



# Overview

- STEM identity in general
- STEM identity in specific
- Proposal



# STEM Challenge

- Low interest
- Low diversity

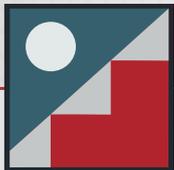


# STEM Identity

- Young people struggle to identify with STEM culture and professionals
- Identity
  - Distinctive characteristic(s) shared by all members of a particular social group (Leary & Tangney, 2003)



# STEM Culture & Professionals



# Sense of Belonging

- “Many of the students I knew shied away from science, and I think that’s because we’ve done a poor job of saying that doing science is not just something white guys do”
  - Juan E. Gilbert in *The Chronicle of Higher Education*
- Non-representation
- Stereotypes
  - Non-majority



# Need for Change

- “A lot of black males don’t really have the people to look up to in STEM. They need examples of people who look like them who are successful and doing positive things.”
  - Ryan Charles Hynd in *The Chronicle of Higher Education*



# Recommendations

- Tell stories of successes
  - Focus on positive
- Exposure to female STEM experts
  - Identity
  - Self-efficacy
- Introduce broader STEM career identities
  - Challenge stereotypes
  - Broaden range



# Native STEM Identity

- No image representation = non-existence
- 3.3% Natives over 25 years old have STEM bachelor degrees or higher (2011 ACS)



# Proposal

- Create images & videos of successful Native STEM professionals to be distributed to Native K-20 classrooms & communities
  - Posters
  - Videos
  - Website



# Natives in STEM

- Establish framework
  - Partners
  - Look
  - Focus groups
- Spotlight Navajo & Pueblo STEM professionals
- Distribute material
  - Printed posters
  - Website announcement
  - Traveling exhibit/event
- Grow to include Indian Country



# POSTER MOCK-UP

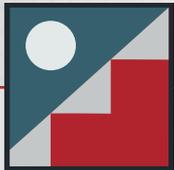




I am Navajo. I am a Civil and Structural Engineer. I am STEM.

**SANDRA BEGAY-CAMPBELL**

# WEBSITE MOCK UP



**NiSTEM**

Name

Career Path

Subject

Tribe

Women

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Resources

Content for Natives in STEM

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Dr. Stan Atcitty

Photo

Karen McDaniel

Photo

Sandra Begay-Campbell

Photo

Carrie Wood

Photo

Cheston Bailon

Photo

Cordell Yazzie

Photo

John Bailon

Photo

Karlis Yazzie

Photo

Lawrence Brown

Photo

Lydell Yazzie

Photo

Dr. Karletta Chief

Photo

Dr. Julius Yellowhair

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## Academia

Photo

Dr. Karletta Chief, Assistant Professor at University of Arizona

## Entrepreneur

Photo

[NAME]

## Government

Photo

Dr. Julius Yellowhair, Optical Engineer at Sandia National Laboratories

## Private

Photo

Carrie Wood, Software Engineer at IBM

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## **Biology**

Photo

[NAME]

## **Engineering**

Photo

[NAME]

## **Mathematics**

Photo

[NAME]

## **Physics**

Photo

[NAME[]]

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## Apache

Photo

[NAME]

## Navajo

Photo

[NAME]

## Pueblo of Laguna

Photo

[NAME]

## Yupik

Photo

[NAME]

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Poster Image

## **Sandra Begay - Campbell**

Biography – graphic/image of biography to depict path (highs and lows) of getting from point A to point B.

Video

Interactive questions from audience & answers from featured Professional

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Email – [EMAIL ADDRESS]

Form to request printed material -

[NAME]

[INSTITUTION/ORGANIZATION]

[TITLE]

[ADDRESS]

[PHONE]

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## Partners



New Mexico  
**EPSCoR**



AMERICAN INDIAN SCIENCE  
AND ENGINEERING SOCIETY

# POTENTIAL PARTNERS

- American Indian Science & Engineering Society
- Society for the Advancement of Chicanos & Native Americans in Science
- Sandia National Laboratories
- American Indian Higher Education Consortium
- National Indian Education Association
- Navajo Nation Department of Dine Education
- Navajo Technical University
- Dine College
- NOVA Corporation
- **EPSCoR states with Tribal Colleges & Universities**
- **EPSCoR states with Federally Recognized Tribes**
- **EPSCoR states with State Recognized Tribes**



# Sources

- Boe, M. V., Henriksen, E. K., Lyons, T., & Schreiner, C. (2011). Participation in science and technology: young people's achievement-related choices in late-modern societies. *Studies in Science Education*, 47:1, 37-72.
- Cheryan, S., Davies, P. G., Plaut, V. C., & Steele, C. M. (2009). Ambient belonging: how stereotypical cues impact gender participation in computer science. *Journal of Personality and Social Psychology*, 97, 1045-1060.
- The Chronicle of Higher Education. (2014). Diversity in Academe.
- Stout, J. G., Dasgupta, N., Hunsinger, M., & McManus, M. A. (2011). STEMing the tide: using ingroup experts to inoculate women's self-concept in Science, Technology, Engineering, and Mathematics (STEM). *Journal of Personality and Social Psychology*, 100, 225-270.
- "Scientists montage" by Archidamos III MAN Napoli.  
[http://commons.wikimedia.org/wiki/File:Scientists\\_montage.jpg#mediaviewer/File:Scientists\\_montage.jpg](http://commons.wikimedia.org/wiki/File:Scientists_montage.jpg#mediaviewer/File:Scientists_montage.jpg)
- Leary, M. R.; Tangney, J. P. (2003). *Handbook of self and identity*. New York: Guilford Press.

