

QUALITY EDUCATION FOR MINORITIES (QEM) NETWORK
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Workshop on Culture and Curriculum for Faculty Teaching STEM Courses at
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*A Native-centered Approach to Guiding Undergraduate Student
Research: The North Dakota Tribal College Faculty Research Model*

Presented by

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Quality Education for Minorities Network

A NORTH DAKOTA TRIBAL COLLEGE FACULTY MODEL
FOR GUIDING UNDERGRADUATE STUDENT RESEARCH IN
SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS

Created By
North Dakota Tribal College Faculty
North Dakota University Faculty
North Dakota EPSCoR
North Dakota Association of Tribal College

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Dr. Carol Davis, Director
Mr. David Givers and Dr. Gary Johnson, Co-PI's

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“Working together to establish smooth pathways and seamless transitions for Native American students who seek careers in Science, Technology, Engineering and Mathematics (STEM)”

“Recent educational research has shown that students who engage in research projects are more likely to enroll in and complete STEM degree programs when compared to other students. Therefore, “engaging the students in research” is adopted here as a major strategy to improve their retention in STEM programs

“Engaging tribal college students in research has the potential of becoming pedagogically beneficial to the tribal college and university faculty”

“Engaging in research and developing research project situations for students will provide them opportunities to enhance their teaching and research capability “

“Encourage students to understand STEM through their cultural knowledge. A native-centered approach (native research paradigm) is encouraged”

The Native Science Paradigm

“the aspects of Native science that are most critical to understanding science from a Native cultural perspective”

“Tribal college faculty are strongly encouraged to utilize these precepts throughout the research experience with students”

Process of Native Science – Methodological elements and tools of Native science that have traditionally facilitated learning included:

From the book *Native Science: Natural Laws of Interdependence*, pp 66-71, Gregory Cajete, (2000) *Native Science*. Sante Fe, NM: Clear Light Publishers.

The Elements Are:

Observation	Experiment	Meaning and understanding	Objectivity
Unity	Models	Causality, Instrumentation	Appropriate technology
Spirit	Interpretation	Explanation	Authority
Place	Initiation	Cosmology	Representation
Humans	Ceremony	Elder	Life energy
Paths	Dreams and visions		

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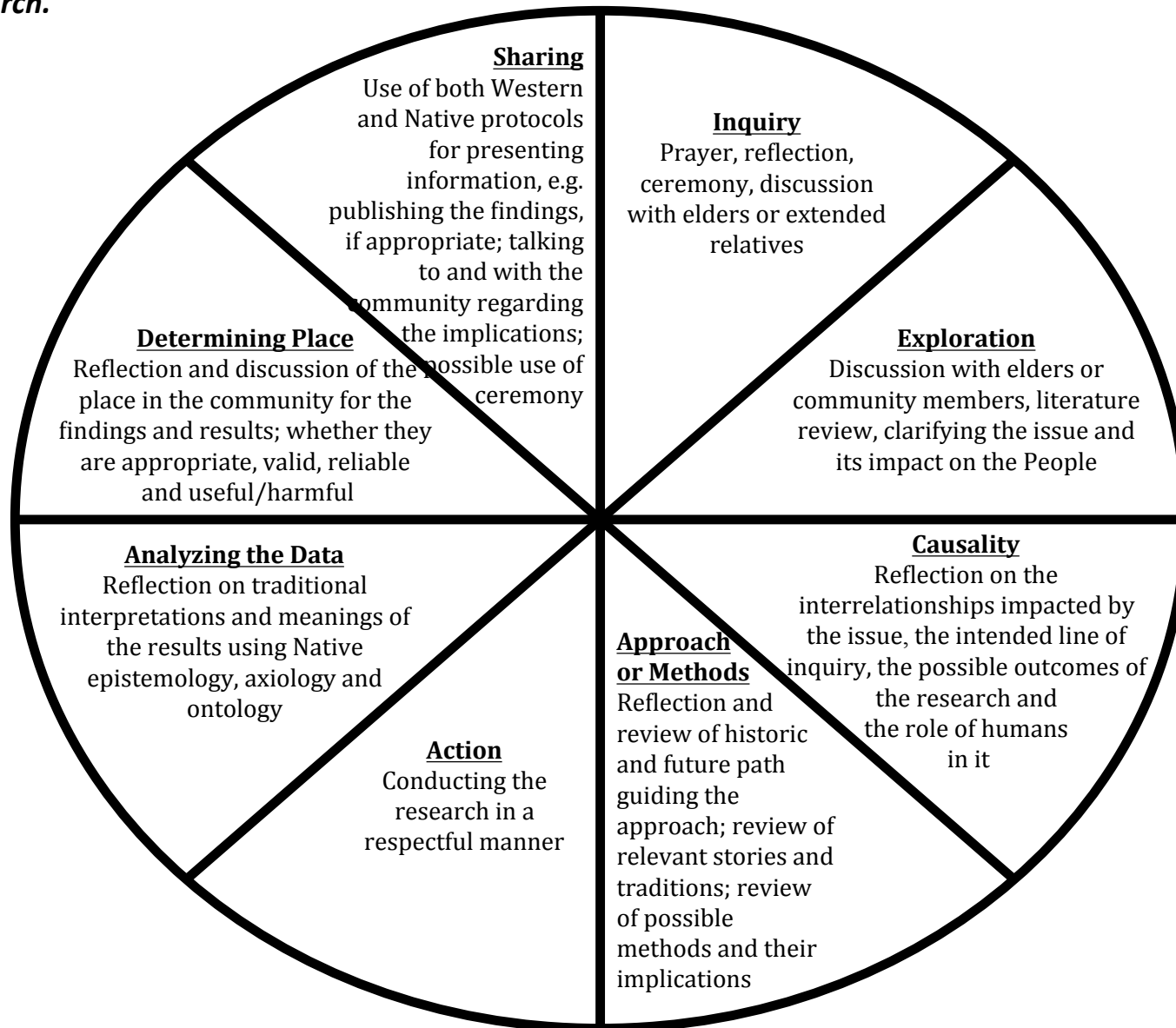
“Basis for STEM research conducted within a tribal college setting”

By

Kerry Hartman, Bull Bennette, Lisa Colombe, Carol Davis, Jeremy Guinn, Gary Halvorson, Steve Kubisiak, Audrey LaVallie, John Lohnes, Cheryl Long Feather, Erich Longie, Wei Lin, Heather Marxen, G. Padmanabhan, Robert Pieri, Wanbdi Perkins, Miles Pfahl

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“By integrating a Western-based model of scientific inquiry with a Native-based model of scientific inquiry, students will acquire skills that will enable them to conduct successful research either in, or away from, their respective reservation communities. The model is a suggested outline of activities for implementing undergraduate student research.”



- *Explanation of Model for Native-Based Student Research Protocols tied to Dr. Gregory Cajete's Process of Native Science*
- *References*
- *WebGURU, the Online Undergraduate Student Research Guide Published by the Division of Undergraduate Education, National Science Foundation*
- *Reliability*