



Designed to Succeed

Holy Ghost Prep's commitment to building a STEM Tower and to fully integrating the design thinking model into its teaching will equip its students to excel in an ever-changing world.

by MICHAEL BRADLEY | photography by CATALANO STUDIO

When Pat Hoelzle speaks to fellow Holy Ghost Prep faculty members about the school's investment in STEM education, he always uses a look into the future to emphasize why it's so important for the school to make the investment.

"I always tell them that the jobs kids are going to be getting in five years don't yet exist," says Hoelzle, a 2001 Holy Ghost grad and the school's STEM initiative leader. "We're trying to give them skills that are helpful and applicable."

Thanks to the rapid changes being made in how just about every profession operates, schools are more interested in providing students with a combination of broad-based skills—communication, collaboration, creativity and critical thinking—and a heavy dose of science, math and technology. At Holy Ghost, there is still plenty of room for the liberal arts, but today's economy requires a more diverse toolbox, thus the greater emphasis on STEM (Science, Technology, Engineering, Math) and on developing a design thinking approach in their students.

"We are infusing project- and inquiry-based learning into HGP's curricula as a framework to develop in our students the 21st century learning skills of communication, collaboration, creativity and critical thinking," says Hoelzle.

In August, HGP opened the Brennan Family Innovation Center, a 2,000-square-foot space that allows students to design and create just about anything they can brainstorm.

"Jean and I are excited about all of the positive momentum at Holy Ghost Prep," said John Brennan, a former HGP board member and father of a graduate who made the naming gift for the center. "The school has a strategic vision of where it wants to go and having college-level facilities like the

Brennan Family Innovation Center is a key component of that vision.”

Next year, Holy Ghost will transform six science laboratories into STEM-based labs. Together with the Brennan Family Innovation Center, they will comprise a STEM Tower that will house the school’s 21st century learning hub.

“It’s critically important to teach these skills,” says Holy Ghost president Gregory J. Gerson ’79. “It’s not just the STEM skills; it’s also a way of thinking that integrates the work into other subjects. For us, things like critical thinking and intellectual curiosity have always been important. What is new is the collaboration. Working in team settings is incredibly important for our students.”

In order to decide what would be the best path for the STEM Tower to take, Holy Ghost worked with Chris Anderson, an integrative STEM education expert from The College of New Jersey, and also visited other area independent schools to study their approaches. The key was to make the entire facility as flexible as possible and to emphasize it as a “maker space,” in which students could conceive of, test and produce design concepts.

This year, all HGP freshmen are taking an Intro to Engineering Design Principles course in the Innovation Center, which will teach them how to take an idea from conception to completion. More importantly, the course will teach them principles of the design thinking process, a structured framework for identifying challenges, gathering information, generating potential solutions, refining ideas and testing solutions that Holy Ghost students will be expected to use in every class—no matter what the discipline—throughout the rest of their Holy Ghost careers.

“The main goal is to teach problem-solving skills,” says Mike Jacobs, a 2001 HGP grad and the school’s director of information technology. “We want them to learn the process of how to make things work better and to learn the design process.”

The highlights of the Innovation Center are two apparatuses that will allow students to convert design ideas into realities. The first is a CNC (Computer Numerical Control) machine that is capable of carving a design created on a computer into any material a student chooses. The other is a similar device that uses lasers instead of drill bits to accomplish the task.

Jacobs reports the Innovation Center was modeled after the Stanford University d.school, which stresses the value of creativity in STEM work and encourages students to concoct solutions on local and global platforms in an atmosphere that is flexible and encourages collaboration.

“Everything in the labs is portable and mobile,” Jacobs says. “Teachers and students can reconfigure the room anyway they want. That flexibility is what we are building into the STEM Tower.”

At the same time, it’s important for Holy Ghost to combine that instruction with the school’s wider approach to the liberal arts, for which it has always been well known.

“We have been talking about how to integrate design thinking into other classes,” Jacobs says. “In a history class, students can wonder how things were done in the past and then go into the lab and figure it out.

“There’s no teacher station,” he continues. “It’s like a professional laboratory, where the teacher can work from everywhere.”

The STEM Tower is part of Holy Ghost’s overall goal of transforming itself into the area’s premier Catholic college preparatory school. Doing that requires a forward-thinking approach to education that moves away from old methods and embraces a fresh set of paradigms, the better to prepare students for an uncertain future that will require flexibility, rather than traditional approaches to training.

“We have several strategic imperatives,” Gerson says. “One is for our students to have a collegiate experience in high school, so that they are poised for life in college. We looked at the university experience and what we have been giving [students] and adapted. This isn’t just about going to college but also about their future lives. They may be pursuing opportunities that don’t exist now or barely exist.”

There is no such mystery about Holy Ghost’s commitment to design thinking. It is strong and committed to building students’ skills for an exciting future. ■

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PREPARATORY SCHOOL**
2429 Bristol Pike | Bensalem, Pa.
215-639-2102 | HolyGhostPrep.org



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