ND EPSCoR

**Partnerships to Build STEM Resources in North Dakota
Version 1**

August 2021

Background and purpose of this document

This document compiles a variety of information related to informal and formal K-12 education in North Dakota (ND); from ND EPSCoR State Office K-12 survey results, ND Department of Public Instruction (DPI) Statewide Longitudinal Data System (SLDS) data, current K-12 ND EPSCoR State Office partnerships, and K-12 outreach and/or engagement opportunities available at higher education institutions. Also, included is information on other ND EPSCoR State Office partnerships (North Dakota's Gateway to Science), and the new STEM Education Portal. The information within this document can be used as a resource for teachers, communities and schools looking to increase both formal and informal STEM engagement and learning, and faculty within higher education institutions across ND who wish to develop STEM outreach or informal STEM activities for K-12 students.

If you have any questions about this document or would like more information about making connections that build K-12 STEM for North Dakota, please contact the ND EPSCoR State Office at 701-231-8400 or ndepscor@ndus.edu. For information about forming partnerships to build STEM capacity in North Dakota, see: Partnerships to Build STEM Capacity

History of ND EPSCoR State Office

Established in 2017 by the North Dakota University System (NDUS)[1], the ND EPSCoR State Office is responsible for developing, implementing, monitoring, and assessing numerous programs tied to the state's STEM ecosystem (Table 1). For more information about these ND EPSCoR State Office programs, visit www.ndepscor.ndus.edu.

Table 1. State Office Programming, Administrative Services, and External Award Administration.		
SO Program and Activity Categories	**Budget Structure**	**FY21 Programs and Activities**
SO Activity – Programmatic (* - SO dollars)		
*External Partnerships	Programmatic	STEM programming partnerships with ND-based entities and organizations
*K-20+ STEM	Programmatic	Activities to build the STEM workforce in ND, including: 1) K-12 programming, 2) K-12 Lesson Plan development, 3) K-12 STEM activity video series for STEM projects at home, 4) Undergraduate and graduate student research, training, programming, and professional development
*Innovation and Entrepreneurship	Programmatic	Students in Technology Transfer And Research (STTAR) student internships with ND-based companies

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[1] North Dakota received its first NSF EPSCoR RII Track 1 cooperative agreement in 1986. A state appropriation to the NDUS provides the match to the RII Track-1 and funds statewide programs to build STEM capacity and a sustainable STEM workforce within North Dakota. From 1986-2016, North Dakota State University (NDSU) and the University of North Dakota (UND) had duplicative office managing these programs. Under a memorandum of understanding, the ND EPSCoR State Office is administered by NDSU.

*Broadening Participation	Programmatic	Nurturing American Tribal Undergraduate Research and Education (NATURE) programming
*Communicating Science to the Public	Programmatic	1) Website, 2) Social media, 3) Monthly newsletter, and 4) Communication workshops, and 5) ND EPSCoR Annual State Conference
*Support for EPSCoR-like Programs	Programmatic	1) NSF EPSCoR Track-2 proposals, 2) NSF CAREER proposals, and 3) other EPSCoR-like programs
*Proposal Development Support	Programmatic	Internal and external proposal reviews
*Participating Institution STEM Seed Funding	Programmatic/ Administrative	Competitive STEM research capacity building, education, outreach, workforce development opportunities that are competitively available to all 11 participating campuses
*RII Track-1 match	Programmatic	The National Science Foundation (NSF) requires a 20% state match on each of its 5-year $20M Track-1 cooperative agreements
SO Activity - Administrative Services (* - SO dollars)		
*Financial, Administrative, and Logistical Services	Administrative	1) Oversite of financial obligations covered by the State Office on behalf of all participating institutions, 2) financial oversight, 3) administrative support, trainings and guidance to all 11 ND EPSCoR participating campuses, 4) office and program logistics, and 5) campus outreach to ND EPSCoR participating campuses
*ND EPSCoR State Steering Committee	Administrative	Logistical and administrative support
SO Activity – Leveraged (*- SO dollars; ** - NASA EPSCoR dollars from UND)		
*STEM Capacity Building at the RUs	Leveraged	Investments at NDSU and UND
**NASA EPSCoR	Leveraged	NASA investments on the NDSU campus
SO Administration of Externally Funded Awards (* - external dollars)**		
***NSF EPSCoR Research Infrastructure Improvement (RII) Track-1 Cooperative Agreement	NSF	1) New Discoveries in the Advanced Interface of Computation, Engineering and Science (ND-ACES, 2020-2025)

***NSF Collaborative Research Grant (2020-2022)	NSF	Cultivating Indigenous Research Communities for Leadership in Education and STEM (CIRCLES) Alliance is a collaboration between six EPSCoR jurisdictions

K-12 Schools in North Dakota

K-12 education is an important social good and a stepping stone to community and state prosperity. The ND K-12 education ecosystem consists of public and private entities and formal and informal platforms. Currently, there are 173 school districts across ND with a combined total of 483 schools[2]. There are six major groups (race/ethnicity) that make up the ND K-12 student demographics (Figure 1)[2]. Of all teachers in ND in 2019 – 2020, 63.8% held a Bachelor's degree, 35.5% held a Master's degree and 0.5% held a Doctorate degree (Figure 2)[2]. Enrollment has continued to increase across the state over the past five years with the exception of 2020 – 2021. The decrease in 2022-2021 is likely due to increased home schooling and delaying the start of Pre-K and Kindergarten during the COVID-19 pandemic (Figure 3)[2]. In ND 31% of students are classified as coming from low income families[2]. The graduation rate in the 2019 – 2020 school year was 89%[2]. A detailed summary of the state K-12 data is available at: https://insights.nd.gov/.
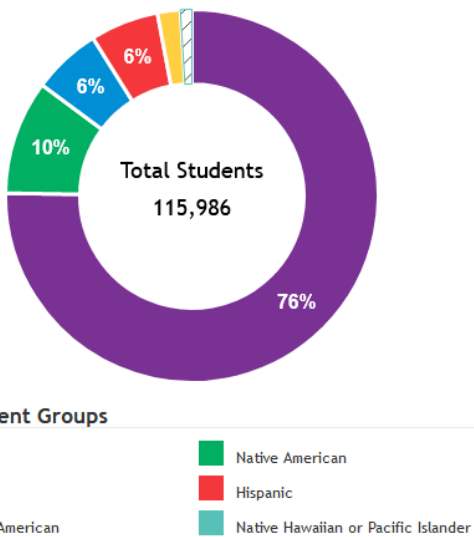

Enrollment Groups

- White
- Black
- Asian American
- Native American
- Hispanic
- Native Hawaiian or Pacific Islander

Figure 1. Total number of students enrolled across ND schools by group in 2019 – 2020. Figure obtained from https://insights.nd.gov/.

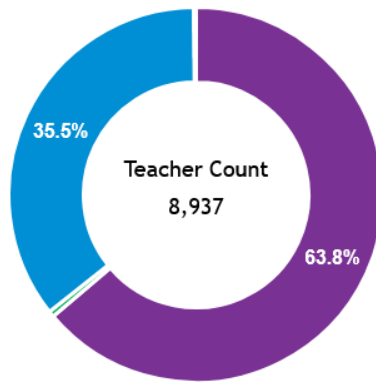**Figure 2. Number of teachers with Bachelor's (purple), Master's (blue) and Doctorate degrees (0.5%) (green) in 2019 – 2020. Figure obtained from https://insights.nd.gov/.**
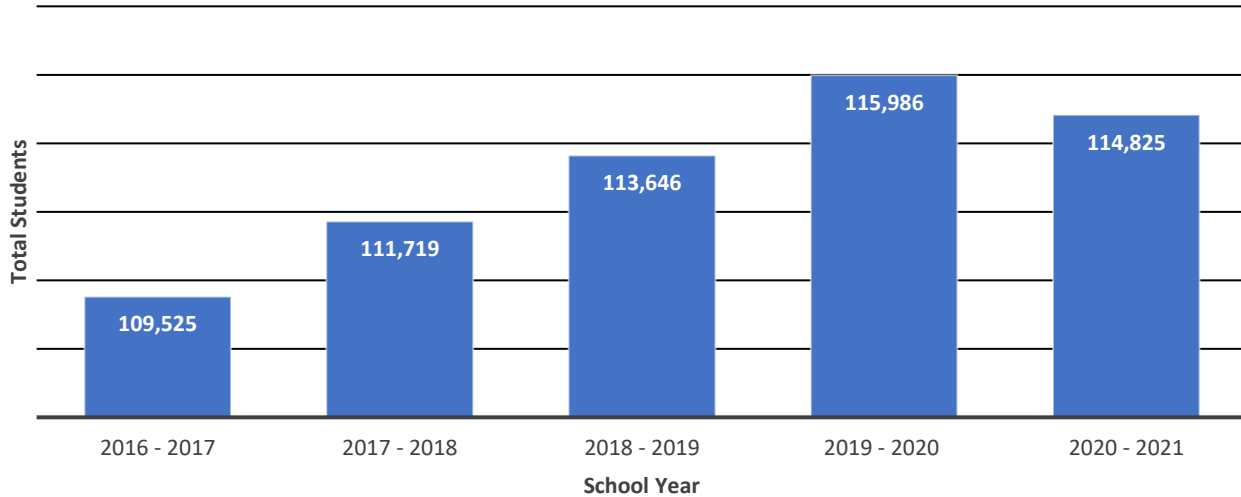
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[2] Insights of North Dakota: https://insights.nd.gov/

Figure 3. Total student enrollment in ND K-12 schools for the past 5 years. Figure obtained from https://insights.nd.gov/.

ND EPSCoR State Office K-12 STEM Needs Survey

While the SLDS data provides a solid background of current demographics in ND K-12, the ND EPSCoR State Office wanted to look more closely at STEM needs from the perspective of K-12 educators and administrators Thus, an online survey was developed to gather feedback from ND K-12 educators. The survey (IRB protocol # XX19159) asked a variety of questions related to interest around STEM education; current resources, curricula strategies, activities, and professional development; and, areas for growth, development, and support. The survey link was disseminated to all the principals listed in the most recently published ND K-12 school directory. Principals were asked to share the link with the teachers in their schools. Responses were received from teachers/administrators in 30 of the state's 53 counties (Figure 4) with representation from schools considered rural and urban. Over 80% of respondents reported being excited or very excited to respond to a survey about developing or augmenting STEM activities within their schools (Figure 5).
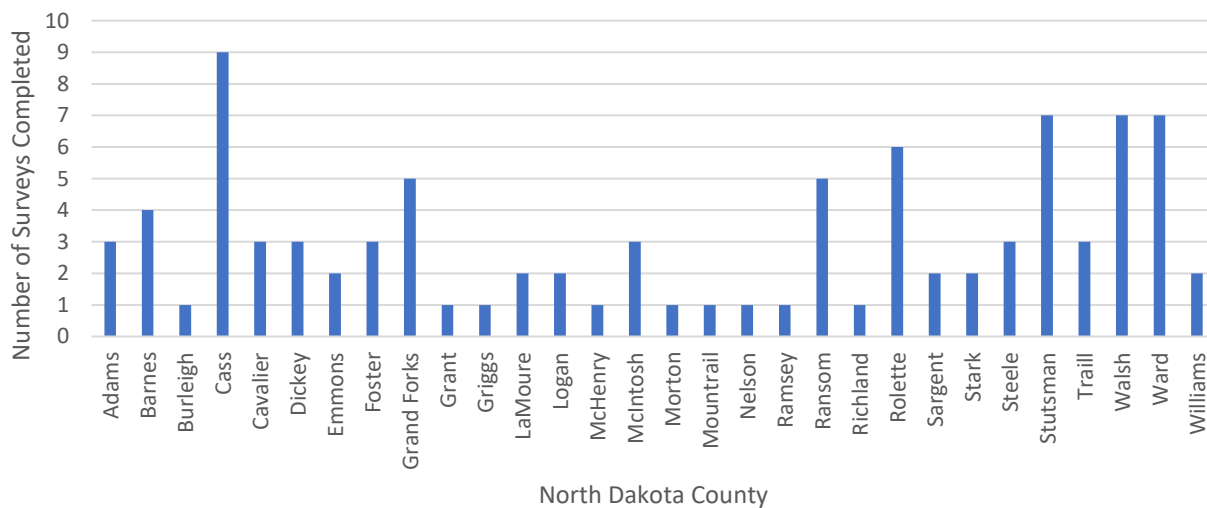

Figure 4. Total number of surveys completed across ND by county during Spring 2020.

On the scale below, how excited are you at the idea of developing/augmenting STEM activities in your school (1= not excited; 5=very excited)?
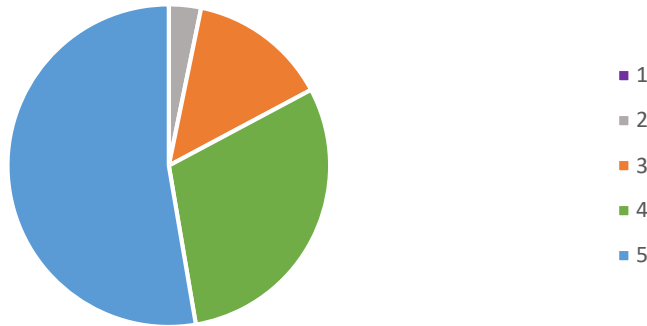

Legend:
- 1
- 2
- 3
- 4
- 5

Figure 5. Interest across ND K-12 schools in developing/augmenting STEM activities.

The survey had a total of 93 responses between Fall of 2019 and June 2020. Of those who took the survey, 75% were K-12 teachers; 20% were school administrators; and, the rest were a combination of support staff, para professionals, and substitute teachers. The grade levels taught by the teachers who completed the survey were 32% from K-5 grades, 23% from 6 – 8 grades, 17% from 9 – 12 grades, and the remaining 28% from a variety of other grade categories (e.g., 7 – 12, K – 12, 5 – 8, 4 – 8). When asked to rank four STEM Education development categories in order of importance (1 = high priority, 4 = low priority), survey respondents overwhelmingly ranked Curriculum and Professional Development higher than community impact and other categories (e.g., funding, materials, supplies) (Figure 6).
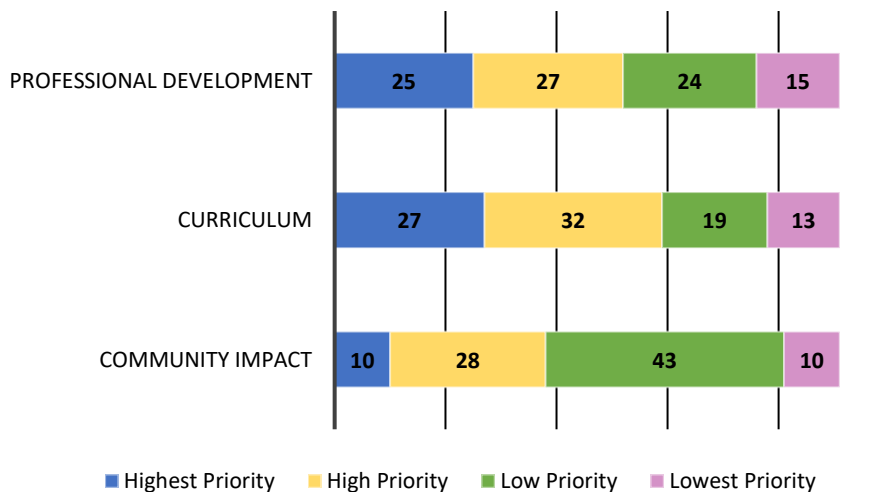

Legend: ■ Highest Priority ■ High Priority ■ Low Priority ■ Lowest Priority

Figure 6. Ranked importance of each in terms of STEM education. 1 = highest priority, 4 = lowest priority. ND EPSCoR K-12 STEM needs survey.

Survey respondents were also asked about currently used classroom design strategies versus what they would like to implement/augment within their classrooms in the future. When viewed together (currently vs. in the future), the two strategies with the highest increase were flipped classrooms (where students learn through hands-on activities and work in teams [10% increase]) and mobile furniture that would more easily accommodate group projects and active learning pedagogies (8% increase). When asked about what curricula strategies they use versus what they would like to implement in their classrooms, the strategy with the highest response was interdisciplinary learning (where multiple subjects are connected/combined to enhance topic understanding [11% increase]). Often times teachers would like to incorporate new ideas, techniques, curricula, etc. into their classroom, but a variety of factors impact whether or not they are able to make those changes. When given the choice between eight different resources, the top three were: 1) online resources with lesson/activity plans; 2) financial assistance for classroom equipment and or other supplies; and, 3) training on how to implement STEM activities into existing curricula (Figure 7).
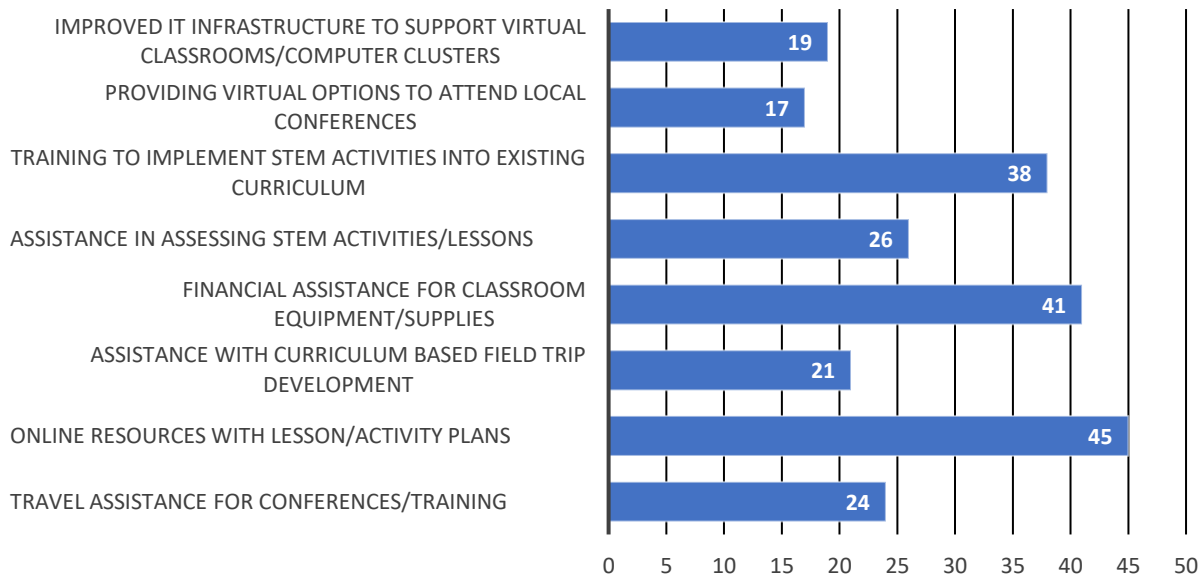
Figure 7. Resources that would be helpful to improve a teacher's ability to incorporate or teach STEM in the classroom.

K-12 educators are often encouraged to attend local and regional professional development opportunities, but some schools are not able to fund these opportunities. The ND EPSCoR State Office survey asked what professional development strategies schools currently use versus what they would like to developed/augmented. The two most currently used strategies are: interested teachers and support staff are sent to STEM conferences, fairs, trainings, and symposiums; and educators are encouraged to attend local and regional STEM and STEM related professional development opportunities. Respondents reported that the strategies they would most like to have developed/augmented is "schools pay, or seek out STEM resources, for teachers and help make them accessible" (55%) (Figure 8).
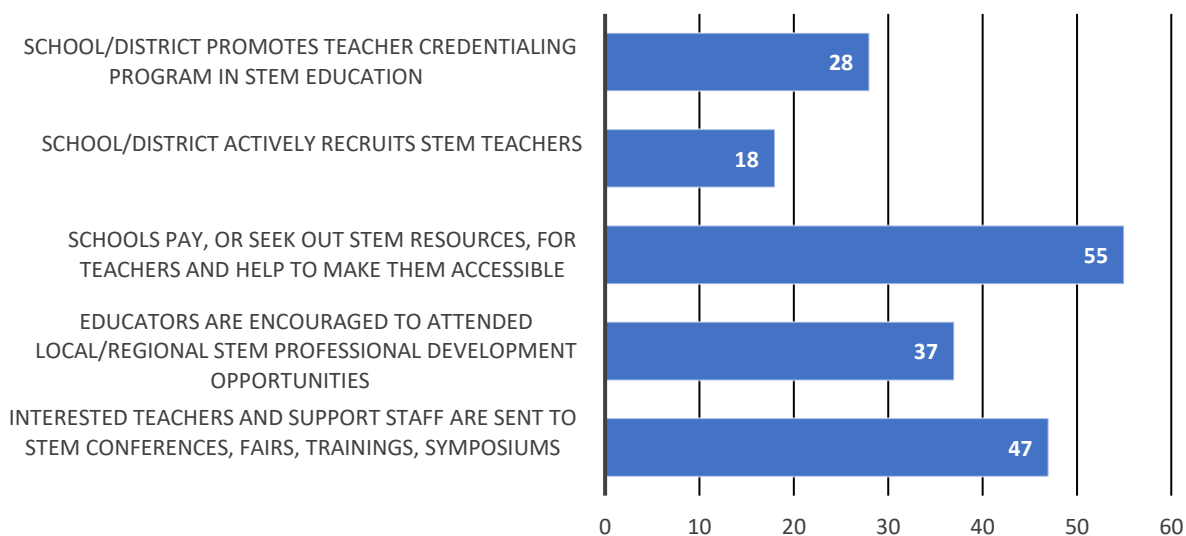

Figure 8. Professional development strategies that teachers would like in their schools/districts.

Finally, ND K-12 schools implement many different STEM activities at the school/district/regional levels to engage students and connect them with STEM experiences and opportunities. When asked what they currently do versus what they would like to develop/augment, the responses selected the most were: 1) networking opportunities with industry; 2) participation in STEM competitions; 3) interactions/tours of industry and higher education; and, 4) internships for students and teachers. If you would like to see the full survey report, it is available by contacting ND EPSCoR at ndepscor@ndus.edu. With the unprecedented changes that occurred to K-12 education across the country due to the COVID-19 pandemic, future surveys will be updated to include questions assessing impacts to schools and teachers in ND.

Education degree options at the ND EPSCoR State Office participating campuses
There is a wide range of education degree options available at the 11 ND EPSCoR State Office participating campuses (Figure 9). Listed below are the education majors that each of the 11 participating campuses currently offer. Each of the campus degrees are divided by Bachelors, Master's, Doctoral, and Specialist. The website for each campus is included for ease of accessing additional information on additional degrees offered by each institution. There is additional demographic data for each of these campuses (Table 2 [PUIs and MCU], Table 3 [TCUs], and Table 4 [RUs]) at the end of the document (APPENDIX A) that shows campus enrollments, makeup of the student body, student/faculty ratio and other campus-specific demographics. Currently, the 11 higher education institutions (from the ND University System and the ND Association of Tribal Colleges) that participate in ND EPSCoR State Office programming all have STEM connections to K-12 through summer camps, outreach, engagement, training the teachers of tomorrow, and more.
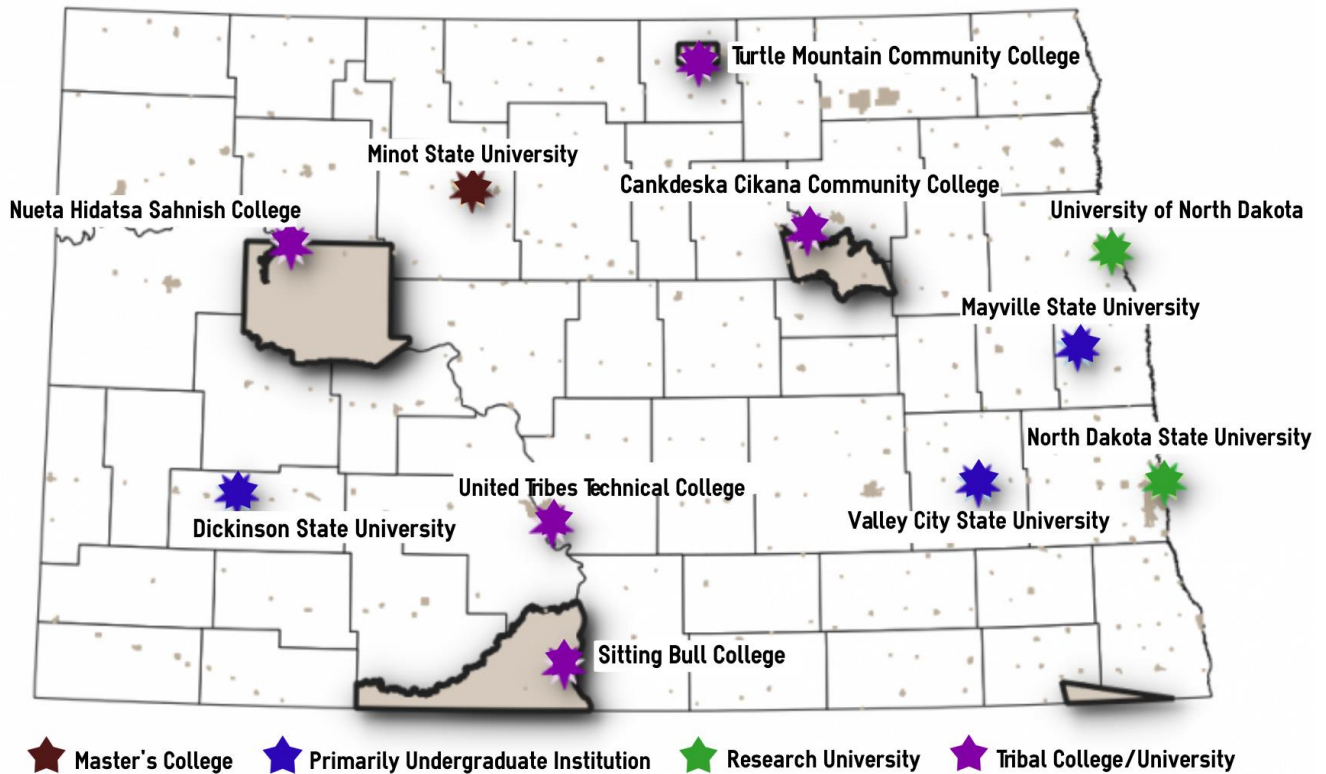

Figure 9. Map of ND EPSCoR State Office Participating Institutions.

The Primarily Undergraduate Institutions (PUIs) and Master's College/University (MCU). The three PUIs and one MCU (Figure 9) were established between 1889 and 1918. Originally called "normal schools," they were created to produce K-12 teachers for schools in ND, and they each continue to have robust education departments that attract large numbers of students. Over the years, these campuses have added departments and degree programs in STEM and many other areas. In addition, they produce education majors in STEM fields, thereby helping fulfill STEM workforce needs in the local communities.

Dickinson State University, Dickinson: https://www.dickinsonstate.edu/academics/fields-of-study/teacher-education/
- Bachelor's Degree Programs (Biology, Business, Chemistry, Composite Science Ed – Biology Track, Composite Science Ed – Earth Science Track, Composite Social Science, Elementary, English, History, Mathematics, Music, Physical Ed (K-12), Technology).
  - o Bachelor of Science in Education Degree - Elementary Education
    (Associate in Science Degree - Elementary Education Option)
  - o Secondary Professional Education Sequence
    (Associate in Science Degree - Secondary Education Option)
  - o Bachelor of Science in Education Degree - Technology Education
    (Technology Education Minor)
- Master's Degree Programs
  - o Master of Arts in Teaching
  - o M.Ed. in collaboration with Minot State
- To see all the degrees offered visit: https://dickinsonstate.edu/academics/program-pages/

Mayville State University, Mayville: https://mayvillestate.edu/academics/teacher-education/
- Bachelors Early Childhood Education B.S.Ed., Elementary Education B.S.Ed., Elementary Education Off-campus B.S. Ed., Secondary Professional Education, Special Education B.S.Ed. (Double-major option), Composite in Biology Education B.S.Ed., Composite in Chemistry Education B.S.Ed., English Education B.S.Ed., Health Education B.S.Ed., History Education B.S.Ed., Mathematics Education B.S.Ed., Mathematics Education B.S.Ed. Online, Physical Education B.S.Ed., Social Science Education B.S.Ed.
- Master of Arts in Teaching (MAT) Program
- Graduate Certificate for Online Teaching
- To see all the degrees offered visit: https://mayvillestate.edu/academics/majors-and-minors/

Minot State University, Minot: https://www.minotstateu.edu/tehp/programs.shtml
https://www.minotstateu.edu/tehp/pages/secondary-education.shtml
- Early Childhood Education, Elementary Education (Concentration: Middle School, and Reading), Art Education, Biology Education, Business Education, Chemistry Education, Earth Science Education, English Education, History Education, Mathematics Education, Music Education, Physical Education, Social Science Education, Special Education
- M.Ed. in collaboration with Minot State, and Masters Programs: Mathematics Teacher, Science Teacher Education)
- To see all the degrees offered visit: https://www.minotstateu.edu/enroll/programs/

Valley City State University, Valley City: https://www.vcsu.edu/departments/education-and-graduate-studies/
http://catalog.vcsu.edu/undergraduate-catalog/programs/majors/
- Art Education, Biology Education, Business Education, Business Education - Composite Major, Career and Technical Education, Career and Technical Education B.S. in Education, Chemistry Education, Elementary

Education, English Education, Health Education, History Education, Mathematics Education, Music Education, Physical Education K-12, Social Science Education, Technology Education
- To see all the degrees offered visit: https://www.vcsu.edu/academics/all-programs/

The Tribal Colleges/Universities (TCUs). The five TCUs in North Dakota (Figure 9) were established between 1969 and 1973. With the exception of United Tribes Technical College (UTTC), each of them is located on a reservation. UTTC, located in Bismarck, was chartered by all of the tribes in North Dakota. The TCUs were created to provide culturally-responsive programs designed to meet the needs of tribal students and to be catalysts of cultural and socioeconomic revitalization for their communities. The TCUs offer a variety of teaching programs for students who are interested in the field of teaching/education. The programs range from an Associate of Arts to Bachelor's degree level. Below is a current list of the degrees/programs offered at the TCUs.

Cankdeska Cikana Community College, Fort Totten: http://www.littlehoop.edu/programs.html
- Associate degrees and Certificates, Associate of Arts in Early Childhood Education
- To see all the degrees offered visit: http://www.littlehoop.edu/programs.html

Nueta Hidatsa Sahnish College, New Town: https://nhsc.edu/academics/degrees-certificates/
- Elementary Education (BA and Assoc.)
- To see all the degrees offered visit: https://nhsc.edu/academics/degrees-certificates/

Sitting Bull College, Fort Yates: https://sittingbullcollege.files.wordpress.com/2020/08/education.pdf https://sittingbull.edu/
- Secondary Science Education, Elementary Education, Early Childhood Education, Teacher Education (Associates), Early Childhood (Associates), Master of Education – Curriculum and Instruction
- To see all the degrees offered visit: https://sittingbull.edu/sitting-bull-college/programs/

Turtle Mountain Community College, Belcourt: https://www.tm.edu/academics/bachelor-of-science/teacher_education/
- Elementary Education, Secondary Science (5 – 12) Education
- To see all the degrees offered visit: https://www.tm.edu/academics/

United Tribes Technical College, Bismarck: https://uttc.edu/academic-affairs/elementary-education/
- Elementary Education (AS and BS)
- To see all the degrees offered visit: https://uttc.edu/degree-overview/

The Research Universities (RUs). The two RUs were founded in 1883 and 1890 (Figure 9). As North Dakota's public land-grant research university, that the role of North Dakota State University (NDSU) included an emphasis on agricultural programs and a network of agricultural research extension centers throughout the state. Whereas, the University of North Dakota (UND) was founded as a liberal arts university, including North Dakota's schools of medicine and law. From the beginning, both RU's goals included research and teaching in service of the entire state. The RUs offer a variety of teaching programs for students who are interested in the field of teaching/education. The programs range from Bachelor's degree to Ph.D./Ed.D. level. Below is a current list of the degrees/programs offered at the RUs.

North Dakota State University, Fargo: https://www.ndsu.edu/education/ and https://www.ndsu.edu/ted/
- Bachelor's Degrees:
  - Secondary Ed: Agricultural Teacher, Biology Teacher, Chemistry Teacher, Earth Science Teacher, Mathematics Teacher, Physics Teacher, Science Education Teacher. Masters Programs: Agricultural Teacher, Teacher Education (linked with Valley City for degree granting)
  - K-12 Ed: Art, Music, and Physical Education
- Master's Degrees:
  - Master of Education (M.Ed.) and Master of Science (M.S.) degrees in six areas: Counseling, Education, Agricultural Education, Extension Education, Family & Consumer Sciences Education, and Educational Leadership
- Specialist Degree:
  - The School of Education offers graduate study leading to the Education Specialist (Ed.S.)
- Doctoral Degrees:
  - Doctor of Philosophy (Ph.D.) degrees in Counselor Education and Supervision and both the Doctor of Philosophy (Ph.D.) and Doctor of Education (Ed.D.) degrees in Education
- To see all the degrees offered visit: https://www.ndsu.edu/academics

University of North Dakota, Grand Forks: https://education.und.edu/academics/tlpp/teacher-education/
https://education.und.edu/academics/index.html#d29e93-1
- Bachelor's Degrees
  - Secondary Ed: Biology, Chemistry, English, French, Geology, Geography, German, Mathematics, Music Education, Physical Education, Physics, Spanish, Visual Arts
  - K-12 Ed: Physical Education, Music
  - B.S.E.D. with major in Early Childhood Education, B.S.E.D. with major in Elementary Education, B.S.E.D. with Major in Middle Level Education, B.S.E.D. with Major in Secondary Education, B.S.E.D. with composite major in Science (secondary), B.S.E.D. with composite major in Social Studies (secondary)
- Master's Degrees
  - Master of Arts in Counseling (K-12 School Counseling Emphasis); Master of Science Educational Studies; Master of Science in Higher Education; Master of Education in Instructional Design & Technology; Master of Science in Instructional Design & Technology; Master of Education in Educational Leadership; Master of Science in Early Childhood Education; Master of Science in Reading Education; Master of Science in Special Education; Master of Science in Teaching & Leadership; Master of Education in Elementary Education; Master of Education in Reading Education; Master of Education in Special Education; Master of Education Teaching English to Speakers of Other Languages (TESOL)
- Doctoral Degrees
  - Doctor of Philosophy in Counseling Psychology; Doctor of Philosophy in Educational Foundations & Research; Doctor of Education in Educational Practice and Leadership; Doctor of Philosophy in Teaching and Leadership
- To see all the degrees offered visit: https://und.edu/academics/index.html

STEM Outreach and Engagement
Throughout the past year the ND EPSCoR State Office has made statewide investments K-12 outreach and engagement. From the Education Portal that provides access to lesson plans for teachers, to the partnership with North Dakota's Gateway to Science (Bismarck) where funding from the ND EPSCoR State Office helps get their STEMzones (program of informal STEM activities) into schools that might not otherwise be able to afford the hands-on enrichment. The ND EPSCoR State Office looks forward to continuing to provide support to strengthen the ND STEM pathway for students of all ages.

ND EPSCoR State Office STEM Education Portal.

In response to a need identified by teachers in 2020 the ND EPSCoR began contracting with K-12 teachers to take the Nurturing American Tribal Undergraduate Research and Education (NATURE) Sunday Academy informal STEM modules/activities and develop them into full K-12 lesson plans that teachers can access via the ND EPSCoR State Office STEM Education Portal.

The STEM Education Portal (Figure 10; https://education.ndepscor.nodak.edu) is a free, online resource provided by the ND EPSCoR State Office. The portal contains a variety of downloadable lesson plans. The ND EPSCoR State Office began working with ND K-12

Figure 10. Screen shot of the homepage of the ND EPSCoR STEM Education Portal.

educators in summer 2020 to convert ND EPSCoR-developed STEM activities into STEM lesson plans. The background STEM activities have been developed over the past 13 years by NDSU and UND faculty and K-12 teachers from tribal communities as past to the ND EPSCoR State Office NATURE Sunday Academy program (https://www.ndepscor.ndus.edu/ndep/nature/sunday-academy/). Each STEM lesson plan is linked to research being conducted by the faculty at UND and NDSU and comes with a PowerPoint slide deck, a detailed plan with the state and national standards addressed, and associated worksheets and assessment tools. Filters in the portal allow teachers to search by STEM subject or K-12 standards. New STEM lesson plans will be posted to the Education Portal each summer. As of July 2021, there have been 33 downloads of lesson plans that are estimated to reach 2000+ students. Additionally, the ND EPSCoR State Office is currently working with American Indian culture leaders to develop cultural supplements for these STEM lesson plans.
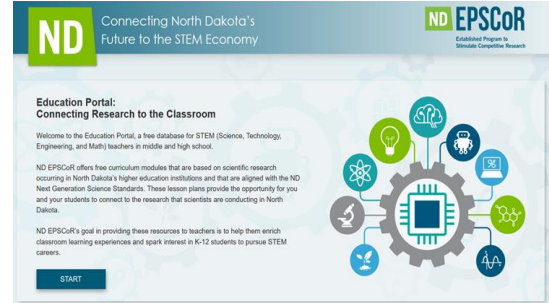
External Partnership: North Dakota's Gateway to Science.

The ND EPSCoR State Office partners with North Dakota's Gateway to Science to support their K-12 STEM programming within the state by providing funding for STEMzone experiences. The mission of North Dakota's Gateway to Science is to inspire the discovery of science through hands-on experiences. *North Dakota's Gateway to Science* fulfills its mission by operating an interactive exhibit gallery in Bismarck and developing and delivering mobile educational outreach programs across the state through *North Dakota's Gateway to Science on the Go van* (Figure 11)*. North Dakota's Gateway to Science* is currently developing several new programs to offer educators,

Figure 11. Image of *North Dakota's Gateway to Science* on the Go van with the ND EPSCoR State Office logo.

including informal STEM activity kits, workshop presentations in the classroom, virtual workshops, and other online resources. In addition to on- and off-site programming, *North Dakota's Gateway to Science* offers a STEM at Home section as well as a Resource Center for families and educators on its website. Students, parents, and teachers will find hands-on informal STEM activities to do at home or in the classroom, a list of recommended STEM books, and a wide variety of STEM-related websites.

As an informal STEM setting, the science center complements the formal education system. *North Dakota's Gateway to Science* offers youth, families, and the public a fun, stress-free gateway to explore science, technology, engineering, and math (STEM). Programs – including camps, afterschool clubs, Preschool Discovery Hour, and Girls Who Code – spark students' interests and connect their passions with STEM education and career opportunities in North Dakota. To learn more, visit https://gatewaytoscience.org/.

Participating Higher Education institutions in ND. Across ND the institutions of Higher Education that partner with the ND EPSCoR State Office are involved in a variety of outreach and engagement programs/activities with K-12 schools throughout the school year as well as during the summer. The list below has been compiled from the ND EPSCoR State Office yearly meetings with campuses and supplemented with information found on each institution's website. If there are additional items not mentioned here please contact ND EPSCoR at ndepscor@ndus.edu with the information and the list will be updated.

- Cankdeska Cikana Community College, Fort Totten
  - o NATURE Programs (Sunday Academy, Bridge Camp, Tribal College Summer Camp, University Summer Camp) – Campus Contact: TBD https://www.ndepscor.ndus.edu/nd-epscor-programs/nature/)
  - o TRIO Talent Search – Campus Contact: Cali DeMarce: cali.demarce@littlehoop.edu (https://www.littlehoop.edu/trio.html)

- Dickinson State University, Dickinson
  - o Discovery Dome – Campus Contact the Discovery Dome at: dsu.discoverydone@dickinsonstate.edu (http://dsudiscoverydome.com/#!/splash-page)
  - o Information on multiple camps, activities and resources for K-12 at the West River Teacher Center website – Campus Contact: Hildee Fike: hildee.fike@dickinsonstate.edu https://dickinsonstate.edu/academics/fields-of-study/teacher-education/west-river-teacher-center/teacher-resources/

- Mayville State University, Mayville
  - o Education and Innovation Center: https://mayvillestate.edu/community/eic/ - Campus Contact: Jeni Peterson: jeni.peterson@mayvillestate.edu
    - i. STEM Carnival and STEM kits to check out
    - ii. Teacher Professional Development

- Minot State University, Minot
  - o MSU Science Division K-12 Outreach Activities/Open House/Science Club – Campus Contacts: Naomi Winburn: naomi.winburn@minotstate.edu and Dr. Bob Crackel: robert.crackel@minotstate.edu

- North Dakota State University, Fargo
  - o STEM Kids Camp: https://www.ndsu.edu/coe/outreach/stem_kids_camp/ - Campus Contact: Lauren Singelmann: lauren.n.singelmann@ndsu.edu
  - o 4-H Youth Development Camp: Campus Contact varies by NDSU Extension offices: www.ag.ndsu.edu/extension/directory/counties https://www.ndsu.edu/4h/website_master/camp/camp_descriptions/
  - o College of Engineering K-12 Outreach: https://www.ndsu.edu/coe/outreach/ - Campus Contact: lauren.n.singelmann@ndsu.edu

- Nueta Hidatsa Sahnish College, New Town
  - o Community Outreach: https://nhsc.edu/community/ - visit the website for contact emails for each of the five different sites
  - o NATURE Programs (Sunday Academy, Bridge Camp, Tribal College Summer Camp, University Summer Camp) Campus Contact: Kerry Hartman: khartm@nhscu.edu (https://www.ndepscor.ndus.edu/nd-epscor-programs/nature/)

- Sitting Bull College, Fort Yates
  - NATURE Programs (Sunday Academy, Bridge Camp, Tribal College Summer Camp, University Summer Camp) Campus Contact: Mafany Ndiva Mongoh: Mafany.mongoh@sittingbull.edu (https://www.ndepscor.ndus.edu/nd-epscor-programs/nature/)

- Turtle Mountain Community College, Belcourt
  - Anishinaabe Learning, Cultural, and Wellness Center: https://www.tm.edu/departments/anishinabe-learning-cultural-and-wellness-center/activities-2/ Campus Contact: Mark Hamley: mhamley@tm.edu
  - NATURE Programs (Sunday Academy, Bridge Camp, Tribal College Summer Camp, University Summer Camp) Campus Contact: Austin Allard: allard@tm.edu (https://www.ndepscor.ndus.edu/nd-epscor-programs/nature/)

- United Tribes Technical College, Bismarck
  - Intertribal Research & Resource Center (IRRC) "serves the tribes of the Northern Plains by providing Research, Outreach, Training, and Education in the sustainability of food, energy, and water resources.": https://uttc.edu/irrc/ Campus Contact: Jeremy Guinn: jguinn@uttc.edu and https://uttc.edu/irrc/outreach/ Campus Contact: Anna Bahnson: abahnson@uttc.edu
  - NATURE Programs (Sunday Academy, Bridge Camp, Tribal College Summer Camp, University Summer Camp) Campus Contact: Mandy Guinn: mguinn@uttc.edu (https://www.ndepscor.ndus.edu/nd-epscor-programs/nature/)

- University of North Dakota, Grand Forks
  - College of Engineering and Mines K-12 Outreach (FIRST Lego League, Summer Camps, Education resources and more: https://engineering.und.edu/outreach/k-12/ - Campus Contact: Gwen Klawon: Gwendolyn.klawon@und.edu
  - ND Space Grant Consortium (https://ndspacegrant.und.edu/) – Campus Contact: Caitlin Nolby: Caitlin.nolby@und.edu; STEM Ambassadors: https://ndspacegrant.und.edu/stem-ambassadors.html – Campus Contact: Tori McIntosh: tori.mcintosh@und.edu
  - INMED Summer Institute: https://med.und.edu/indians-into-medicine/summer-institute.html - Campus Contact: Dr. Donald Warne: Donald.warne@und.edu
  - Computer Science Summer camps: http://camps.cs.und.edu/ - Campus Contact: Tim Stokke: tstokke@cs.und.edu
  - International Aerospace Camp: https://aero.und.edu/aviation/aerocamp.html#faq-1 Campus Contact: aerospacecamps@aero.und.edu

- Valley City State University, Valley City
  - Middle School STEM Academy: https://www.vcsu.edu/academics/academic-centers/great-plains-stem-education-center/middle-school-stem-academy/
  - Prairie Waters Resource Center: https://www.vcsu.edu/academics/academic-centers/prairie-waters-education-research-center/
    - Summer Camps: https://www.vcsu.edu/academics/academic-centers/prairie-waters-education-research-center/summer-camps/
  - Great Plains STEM Education Center: https://www.vcsu.edu/academics/academic-centers/great-plains-stem-education-center/
    - Professional Development, Curriculum materials and more

Ongoing Efforts to include Native American/cultural supplements in All STEM Education Activities
The ND EPSCoR State Office has a long history of working with the state's tribal communities to promote STEM through its NATURE programming. As identified above, the ND EPSCoR State Office is in the process of revamping its informal Sunday Academy STEM activities into K-12 lesson plans that can be accessed via our Education Portal. To complement those lesson plans, the ND EPSCoR State Office has contracted with American Indian cultural experts throughout the state to develop cultural supplements that will link the STEM lesson plans to tribal culture/indigenous knowledge.

There are five federally recognized Tribes and one Indian community located at least partially within the State of North Dakota: 1) Mandan, Hidatsa, & Arikara Nation (Three Affiliated Tribes), 2) Spirit Lake Nation, 3) Standing Rock Sioux Tribe, 4) Turtle Mountain Band of Chippewa Indians, 5) Sisseton-Wahpeton Oyate Nation, and 6) Trenton Indian Service Area. According to the ND Indian Affairs website (https://www.indianaffairs.nd.gov/tribal-nations), there are 31,329 American Indians living in North Dakota, making up 4.9% of the total population; almost 60% of whom live on reservations and over 40% of whom are under the age of 20. The history, language, and teachings of each of these tribes are an important part of ND and United States history. The ND Department of Public Instruction has worked with representatives from each of the tribes to develop information for use in the classroom called "Teachings of our Elders. More information can be found at: https://www.nd.gov/dpi/education-programs/indian-education/north-dakota-native-american-essential-understandings and, https://teachingsofourelders.org/.

Appendix A

Table 2. Demographics and STEM Programs of the three PUIs and one MCU. *This table and subsequent updates are posted* here*.*			
Dickinson State University (DSU, a PUI)	**Mayville State University (Mayville State, a PUI)**	**Minot State University (Minot State, a MCU)**	**Valley City State University (VCSU, a PUI)**
CAMPUS DEMOGRAPHICS			
Location: Dickinson, ND	Location: Mayville, ND	Location: Minot, ND	Location: Valley City, ND
President: Stephen Easton, J.D.	President: Dr. Brian Van Horn	President: Dr. Steven Shirley	President: Dr. Alan LaFave
Total Enrollment: 1441	Total Enrollment: 1168	Total Enrollment: 2920	Total Enrollment: 1953
Student/faculty ratio: 13 to 1	Student/faculty ratio: 13 to 1	Student/faculty ratio: 11 to 1	Student/faculty ratio: 13 to 1
by state of residency: in-state: 60% out-of-state: 34%	by state of residency: in-state: 61% out-of-state: 49%	by state of residency: in-state: 79% out-of-state: 21%	by state of residency: in-state: 74% out-of-state: 24%
by ethnicity: American Indian: 1% Asian: 1% Black or African American: 4% Hispanic/Latino: 6% White: 79% Two or more races: 3% Nonresident Alien: 3%	by ethnicity: American Indian: 1% Asian: 2% Black or African American: 6% Hispanic/Latino: 6% White: 81% Two or more races: 4% Nonresident Alien: 7%	by ethnicity: American Indian: 1% Asian: 1% Black or African American: 4% Hispanic/Latino: g8% White: 70% Two or more races: 6% Nonresident Alien: 9%	by ethnicity: American Indian: 1% Asian: 1% Black or African American: 2% Hispanic/Latino: 5% White: 85% Two or more races: 4% Nonresident Alien: 2%
by gender: female: 59% male: 41%	by gender: female: 62% male: 38%	by gender: female: 62% male: 38%	by gender: female: 60% male: 40%
by age: 24 or under: 79% 25 and over: 21%	by age: 24 or under: 70% 25 and over: 30%	by age: 24 or under: 77% 25 and over: 23%	by age: 24 or under: 75% 25 and over: 25%
NUMBER OF DEGREE PROGRAMS			
Certificate level 6	Certificate level 7	Certificate level 7	Certificate level 1
Associate level	Associate level	Associate level	Associate level

5	3	1	0
Bachelor level 52	Bachelor level 34	Bachelor level 56	Bachelor level 38
Graduate level 2	Graduate level 1	Graduate level 8	Graduate level 1
Graduate Certificates 0	Graduate Certificates 2	Graduate Certificates 9	Graduate Certificates 0
FIVE LARGEST STEM PROGRAMS AND NUMBER OF STUDENTS/PROGRAM			
Biology BS 62	Biology BS 33	Mathematics BS 11	Fish & Wildlife Man. BS 73
Computer Science BS 18	Mathematics BS 32	Biology BS 123	Health Science BS 52
Comp. Tech Mgmt BS 10	Chemistry BS 5	Chemistry BS 40	Biology BA/BS 20
Mathematics BS 6	Computer Science BS 2	Geology BS 15	Software Eng. BA/BS 15
Environ. Science BS 5	none	Comp. Science BS 65	Comp. Info. Sys. BA/BS 14

Table 3. Demographics and STEM Programs of the Five TCUs.
This table and subsequent updates are posted here.

Cankdeska Cikana Community College (CCCC)	Nueta Hidatsa Sahnish College (NHSC)	Sitting Bull College (SBC)	Turtle Mountain Community College (TMCC)	United Tribes Technical College (UTTC)
CAMPUS DEMOGRAPHICS				
Location: Ft. Totten, ND	Location: New Town, ND	Location: Ft. Yates, ND McLaughlin, SD Mobridge, SD	Location: Belcourt, ND	Location: Bismarck, ND
President: Dr. Cynthia Lindquist	President: Dr. Twyla Baker	President: Dr. Laurel Vermillion	President: Dr. Donna Brown	President: Dr. Leander McDonald
Total Enrollment: 293	Total Enrollment: 252	Total Enrollment: 405	Total Enrollment: 826	Total Enrollment: 528
Student/faculty ratio: 6 to 1	Student/faculty ratio: 9 to 1	Student/faculty ratio: 9 to 1	Student/faculty ratio: 10 to 1	Student/faculty ratio: 8 to 1
by state of residency: in-state: 100% out-of-state: 0%	by state of residency: in-state: 99.5% out-of-state: 0.05%	by state of residency: in-state: 55% out-of-state: 45%	by state of residency: in-state: 100% out-of-state: 0%	by state of residency: in-state: 54% out-of-state: 46%
by ethnicity: American Indian: 88% Asian:	by ethnicity: American Indian: 82% Asian:	by ethnicity: American Indian: 90% Asian:	by ethnicity: American Indian: 96% Asian:	by ethnicity: American Indian: 91% Asian:

0%	0%	0%	0%	0%
Black or African American: 1%	Black or African American: 2%	Black or African American: 0%	Black or African American: 0%	Black or African American: 3%
Hispanic/Latino: 1%	Hispanic/Latino: 6%	Hispanic/Latino: 0%	Hispanic/Latino: 1%	Hispanic/Latino: 0%
White: 9%	White: 6%	White: 9%	White: 3%	White: 5%
Two or more races: 0%	Two or more races: 5%	Two or more races: 0%	Two or more races: 0%	Two or more races: 0%
by gender: female: 65% male: 35%	by gender: female: 67% male: 33%	by gender: female: 68% male: 32%	by gender: female: 60% male: 40%	by gender: female: 64% male: 36%
by age: 24 or under: 53% 25 and over: 47%	by age: 24 or under: 51% 25 and over: 48%	by age: 24 or under: 42% 25 and over: 57%	by age: 24 or under: 60% 25 and over: 40%	by age: 24 or under: 51% 25 and over: 49%
NUMBER OF DEGREE PROGRAMS				
Certificate level 3	Certificate level 8	Certificate level 10	Certificate level 13	Certificate level 5
Associate level 18	Associate level 12	Associate level 18	Associate level 11	Associate level 15
Bachelor's level none	Bachelor's level 3	Bachelor's level 7	Bachelor's level 3	Bachelor's level 3
Graduate level none	Graduate level none	Graduate level 3	Graduate level none	Graduate level none
FIVE LARGEST STEM PROGRAMS AND NUMBER OF STUDENTS/PROGRAM				
Nat. Res. Man. AS 2	Pre-Engineer AS 12	Environ. Studies AS 9	Gen. Science AS 32	Environ. Sci. AS 13
Pre-Engineer AS 5	Environ. Studies AS 7	Environ. Studies BS 5	Pre-Engineer AS 6	Environ. Sci. BS 6
Computer Sci. AS 1	Science AS 5	Info. Tech. AS 10	Pre-Environ. Sci. AS 1	Pre-Engineer AS 9
Environ. Sci. AS program furloughed	Environ. Sci. BS 5	Pre-Engineer AS 3	Biology AS 0	none NA
none NA	Mathematics AS 1	Environ. Studies MS 4	Chemistry AS 0	none NA

Table 4: Demographics and STEM Programs of the two RUs.

This table and subsequent updates are posted here.

North Dakota State University	University of North Dakota
CAMPUS DEMOGRAPHICS	
Location: Fargo, ND	Location: Grand Forks, ND
President: Dr. Dean Bresciani	President: Dr. Andrew Armacost
Total Enrollment: 12,846	Total Enrollment: 13,615
Student/faculty ratio: 16 to 1	Student/faculty ratio: 17 to 1
by state of residency: in-state: 42% out-of-state: 58%	by state of residency: in-state: 34% out-of-state: 66%
by ethnicity: American Indian: 0.6% Asian: 4.7% Black or African American: 3.2% Hispanic/Latino: 2.8% White: 83.5% Two or more races: 3.6%	by ethnicity: American Indian: 1.5% Asian: 2% Black or African American: 3% Hispanic/Latino: 4% White: 76% Two or more races: 4%
by gender: female: 49% male: 51%	by gender: female: 49% male: 51%
by age: 24 or under: 83% 25 and over: 17%	by age: 24 or under: 65% 25 and over: 35%
NUMBER OF DEGREE PROGRAMS	
Certificate level undergrad: 6	Certificate level undergrad: 36
Certificate level: graduate: 25	Certificate level graduate: 26
	Certificate level professional: 2
Associate level: 0	Associate level: 0
Bachelor's level: 146	Bachelor's level: 179
Graduate level: 135	Graduate level: 104
	Professional level: 2
FIVE LARGEST STEM PROGRAMS AND NUMBER OF STUDENTS/PROGRAM	
Mechanical Engineering: 797	Commercial Aviation: 1562
Biological Sciences: 458	Mechanical Engineering: 654
Computer Science: 453	Biology: 449
Civil Engineering: 366	Civil Engineering: 355
Electrical Engineering: 278	Electrical Engineering: 331