 15 to 59 (in 2016) – put their classroom educations to the test in a real-world “sandbox for innovation,” according to Gary Gilot, director of engineering leadership and community engagement at the University of Notre Dame.

“We have young people who are classroom smart. They’ve got all the theory, but they need an opportunity to put it in practice,” he explains. “We pilot ideas in a participatory process; students listen to pain points and they come up with alternative solutions and we execute.”

Gilot and Jay Brockman, an associate dean and professor at the University of Notre Dame, serve as mentors to the students in BCE2. The first group of interns participated in 2015.

Non-profit organizations and local companies are hoping these experiences help to stem the flow of talented graduates that are leaving Indiana.

“Indiana exports talent. We’re 14th in graduating STEM (science, technology, engineering and math) baccalaureate degrees



Interns, ranging in age from 15 to 58, spent their summer in South Bend learning about conservation, technology and innovation during the second year of the Bowman Creek Educational Ecosystem. One of the 2016 projects was building rain gardens, which help collect and purify rainwater.



and we’re 44th in retaining them,” Gilot says. “The focus with Bowman Creek is to maybe get some folks to feel like we can be successful and have meaningful work and have a decent quality of life here.”

Students come from three local high schools and three universities: Notre Dame, Ivy Tech Community College and Indiana University South Bend.

“This initiative is really demonstrating what the future of community-university

partnerships could look like,” says South Bend Mayor Peter Buttigieg in a provided statement.

“We have professionals, students and community members working side-by-side in order to design and execute innovations and interventions that help with issues ranging from environmental remediation of a complex creek and its water issues to how to make the most of opportunities created by vacant lots that are the result of the city’s efforts to deal with vacant and abandoned homes.”



The interns teamed with local businesses and organizations for hands-on learning about green technology and data collection.



## Overflowing with opportunity

Interns work with local partner organizations and employers to study, innovate and execute solutions to problems within the Bowman Creek neighborhood. The team tackled nine projects during the 2016 internship period, one of which was the implementation of 10 rain gardens, which help collect and purify rainwater.

Other projects included studying the economic feasibility of a native tree nursery on vacant lots, designing streetscape artwork and advancing the design of a pedestrian bridge.

Another focus was the study of smart green infrastructure as a unique solution to one of the more pressing challenges facing South Bend: combined sewer overflow. When the city gets too much rain, sewer runoff spills into the neighboring river and tributaries.

Smart infrastructure and data analytics, however, have helped the city reduce overflows by about 70% and decrease the amount of E. coli in the St. Joseph River by half.

EmNet, LLC, a South Bend-based engineering company, designed that smart infrastructure, called CSOnet. The technology includes sensors that are located in the sewer system and communicate data about water flows every five minutes to gates or valves that react and divert water to parts of the sewer system to avoid overflows.

EmNet has partnered with BCe2 and mentored the interns over the past year. Luis Montestruque, Ph.D., company president and chief

technology officer, admits that working with the organization has several motivations.

“We are very interested in participating in community events and activities, not just the ones that have been done by the Bowman Creek Educational Ecosystem. But a portion of that has to do with STEM development of interns, which is obviously an area we are familiar with. We wanted to mentor and help the people that were involved – the interns – of the Bowman Creek Ecosystem project,” he offers.

“Naturally, it may be a little bit of a selfish point of view, seeing what the future employees could be for recruiting purposes. That has been the reason why we decided to get involved.”

It has worked out for the company so far: One of the 2015 BCe2 team leaders, Jon Schommer, is now working as an engineer at EmNet.

“In our particular industry, and it has to be true for other ones as well, I can tell you that the kind of talent we are looking for is talent that is STEM-savvy, multi-disciplinary and that has a true passion for the environment. It’s not the most usual combination of things you can find,” Montestruque adds.

Affiliations are vital to BCe2. Indiana INTERNnet – the free internship matching program managed by the Indiana Chamber of Commerce – is another partner. Britney Arenas, from Riley High School, was one of the 2016 BCe2 interns and was named the High School Intern of the Year during the 2017 Indiana INTERNnet IMPACT Awards (see Page 73).

“It gets contagious. Energy and enthusiasm are hard to resist and everybody wants in. So the thing kind of snowballs. Many hands make light work,” Gilot asserts.

Another partner is enFocus, a non-profit organization that pairs recent graduates – “fellows” – with local mentors in an effort to keep those graduates in the region.

Between enFocus and BCe2, Gilot says the statistics for graduate retention from the two organizations are around 81%.

## Out of the bubble

Alicia Czarnecki is among that 81% planning to stay in the area. She is a senior studying environmental engineering at the University of Notre Dame and was the 2016 BCe2 team leader.

Originally from Michigan and graduating in May, Czarnecki has accepted a job offer from a South Bend-based engineering firm.

“I think the work I was able to do through the Bowman Creek project and the people I was able to meet and network with through the different projects we took on really set me up to have a good network in South Bend and be a good candidate for a job in that region,” she acknowledges.

“It definitely had a lot of influence on my decision to stay here. ... It’s not that I didn’t see myself staying in South Bend. I was looking at a lot of different opportunities, but I kept coming back to the connections and network and meaningful experiences I had here.”

Czarnecki, who was also a nominee for the Indiana INTERNnet IMPACT Awards, notes that University of Notre Dame students tend to exist in the “bubble” of the campus and that BCe2 helped her and others reach out into the community.

“As a person and an engineer who wants to help society, it was cool to be using my STEM skills where I can directly see the benefit to this community. ... These are not unique challenges to South Bend, but we have a unique solution,” she adds. “I have a passion for the environmental aspects, but also for the social good and innovations that make economic sense for a neighborhood that’s facing challenges.”

“It’s kind of become a little addictive to stay and do this kind of work. It’s very rewarding.”

**RESOURCES:** Alicia Czarnecki and Gary Gilot, Bowman Creek Educational Ecosystem, at [www.bowmancreek.org](http://www.bowmancreek.org) | Luis Montestruque, EmNet, at [www.emnet.net](http://www.emnet.net)