

Robotics Club members Victoria Schneider '20 and Tyler Chase '19 work on the robot they will use to compete at the First Tech Challenge Tournament later this winter.



Creativity, Collaboration, Community

The Mill @ Cannon School
Sets the Course for
Innovative Learning



nothing like it did a year and a half ago, when it humbly hosted classrooms of eighth graders. Although the exterior is the same, the inside is completely new—a space designed for Upper School students to engage in maker activities, robotics, media arts, videography, circuitry, electronics, and virtual and augmented reality.

Moving Forward with Curriculum

Long before The Outback became The Mill, Director of Institutional Technology Bill Donovan recognized that there was a gap in curriculum for Upper School students who might be inclined to take an elective in the technical realm. “We had kids coming out of a wonderful Middle School program in which they had access to the ThinkTank (the Middle School makerspace), and they developed interests in certain areas—but they didn’t have a means to explore them in the Upper School,” he said. “There wasn’t an opportunity for them to take a class like coding or computer science until they were juniors or seniors and had reached the AP level. We wanted to make sure that the kids coming out of

The first thing you notice is the noise.

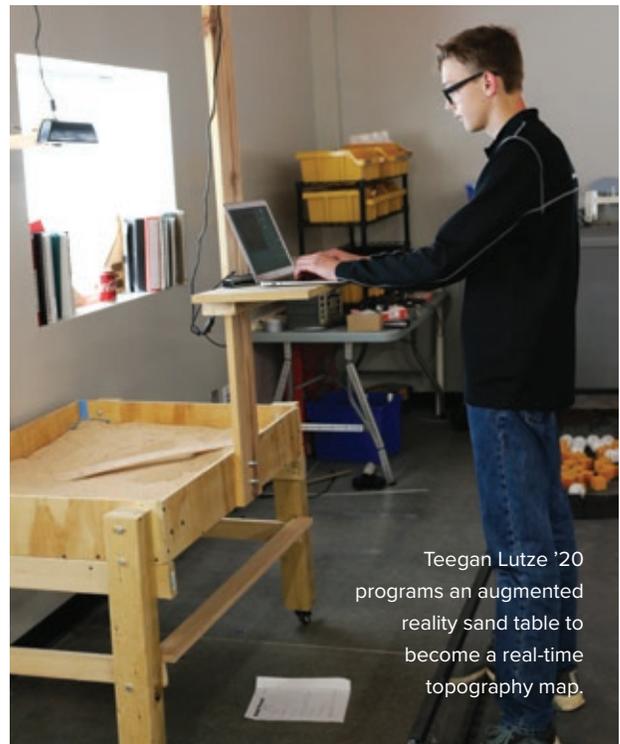
Wind your way to the back of campus, beyond Andrews Strength and Conditioning Center, and your ears will alert you to what’s happening inside the low-slung red building, formerly known as The Outback and now named The Mill. A cacophony of power saws greets you, drifting through the giant garage doors which have been opened to expose the guts of this newly-imagined building that looks absolutely

Middle School had an opportunity to build on the skills they learned there.” Multiple sections of a Creative Design and Engineering class were offered beginning in August 2017 to help fill the void for freshmen and sophomores.

Not Exactly Run-of-the-Mill

In August 2016, a group of parents stepped forward and the wheels were set into motion for the \$3.8 million Imagine Tomorrow capital campaign, which raised money to construct a new Middle School addition as well as reoutfit The Outback building as an Upper School technology studio. Construction was finished this past summer, and the doors opened in August.

Step inside the 5,000 square-foot Mill and you’ll spot innovative, hands-on learning in every corner. The Media Productions class is busy editing concept videos they recently captured. Media Arts students huddle over their Macs, manipulating artwork in Photoshop. And follow that ever-present drone of saws to discover the Creative Design and Engineering I class building life-size reindeer from lumber.



Teegan Lutze '20 programs an augmented reality sand table to become a real-time topography map.



Skookum founders and Cannon parents James Hartsell and Bryan Delaney, along with their wives Leah and Holli, pose in The Mill at the Imagine Tomorrow Grand Opening in August.

In August, Cannon School announced a partnership with Skookum, the Charlotte-based digital transformation and innovation firm, to name the school’s newly-renovated technology studio. Co-founders of Skookum and Cannon parents Bryan Delaney and James Hartsell were on hand to announce the new technology space would be called “The Mill @ Cannon School.”

“The Cannon name has been synonymous with innovation and community for over 100 years in Cabarrus County. The reason Cannon Mills was able to become the success story it was is because James William Cannon took a chance to innovate,” said Hartsell.

“We, at Cannon School, find ourselves at a unique inflection point, not only in our own future but also more globally in the midst of a digital industrial revolution that will challenge how we educate and prepare our children for the jobs of tomorrow,” Hartsell continued. “We believe this new facility has the unique opportunity to not only evolve the manner by which our children can grow and learn, but also significantly bolster the impact Cannon has on our surrounding community. So in the interest of connecting the legacy of the Cannon name to the future of what we hope to achieve at this school, we have chosen to name this building ‘The Mill @ Cannon School.’”

A leadership gift made by the Delaney and Hartsell families ensured naming rights of the space.



Jackson Maynor '21 and Justin Thompson '19 get ready to launch a gourd as part of the Creative Design and Engineering class's "Punkin' Chunkin' Challenge," in which students designed and built catapults, trebuchets, and ballistas.

Hands-On, Brains-On

The hands-on approach that happens in The Mill is intentional, especially after the last twenty years have shown a massive decline in collaborative, project-based learning. Many believe that the skills lost in the process will be detrimental to our students' futures. "Kids need time to imagine, create, and share," said Upper School Makerspace Facilitator Mush Hughes. "Being able to take your imagination and make something out of it is important both emotionally and spiritually—it creates a fulfilling human experience. Skills like the ones you learn in makerspaces are incredibly necessary because unfortunately in the future, automation and artificial intelligence will be able to do a lot of the acts of looking up stuff, changing it slightly, then spitting it back out. Our students need to learn how to come up with new, creative solutions."

A recent project that Mr. Hughes did with his Creative Design and Engineering classes illustrated the skill sets he believes are so important for the future. "I asked the kids to design and build a machine that would chunk a pumpkin.

They couldn't use gas or fuel, but other than that, it was pretty much up to them," he said. "Groups came up with their own designs for catapults, trebuchets, and ballistas, did engineering research around weak points, tested the designs on a small-scale, then built life-size models. We then tested the process while the whole Upper School watched, to see whose design could actually chunk a pumpkin. It was the epitome of the process I want to see the kids be able to do."

An Exciting Future

Mr. Hughes believes the future is bright for The Mill. Taking cues from a class he's taken on design thinking, he plans on more exploration, planning, reflecting, and sharing. He's excited about incorporating more of the visual arts, including textiles and digital design. He's also counting on students helping map out the course of future projects through their victories and what he dubs "spectacular failures."

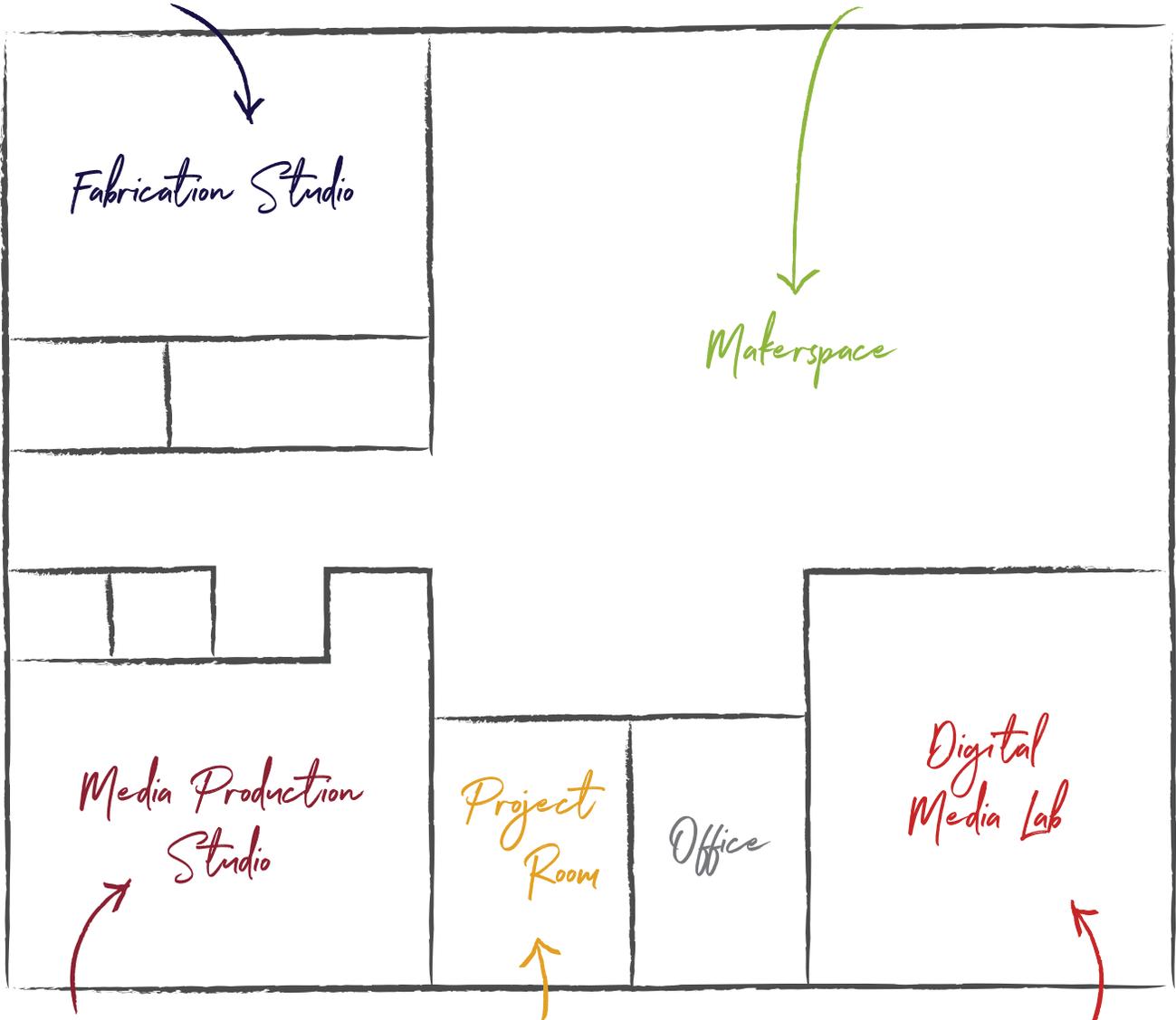
"Those are the best learning experiences out there," he said with a smile.

The Mill @ Cannon School

Fabrication Studio

Where “all the noise and all the mess” happens. Includes computer numerical control (CNC) machines, drills, impact drivers, an angle grinder, jointer, planer, belt sander, drill press, and lathe, plus jig, circular, track, band, table, scroll, and hand saws.

The **Makerspace** houses our virtual reality station complete with an Oculus Rift headset, textile equipment like a sewing machine and a serger, as well as circuitry accessories including microbits, arduinos, and raspberry pis. The Makerspace is also home to a robot prototyping kit and two FTC (First Tech Challenge) kits.



Media Production Studio

Home base for the media productions class, this space features cameras to capture artistic photography and audio and video recording equipment, allowing students to create an audition tape and record original music or an original video short.

The **Project Room** is a space which houses the laser cutters (used for rapid prototyping) and vinyl cutters (used for customization and personalization). You can find our 3-D printers here as well, which help our students bring their digital 3-D designs to life.

Digital Media Lab

All visual arts students meet in this space complete with eighteen iMacs, learning the Adobe Creative Suite (Photoshop and Illustrator) to explore principles of graphic design.