



## Developing a Cross-Cultural Framework for Sustainability Solutions in the US-Mexico Borderlands: Integrating Interdisciplinary and Community-Driven Research in Curriculum

Caitlyn Hall<sup>1</sup>, Kenneth Kokroko<sup>2</sup>, Nadia Mexia-Alvarez<sup>3</sup>, Aaron Bugaj<sup>4</sup>, Lysette Davi<sup>5</sup>, Laura Horley<sup>6</sup>, Adrian Munguia-Vega<sup>7</sup>, and Nicole Antebi<sup>8</sup>

<sup>1</sup>W.A. Franke Honors College, College of Engineering, College of Agriculture, Life, and Environmental Sciences, University of Arizona, Tucson, AZ, United States of America (cahall@arizona.edu)

<sup>2</sup>College of Architecture, Planning, and Landscape Architecture, University of Arizona, Tucson, AZ, United States of America (kjkokroko@arizona.edu)

<sup>3</sup>W.A. Franke Honors College, University of Arizona, Tucson, AZ, United States of America (nalvarez@arizona.edu)

<sup>4</sup>Biosphere II and Photography, Video, Imaging, College of Fine Arts University of Arizona, Tucson, AZ, United States of America (bugaja@arizona.edu)

<sup>5</sup>W.A. Franke Honors College, University of Arizona, Tucson, AZ, United States of America (lysettedavis@arizona.edu)

<sup>6</sup>W.A. Franke Honors College, University of Arizona, Tucson, AZ, United States of America (lhorley@arizona.edu)

<sup>7</sup>Genomics Lab, La Paz, BCS, Mexico (airdrian@arizona.edu)

<sup>8</sup>Illustration and Design, College of Fine Arts, University of Arizona, Tucson, AZ, United States of America (nantebi@arizona.edu)

We are developing a framework to explore environmental sustainability and cultural resilience topics in curriculum emphasizing cross-cultural, international, and interdisciplinary approaches through community-driven research projects in the US-Mexico Borderlands. Structured as a circular process, the framework includes: 1) Community Relationship Building, 2) Scoping and Information Discovery, 3) Co-creation of Opportunities, 4) Development of Community-Driven Solutions, 5) Sharing of Lived Experiences, and 6) Multi-stakeholder Evaluation and Iteration. The framework focuses on capacitating students and community members to merge local narratives with research for sustainable practices in water and environmental conservation, green infrastructure, and science policy and communication. Our approach aims to develop actionable projects that confront currently felt challenges through collaboration with local communities, integrating their historical, environmental, and cultural contexts into developing sustainable solutions. Designed to be discipline-agnostic, the framework has been tested across various educational levels and subjects. It's been applied in introductory courses on water and environmental policy, advanced hydrology and environmental science, art and animation studios, and graduate-level landscape architecture courses. This wide applicability underscores our commitment to inclusive and sustainable educational practices that further traditional hydrology education and the integration of water-related science and concepts that transcend disciplinary boundaries. Our presentation will share its implementation in water-focused courses, highlighting successes, learnings, and strategies for community-based participatory research.

