

Building Environmental Justice-Relevant Competencies through USR-Integrated Environmental Education: A Double-Helix Action Research Study in Taiwan

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Abstract

Environmental justice requires not only awareness of environmental problems but also the capacity to recognize place-based concerns, participate in collective action, and translate knowledge into responsible practice. This study examines how University Social Responsibility (USR)-integrated environmental education can cultivate environmental justice-relevant competencies in higher education. A two-year action research project was implemented in the Environmental Education Personnel Certification Program at Shih Chien University, Taiwan. The proposed Double-Helix Action Research model intertwined service learning as an output-oriented spiral with industry-academia collaboration as an input-oriented spiral. Forty-nine students participated. A mixed-methods design combined pre- and post-test assessments of multiple intelligences and environmental literacy with reflective journals, internship records, teaching demonstrations, and mentor feedback. Results showed significant gains in intrapersonal, interpersonal, linguistic, spatial, logical mathematical, naturalistic, and existential intelligences. In the second action-research cycle, environmental concept knowledge, environmental action experience, environmental sensitivity, and environmental action skills also improved significantly. Qualitative findings revealed increased place-based awareness, learner empowerment, professional identity, and reciprocal engagement with community partners. These findings suggest that environmental education can promote environmental justice by moving beyond knowledge transmission toward situated participation, reflection, and community-engaged action. The Double-Helix model provides a practical framework connecting sustainability education, local responsibility, and green collar talent development practice.

Keywords

Environmental education, environmental justice, place-based education, university social responsibility, green collar talent.