

## LBJ INSTITUTE FOR STEM EDUCATION AND RESEARCH

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### As Long as The Sun Shines, The Grass Grows and The River Flows: NASA EPDC Forges Ongoing Relationships with Indigenous Communities 2022

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Figure 1: Stanford Powwow participant using a ball robot to navigate a zone simulating the Moon or Mars

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# TEXAS STATE

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In working with Indigenous communities, EPDC has learned that it is important to honor the deep respect they have for the natural world and the spiritual connection that many Indigenous people feel toward the moon, the stars, and the universe.



Figure 2: NASA Ames Robotics Engineer George Gorospe explaining to a future engineer/scientist his own passion in Engineering and journey from the Reservation to NASA.

NASA STEM EPDC has a strong commitment to provide NASA educational services and resources to populations who have historically been underrepresented in the STEM professions, including the Indigenous communities that make up 1.1% of the American population. Indigenous peoples in what is now the contiguous United States, including their descendants, are also called American Indians or Native Americans. Indigenous peoples are distinct social and cultural groups that share collective ancestral ties to the lands and natural resources where they live, occupy or from which they have been displaced. In the 2020 census, 3.7 million people identified as Native American or Alaska Native alone, and a total of 9.7 million people identified as Native Americans and Alaska Native, either alone or in combination with one or more ethnicity or other races.

In working with Indigenous communities, EPDC has learned that it is important to honor the deep respect they have for the natural world and the spiritual connection that many Indigenous people feel toward the moon, the stars, and the universe. As we work with Indigenous communities and make STEM advancements that uses our Earth's resources, as a society we need to strive to move forward responsibly. It has also been essential for EPDC to recognize that that some indigenous people may have a degree of hesitancy in engaging with NASA because their previous experiences with government entities have not always been positive. EPDC understands that it is imperative to include the voices of Indigenous people in NASA's work. Toward this end, the process of building strong, productive working relationships with Indigenous communities has entailed EPDC reaching out through a variety of events.

### **EPDC at AISES**

EPDC specialists from Armstrong Flight Research Center and Ames Research Center located in California, participated in the American Indian Science and Engineering Society (AISES) Conference in September of 2021 in Phoenix, AZ where they began conversations and building relationships with students and educators to join NASA's quest to transform the face of NASA to reflect the nation's diversity.

AISES is an organization that was founded in 1977. AISES supports precollege schools, chartered colleges and university chapters as well as tribal chapters. This organization widens the STEM workforce through internships, professional development and career resources as well as conferences (https://www.aises.org/). The AISES National Conference is an opportunity to meet other Indigenous students interested in STEM and professionals in the STEM field.

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"Where are you from? You are NASA, right? What are students exactly doing here?" AISES Conference Exhibitor



Figure 3: Middle School participants at the AISES Conference use the Engineer Design Process to create drag devices.

The conference extended three days and partnered with several technical companies. One of the companies, Boeing sponsored a STEM Day for all middle school and high school students in the Phoenix area. EPDC specialists walked in the large hotel conference room and unpacked a cart full of recyclable materials such as sheets of newspaper, colored tissue paper, pieces of cardboard, coffee filters, paper cups, translucent tape and markers, they received puzzled and confused looks from other booth sponsors. Intrigued onlookers came and asked questions such as "What exactly are students going to do here?" and "Where are you from? You're NASA, right?"

As the conference kicked off with the Boeing STEM day, students gravitated to the NASA booth. EPDC specialists told the story of Artemis, NASA's mission of returning to the moon as middle and high school students were actively engaged in using the engineering design process to design and create a lunar lander using a parachute and creating a moon habitat.

As students and educators became actively engaged and stayed at the booth, educators and facilitators working other booths came by to take a closer look at the activities. Representatives from the other booths inquired about NASA resources and exchanged their contact information. Students used team work along with their teachers to build a moon habitat. They worked as a team to problem solve the structural design of the moon habitat.

#### **EPDC** at the Stanford Powwow

Another STEM event that CA Regional OSTEM EPDC Education Specialist supported was the 51<sup>st</sup> Stanford Powwow, Intergenerational Resilience held in Stanford, California May 6-8, 2022. This event took place over three days and attracted over 5,000 educators, students, and their families. People of all ages stopped by the booth to create a model of the first Mars helicopter named Ingenuity using marshmallows and toothpicks. They also navigated a small ball robot through a maze simulating roving the Moon.

This was NASA's first appearance at the Stanford Powwow. People were welcoming and excited to interact yet surprised to see NASA at the powwow. NASA EPDC education specialists and subject matter experts had conversations with constituents which resulted in invitations to NASA centers and schools with a promise to stay connected. Children returned multiple times to create a new version of the helicopter with more questions and ideas about the mission to the Moon and Mars.

#### **EPDC** Work with the Choctaw Nation

Three EPDC staff members participated in the at the Emerging Aviation Conference hosted by the Choctaw Nation in Durant, Ok on

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Figure 4: High School students at the AISES Conference create a Moon Habitat.

"Thank you for coming, because I got to see you, a girl who is an engineer, now I want to be an engineer and work at NASA." For more information about NASA EPDC visit txstate-epdc.net

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lesliehuling@txstate.edu As Long as The Sun Shines, The Grass Grows and The and River Flows: NASA EPDC Forges Ongoing Relationships with Indigenous Communities 2022 April 4-5, 2022. The EPDC specialists from Goddard Space Flight Center in Maryland served as a panelist at the conference attended by 400 students, teachers, and industry representatives. EPDC educators also participated in networking meetings with McAllister Schools, Jones Academy, and the Choctaw Nation of Oklahoma Education Executive team. McAllister School District is looking for Aviation infusion for K-12 curriculum as well as summer STEM Camp ideas. Jones Academy is wanting EPD support for ISS Down link, monthly ISS activities and support for exclusive STEM camp. CHO Ed Ex team focused with the High School Support Services on how to provide and organize resources for the upcoming Superintendent's luncheon scheduled in July, 2022.

### **Reflections on the Journey**

The EPDC presence at these three events stirred curiosity, questions about the EPDC specialists' journey to NASA, and ignited hope from parents and young people that they too can one day work in a place where they can share their passion for STEM. At AISES, a young Indigenous girl said "thank you for coming, because I got to see you, a girl who is an engineer, now I want to be an engineer and work at NASA." At the Stanford Powwow, a young Indigenous boy had a long conversation with a NASA subject matter expert, George Gorospe, about his experience with coding robots and excitedly the young boy shook his head in agreement about life on the reservation and how to take steps forward toward achieving goals and navigating through an institution like NASA as a Native American.

NASA EPDC Education Specialists are leveraging existing NASA education resources working diligently to break barriers such as the lack of educational opportunities facing underserved and underrepresented communities across the United States. As we accept responsibility to serve underserved and underrepresented communities it requires a shift in our mindset, in our hearts and being deliberate in creating spaces to encourage culturally responsive engagement to build relationships. Constituents are paying attention and seeing people from NASA, and especially those who look like them, instantly breaks down barriers and is the first indicator that people of color do belong in spaces like NASA and that what they think and contribute matters a great deal.

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