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# Alumnus Helps with Buncombe County Schools' Efforts to Make Face Shields

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Office of University  
Communications

April 16, 2020

*Joseph Hough, '91, Appreciates How Community is Coming Together to Help Healthcare Providers*

Story and Photos By Tim Reaves

Buncombe County Schools Communications Department



Buncombe County Schools Career and Technical Education (CTE) Director Taylor Baldwin works on a face shield design.

ASHEVILLE, N.C.—A whirring chorus – a peculiar song of hope – drifts out of one classroom in a mostly quiet Nesbitt Discovery Academy.

While much of the high school sits dark and empty, the aptly-named Innovation Lab buzzes with activity. Inside, 11 3D printers hum away as they churn out frames for protective face shields. Buncombe County Schools (BCS) staff members monitor the progress and incorporate the custom-printed plastic pieces into finished products. They attach sheets of clear plastic material, glue the 3D-printed frames in place, add foam barriers on top of the frames, and seal the seams with electrical tape.

The Innovation Lab, where students learn how to creatively solve problems, has become a manufacturing facility for life-saving medical equipment. The protective shields will be donated to the Buncombe County Emergency Operations Center, which will distribute them where they can do the most good.

“This is a war-time effort that brings together a nation, the most significant event since 9/11, before most of our students were even born,” said BCS Assistant Superintendent Joseph Hough, a Gardner-Webb University alumnus. “This is the practical application as communities come together during a national crisis. Here locally, that’s been county government, emergency management, the medical community, schools, and various other partners. We have had even dentist offices and other organizations reach out to us asking to help. It has been a pleasure working with so many people that have a ‘we can do this’ attitude throughout the process. We are waking up as a community and realizing we’re stronger together. And when the children see us stepping up, they’ll see a model for how they can step up when they see a need.”



Joseph Hough, right, is an assistant superintendent for Buncombe County Schools.

Hough, a 1991 graduate of GWU, was named a GWU Distinguished Alumni in 2018 and is a member of the Alumni Board of Directors. In addition to his position with Buncombe County Schools, he is a lieutenant colonel serving as the Deputy Brigade Commander for the 130th Maneuver Enhancement Brigade in Charlotte, N.C. He has received numerous awards over the years in both his civilian and military careers.

BCS Career and Technical Education Director Taylor Baldwin started making masks in early March after speaking with his mother, a former nurse, about mask shortages in areas hit hard by the novel coronavirus. “I think this is the most appropriate situation you could have in an emergency like this, to be in an Innovation Lab at a school, utilizing what we’re teaching the kids to actually put that into play at the front lines,” Baldwin said. “We’re thinking outside the box and stepping up. She told me that the real problem was a lack of face shields. I thought about all the 3D printers we have and decided that maybe we can help.”

At the same time, Glen Arden Elementary School Media Specialist Lee Ann Smith heard about the shortages from a doctor friend. She saw her school’s 3D printer as a possible solution. Their goal is to create 100 face shields per week. Asheville City Schools also has joined the effort.

“I know it’s a drop in the bucket, but those drops eventually fill up the bucket,” Smith said. “A lot of little drops will make a difference.”

Thanks to investments in STEM (Science, Technology, Engineering, and Mathematics) and project-based learning, each BCS school has at least one 3D printer. Smith brought Glen Arden’s 3D printer to Nesbitt, and BCS staff brought several others from schools around the district. Baldwin combined those with other 3D printers he already had at the Central Office to turn classrooms into manufacturing bays.

As soon as it became clear that BCS had both the equipment and the materials to do the job, Baldwin designed a prototype in Autodesk Inventor and took it to the Emergency Operations Center. The original design took about six hours to complete. The newest iteration takes barely more than two.

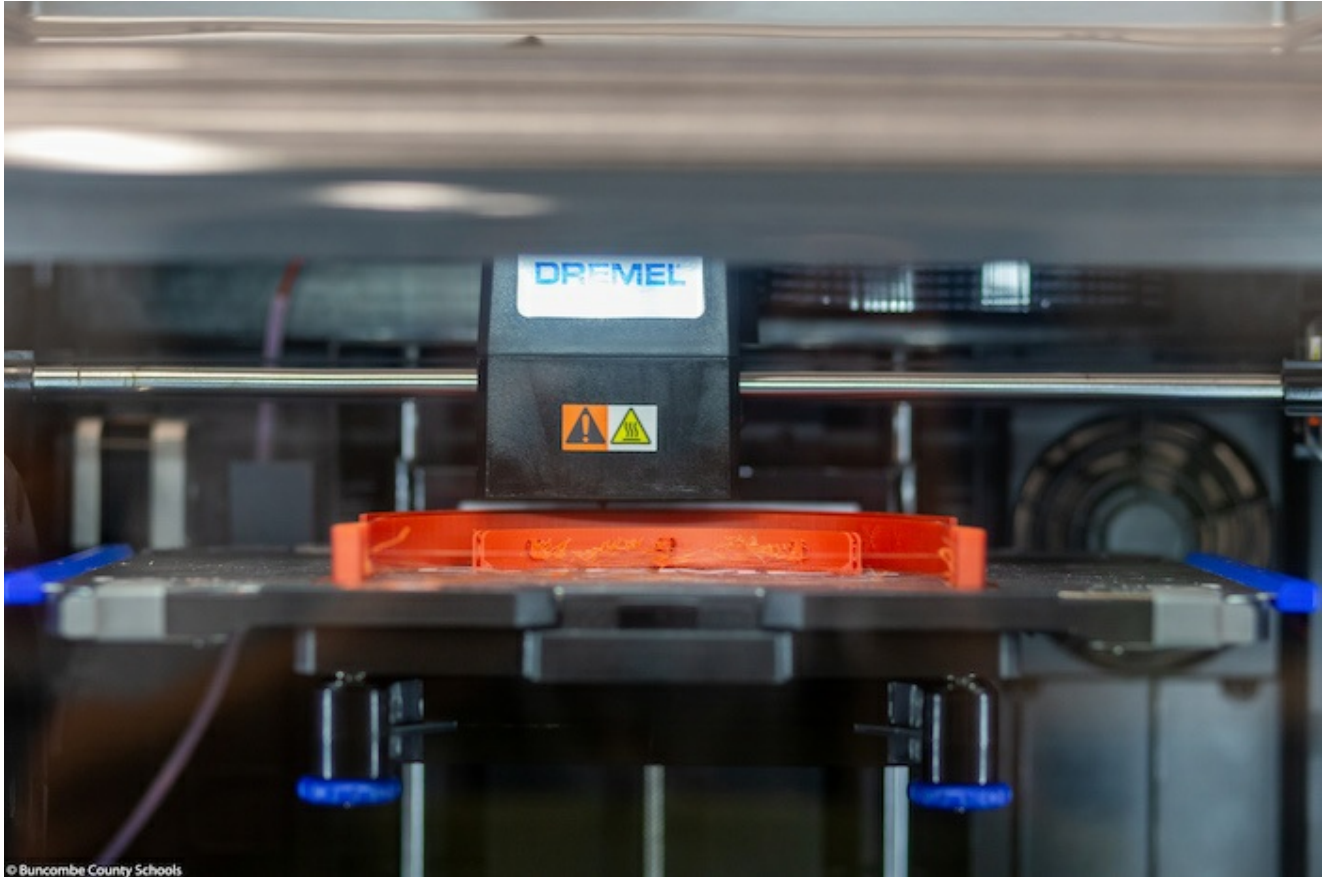
“This one is a whole lot quicker,” he said. “And we’re still improving it based on feedback from Emergency Management.”

“What this shows is that there are real-life applications to what we learn in school,” Smith said. “It’s not only for teaching and education purposes, but it can save people’s lives.”

All BCS elementary and intermediate schools have STEM Labs and Maker Spaces, where students learn to apply classroom lessons to real-world problems using the Engineering-Design Process (Ask, Imagine, Plan, Create, Improve).

“These face shields followed that process,” Baldwin said. “I made a prototype, took it to the Emergency Operations Center, and needed to try six different times before the product was ready. It doesn’t get much more ‘real-life’ than that. And I’m not even an engineer. I’m using Autodesk Inventor, the same software our students use. I hope the kids can see the power of technology combined with autonomy and innovative thinking.”

[Learn more about the GWU School of Education.](#)



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Because of investments in STEM (Science, Technology, Engineering, and Mathematics) and project-based learning, each school in the Buncombe County Schools system has at least one 3D printer.