ECUITY

Urban-biodiversity Initiative for Teachers and Youth

Empowering Changemakers

Empowering youth to protect & enhance local biodiversity

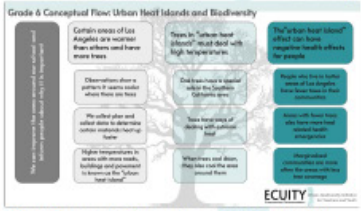
The ECUITY project aims to develop and utilize a multi-agency partnership to **design, implement, and test a research-based professional learning approach** to provide teachers and their students with actionable knowledge on how to protect and enhance the biodiversity in their communities. Cadres of teachers, local scientists, and leaders from the CA NGSS Early Implementation Initiative co-designed **problem-based learning sequences (LSs)**, short units of instruction that include formative assessment components for each grade level (6-8) that are customized for local context in the project and that highlight biodiversity impacts on a local scale.

Professional Learning and Learning Sequences for grades 6-8

Leading the work: The Cadre

Cadre PL1 • June 2023
Biodiversity, justice-centered phenomenon

Cadre PL2 • July 2023
Instructional model, learning sequence development



Access CFs:

Grade 6 example (1st learning sequence chunk)


anchor


investigations


gap analysis

Carrying it forward: Teachers & Beyond

Cadre PL3 • Jan 2024
PL development

Partner teacher PL • Feb 2024
Field Test with PLCs

Cadre PL4 • May 2024
Instructionally meaningful assessments, learning sequence edits

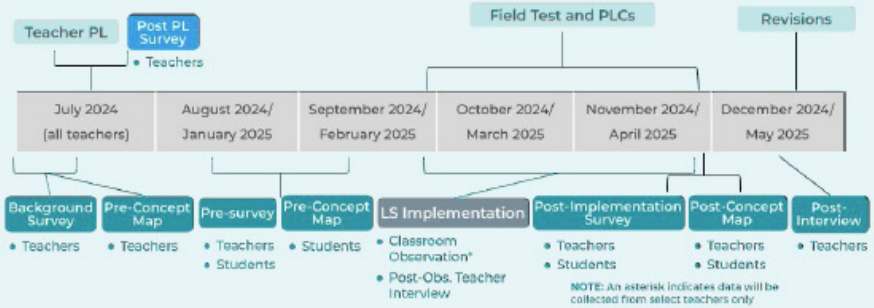
Expansion PL • July 2024
Field Test with PLCs fall 2024, and spring 2025

Cadre PL5 • Jan 2025
Review student work, revise learning sequences

Admin PL • Spring 2025
Walkthrough tools and technical assistance

Learning Sequence Implementation: Fall 2024/Spring 2025

Research & Professional Learning Activities



The figure above shows data collected during the Fall 2024 and Spring 2025 implementation periods.

Data collection from both **teachers and students** captured information about teachers' instruction, self-efficacy and attitudes/behaviors, and understanding of core project topics (e.g., human impacts on the environment, engineering design, etc.) before and after their implementation of the ECUITY LSs in addition to how teachers felt the ECUITY project impacted them and their students. Our team used this research data alongside **feedback teachers provided** throughout their participation in the project and **student work** from the LSs to make revisions to learning sequence materials.

ACKNOWLEDGEMENTS

ECUITY Team: Ashley Iveland, Jill Grace, Katherine Nilsen, Travis Longcore, Susan Gomez Zwiep, Mas Dojiri, Dianna Cazarez, Burr Tyler, Aaron Soo Ping Chow, Andrea Frias, Sara Salisbury, David Tupper, Lauren Stoll, Jill Wertheim.

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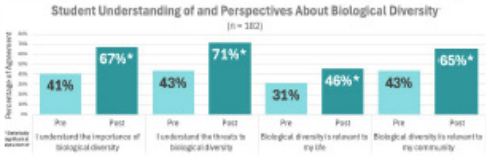
Influence of the ECUITY project on teachers and their students

Findings: Biodiversity

After ECUITY instruction students expressed higher levels of agreement that they **understood threats to biological diversity and the importance of biological diversity**, and that **biological diversity is relevant to their life and to their community** when compared to before ECUITY implementation (*changes are statistically significant at an alpha level of 0.05 according to the Wilcoxon signed-rank test).



Finding: Engineering Design

Teachers completed a concept map focused on environmental justice and another that asked, **"How would you solve a local biodiversity problem through engineering design?"** These were done before participating in ECUITY activities and after each implementation of the learning sequences in their classroom.

Overall, post-concept maps included **more nuanced descriptions of the engineering design process** and were **more centered around biodiversity** specifically, especially on topics covered in the ECUITY learning sequences.

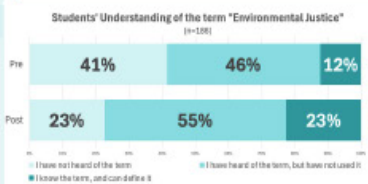
Pre-map (top) 2nd Post-map (bottom)

Finding: Student Agency

As part of the 7th grade ECUITY LS, students learned about the biodiversity in their community and on their school campus that culminated in a project where **students were given agency to design a plan that would increase biodiversity on their campus.** Students surveyed their campus and potential areas for improvement. Students expressed care and consideration for the school community, biodiversity on campus, and other constraints they needed to work within when creating their plans, including:

- Noting existing species in determining how to create a more balanced campus ecosystem
- Ensuring plants would be viable food sources for ants on campus
- Not planting mushrooms to avoid health risks to younger students on campus

Finding: Environmental Justice



Many more students were familiar with or understood **"what the term 'environmental justice' means"** after the ECUITY LS compared to before this instruction.