

# Equity in STEM | Northwestern 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 Northwestern 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/](https://osit.nv.gov/STEM/Regional_STEM_Networks/).

## Why is Equity in STEM Critical to Northwestern 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, p. 1](#))

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.

Northwestern Nevada is rife with STEM industry: Blockchains, LLC., Tesla Motors, Panasonic, IGT, NVEnergy, Switch 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.

## 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.

## Examples of Programs in Northwestern Nevada Addressing Inequities in STEM

### Sierra Nevada Journeys: Community Needs Assessment

"We recognize that our local community has shifted as a direct result of both the COVID-19 pandemic and an equity focus to support Black, Indigenous and People of Color in the context of the Black Lives Matter movement. COVID-19 has exacerbated inequities in access to quality education and social emotional learning, particularly our youth and communities previously experiencing an opportunity gap due to systemic racism and inequity. With this in mind, we are modifying our STEM programs by bringing in community stakeholders to amplify the experiences and perspectives of Black, Indigenous and People of Color (BIPOC) and their families who live in our communities. Please download our [Classrooms Unleashed Community Needs Assessment](#) and read our findings."



## Community of Bilingual English-Spanish Speakers Exploring Issues in Science and Health (CBESS)

The [Community of Bilingual English-Spanish Speakers Exploring Issues in Science and Health](#) (CBESS) is a [National Institutes of Health](#) (NIH) supported program that seeks to increase the number of bilingual English-Spanish students who pursue paths in science, technology, engineering, math (STEM) and health care fields such as biomedical, behavioral, and clinical careers. The initiative is a collaboration between the University of Nevada's [College of Education](#), [Raggio Research Center](#), [School of Community Health Sciences](#) and the [School of Medicine](#).

CBESS engages bilingual high school students across northern Nevada to learn a variety of topics in STEM and health through the lens of bilingualism in a variety of different program initiatives. These include career exploration events, a summer research program, dissemination, mentoring, and an outreach project.

Get a glimpse of what some of our participants have to say about their CBESS experience below and read the full interviews [here](#).

How was your mentorship experience and what did it mean to you to have a bilingual mentor?

Saba: "My mentorship experience was unforgettable as I am incredibly thankful to have had someone who cared for me in both my professional and personal life. Applying for college and scholarships was made easy because of the help of Jessica. Having a mentor who contains similar goals and has been through the same experiences was especially helpful, considering I was a first-generation student. She continues to help me and is someone I go to for questions in undergrad as well."



What is the importance and/or value of having your family members engaged during your time in the CBESS program?

Kim: "Having my family so engaged in the CBESS program with me was incredible. The career exploration events provided so much information for me and my family. Growing up, my family hasn't been the most involved in my school activities due to the language barrier but having everything in English and Spanish made CBESS feel like our own community. This also made my family more comfortable with me spending weeks living at UNR because they got to meet all the people involved."



## 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.
- 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.
- 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.



## STEM 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](#)

### 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](#)

### 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.