

Faculty Sustainability Leadership Award Nomination

Nominee: Dr. Elaine Villanueva Bernal (self), Lecturer

Department: College of Natural Science and Mathematics, Chemistry and Biochemistry

Years at CSULB: 19

Narrative Statement

As an educator, mentor, and leader, my work reflects the President's Commission on Sustainability: building a just, diverse community that elevates climate justice, strengthens partnerships, and advances a just transition through education, engagement, and action.

I have been teaching for almost 20 years, and during that time I have developed assignments that enable students to connect chemistry to sustainability and equity. In my CHEM 100 class, which enrolls more than 200 students each semester, the Household Chemical Inventory asks students to examine everyday products and reflect on their impacts. One student, shocked to discover that a moisturizer they used daily carried cancer and reproductive health warnings, asked why such products remain on the market and committed to seeking safer alternatives. Another focused on pointing to eco-friendly cleaners and rechargeable batteries. Others highlighted the dangers of mixing bleach, the need for safe disposal, and the cultural importance of foods like black beans, noting both hidden toxins and affordability barriers.

I also created the Heroes of the Periodic Table assignment, where students reimagine elements as characters whose powers reveal environmental justice themes: mercury's weakness was its toxicity, chlorine became a purifier of contaminated water, and carbon stood as a defender of the climate. In the Chemistry Connection project, students applied chemistry to their own fields and professional interests. They critiqued corporate water pollution, showed how PFAS and pesticides disproportionately affect low-income communities, and examined how parabens and microplastics in consumer goods compromise both health and ecosystems.

As a Faculty Fellow with College Corps@the Beach, I extended this mission into the

community. Student Fellows I mentored served with the Bolsa Chica Conservancy, The Moore Institute for Plastic Pollution Research, the CSULB Office of Sustainability, Roundhouse Aquarium, and the Shark Lab. Their work advanced sustainability through habitat restoration, climate action planning, food justice, and marine conservation. At the Moore Institute, students studied innovative microplastic analysis methods ahead of national practice and contributed to state-level policy on plastic pollution and emerging data standards. At the Shark Lab, students paired marine research with public communication so residents could see links between ocean health, climate resilience, and justice for coastal communities.

As Co-Principal Investigator for the STEAM Ecosystem Expansion Demonstration (SEED) Project, I helped build a model for sustainability education beyond the university. In the SEED Design Camp, I supported preservice teachers and Long Beach Public Library staff as they led design challenges with LBUSD middle schoolers on climate resilience, sustainable transportation, and green public space. Student teams proposed shaded, solar-powered bus shelters to reduce heat for transit riders, and neighborhood cooling centers and gardens reflecting local needs. By coaching educators who worked with youth, I built capacity for equitable, sustainability-focused STEAM education across historically underserved neighborhoods.

My work shows that sustainability and environmental justice can be embedded across teaching, service, and leadership, equipping students and communities to act for a more equitable future.

Supporting Materials:

SEED Summer Design Camp Nurtures Creativity and Innovation in Long Beach

By Miranda Bates: <https://www.csulb.edu/office-of-the-provost/article/seed-summer-design-camp-nurtures-creativity-and-innovation-long-beach>

Mayor Bass calls for more tap water testing in Watts after lead findings By Camilla Rambaldi:

<https://www.nbclosangeles.com/news/local/watts-water-testing/3497042/>

Supporting Documents Folder: <http://bit.ly/3KRuvYV>