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Riverview students delve into building design

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Published: Sunday, April 26, 2015 at 7:25 p.m.

Architecture, construction and engineering are practical professions, but the 70 students in a new mentorship program at Riverview High School are interested in more than just how buildings are designed or built.

They want to know everything about working in the building sciences.

"How many years of schooling does it take?" one student asked structural engineer Karl Hees during his recent lecture.

"Much much paperwork?" asked another. "How much are you paid?" asked a third.

Hees didn't dodge any questions. With a master's degree, a new engineering graduate can earn \$45,000 to \$55,000, he told the students. "After four years, you can take the PE (professional engineer) test, and earn 15 percent more. Twenty percent pass" on the first attempt.

But those in management and sales make the most, Hees said.

Since October, a group of volunteer professionals have been mentoring Riverview students in their respective disciplines. It's part of the national ACE (Architecture, Construction and Engineering) Mentor Program, now finishing its first year at Riverview.

"When I look at the dedication of these professionals," said Riverview's principal, Linda Nook, who is retiring at the end of the school year, "it is a really good story. Every Tuesday morning they are all out here."

"It is so meaningful to the students," said Melanie Dunham, the program's faculty adviser and an assistant principal. "We have girls who say, 'I want to be an engineer.' We had one who just presented at the School Board meeting the other night. She said it absolutely changed her career goals."

Female students who go into an ACE profession will be following the lead of the Sarasota ACE chapter's leaders, Melanie Delehanty Smith and Tara Sall, both of the engineering firm Stantec.

Smith said local affiliates — this chapter was formed after three years of planning — follow strict guidelines set by the national ACE organization. Fundraising and creating strong school partnerships is part of the mission, because ACE offers scholarships for outstanding students.

"They have to be pursuing architecture, construction or engineering to become eligible for those scholarships," said Sall, vice president of the local ACE chapter. "It is all based on what we raise, so funding is a big thing. There has been huge support from the community."



STAFF PHOTOS / DAN WAGNER

Tara Sall of Stantec Consulting mentors Riverview High School senior Devyn Kelly as they look over site plans for Sarasota High School's west campus during an ACE (Architecture, Construction and Engineering) class.

“You want your inaugural year to go very well because you don't want to leave a bad memory about the program not doing well,” said Delehanty Smith, a 30-year-old Venice High graduate and a civil engineer. “Riverview was chosen because the staffing is so great, they are excited about the partnership, and the students are higher-caliber. It makes it easy to walk in and have kids who care about the program.”

Throughout the school year, each student has a different role in a designated project – for example, architect, plant manager, landscape manager or project manager.

Delehanty Smith said the experience is invaluable for students heading to college.

“I didn't know what an engineer did,” she said. “I just knew they made more money than a business degree. I was good at math and science, and the teachers said, 'Go get an engineering degree.'”

“Having a better picture of knowing what my career goals could be in high school, when you have to make those decisions, reduces the amount of wasted time. It helps you see what an architect really does. Then, maybe you don't want to be an architect. It helps you on your path and your goals.”

One of the program's top students is Nicholas Altomare, a sophomore who “very much” wants to be an engineer.

“My interest is to be open to what engineers truly do,” he said. “There are so many branches of engineering. I want to find out what are some of the more fun ones. What are the ones I want to follow in my career?”

Senior Arden Sykes is headed to Florida State, where she wants to major in chemistry, but signed up for the ACE program because she has “an appreciation for engineering. I have some relatives who are architects, so that is why I am taking an engineering class. The most valuable part of this experience, compared to engineering classes, was real-world application and what it is like to go into these career fields specifically.”

Central Florida-bound senior Jacob Lacenere said the ACE program “brings something into the classroom that you just can't get from looking into a computer screen. You don't get real-world experience until you bring in someone who knows what is going on in the world.”

The students are impressing the professionals. During guest-speaker Hees' visit, he showed a photo of a Sarasota building occupied by a Diamond Vault store and asked the students to identify the large overhang.

“What is this?” he asked.

Almost every student responded “a cantilever.”

“Very good!” Hees replied.

As for those practical questions regarding paperwork and paychecks, Altomare said, “We want to see every part of engineering, not just the knowledge of what you are supposed to do, but every aspect of the daily life.”

The program emphasizes the collaboration required to construct a building.

“They are seeing what goes into actually building something or creating something,” Delehanty Smith said. “It is not linear. It is not, one profession makes all these decisions. You have to encompass.”

Riverview's ACE project focused on the renovation of the 1960 addition (Building 4) at Sarasota High School, which was designed by famed architect Paul Rudolph.

Rather than be demolished, the building was restored on the outside and rebuilt on the inside as the first part of a campus-wide redevelopment plan.

The SHS project was chosen because the students could relate to it. The project was under construction and the School Board approved its use as a case study, Sall said.

“We presented how Sarasota High School was controversial,” said Delehanty Smith, “and do you just demo it and build a building like this (RHS), which is easy to build because it is all brand new?”

“They wanted to keep Building 4. They wanted that rich architectural history to stay intact,” she said. “There is a lot of money that is lost in building a nice, new facility because of that. Because the public interest is important, it gives the students a brief understanding of what goes into building.”

Through the ACE program, students get the sense of “adults caring enough to come in and teach them and hang out with them. All of us that are a part of ACE, the one common thing I hear is, ‘I wish we would have had this in high school,’ ” said Sall, a civil engineer in training at Stantec. “We wish we would have been able to see what really happens on the other side. Maybe we would have made different college degree choices, maybe different career choices.

“All of us had a roundabout way of getting to where we are,” said Sall, a 2004 Venice High graduate. “We get to share those experiences with the kids, and if anything, I think it is just that bonding part of it. We have something that their parents might not be able to offer them.”

Sall, who majored in architectural engineering at the University of Missouri-Rolla, said a main goal of the ACE program is to encourage students to “become serious about school post-high school, to equip them with the knowledge of what they might be getting into.

“I have been fascinated by what good questions the kids ask. That is really what blew me away the most, is how eager they are to learn. That validates what we do.”

Companies that permit their employees to volunteer for ACE may also see a staffing benefit, said Sall.

“After they have gotten out of school, we want to entice them to come back to the companies they have gotten to know through this program, to this area,” she said. “It is not just a retirement area; it is a place you can grow your family, and they can really see themselves” as a respected professional.

THE PROJECT

Sarasota High's renovation and campus redevelopment

“Our goal was to mimic what a design firm would have to go through to get, design and build a project. The teachers broke the students into groups of five to six. Their first assignment was to develop their company name and logo and decide on positions within the company — project manager, architect, civil engineer, landscape architect, transportation engineer, and contractor.

“Each team was provided a Request For Proposal. This outlined what ultimately was required of each team. Within this RFP is a schedule, and each week builds to the end design goal. Every other week through Week 12, a guest speaker taught the students a new topic about the project design. We focused on obtaining speakers that predominately worked on the SHS project to ensure the most could be gleaned for their individual assignments.

“The week after the speaker, the students had a follow-up assignment, or deliverable,

that was specific to the prior week's topic. For example, they had to work with trace paper and large drawings to remove part of an existing building, and, using engineering scales, to scale off the required distances and size of a new building. Each week, their assignments were pieces of what will be their end design project. The pieces will be combined to create their projects three-dimensionally with AutoCAD Inventor and Google SketchUP.”

_ Tarra Sall, EI, Stantec

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