Why Four Corners AISES is Changing the Way We Live by using STEM

2019 DNR Summit
What exactly is STEM?

- STEM is an acronym for “Science, Technology, Engineering and Mathematics.”
- STEM innovations have touched every aspect of the human life through breakthrough innovations in science, medicine, technology, business and modernization.
- STEM today is an integrated, interdisciplinary approach to learning by providing hands-on and relevant learning experience for students and professionals.
  - Critical thinking
  - Problem solving
  - Creative skills
  - Collaborative skills
  - Connection between the school, workplace community and economy.
STEM Timeline of Breakthrough Inventions

- Mechanical Gear
- Water mills
- Clocks
- Electric Light Bulb
- Steam Engines and Pumps
- Air Flight
- Computers
- Internet
- Google
- Facebook
- Four Corners AISES

- 350 BC
- 250 BC
- 20 AD
- 10th Century
- 1879
- 1903
- 1916
- 1943
- 1983
- 1995
- 1998
- 2004
- 2018

2019 DNR Summit – Four Corners AISES Professional Chapter
Four Corners AISES Professional Chapter

 frowned Why do we exist?  
 • To change and inspire the way we live today. Taking what we know to our homes and communities.

 frowned Mission  
 • Empowering & inspiring Native American students, professionals and communities by promoting Science, Technology, Engineering and Mathematics (STEM) initiatives and programs in the Four Corners region.

 frowned Vision  
 • Cultivating a sustainable network of resources that strives for excellence.

 frowned Guiding Values & Principles  
 • To create innovative fun  
 • To be ethical and have integrity  
 • To make a great organization  
 • Powered by STEM  
 • To be a invaluable resource  
 • To foster & incorporate cultural technical knowledge

 frowned Goals  
 Membership  
 Educational Outreach  
 Funding & Sponsorship  
 Professional Development & Partnerships

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Four Corners AISES Statistics to Date

2019 Fund Raising

2% of our goal reached

Achieved %

Goal % $72,760

Four Corners AISES Membership

STEM 80%
Non-STEM 20%

2019 Volunteering Statistic YTD

$53,465 in-kind Contributions

2019 Fund Raising

Four Corners AISES Goals Meter

To promote professional development and partnerships 29%
To seek and establish funding and sponsorship 15%
To conduct educational outreach 78%
To increase, sustain, engage and promote membership 15%

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Navajo STEM – Policy, Programs and Society

- Resolution of the Naabik’iyati Committee of the Navajo Nation Council. 2011 Legislation No. 0359-11; Supporting the Navajo Nation Creation and Funding of a Navajo Tribal College STEM Initiative.
  - Navajo Technical University
  - Dine College
  - Section 8: Community and Economy
    - Section 807: Science, Technology, Engineering and Mathematics Education (STEM). The Nation shall support the pursuit of educational studies in STEM by its youth in order to create an interest in careers in the energy industry and to build a workforce that is prepared for technical and managerial careers in the energy industry
- Navajo Nation area K-12 Schools.
  - St. Michaels Indian School
  - Navajo Prep School
- Four Corners AISES Professional Chapter.
STEM Diversity, Inclusion and Equity Matters

- Diversity means different across many social and economic backgrounds. Diversity can be examined into four groups: 1) occupation, 2) skills and abilities, 3) personality traits and 4) values & attitudes.
  - STEM Diversity is critical to problem solving the many challenges of the world.
  - Having different perspectives that works together promotes long-term sustainability growth and competitiveness.
  - **Diversity drives Innovation.**

- Inclusion means that all people, regardless of their abilities, disabilities, or health care needs, have the right to: Be respected and appreciated as valuable members of their communities.
  - STEM Inclusion promotes STEM access for all learners.

- Equity means the quality if being fair and impartial.
  - STEM equity helps educators, administrators, and communities to understand the conditions needed to create an environment where every student can thrive and grow personally and academically.
Racial and Ethnic Distribution of Employed Individuals with S&E Degree, by Field of Highest Degree: 2015

A Navajo Professional Shared STEM Experiences

- Growing up on the Navajo Nation
- First exposure to STEM
  - High School STEM program (off the Navajo Nation)
- Connecting with other STEM folks and organization outside of the Navajo Nation
  - NAU College of Engineering
  - AISES
  - Working Experiences
- Creating a STEM Business
  - Connecting and Collaborating
  - Bringing STEM to our Communities
  - Adding Value
- Belonging to the Four Corners AISES Professional Chapter
- Mentoring and Developing future STEM Leaders
Inequities in STEM Degrees and Occupation

Table 1: Racial and Ethnic Distribution of Employed Individuals with S&E Highest Degree, by Level of highest Degree: 2015

<table>
<thead>
<tr>
<th>Race and ethnicity</th>
<th>Bachelor's</th>
<th>Master's</th>
<th>Doctorate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employed with highest degree in S&amp;E (number)</td>
<td>9,539,000</td>
<td>2,934,000</td>
<td>992,000</td>
</tr>
<tr>
<td>American Indian or Alaska Native</td>
<td>0.3</td>
<td>0.2</td>
<td>s</td>
</tr>
<tr>
<td>Asian</td>
<td>11.2</td>
<td>25.0</td>
<td>23.2</td>
</tr>
<tr>
<td>Black</td>
<td>7.1</td>
<td>5.4</td>
<td>3.4</td>
</tr>
<tr>
<td>Hispanic</td>
<td>9.1</td>
<td>7.3</td>
<td>4.6</td>
</tr>
<tr>
<td>Native Hawaiian or Other Pacific Islander</td>
<td>0.4</td>
<td>0.1</td>
<td>s</td>
</tr>
<tr>
<td>White</td>
<td>69.9</td>
<td>60.4</td>
<td>66.9</td>
</tr>
<tr>
<td>More than one race</td>
<td>2.0</td>
<td>1.6</td>
<td>1.3</td>
</tr>
</tbody>
</table>

Table 2: Racial and Ethnic Distribution of Employed Women in S&E occupations and with S&E Highest Degrees: 1995 and 2015

<table>
<thead>
<tr>
<th>Race and ethnicity</th>
<th>Women in S&amp;E occupations</th>
<th>Women with S&amp;E highest degrees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total (number)</td>
<td>714,000</td>
<td>1,818,000</td>
</tr>
<tr>
<td>American Indian or Alaska Native</td>
<td>0.3</td>
<td>0.1</td>
</tr>
<tr>
<td>Asian</td>
<td>9.8</td>
<td>22.9</td>
</tr>
<tr>
<td>Black</td>
<td>5.6</td>
<td>5.7</td>
</tr>
<tr>
<td>Hispanic</td>
<td>2.9</td>
<td>6.4</td>
</tr>
<tr>
<td>Native Hawaiian or Other Pacific Islander</td>
<td>NA</td>
<td>0.1</td>
</tr>
<tr>
<td>White</td>
<td>81.3</td>
<td>62.9</td>
</tr>
<tr>
<td>More than one race</td>
<td>NA</td>
<td>1.7</td>
</tr>
</tbody>
</table>

Inequalities that Exist in the Navajo Enterprises

Navajo Nation Enterprises Top Officer

64%

36%

Non-Navajo

Navajo

Navajo Nation Enterprises Top Officer (Acting Positions Filled by Non-Navajo)

85%

15%

Non-Navajo

Navajo

The Picture Today with Five Navajo Acting CEO’s or Managers

Source(s): NTEC, NTUA, NHA, NAPI, NACE, KTTN/KWRK, NNOGC, Navajo Times, NNSCI, Navajo Transit System, NECA, DDC, NNHE, NGE. Not included were Dine Power Authority and Nataani Development Corporation.

Note: STEM Enterprises are NTEC, NTUA, NAPI, NECA, DDC, NNOGC and DPA. The Top Officer for these enterprises are 16.7% Navajo (1 out 6) and 83.3% Non-Navajo (5 out 6). DPA was not included in the analysis.


Promoting and Support more American Indian STEM initiatives and Programs, such as AISES
Some Ideas to Improve the Disparity in STEM

- Capacity Building at ground zero (our homes). Explaining STEM to non-STEM family members builds support and collaboration. STEM evolves inclusion, diversity and equity.
- Connecting STEM with other disciplines, including the humanities & arts. A holistic view.

**STEM ➔ STEAM**

- Including a social justice component in STEM education.
- Pursing advance STEM degrees, or a parallel track for dual undergraduate or graduate degree programs that allow students to evolve even further.
- Mentors should show a genuine interest in a young person’s professional career.
- Considering all the evaluated metrics and strategically plan hitting milestone goals.
- Investments into afterschool STEM programs and initiatives.
- Including an entrepreneur component in STEM education.

**STEM ➔ STE²AM**
Creating Long-term Value by Integrating STEM into our Lives

- STEM is a way of thinking and learning to redesigning the way we live.
- Four Corners AISES connects Professionals with each to be very innovative and to solve our own community problems.
- Growing Native STEM and Navajo Businesses thru AISES.
  - Professional members are Cohorts to STEM grant to increase the number of STEM business owned by American Indian Professionals.
- Native STEM Businesses who create the right STEM environment by empowering professionals and building capacity to ensure a vibrant regional economy.
  - This is created from collaboration with other individuals, groups, agencies, companies, and colleges.
  - Developing relationships with government entities, tribal leaders, state leaders, federal officials, and local government/townships.
  - Long term value includes keeping up with the latest technology trend.
- Four Corners AISES Professional members are subject-matter experts.
Four Corners AISES Contact Information

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  - [LinkedIn](https://www.linkedin.com/in/four-corners-aises/)