Enhancing Institutional Education Research Capacity
National Summit to Survey and Stimulate Broadening Participation
Research at Historically Black and Tribal Colleges and Universities

Quality Education for Minorities (QEM) Network
Hilton Baltimore BWI/Airport, 1739 W Nursery Rd, Linthicum Heights, MD 21090 Arlington, VA
March 8, 2019
Leander R. McDonald, PhD, President
& Jeremy Guinn, PhD, Director, Intertribal Research & Resource Center
United Tribes Technical College (UTTC)

• United Tribes Technical College (UTTC) is celebrating fifty years of educational service, twenty-five years as a 1994 Land Grant institution, and thirty-seven years of accreditation by the Higher Learning Commission.

• The legacy of workforce development and employment training continues through the offering of three certificates, five associate of applied science, nine associate of science, and four bachelor of science, degrees.

• The ongoing mission and vision are to train American Indian students with vocations that will provide them with the skills they need to take care of themselves and their families while they contribute to their nations and society.
Average Annual Total Undergraduate (duplicated count)

911 student average over the last three years.

- 2013-14: [VALUE]
- 2014-15: 1,001
- 2015-16: 901
- 2016-17: 919
- 2017-18: 914
UTTC Average Age

The average student age is steadily decreasing at UTTC.
UTTC Student Demographics – Fall 2017

- Female: 66%
- Male: 34%

- Native American: 92%
- Non-Native: 8%

- Full Time: 86%
- Part Time: 14%

- Onsite: 89%
- Online: 11%
48 Native American tribal nations were represented in the UTTC student body in 2017.

- Navajo Nation 2.0%
- Rosebud Sioux Tribe 3.5%
- Sisseton Wahpeton Sioux Tribe 3.5%
- Oglala Sioux Tribe 4.4%
- Spirit Lake Tribe 5.9%
- Cheyenne River Sioux Tribe 9.6%
- Turtle Mountain Band of Chippewa Indians 12.9%
- Standing Rock Sioux Tribe 15.7%
- Three Affiliated Tribes 21.9%
**UTTC Institutional Review Board**

- **Initiated** in 2003
  - Registered with the U.S. Department of Health and Human Services Office for Human Research Protections (OHRP)
  - Human Protection – surveys, behavioral health, communication styles, leadership styles, etc.
- **Partnerships**
  - United States Department of Agriculture (USDA)
    - Agriculture Research Service (ARS) specifically Grand Forks Human Nutrition Research Center
  - North Dakota Association of Tribal Colleges
  - University of North Dakota
  - North Dakota State University
- **Ongoing activities**
  - Monthly meeting dates and Committee membership
  - IRB make-up – UTTC faculty and staff knowledgeable in research
  - Periodically request Project Investigators (PIs) share:
    - annual updates
    - poster sessions and conference presentations
    - data results (interpretation and analysis)
    - final reports – “Summary of Results” or to funding agencies
    - publications (professional and/or peer reviewed articles)
IACUC—Research on Vertebrate Organisms

Purpose of IACUC - Institutional Animal Care and Use Committees

- Review research and teaching involving vertebrate animals, according to PHS Policy*, administered by OLAW - Office of Laboratory Animal Welfare.
- IACUCs were originally designed to protect laboratory animals and researchers
- IACUC has expanded to cover projects on wildlife and even merely observational studies of wild species (ex. using trail cameras)

Compliance Through Partnerships

- Review requires an established research partnership with an institutional faculty sponsor
- Vertebrate projects are reviewed by IACUCs from partnering institutions (UND, NDSU, USDA-Agriculture Research Service)
- As our capacity grows and more independent research is conducted, this is becoming an increasingly cumbersome process

UTTC Vertebrate Animal Research Discussion

- UTTC has not initiated an IACUC to date
- Membership requires inclusion of a Doctor of Veterinarian Medicine with experience in lab animal science
- UTTC has no plans to house animals
- UTTC’s IRB serves as a resource for topics considered controversial or that may have cultural concerns
- Should a UTTC IACUC be considered, next steps would include communicating with OLAW, drafting policies, recruiting IACUC members, and obtaining assurance (https://olaw.nih.gov/guidance/obtaining-an-assurance.htm)

Research conducted on tribal lands should ensure:

• Tribes retain ownership of the data
  • Data analyses, publication, and/or presentation must be approved by tribal council and/or Institutional Review Board (IRB)
  • Data archives in chronological order assists in tracking research that could assist in better research being conducted (i.e., trend analysis)

• Research benefits to the tribe
  • Compensation to participants (human subject research)
  • Tribal research capacity is developed or enhanced
  • Reports are provided to tribal council and/or research contact person(s) or team for dissemination, cataloging, and archives
  • Future graduate students may wish to utilize data archives to complete thesis or dissertation requirements
Tribal Control

• Tribal Colleges and Universities (TCUs) have a responsibility to develop and implement curricula specific to our Nations, cultural perspectives, and practical application.

• TCUs must ensure tribal students recognize the political status of our Nations as sovereign governments by providing an accurate history of what transpired since European first contact. Ex. Genocide, assimilation, and termination, attempts.

• We are unique in comparison to other Minority Serving Institutions (MSIs) in that the United States government is fulfilling a trust responsibility for the provision of education for the cessation of millions of acres of land.
Research at UTTC

• Develop a research culture with clear goals and expectations
• Serve tribes throughout the region, on campus, in the surrounding area, and on the home reservations of our students
• Recognize our students’ strong commitment to serving their communities and the protection of natural resources
• Build on an established core of diverse researchers and educators in the science and agriculture fields
15-years of Environmental Science at UTTC
STEM Transition over time

- Several innovative solutions for increasing student enrollment, retention, and completion, were attempted over time.
- Several associate-level degrees were created (Environmental Field Technician, Environmental Lab Technician, GIS, Pre-engineering).
- Faculty positions were added and positions began to stabilize.
- Institutional transitions occurred that provided a foundation for STEM program growth.
# STEM Enrollment

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2004
• The science program shared one classroom and one lab in the Skills Center; faculty offices were across campus in Building 35.
• A student area was carved out of the Building 35 basement to be used for student meetings and computer lab.

2019
• Science & Technology Center boasts 6 lecture rooms, 3 teaching labs, a dedicated research lab, office space for eleven, and student areas.
• Genetics Lab (PCR, sequencer)
• Environ. Analysis Lab (HPLC, GCMS)
2004
• Prior to 2004, UTTC offered no STEM program, just a few general education science courses.
• In 2004, the AS Environmental Science program was initiated.
• In early years, the program had more of a Geoscience focus due to faculty background.

2019
• UTTC offers:
  • AS degrees in Pre-engineering and Computer Information Technology
  • AS and BS degree in Environmental Science & Research.
    • BS program tracks include:
      • Ecology & Conservation
      • Cell & Molecular Biology
2004 – 2010

- In early years, the program typically consisted of one non-teaching department chair and 1-2 faculty members, often shared with Gen. Ed. or Nursing programs.
- High turnover = short longevity (2-3 years was common)
- A few PhDs passed through, but BS was the most common degree held.

2019

- Long-tenured faculty are now the norm (average 8+ years).
- 5 PhDs and 4 MS
- Faculty positions include:
2004 – 2010

- Very little research was done; most opportunities came through external partners including visiting summer activities.
- 1-semester research course was implemented, but had limitations.
- Basically, staff was teaching to fill general education requirements.

2019

- Research fully integrated into academic program and required for graduation.
- 10 credits of research (AS) and 9 additional credits of research (BS)
- Students provide a department seminar and defend their project.
- Summer REU programs on-site or off-site.
- National and International Partners
- First Research Center provided new opportunities.
Community & Outreach

2004 – 2010

- Outreach has always been an important part of STEM programming at UTTC.

2019

- Outreach remains a priority.
- Sunday and Summer Academy Programs
- K-12 presentations
- STEM-Spectaculars (booths)
- Science Fair Participation
- Tribal Science Outreach Coordinator (new hire 2019) for Research Center
Observations of STEM Teaching & STEM Students

Challenges
- Disconnect between coursework and application
- Lack of goals beyond obtaining the degree

Recruitment and Retention are key to the success of any program
- Research as a means of improving student interest and keeping them going in programs—and keeping faculty motivated!
- Research became the mechanism for engaging students
Train Scientists by doing Science!
Ideas for implementing research into busy schedules:

1. Integrate research into the curriculum
2. Move toward research immersion programs
3. Seek funding for students for short-term projects during summer or semester breaks.
4. Create annual class activities that are cyclical
Examples from previous Summer Research Projects

**2013 BATS INTERNSHIP**
(Broadening Achievements Together in STEM)

_What are you doing during summer break?_

**SUMMER RESEARCH**

_The only REU program for tribal college students to conduct research on reservations_

**TRIBAL COLLEGE REU PROGRAM**

_Research experience for undergraduates_

**NASA CIPAIR STUDENT INTERNSHIP 2012**

United Tribes Technical College is offering a 9-week (May-July) mentorship internship to undergraduate students that are currently pursuing a degree in a science-related field. Students will spend four weeks at UTTC campus in Bismarck, ND prior to a 5-week internship at the NASA Ames Research Center in California. Participants will complete their internship with a final week at UTTC where they will develop a scientific poster and present their results at a research symposium.

A student team composed of two undergraduate students and one graduate student will be nominated by tribal scientists for their credited research in a science-related area. The project will be designed to combine student interest with current NASA research.

**APPLICATIONS DUE JAN 25TH, 2013**

Contact: Tasha Thompson
Email: tdthompson@uttc.edu
Phone: 701-253-2280 Ext. 1344 or Ext. 1322

*Applications are due on January 25th.

**UTTC SUMMER RESEARCH PROGRAM**

**INBRE - NARCH**

McDonald & Guinn
Students’ Eight Reasons to Participate in Undergraduate Research

1. Class Credit
2. Applying Classroom Concepts
3. Money
4. Class & Life Skills
5. Learn New Techniques
6. Networking
7. Publications
8. Build Your Resume

Allison Fisher, Penn State University- Video blog
http://www.psu.edu/dept/science/undergrad-scientists/video-blog-allison-fisher/
What we observed...

Students understood the application of their full academic/research experience

• Research = data collection, methodology, and theory
• Information Technology = data entry, data management, and data analyses
• Math/Stats = analyses and interpretation of data
• Speech = preparation and presenting of results (oral and poster presentations)
• English = writing reports/papers
Next Steps

- Recognize research enhances students’ educational experience and faculty teaching
- Hands on scholarly activity opportunities (rocket competition)
- Intertribal Resource and Research Center is anticipated to yield a new network and expanded services for the region.
- Ongoing expanded student research opportunities
- Development of strong policies for faculty research release time
- Seek out quality faculty teaching replacements
- Consider graduate teaching assistant (GTA)/internship program (quality faculty recruitment)
- Ensure administrators understand the value of research on campus ($$).
- Utilize the classic model for building research shops by building a history that allows for successful grant application
Questions/Comments

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