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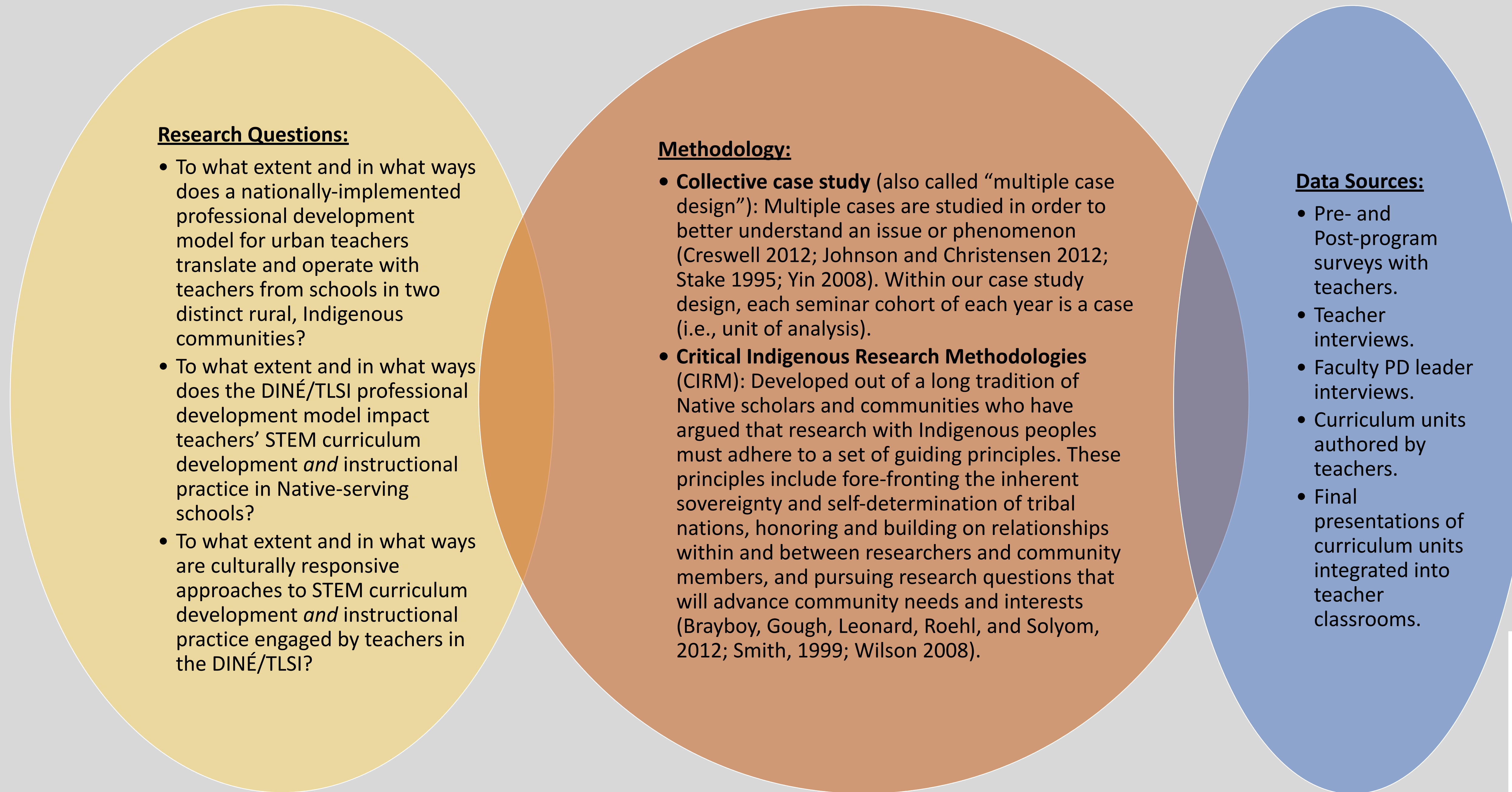
Project Overview

There is a long-established body of knowledge about effective professional development (PD) for STEM teachers, but very little of it has been applied and studied in Indian Country. This project provides concrete examples and knowledge about the ways culturally responsive approaches to STEM PD, curriculum development, and teacher practice are taken up within two distinct rural, Native Nations in the southwestern U.S.

DINÉ: Diné Institute for Navajo Nation Educators – PD for K12 teachers in school on and bordering the Navajo Nation.

TLSI: Teacher Leadership Shilgozhó Institute – PD for K12 teachers in Apache-serving schools

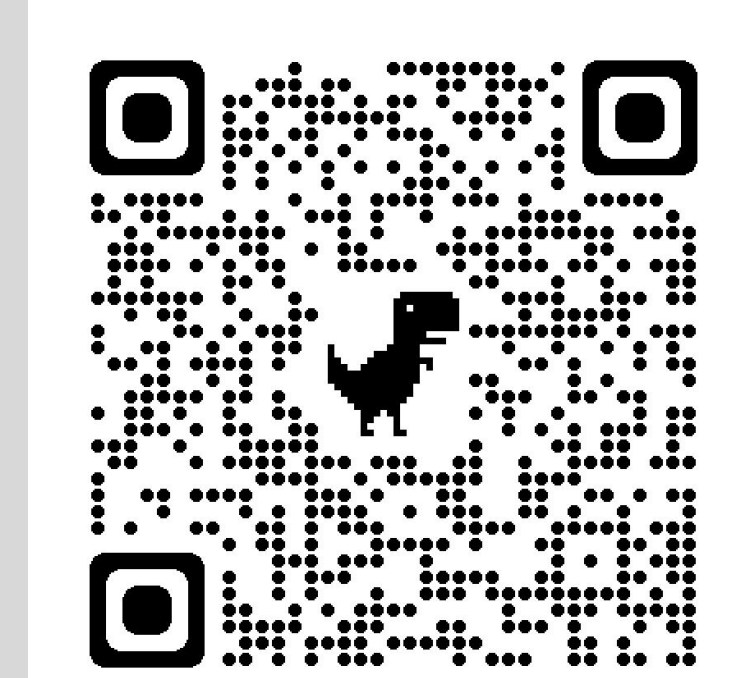
- Both programs are grounded in culturally responsive principles and what we know from the robust scholarly work on Indigenous education and Native Nation Building.
- Both programs are long-term (approx. 8 months) to ensure lasting impact with educators. Both virtual and in person meetings.
- Both programs intentionally cultivate collaborative relationships among preK-12 educators, Elders, and NAU faculty/staff.
- Each teacher produces a practice-oriented document. This makes their learning immediately useful for them, and it contributes to a growing repository of culturally responsive resources for preK-12 schools serving Navajo and Apache students. These are all published online in a free, searchable database.
- Every curriculum unit must align to district, state, national, and either Department of Diné Education standards or CRAIS Tool elements.



Resources to Explore

Click on the QR code to find:

- [CRAIS TOOL](#)
- [Teacher-authored curriculum units](#)
- [Institute for Native-serving Educators website](#)
- [Links to our related publications](#)



Participation in STEM PD Seminars

Program	Year	Seminar Title/Topic	Number of Teachers
DINÉ	2019	The Human Body: Marvels of Physics, Chemistry and Biology working together!	6
DINÉ	2019	Clean Air and Water on the Navajo Nation	7
DINÉ	2020	Unpacking Place Value	7
DINÉ	2021	Patterns, Relations, and Functions	5
DINÉ	2021	Forests and Climate Change	10
DINÉ	2022	Solving Problems Through Problem Solving	3
DINÉ	2022	Toxic Waste and Indigenous Environmental Justice	2
TLSI	2022	Stewardship of Trees and Forests for Environmental and Human Health	14
DINÉ	2023 (in progress)	Understanding our World through Geometric Reasoning	4
DINÉ	2023 (in progress)	Quantum Technologies: Preparing students for the next technological revolution	10
TLSI	2023 (in progress)	Nature-based Learning	9

Acknowledgement & Contact Info

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Key Lessons Learned



Publications

Castagno, A.E., Chischilly, M.**, & Joseph, D. (2022). Strengthening Teaching in Rural, Indigenous-serving Schools: Lessons from the Diné Institute for Navajo Nation Educators. *Journal of Research in Rural Education*, 38(4). <https://doi.org/10.26209/jrre3804>

Castagno, A.E., Joseph, D., Kretzmann, H.*, Dass, P.M. (2021). “Developing and piloting a tool to assess culturally responsive principles in schools serving Indigenous students.” *Diaspora, Indigenous, and Minority Education: An International Journal*. 16(2), 133-147 <https://doi.org/10.1080/15595692.2021.1956455>

Castagno, A.E. (2021). “From Professional Development to Native Nation Building: Opening Up Space for Leadership, Relationality, and Self-Determination through the Diné Institute for Navajo Nation Educators.” *Educational Studies*, 57(3), 322-334. <https://doi.org/10.1080/00131946.2021.1892686>

Castagno, A.E., Tracy, T.**, Denny, D.**, Davis, B.*, Kretzmann, H.*. (2020). “You are never too little to understand your culture”: Strengthening early childhood teachers through the Diné Institute for Navajo Nation Educators. *The eJournal of Indigenous Early Childhood Education*, 1(1), 1-14. <https://nau.edu/wp-content/uploads/sites/30/The-eJournal-of-Indigenous-Early-Childhood-Education-1.pdf>



“My curriculum unit is trying to make this connection between the mathematical reasoning of geometry and the cultural aspect of Native American artistry. Rug weaving is a complex and ancient craft, which is still part of our Diné society. To most people, rug weaving appears to be a simple form of artistry, but it requires visual thinking and a sophisticated understanding of geometry. By having my students rediscover the abilities of our people in the past, they might be enticed into learning their own abilities for the future.” (Middle School Teacher in DINÉ math seminar, 2021)