

Equity in STEM | Rural STEM Network

In Fall 2019, STEM stakeholders from across Nevada came together for the STEM Summit, hosted by the Nevada STEM Networks. During the STEM Summit, STEM program designers, facilitators, educators, industry leaders, and government representatives discussed and identified needs for the State of Nevada's STEM ecosystem. As described in each region's Strategic Direction, three major themes arose from the Summit:



- Equity in STEM
- Awareness of STEM opportunities
- Access to high quality STEM education

The committees in each region (the Northwestern, Rural, and Southern) have been compiling best practices regarding increasing equity in STEM, as well as examples of local programs that have been working to address inequities in STEM. Below you'll find strategies, examples, tools, and research regarding equity in STEM.

This document is meant to be a launch point for program designers and providers with an interest in addressing inequities in STEM in Nevada. The Rural STEM Network Committee fully acknowledges the complexity of this topic as well as the group's limitations. This document is not meant to fulfill the region's goals toward eliminating inequities in STEM, but rather is intended as a conversation starter. We hope to use this document with stakeholders in the region as we collaboratively work toward eliminating inequities in STEM.

For more information, please visit https://osit.nv.gov/STEM/Regional_STEM_Networks/.

Why is Equity in STEM Critical to Rural Nevada?

“Career and Technical Education (CTE) and Science, Technology, Engineering, and Mathematics (STEM) education are critical pathways for America’s youth and adults, offering access to high-skill, high-wage, in-demand programs of study and pathways to careers with financial stability. These occupations are still too often segregated by gender, race and ethnicity, socioeconomic status, and disability status. Women and girls; Black, Indigenous, and People of Color (BIPOC); individuals from low-income backgrounds; and individuals with disabilities are being left out of the opportunities and the promise of CTE and STEM.” ([NAPE, 2021](#))

As of 2019, only 35% of the STEM workforce in Nevada are women, while the population of women in Nevada fluctuates around 50%. Similarly, 41% of the workforce identify as a race other than white, while this same group makes up 49% of the State’s population. (Brookings, 2019 and [Data Commons](#), 2019)

When Nevada’s STEM workforce reflects Nevada’s population, we can better serve Nevadans. By engaging diverse perspectives, we can identify and solve issues relevant to the people of this State.

Rural Nevada is rife with STEM industries: Nevada Gold Mines, Farr West Engineering, PK Electrical, Cashman, and more. Nevada has 34,385 annual STEM job openings, with an expected growth of 26.5% by 2028, compared to an 18.6% growth rate of non-STEM jobs. (OSIT, 2019) To build pathways into these industries for Nevadans, we must provide high quality STEM experiences that purposefully engage and retain Nevadans from underrepresented populations.

Additionally, providing equitable access to STEM education and opportunities increases a community’s competitiveness for the allocation of resources. As a region grows the opportunities for education and careers in STEM, they also increase the opportunity to retain the scholars and workforce they have developed.

What Do We Mean by Equity in STEM?

Nevadans from populations traditionally underrepresented in STEM face many barriers to accessing on-going, high-quality STEM experiences that help build STEM identities and encourage participation and retention in STEM. Such barriers are often tied to longstanding systems of oppression. Day-to-day these barriers can appear as lack of transportation, childcare or mentors, negative micromessaging, and cost of STEM experiences, among numerous other barriers.

Groups traditionally underrepresented in STEM include women, black, indigenous, and people of color, those with disabilities, and those with low socio-economic status.

When we aim for equity in STEM, we aim to implement specific strategies for engaging and retaining Nevadans from underrepresented populations in STEM. Strategies can include initiatives such as training educators about unintentional micromessaging we can send to students, connecting philanthropies with high-quality STEM programming to increase access, or immersing into the community to learn, hear, and address the community's needs. STEM providers can increase equity in STEM by helping participants develop their STEM identities. This can be accomplished when programming is sensitive to participants' interests, values, and cultural identities and allows students to "own" the experience. More information about these strategies can be found below.

Rural Nevada Seeks to Address Inequities in STEM

The Rural STEM Network Committee members have been developing a common understanding of inequities in rural STEM by attending the annual [NAPE](#) conference to continue learning, by learning from community members, and national organizations, and by seeking to expand successful equity initiatives from other regions of Nevada.

Learn more about the Rural STEM Network's initiatives by visiting STEMHub.nv.gov!

Strategies for Addressing Inequities in STEM

Diversity as a Resource

- Find Hidden Assets. As a project develops, bring a diverse set of people to the planning.
- Leadership, the Board governing the direction of the organization, and community members contributing to the vision should reflect the diversity of the program participants.
- Including families in decision-making can teach the organization about the community's unique layers and help identify unforeseen barriers to access.

[Race Equity and Inclusion Action Guide, The Annie E. Casey Foundation](#)

Mindset Shift

- Expecting a great deal from youth, convincing them of their ability, and helping them reach their potential are key steps in shifting mindset from deficit to that of high expectations.
- Diverse mentorship with representation from the students' communities can help students to see themselves in STEM.
- Programs that combine student-driven STEM exploration and experimentation with learning that provides leadership and growth mindset opportunities can encourage the development of STEM identity.

[How Girl Scout STEM Programs Benefit Girls](#)

[Ensuring That All Students Can See Themselves in STEM, Edutopia](#)

Program Design and Evaluation

- Programs should regularly re-evaluate their program's equity goals and impact. Systematic evaluation also allows organizations to identify and utilize best practices for engaging diverse learners,
- The [NAPEquity IM STEM Rubric](#) or the Nevada specific [STEMList](#) describe the attributes of high-quality STEM programming and can be used for self-evaluation.
- During program design and evaluation, seek out and include voices and perspectives from those your program serves.

[Race Equity Impact Assessment Tool, Center for the Study of Social Policy](#)

[Equity by Design: 5 Principles, USC Center for Urban Education](#)

Professional Development

- Ongoing professional learning addressing inequities in STEM is crucial for any STEM providers. PD can include foundational understanding of inclusivity, local community resources, and how to leverage the curriculum to engage and retain diverse learners.
- STEM Teaching Tools has equity in science [PD modules](#) that can be used with educators.
- NAPEquity has developed [Root Causes and Strategies](#) which describe research around inequities and what can be done to address them.

Funding

One-time funding opportunities, such as broadband infrastructure projects, can have a big impact on barriers to STEM. Networking with community philanthropists and staying updated on State and Federal funding initiatives can support one-time funding projects to address inequities in STEM.

Visit [OSIT.nv.gov](https://osit.nv.gov) to see OSIT's grant opportunities and learn more about Nevada's Broadband initiatives.

Student Interest and Career Choice

- An interest in STEM does not necessarily translate into selecting a STEM career or having a STEM identity. Opportunities to find the personal and/or cultural value in STEM careers are critical to developing that identity.
- The use of technology or field trips can take students onto a job site and allow them to see the diverse workforce and learn about lesser-known careers and opportunities.
- STEM programs that are accessible to diverse populations lead to college and career transition in STEM.
- Incorporating STEAM can engage participants who may not typically select STEM opportunities.

[STEM Jobs See Uneven Progress in Increasing Gender, Racial and Ethnic Diversity, Pew Research Center](#)

[How to foster the formation of STEM identity: studying diversity in an authentic learning environment, International Journal of STEM Education](#)

[Equity in STEM: How We Take Action, CSTEM](#)

[Career and Technical Education in High School: Does it Improve Student Outcomes? Thomas B. Fordham Institute](#)

[STEAM and the Role of Arts in STEM, SEADAE](#)

Strategic Communication plan

- Strategic communication planning is essential for impactful communication and marketing activities.
- [Re-assess organizational STEM mission and vision](#). Is equity clearly stated?
- The customized plan should engage all stakeholders from intended participants to media, donors, and business/community partners so information is shared and received through multiple channels. This should include materials that are available in various languages to remove barriers for families.
- Consider the audience when marketing a program, including language and jargon used and key aspects communicated. Communications should be accessible through multiple, relevant outlets.
- Communications should describe and promote positive outcomes that explicitly impact underrepresented groups.

Participant Engagement

- Diverse and far-reaching community engagement increases your ability to connect with participants, access hidden resources, and move STEM education further.
- It is essential that STEM programming is relevant to participants and their interests and highlights connections to other aspects of their lives and schooling. Programs should prioritize a sense of belonging.
- Experiences that focus on critical thinking, collaboration, and real-world problem solving better engage participants from diverse backgrounds.
- Connecting participants to local STEM industries, professionals, mentors, and the community-at-large increases engagement.

[Sample Resources, OpenSciEd](#)

[Applied Learning and STEM Education, MassSTEMHub](#)

[Do It Yourself Guide to STEM Community Engagement, NC STEM](#)

[Collaborating to Grow the Pathway of Native Americans in STEM, INTEL](#)

[Encouraging Students to Embrace STEM Programs, Hanover Research](#)

[Creating Equity in Education, STEM Equity Initiative](#)