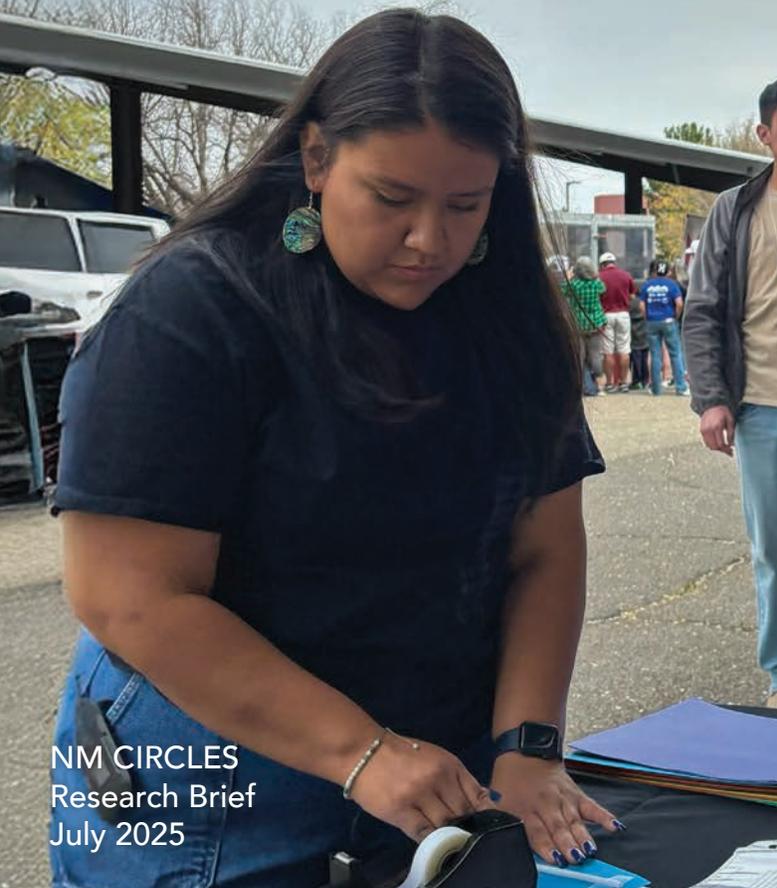


Native STEM Education in New Mexico: Research Findings and Practical Implications



NM CIRCLES
Research Brief
July 2025

NM CIRCLES mentors prepare for a STEAM event. Photo credit: Jonnie Woody

Research Findings

The findings summary below reflects thoughts and observations shared by those who participated in the New Mexico interviews, a majority of which aligned with the findings of the other five CIRCLES Alliance jurisdictions.³

Natives in STEM are needed to expose youth to the STEM disciplines and to fulfill needs of Native nations and communities that are currently filled by non-Native professionals. Native mentors and teachers are essential and were identified as key influences that helped Native students increase their self-efficacy, navigate STEM education, and see themselves as belonging in STEM fields

The importance of making STEM culturally and community responsive and relevant. Interviewees shared stories of ways Indigenous people practice and recognize STEM, ways that are typically not acknowledged in western institutions. Educators expressed a need for more resources that educators could access to develop more culturally-relevant curriculum, as well as professional opportunities to learn how to implement the curriculum. They also noted the extra difficulty Native students face in trying to integrate their worldviews with western worldviews and in challenging bias they face in western institutions. Multiple features of successful culturally relevant and responsive programs were described: place or community-based, nature-based, hands-on, tied to language revitalization, storytelling, and traditional practices.

Additional identified needs include more family involvement, more funding, more resources, more consistent staffing of teachers, and more preparedness of teachers, and the need to address and support students' holistic well-being.

From time immemorial, Indigenous peoples have built communities and created ways of life using science, technology, education, art, and mathematics (STEAM). However, predominant notions of science, technology, engineering, and mathematics (STEM) fields fail to recognize the ways in which Indigenous peoples utilize and participate in STEM. This has led to conceptions of underrepresentation of Native Americans in STEM professions, as defined by western institutions. Although a need for western STEM education and knowledge is acknowledged by Native communities,¹ obstacles persist that make it difficult to increase the representation and participation of Native Americans in western STEM institutions. A major hindrance has been attributed to the lack of culturally responsive education approaches.²

Lani Tsinnajinnie, Ph.D.
Department of Community and Regional Planning
University of New Mexico, lanimts@unm.edu

Keiko Beers, Ph.D.
Reimagine Research Group
keiko@reimaginegroup.com

Selena Connealy, Ph.D.
NM EPSCoR, connealy@epscor.unm.edu

CIRCLES Alliance

The Cultivating Indigenous Research Communities for Leadership in Education and STEM (CIRCLES) Alliance is working across six states—Idaho, Montana, Wyoming, North Dakota, South Dakota, and New Mexico—to address the ongoing challenge of increasing representation and participation of Native Americans in STEM. In 2021, the CIRCLES Alliance conducted a qualitative study with stakeholders in Native STEM education across the six states to gain a better understanding of challenges, needs, and successes of Native American and Alaska Native students in STEM disciplines. In New Mexico, 17 interviews were conducted. New Mexico interviewees consisted of K-12 teachers/staff/administrators, K-12 informal educators, higher education faculty/staff, and students. Native interviewees in New Mexico consisted of representation from eight federally-recognized tribes, six of which are located in NM.

The NM CIRCLES Alliance recognizes that broader discussions around Native education in New Mexico have been spurred by the *Yazzie/Martinez v. State of New Mexico* lawsuit,⁴ and that large-scale changes in supporting Native education are needed, such as changes offered by the Tribal Remedy Framework (TRF).⁵ Strategies offered in the TRF include developing more community-based and culturally relevant education, creating a pathway for Native teachers, and providing more funding to Native schools and would support the needs, challenges, and successes regarding Native STEM Education in New Mexico highlighted in this research brief.

References

- ¹ James, K. (Ed.) (2001). *Science and Native American communities: Legacies of pain, visions of promise*. University of Nebraska Press.
- ² Cajete, G. (2021). Native Americans and Science: Enhancing Participation of Native Americans in the Science and Technology Workforce through Culturally Responsive Science Education. *Engaged Scholar Journal: Community-Engaged Research, Teaching, and Learning*, 7(1), 122–139. <https://doi.org/10.15402/esj.v7i1.70770>
- ³ Beers, K. (2022). *Cultivating Indigenous Research Communities for Leadership and Education in STEM (CIRCLES) Alliance Interview and Survey Report*. [Internal unpublished CIRCLES Alliance report describing the findings and analyses of interviews and surveys conducted by the CIRCLES Alliance across its six jurisdiction states]. NM EPSCoR, University of New Mexico.
- ⁴ *Yazzie/Martinez v. New Mexico*. No. D-101-CV-2014-00793 (NM Dist. Ct. July 20, 2018).
- ⁵ Tribal Education Alliance (2020). *Pathways to Education Sovereignty: Taking a Stand for Native Children*. Accessed July 2, 2025 at https://nabpi.unm.edu/assets/documents/tea-full-report_12-14-20.pdf

Research to Practice

The NM CIRCLES Alliance used the insights gained from these interviews to initiate several activities aimed at supporting Native STEAM education in New Mexico.



STEAM Family Nights bring students and families together to participate in hands-on STEAM activities led by Native mentors, strengthening family members' understanding and value of STEAM for their children and their communities.



Mentorship Program to give Native college students outreach opportunities where they lead the hands-on activities in Family STEAM nights and other outreach events such as the Explora! Native STEAM Day. NM CIRCLES Alliance mentors also have the opportunity to network with Native educators, leaders, community members, and STEAM professionals who attend our events, and to serve as role models for younger Native students with interests in STEAM.



Community Conversations build community and facilitate conversations around Native STEAM education. Community Conversations have given participants the opportunity to discuss topics like how to broaden the notion of STEAM to better include Indigenous worldviews and how to better mentor Native students in STEAM. Community Conversations have also provided space for participants to share resources with each other.



CIRCLES
ALLIANCE

www.circlesalliance.org

This work is supported by National Science Foundation awards #2038271 and #2217344. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.