

UTC Spotlight

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MATC Helps Prepare the Next Generation of Native American Leaders in Transportation

In support of the United States Department of Transportation's mission to recruit, educate, and train workers from underrepresented groups, the Mid-America Transportation Center (MATC), located at the University of Nebraska-Lincoln, has been working to close the gap for underrepresented groups since the center's inception. MATC addresses the specific needs of Native American students through the implementation of three educational outreach activities: the Scholars Program, the Sovereign Native Youth STEM Leadership Academy, and the Roads, Rails, and Race Cars After-School Program.

institutions was essential. The inaugural Native American Scholars Program was held in 2016. Sessions were led by Native professionals from Nebraska Indian Community College (NICC), Nebraska Commission on Indian Affairs (NCIA), and Sandia National Laboratories. Members of the University of Nebraska Inter Tribal Exchange comprised the student panel and answered questions about their experiences in successfully transitioning to, and succeeding at, a large, four-year institution.

"Just hearing how everyone here had their own experience, their own way to actually get to their goal...just hearing 'everything's going to be O.K.'" was helpful said one student participant.

MATC/NCIA Sovereign Native Youth STEM Leadership Academy

In the summers of 2017 and 2018, MATC partnered with NCIA to host the Sovereign Native Youth STEM Leadership Academy for high school students. The weeklong program took place on the University of Nebraska-Lincoln (UNL) campus. Students from all four federally recognized tribes in Nebraska participated in a broad range of hands-on activities such as building boats and remote control vehicles. Academy activities were selected to increase students' interest in STEM subjects, to learn about transportation-related careers, to appreciate Native American history and culture, and to develop important leadership skills.

"We are so happy that we partnered with MATC to offer this program," said NCIA Executive Director Judi gaiashkibos. "It is so gratifying to see the kids engage in hands-on projects and witness the sense of accomplishment in their eyes as they learn that science is more than just theory in books."

The survey results from the 2018 academy indicated that students' interest in STEM subjects and attending college increased after participating in the program. Students also reported that one of their favorite activities was building a boat big enough to hold a group of people. The boat activity sent a powerful message to students that they were capable of more than they imagined.



2018 academy participants with NCIA Executive Director Judi gaiashkibos in front of the Standing Bear Statue in Lincoln, NE.

MATC Scholars Program

The MATC Scholars Program was developed in 2010 and designed to equip students from groups who are historically underrepresented in transportation with the tools to confidently pursue graduate school in transportation-related fields. The inaugural program focused on students from Historically Black Colleges and Universities and Hispanic Serving Institutions from across the United States. To date, 124 students have participated in the program.

After discussions with Native American leaders, it was decided that a Scholars Program for helping students transition from two-year tribal colleges to four-year degree-granting

MATC Roads, Rails, and Race Cars (RRRC) After-School Program

Mid-America Transportation Center



RRRC students with the bridge they built.

RRRC was piloted in Lincoln, NE in 2010 and has been attended by over 7,750 elementary, middle, and high school students. MATC specifically locates RRRC in schools with high proportions of students from

underrepresented groups and high free and reduced lunch program participation. Following the success of the summer program, MATC partnered with two of the academy's teachers in the fall of 2017 to expand RRRC to Native American students at Umo^{ho} Nation Public Schools in Macy, NE and Winnebago Public School in Winnebago, NE.



Dr. Cornelius with RRRC students at Umo^{ho} Nation Middle School.

The after-school program combines the talents of elementary, middle, and high school teachers; engineering graduate and undergraduate student mentors; and industry partners to educate the leaders of tomorrow about STEM principles and transportation opportunities. Mentors or industry professionals present on an engineering or transportation-related topic and lead students in an interactive activity that encompasses the concepts of the lesson.

"As a Native educator, I am particularly proud of our collaboration with the reservation schools to offer RRRC to their students," said MATC Education and Outreach

Coordinator Gabriel Bruguier. "We've been able to modify and develop our curriculum based on specific community needs, which reinforces the students' sense of inclusion in an ongoing learning process."

Importance of Mentorship

A key feature of MATC's outreach programs is the extensive use of Native American mentors. Student mentors from UNL and NICC serve as both educators and positive role models by assisting with development and implementation of the curriculum and sharing their passion for STEM subjects. Successful Native American leaders from a wide range of transportation-related careers develop and provide curricula for the programs, share insight with participants on their careers challenges, and affirm their belief in the students' potential for achievement. Having positive role models not only increases students' self-confidence but also their interest in transportation-related careers.

"I personally know the value of mentoring because it helped shape my path on becoming one of very few Native American engineering professors in the country," said Dr. Christopher Cornelius, UNL Professor of Chemical and Biomolecular Engineering and MATC Education and Diversity Coordinator. "As an indigenous person, my goal is to help fellow Native students envision themselves as future scientists, engineers, teachers, or leaders in their community."

Future Outreach

MATC is adding a new RRRC location this fall at Santee Community School, and plans are underway to expand to Niobrara Public School. MATC also looks forward to hosting the third Sovereign Native Youth STEM Leadership Academy next summer and the second Native American Scholars Program on October 10-12, 2018.



The 2018 academy participants designed and built a boat that held over 1,800 lbs.

About This Project

The goal of the MATC Scholars Program, NCIA/MATC Sovereign Native Youth STEM Leadership Academy, and the MATC Roads, Rails, and Race Cars After-School Program is to encourage Native American students to pursue careers in the transportation field. MATC gratefully acknowledges the United States Department of Transportation, Claire M. Hubbard Foundation, Nebraska Commission on Indian Affairs, Union Pacific, and BNSF Railway for their support of these programs. For more information, contact Dr. Laurence Rilett at lrilett2@unl.edu or 402-472-1992.

This newsletter highlights some recent accomplishments and products from one University Transportation Center. The views presented are those of the authors and not necessarily the views of the Office of the Assistant Secretary for Research and Technology or the U.S. Department of Transportation.



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