Indige-FEWS GIDP project is an opportunity to “indigenize” education materials for the Indigenous Teacher Education Program

The Indigenous Food, Energy, and Water Systems (Indige-FEWS) GIDP PhD Minor integrates engineering, science, and social sciences to prepare students for collaboration with Indigenous communities in the area of food, energy and water systems (FEWS). The Indige-FEWS GIDP PhD Minor Chair, Dr. Karletta Chief, said, “The NSF NRT Indigenous Food, Energy and Water Security and Sovereignty Training Program makes a long-standing impact on the University of Arizona through this PhD Minor. The minor reaches students across campus who want to make a difference in developing communities and prepares them with FEW expertise, intercultural awareness, and understanding of how to work with Indigenous communities to address FEW challenges.” The PhD minor program focuses on real world applications of FEWS interdisciplinary skills. Students take coursework in systems engineering, fundamental materials, American Indian Studies, and unit operations. One course, “Sustainable Water Supplies for Remote Communities,” in the department of Chemical and Environmental Engineering (course CHEE514), focuses on interdisciplinary project design. Instructor Dr. Byron Hempel explains the curriculum "integrates systems, fundamentals, and society into a unit operations course. After a portion covering water treatment, students choose a relevant design project to wrap up their Indige-FEWS studies."

One example from a recent project: students developed a hogan-shaped greenhouse that aimed to be scientifically and culturally relevant to off-grid food production in a Navajo community. To extend the reach of the GIDP PhD Minor, the interdisciplinary Indige-FEWS students presented their design to the “Indigenous Teacher Education Program” (ITEP) in the College of Education, which emphasizes the power of indigenizing education to sustain Indigenous cultures, knowledges, languages, and identities. ITEP Program Director Dr. Valerie Shirley said of the students’ presentation, “ITEP has been working to reconceptualize STEM education in ways to center Indigenous values and knowledge systems as the foundation for teaching STEM. The Hogan greenhouse project—with its emphasis on integrating western scientific constructs with Indigenous Diné stories and philosophies into the greenhouse—was a perfect opportunity for the Indige-FEWS team to engage in conversation with ITEP teacher
candidates about explicit curriculum ideas around the greenhouse. The collaborative dialogue was certainly mutually beneficial for each group.”

The opportunity to develop real world solutions through the GIDP course and collaborate with ITEP outlines the value of the GIDP Minor to meaningfully address FEWS challenges in Indigenous communities. Through the GIDP PhD Minor, students are developing crucial skills to be both innovative and culturally relevant.