Cultural Relevance, Reciprocity, & Responsibility in Research

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I. Introduction

• My name is Rose E. Honey.

• Grew up in Darby, Montana and currently lives in Missoula.

• Completed dissertation research with Salish and Pend d’Oreille students on the Flathead Indian Reservation in 2013.

• Received my doctorate from the Harvard Graduate School of Education.

• Work in research, evaluation, and curriculum design.
II. The Research

Bitterroots & Bull Trout: Traditional Culture in Science Classrooms on the Flathead Reservation

“Does regular attendance in classrooms that incorporate traditional knowledge, values, and language into mainstream science education motivate students to learn about science and culture in different ways than students who do not attend these classrooms?”
Indigenous/Western Methodology
Traditional Knowledge, Science Education, and Intrinsic Motivation

• Montana Indian Education For All: A multicultural education initiative to foster understanding and respect for Montana Indian people, their histories, and their culture.

• Big Sky Science Partnership (BSSP): A 5-year teacher training program specifically aimed at improving science achievement for American Indian students in grades 3-8
  – Elders, Tribal members, professors, educators came together to train teachers.
  – Culture camps, summer institutes, online discussions, weekend retreats
  – Teachers learned how to incorporate cultural activities and traditional knowledge into science lessons in their classrooms.

• Study brings qualitative and quantitative data together to tell a story.
The Story of the Bitterroot:

- Traditional story about how the bitterroot plant came to their people, during a time of starvation (Arlee, 2008).
- Annual ceremony to welcome the “first visitor” and give thanks for its return to the people.
Traditional Knowledge, Science Education, and Intrinsic Motivation

• Students learn the names of different species in their local language and are exposed to sacred sights, traditional stories, and other culturally relevant ideas as they relate to the geology and ecology of their traditional homelands.

• By relating cultural traditions to the environment and natural resources, youth may be encouraged to consider STEM academic and career paths once their interest is piqued.

• If more students are motivated to learn science, the result will be more American Indians in professional positions, making natural resource and land management decisions with the community and the culture in mind.

• Medicinal qualities of the bitterroot:
  – increasing milk production while nursing infants
  – purifying blood
  – clearing skin conditions
  – helping with diabetes symptoms
  – settling an upset stomach
Traditional Knowledge, Science Education, and **Intrinsic Motivation**

- Interest can have a strong influence on performance (Hidi, 2000).

- Students from the Cree First Nation who scored higher on an intrinsic motivation scale were better at integrating traditional and scientific knowledge (Sutherland, 2005).

- Discussing traditional and cultural worldviews and how they relate to mainstream scientific knowledge has been shown to help American Indian college students in the sciences (Haig-Brown, 1995).

- Culturally integrated science education is discussed by many scholars, but there is little hard evidence that shows HOW this positively impacts students.
III. Participants

• 115 participants between the ages of 10-14 years old.
• 41 Bitterroot Salish/Pend d’Oreille participants
• 110 participants in public schools
• 49 participants taught science by teachers who integrate culture into their classrooms.
IV. Approvals & Community Input

• **Tribal Level: Salish - Pend d’Oreille Culture Committee**
  - Initial study approved by committee of Elders
  - Survey topics & questions discussed and changed
  - Final survey questions approved
  - Interview data analysis

• **School Level: Indian Education Committee**
  - Questions removed based on parent/teacher suggestions

• **Family Level: Parent/Guardian Consent Forms**
  - Parents/guardians learn about study and decide if they want their child to participate.

• **Student Level**
  - Students chose whether to participate and whether or not to answer the questions in the survey.
V. Methods & Findings

Quantitative Likert Scale Survey: How does motivation and interest to learn cultural information about the environment differ between students?

- Participants took a survey, asking them about how engaged, how interested, how much they enjoyed learning about:
  - Traditional plants
  - Traditional stories
  - Language
  - Science skills
  - Reciprocity
  - Place

Qualitative Interview: How does student ability to integrate traditional knowledge into science education differ between students?

- Participants take part in an interview to measure how they are integrating or separating traditional knowledge and scientific knowledge.
Quantitative Results: Intrinsic Motivation Means

- Controlling for gender, age, teacher, classroom, grade level, living with Elders, native language spoken in the home, enculturation, goals beyond high school, and parental education, **Students in BSSP classrooms seem to be more intrinsically motivated to learn about traditional plants and traditional language** as it relates to mainstream science in their classrooms (as compared to participants who are not taught culturally integrated curriculum).
Books are a useful resource for information. Can you suggest some other places to find useful information about the bitterroot?

1. Maybe online, or in the world books, or at the library. We do that, we go back to the longhouse and have a feast.

2. He could ask his science teacher, or go to another book store.

3. In my classroom, from Pat’lik, or from me. From school, like Salish Kootenai College, Francis Incahola, a lot of people he could ask, a lot of Elders he could ask.

4. He could probably find it where the bitterroot is planted, he could look at the flower and find information. He might find it in other Elders’ books about Native plants, like bitterroot, yellowbells, shooting stars, or other plants. My teacher had two books of the Elders Native plants. We talked to Elders at the River Honoring about that.

5. Probably from the Elders, that’s all I would do. Or the Internet.

6. I say go to the reservation and ask somebody where he can find it. I think he would ask, I don’t know what they are called… those people, the forest people who go around the forest and do samples on plants and trees and water and stuff. They are forest science people. Life science people. He could ask a ranger or get a plant guide.

7. Go to the place where the bitterroot grows, … maybe ask an Elder or… ask somebody who possibly knows about it, or he might be able to go online and look at it... or… I would just go to Patrick and ask him if I wanted to know.

8. He could talk to a Native and maybe a science teacher. The Internet. An encyclopedia or dictionary.

9. Native Elders definitely know a lot about it, professors, maybe Native American history teachers. I guess you could just ask people, like if you thought they would know about it.

10. The Internet, somebody who knows a lot about the bitterroot flower, like his science teacher, or a geologist.

11. I have a lot of plant books that I use for whenever I go to the camps and we pick huckleberries and do other things. You could go on the Internet. Or you could talk to parents and Elders. They will know a lot about that.
Should both kinds of information be included in a report in your science classroom about the bitterroot plant?

1. Yeah…the books wouldn’t tell you what they really used it for. They just tell you information that really isn’t important. The book wouldn’t have where you can find it, or information you might need or might be useful.

2. Yes, the book is probably not the same as from his mom and dad and grandpa. They told a story about how it happened from that woman crying and her tears were bitter, so they became the bitterroot. I don't know which one to believe, because I guess they are both kind of true.

3. It is a different kind of information. The parts that I would call science would be the petals, the roots, the pollen and the stem because those are the 4 parts that it mainly needs.

4. The bitterroot is um, they do tests on it, so it is science. But the traditional stuff is not science. I would call the story an Indian belief. Beliefs are different than science unless they can be proved.

5. Well, the same kind of information, but what they were saying is different. The ceremony is science, because if you don’t take the heart out, then it won’t grow back. It is a confusing question.

6. The traditional story about how and why it grew probably wouldn’t be accepted as science. In religion you have different stories, and traditional stories. But in science it is all just straight forward, to the fact, just things that people know about and have researched. Traditional is just beliefs, I think mostly.

7. Books can get things wrong a lot. When he talked to his grandfather, his grandfather will probably know because he has probably been to the ceremony a bunch of times. It is all science because they are about plants. Last year we did pond life, and we learned about plants then, so science is a part of plants.
VI. Respect, Relevancy, Reciprocity, & Responsibility

- The principal of reciprocity requires scholars to share the results, ask the community if there are research skills that community members would like to gain, and acknowledge the community for their participation in the research process (Wilmsen, Carl, et al., 2012).

- The 4 R’s: Respect for community protocols and cultural, social, and spiritual values, Relevance to the community with clear intentions, Reciprocal benefits with both the community and the evaluator/program learning from program outcomes, and a Responsibility to actively empower the community to engage in and participate in the project (Kirkness & Barnhardt, 2001).

- Respect is more than just saying please and thank you, and reciprocity is more than giving a gift (Steinhauer, 2002).
Reciprocity, & Responsibility

• How can the research (and the researcher) give back to the community?

• What does it look like to be both a researcher, and an activist?

• What can I do outside of the community, that will work to support this kind of education?


