INTRODUCTION
Building Education and Research Programs to Promote Food Security for Indigenous Populations in the Americas

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Why Education & Research?

Culturally relevant education and research are needed to improve the “situations” resulting from poverty and discrimination in indigenous communities.
Four Examples

- Prairie PhD
- Tribal Bison Sustainability
- Wopasi Research Model
- Culture in Ethics Education
What was the Prairie PhD?

A distance – delivered, cohort graduate program for tribal college faculty and tribal natural resources professionals leading to MS and PhD’s in biological sciences.
Program Features

- Impossible to relocate to campus - distance and short-course delivery
- Wear “many hats” - holistic approach to coursework and research problems
- Importance of cultural perspectives - included in teaching and research approach
- Research to be community based
The Prairie PhD Cohort
Statistics

- 20 students: Lakota, Mohawk, Ojibwa, Cherokee, Hawaiian Native, non-native
- $388,881 or less than $20,000 per student
- 17 women
- 18 students completed a graduate degree
- All research was community based and culturally inclusive
- Research areas included: food (8); natural resources (6); ecology (4); education (2)
RESEARCH STORIES

- Determining factors of sustainability for Tribal bison herds......
- Establishing June berries to replace losses from flooding after dam construction
- Developing a Medicine Wheel Model to teach nutrition in diabetic programs
- Determining the impact of “family meal” on teenage body image
- Investigating the use of alternative protein sources during buffalo scarcity............
“... In the scope of modern day learning, it has been defined that our creator sent out buffalo first to provide a food source for his people when he sent them out of the cave. We emanated from the same place and will **look on each other as brothers** in this world. With this...in mind, we try to treat the buffalo as we would like to be treated.”

Excerpt from presentation by Tom Frederick, bison manager, SGU, 2004
Reservation based research
The Sustainability of Tribal Buffalo in the Great Plains Region

Heather Hatfield,
South Dakota State University
The following table lists the factors of sustainability and the levels of importance among the tribes studied, summarizing from all three data inputs.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Level of Importance</th>
<th>Definition/Example</th>
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</thead>
<tbody>
<tr>
<td>Culture</td>
<td>High</td>
<td>Buffalo meat donated from buffalo program for pow-wows, sundances, and other ceremonies, use in prayer</td>
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<tr>
<td>Ecosystem Health</td>
<td>High</td>
<td>Range quality, carrying capacity</td>
</tr>
<tr>
<td>Community Support</td>
<td>High</td>
<td>Buffalo meat donation from buffalo program for elderly, schools, diabetes programs</td>
</tr>
<tr>
<td>Factor</td>
<td>Level of Importance</td>
<td>Definition/Example</td>
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<tr>
<td>Economic Stability</td>
<td>Medium</td>
<td>Financial health to cover costs for fencing, management, animal health needs</td>
</tr>
<tr>
<td>Educational Component</td>
<td>Medium</td>
<td>Teach culture to tribe and outsiders, teach ecology and range principles, learn from animal behavior</td>
</tr>
</tbody>
</table>
Community driven:

Nutritional concerns
Culturally Relevant:

Porcupine as Alternative Protein
What is the Wopasi Research Model?

The Wopasi Research Model integrates Lakota culture and Western approaches to biological science into a holistic research methodology.
Layers of Research Compliance

- Spiritual: Iyeska Wakan (Holy man) through the Inipi (Sweat lodge)
- Tribal Council: Presentation to Elders
- Community: Public Forum
- Tribal University: Institutional Review Board
- State University: Institutional Review Board
Statistics

- Student and faculty exchange
- Two USDA collaborative research projects funded around food and natural resources
- Three MS degrees and continuation to PhD
- Collaboration handbook published
Research Stories

- Traditional Ecological Knowledge and Native Gardening
- Multiple Use Land Enhancement of Abandoned Coca Fields
- Bio-control of Tomato Insects
- Bio-char as a Soil Amendment
- Influence of Policy on Education
- The Role of Culture in Ethics Education...
Ethics Education

Incorporating the Three R’s into Ethics Education for Scientists and Engineers

Funded through the National Science Foundation EESE Program
What are the three R’s of ethics education?

- Rules and regulations – knowing your professional codes
- Reason – being able to identify and reason through an ethical dilemma
- Responsibility – stepping up to the responsibilities resulting from your decisions and actions
What are diverse perspectives?

- Lakota, Aymara, and “western” cultures
- Educators, philosophers, attorneys, scientists and engineers
- Religiously affiliated, tribal, and state education systems
- Mountains and plains people
Lakota and Aymara Cultures
Tribal Institutions
Planning in South Dakota
Course features

- Offered on-line
- Bi-lingual (Spanish and English)
- Synchronous
- Dialog, recorded lectures, readings
- Team and individual assignments
- Cultural perspectives
- Cultural activities
Ethics and Culture

- Common virtues
- Unique values
- Elder videos
- Quipus and winter count activity
- Cross cultural conversation partners
Did we make a difference?

Final Narrative

“…My actions have already changed noticeably as a result of the many forms of ethical reasoning and considerations that were framed…”
SINEW*: Addressing food security for indigenous communities.

- Sustainable Systems
- Impact Investment
- New Ideas
- Education
- Women and Children

*Adapted from Phillipe Cousteau Jr., 2013, Plain Green, Sioux Falls, SD.
Mitakuye Oyasin
We are all related