**Teaching Notes**

 **Research for Resilience: Climate Change, the Crow Tribe and Indigenous Knowledge**

By

 Linda Moon Stumpff, PhD

**Learning Outcomes:**

1. Students will understand the role of indigenous knowledge in responding to climate change
2. Students will consider the challenges and obstacles for completing research that is credible to Tribes as well as to federal agencies
3. Students will become familiar with research resources that reflect tribal voice and the knowledge and preferences of tribal communities
4. Students will be able to articulate the differences between federal and tribal land and water management objectives especially with regard to Crow Nation preferences within the Great Plains and what opportunities for collaboration may exist despite the differences
5. Students will be able to describe some of the legal and ethical considerations in tribal research and the role of tribal sovereignty expressed through protocols in research
6. Students will understand the unique contributions of Western science and indigenous knowledge in responding to climate change
7. Students will be able to describe the characteristics of indigenous knowledge
8. Students will become familiar with indigenous research methodology

**Key Concepts:** indigenous knowledge and indigenous research methods, law and ethics climate change and indigenous peoples, intergovernmental relations with Tribes, two-eyed seeing

**Intended Audience:** This case can be used for students in undergraduate and graduate higher education: academic disciplines such as Native American Studies, sociology, research methods, environmental studies, geography, science, history, ethno botany, ethnology, and history. With appropriate discussion and/or research questions, the case can be used with students at different academic levels and with different levels of familiarity with tribal governance and cultures.

**Related Cases:** Cases in our collection that directly relate to this case are: “Who Speaks for the Peaks” (climate change, policy, Indigenous knowledge)

**Implementation Suggestions**: Three implementation approaches are suggested here: 1)

Reading the Part I Case before class and use the basic or advanced questions for a class discussion or small group discussions in class. This approach works best when class time is limited. 2) Students read the Part I “Making the Case” before class: they then work in small groups to answer questions as described below in Approach #2. Approach #3 Interrupted case. Participants complete case activities per Approach #2. Next, they would read Part II and participate in a class discussion to evaluate the published case. Teaching the case as an interrupted case involves reading Case I first, followed by class discussion, and then proceeding to the reading of Case II and implementing the evaluation activities in a separate class time.

**Approach #1: Implementation through Small Group Discussion**

In this approach the emphasis is on having students dig more deeply into the educational issues and specific content of the case. Divide the class into small groups of 3-7 students to discuss some or all of the questions below. Each group can be given different questions or they can discuss the same questions. In either instance, the small groups should discuss their questions and then prepare a poster to present to the overall class summarizing their conclusions.

1. **Using the case in small group discussions using discussion questions. Select basic or advanced question sets in relation to the level of knowledge of the class. A full class discussion can follow the small group discussions.**

**Basic Questions**

1. What are the first steps Veronica needs to take to begin this research and prepare for a trip to the Crow Nation?
2. What federal agencies surround the Crow Reservation?
3. What are the characteristics surrounding the term Indigenous. Do you agree with the U.N. description? Why or why not?
4. What kinds of topics and disciplinary areas does Veronica cover in her work to prepare to work on implementing the proposal?
5. What challenges and barriers does Veronica meet? How does she respond?
6. Finding credible research resources is a critical component. What are some of the most important resources the researcher found and why were they important?
7. What are the main obstacles to completing this research project? Why does Veronica consider quitting at one point? What is her motivation to stay on the project
8. Describe how projects such as this might be conducted under more ideal circumstances. How could conditions for Indigenous research contributions be improved?

**Advanced Questions**

1. How does the tribal focus on land management differ from the focus on federal lands?
2. Explain the concept of two-eyed seeing and why it is important in responding to climate change impacts
3. How did the original research proposal lead to obstacles for completing that very research? What are the moral and ethical considerations concerning research in indigenous communities? How does tribal sovereignty affect research?
4. What is the nature of indigenous knowledge and how does it contribute to climate change?
5. Why does Veronica move to the symbolism of the shield in a framework designed to communicate indigenous knowledge to a larger audience?
6. What are the most important components of implementing indigenous method in this case?
7. What kinds of resources are credible? What makes these resources credible to government scientists and managers? To tribal scholars and professionals?
8. The researcher in this case makes some compromises and adjustments. What steps does she take to ensure a level of integrity?

**Approach #2 Understanding the Complexities of Project Design and Implementation through small group work.**

Imagine that a tribal- federal commission task force was set up to lay the ground for further research collaboration. They are charged with reviewing the design and process described in Part I to determine how to improve the process with the values of Indigenous knowledge in future collaborations. They are also attempting to better understand the nature of Indigenous knowledge. They set up several subcommittees that will attempt to answer some key questions relevant to their charge based on a reading of Part I. They make recommendations for future research projects based on two-eyed seeing and the hope to be able to identify shared management principles.

1. **Indigenous Knowledge and Climate Change**. The role of this committee is to explore, evaluate and identify benefits of using Indigenous knowledge in climate change and potential limitations or barriers. They will also look at how it could be applied in tribal and federal land management.
2. **Indigenous Resources for Climate Change** List short and longterm needs for credible sources and bodies of knowledge that should be used in the case, including those discussed and those you think should be added. Describe a pathway on how to proceed to increase collaboration and communication between tribal knowledge holders and government agencies. Communication with the other subcommittees is recommended.
3. **Tribal expertise.** Your job is to explore how researchers should be trained to become aware of Indigenous knowledge and how to incorporate it in management practice and collaborative work. How would this best be accomplished ? Has Veronica chosen the best path by focusing on getting material published? Was it worth the compromises and delays? What kind of support do tribal and government researchers need to improve collaboration? Should federal researchers be required to take training in basic tribal sovereignty as it applies to research protocols? Is training the best way to reach federal managers?
4. **Role of the Researcher and choice of methodology**. This sub-committee is charged with identifying how proposal design could be improved. They also make recommendations on what messages should go out about this work before they receive the actual publication. What audiences (scientific/academic, tribal relations, managers, research stations) might be involved? Will they need separate messages? Develop a communications plan paying attention to who, what, where, when, and why questions that may arise.
5. **Local/Tribal Research Development Committee**. Your job is to explore & make recommendations to support local tribal collaboration in research. What steps did Veronica take to achieve at least a minimum level of collaboration? Outline the steps you will take from the beginning of developing a research proposal about climate change impacts to a tribal nation to improve the process. Describe what you recommend as a structure for moving ahead with tribal collaboration on land management and the research to back it.

After briefly reviewing the case with the entire class and holding a discussion about what the overall next steps should be, divide the class among the above committees and have each group discuss the case and complete the various tasks described for their small group. Each group reports out. The final activity is an all-group discussion of the needed next steps to move ahead and address overall goals.

**Optional activity.** This approach does not include reading and discussing Part II, which represents the actual final publication. If another class time is added, participants could read Part II and conduct a discussion about the final publication that is a product of Part I and how well it fits with the findings from their small group tasks.

**Approach #3: Teaching the Case as an interrupted case**

In this interrupted case discussion format, Part I and Part II are read and discussed in two class sessions, with discussions held at the end of each session. This approach promotes very close reading of a complex research process and highlights the evolving nature of an emergent project over time. Small groups are assigned to discuss and report out. It is likely that there would be more than one of each of the two group types depending on class size. Even groups with the same charge often come up with alternatives that enhance learning. Students may also be assigned to gather additional information for their group outside of class if the case is done over several class periods.

After completing the activities in Approach #2 students read Case II as the final published case as homework. In the next class participants begin a review of the final published case (Case Part II) in groups with two different charges.

Divide the class into small groups of 3-7 students to discuss some or all of the questions below. The two group types have different questions and tasks.

Group I Evaluates the final published case that makes up Part II and they begin a discussion to evaluate it. The objective is to develop an evaluation plan to review the final Shield case.

1. What are the major questions the case needed to address?

2. What data was gathered? Is the data credible to different audiences?

3. Was the shield framework effective in communicating the tribal process that incorporated Indigenous knowledge? Describe the four-stage process as a tool for cross-cultural research and speak to its benefits and limitations.

4. Did the final case meet the goals stated in the abstract? Why or why not?

5. Will this publication contribute to collaborative research. Why or why not?

Make a chart. List what goals were met and select from 3 levels of success for each goal. Describe what goals were met, unmet, or partially met and why in your chart. This group then presents their evaluation plan to the class.

Group II These groups dig more deeply into the research process itself and the specific objectives of this particular case and the use of Indigenous knowledge. Like the other groups, this group discusses a series of questions. After discussing their questions Group II groups prepares a poster to summarize their responses and conclusions.

1. What underlying assumptions do you see in the approach taken to write a case that encompasses Indigenous knowledge as a major contribution to climate change adaptation through a publication? Evaluate these assumptions.
2. What decisions did the researcher make and were they the best decisions? What other course could the researcher have pursued?
3. What were the obstacles to developing an authentic case that included credible sources for Indigenous knowledge? How were they addressed?
4. Does the case meet the original objectives as stated? Why or why not?
5. Why did the researcher insist that a Crow tribal member be one of the peer reviewers for this publication?
6. What factors did the researcher consider early into the project and later as it proceeded? Was the researcher effective in dealing with these factors and obstacles? What compromises were made? Were the compromises ethical? Did they lead to a credible product?
7. Should research supervisors be trained in tribal relations? Why or why not? Should they take into consideration tribal protocols and rights, even if those pose limitations on their research ? Why or why not?
8. What government research policy changes are needed to improve collaborative research with Tribes?
9. What can be done to improve collaborative research that covers federal mixed-ownership lands and adjacent tribal lands to address climate change?
These groups then present a poster with their findings and a final class discussion takes place.

**Suggested Additional Research Opportunities**

1. Complete research on what one or more Tribes are doing to develop research projects with government partners. Describe what kinds of projects were most successful and why.
2. Read and analyze literature on Indigenous knowledge and how it can be used in climate change adaptation
3. Locate research protocols from 2-4 Tribes and complete a comparative analysis of them.
4. Complete research on the ethics of gathering and using Indigenous knowledge in publications or practice. Identify some major principles for carrying out research with Tribes.
5. Locate two or three tribal Forest Management Plans online and evaluate how they discuss climate change and tribal preferences for using the knowledge in restoration practices. The Salish Kootenai Forest Management Plan is a good place to start. (These plans are available to public access online).