

# Ordinary Life, Extraordinary Impact

**CHEMISTRY MAJOR BRITTNY NATION CHOSE  
TO GO WHERE THE NEED WAS HIGHEST**

*Brittney Nation (Biochemistry, '11; Single Subject Teaching Credential, '12) didn't set out to change lives or help solve the STEM education crisis. She wasn't even interested in becoming a teacher — until chemistry Professor Seth Bush talked her into taking a class called Learn by Doing Lab. After teaching hands-on science to local elementary school students, Nation was hooked.*

"I was not trying to be a teacher," Nation said. "I thought, I need to make some money out here, but Seth saw it in me. I did Learn by Doing Lab, and I was like dang it, I actually love this."

The Oakland native spent four years teaching chemistry at Paso Robles High School before taking her current position at San Lorenzo High School, just south of her hometown. She chose San Lorenzo because she knew the students needed someone with her scientific background and experience in the classroom.

"Our kids come from an unreasonable amount of trauma," Nation said. "I would classify a lot of my kids as homeless, maybe not literally on the street but bouncing from family member to family member because their parents are being evicted or are alcoholic or in jail."

With students who are working night jobs or worrying about family members being deported, Nation sees school as more than an educational undertaking. She wants San Lorenzo High to be a place where students feel welcome and safe.

"They have a lot of things stacked against them. If I can provide moments for them when they can just be a kid, I'm all about that," Nation said.

That focus, according to Bush, is one of the qualities that makes Nation exceptional. "One thing I've seen Brittney do time and time again is connect to kids who are struggling. She's so proud of them that she shows them how to be proud of themselves," he said.

To create these moments, Nation spends a lot of time outside of the classroom working to improve the culture at



Photo credit: Tony Turreto

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San Lorenzo High. She runs the Associated Student Body Leadership Council and is the school’s activities director, which means she’s involved in everything from advising the dance club to spearheading an initiative to get students off their phones.

Working with a private company, Nation led the effort to implement an electronic system that prevents students from using their phones while at school. The results have been dramatic. The program has cut down the number of fights and put a stop to cyber bullying during the day.

“I see kids playing at lunch now,” Nation said.

She’s also working to change the power dynamic on campus and increase respect between teachers and students. To show their appreciation, students choose and deliver a gift to all faculty and staff each month. This practice helps school employees relate to the students and approach them as people first.

“A system of ‘you better respect me’ just doesn’t work here. Teachers have to make kids feel comfortable being around them,” Nation said.

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“LEARN BY DOING TRIGGERS THE STUDENTS’ INNATE CURIOSITY.” — BRITTNY NATION

Inside the classroom, she sees chemistry as a path to teaching students to think and troubleshoot, a goal for which she finds Learn by Doing the perfect approach. Instead of lecturing about the concept of density, for example, Nation puts a penny in sodium hydroxide, which makes it turn silver, and then heats it, turning it gold. She tells her students that if they don't believe the penny has really turned gold, they need to prove her wrong.

“Learn by Doing triggers the students’ innate curiosity,” Nation said. “I give them the opportunity to design an experiment to answer the questions they came up with themselves. It’s fun.”

Though this approach takes longer, Nation knows the importance of challenging and caring for her students at the same time.

“Brittney can hold her students accountable when they’re off track and at the same time completely support them,” Bush said. “She sees their potential, and she’s not going to settle for anything less. And they know it.”

Nation doesn't mind the long days because, in the end, she teaches high school chemistry to inspire her students to imagine a future that’s very different from their present lives.

“Seeing them recognize their dreams and acknowledge that it’s possible to attain them makes all the time and energy and emotion completely worth it,” Nation said. //

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— CHEMISTRY PROFESSOR SETH BUSH

**Pictured:** (clockwise from top) Brittany Nation gives directions to her high school chemistry class; Passing period at San Lorenzo High School; Nation meets with the Associated Student Body Leadership Council; Nation prepares for another day teaching chemistry.

**Photo credit (all):** Tony Turreto



## FACULTY MEMBERS SHAPE THE FUTURE OF TEACHING

Behind every great teacher is another great teacher — or two. High school chemistry teacher Brittney Nation (*see previous story*) credits chemistry Professor Seth Bush and education Professor Nancy Stauch as her most influential mentors.

“Nancy and Seth shaped how I view education and educating,” Nation said.

“KIDS ARE NATURAL SCIENTISTS. WE NEED SCIENCE TEACHERS WHO FOSTER THAT CURIOSITY.”

— EDUCATION PROFESSOR NANCY STAUCH

With the country in greater need of science, technology, engineering and math (STEM) teachers than ever, Stauch and Bush act as talent scouts and advisors. They help Cal Poly students discover their innate strengths and instill in these future teachers a student-centered, Learn by Doing approach in the classroom.

As was true for Nation, science majors often don't enter college considering a teaching career. When Bush sees a promising student in general chemistry, he takes an indirect approach to help them see new possibilities.

“It's Learn by Doing, right? I want to hook them by giving them those teaching experiences at science nights or in Learn by Doing Lab. Then they start to see that they have talent,” Bush said.

Bush and Stauch look for students who naturally create connections with others.

“Teaching is all about making relationships,” said Stauch, who coordinates the Single Subject Credential Program. “When I first ask candidates what they teach, they say chemistry or biology or math. By the time they finish the program, I want them to say, ‘I'm teaching children.’”

Judging by her protégé Nation's advice to future teachers, Stauch's message stuck. “Make a relationship with every kid,” Nation said. “Make them feel smart, but make them feel like you care about them even if they fail.”

By fostering these relationships, teachers can motivate students to learn what science is really about: critical thinking, problem solving and making informed decisions.

“Kids are natural scientists,” Stauch said. “We need science teachers who foster that curiosity. We have to inspire our kids and give them the confidence to take on challenges.”

The Learn by Doing approach, which Nation learned from Professors Stauch and Bush and now uses in her classroom, gives students opportunities to build these skills. It also puts her at the forefront of the country's new approach to science education, which focuses on developing critical thinking skills.

“Teachers like Brittney are the pioneers for the Next Generation Science Standards,” Bush said. “They've been on the avant garde of this movement, and that will translate to deeper learning for their students. They'll also be leaders in their local communities of teachers.”

The future of STEM education is looking brighter thanks to Cal Poly faculty members like Stauch and Bush who find and foster that leadership potential. //