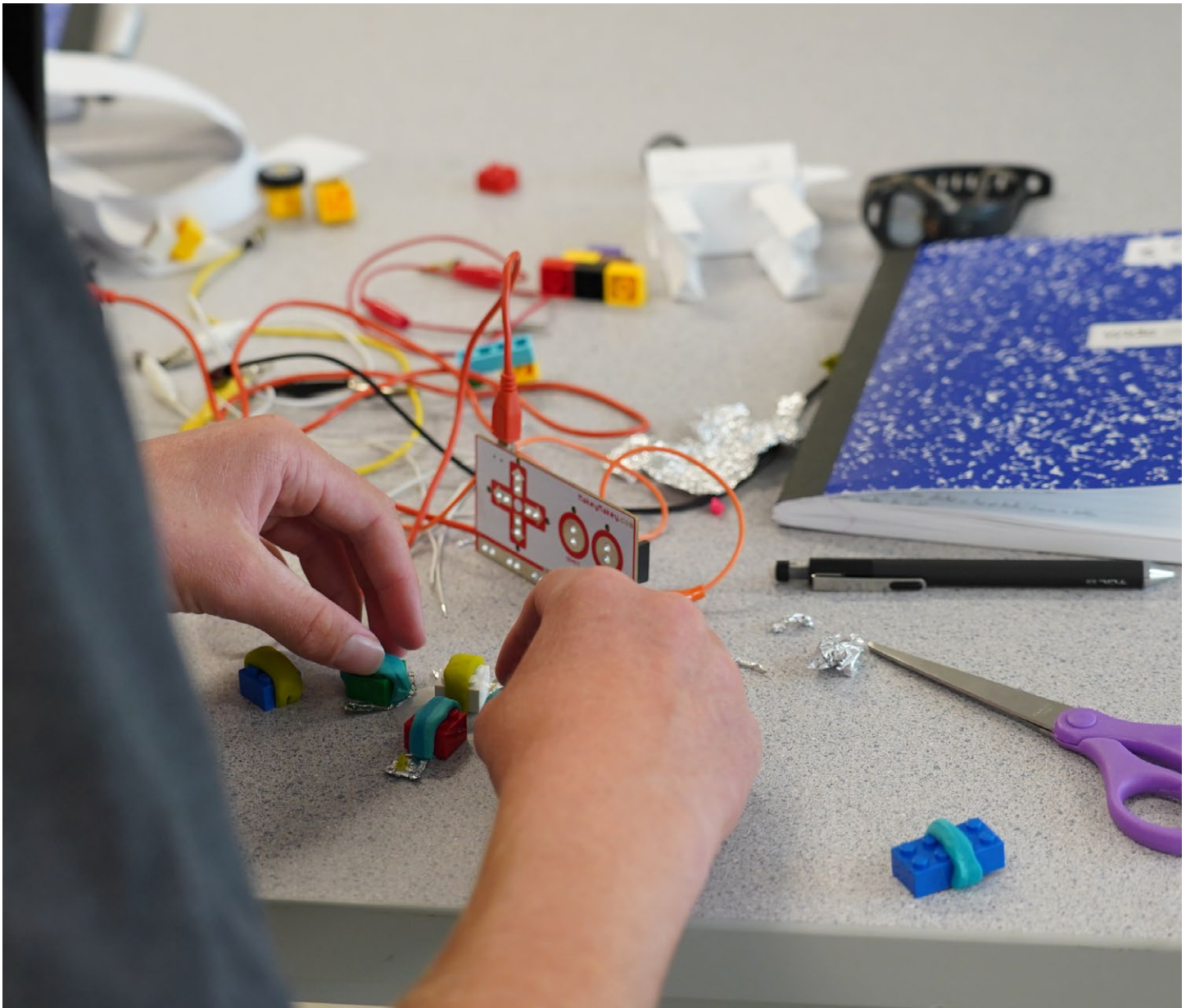# True Innovation Requires Failure

BUILD Lab Reopens, Encourages Student Struggle

By Carey Pohanka, Upper School academic instructional technologist

This summer I took a class to learn slip casting. It's a technique in ceramics that involves designing a model out of any hard material, making a cast and pouring slip (liquid clay) into it. In almost all my interviews with boys about what they wanted to do in the new BUILD Lab, they mentioned ceramics. I figured slip casting would be a great way to take designing a 3D printed model a step further with the creation of a ceramic piece.

I already knew how to do the 3D printing part. How difficult could it be to incorporate ceramics? Well, it was more difficult than I anticipated. Imagine me, who last took a pottery class in eighth grade, learning with a class of professional artists, including highly decorated ceramicists. Nonetheless, I was extremely proud of my first project. It looked like something you might find coming out of a Lower School art class, but I learned the basics and was excited to push forward.

For the second project, our teachers encouraged us to step it up to design a mold that required two or three parts. Two weeks of focused work sadly ended with me taking a hammer to the project. The molds wouldn't work, and I had to completely start over. I have always prided myself on modeling what failing should look like to my students, but I was not expecting to have such an epic example to share when we returned to campus this fall.

Beginning this year, with the addition of our state-of-the-art BUILD Lab in the Luck Leadership Center, we've added a class for ninth graders. Boys will learn 3D printing, laser cutting, electronics, virtual reality, coding and more. While learning how to design using all these fancy tools is the focus of the class, my true objective is to cultivate an innovation mindset. Innovation is a buzzword thrown around these days, and when I hear it I think, "You keep using that word. I don't think it means what you think it means." We tend to equate new with innovative, but that isn't necessarily true innovation.

True innovation requires something that makes all of us uncomfortable — failure.

In class, I set the expectation that we all must fail in this class to be successful. When I voice that intention, you can imagine the looks I get. I doubt it's on the syllabus for any other class. Failure makes us so uncomfortable because we think of it as an outcome. We think of a big red "F" on a test, a loss on the playing field or missed lines in a play. In this class, failure is never an outcome, it's a process.

What does failure look like in our class? The boys need to make choices that force them to learn new things and not just rely on what they already know how to do.

They must also welcome struggle.

For so many, struggle is equated with a lack of intelligence. In this class, it's a key step to learning. Students also need to take risks willingly by trying something that they know might not work. They must capitalize on their mistakes to "fail forward" and use them to find a new path. As a part of every project they do, the boys will reflect on their failures and how they overcame them during the process.

As their teacher, my job is to support them through these steps so they can learn and grow. I must create a culture in our class of celebrating their failures. I must give them opportunities to try something that may not work.

I remember my ceramics teacher saying, "I'm not sure that will work, but I think you should try it." Clearly, it did not. But taking that hammer to my molds, I learned a key step of the slip casting process and, ultimately, I figured out a better way to do what I was trying to accomplish.

BUILD (Boys Using Innovation to Learn and Design) began in 2014 under the tutelage of Carey Pohanka and Multimedia and Technology Specialist J.D. Jump. Pohanka, who joined StC in 2011, received her undergraduate degree from the University of Mary Washington and her Master of Education in curriculum and instruction, teaching, learning and facilitating educational change with technology.