

# Immersion Learning is Indigenous Education Evidence from a Tribal Youth Science Program

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## **Introduction**

### **What is an IE practice?**

The pedagogies invoking indigenous education (IE) are often described as having several similar tenets across and among differing Native Nations. For example, IE practitioners as a whole will elevate the role of elders as instructors, place learning within the context of community, maintain a joint discussion between stewardship and learning, and increase the role of spirituality in knowledge (Brayboy, 2008; Cajete, 2006; Medicine, 1996).

Summarizing particular patterns true of all Native-minded instructors may be helpful within a larger discussion about student-centered environments, but may also contribute to a scholarly and instructional homogenizing as it pertains to Native wisdom and ways of thinking. In fact, one of the common tenets of indigenous education is that it mirrors community priorities; indigenous education among Native groups is often best described as “community-based” education. This may be confusing to some observers because in the process of seeking so-called common ground, particular pedagogical priorities of one Nation may be diluted or minimized when in fact they are critical to the epistemological framework of the community (Medicine, 1996; Garroutte, 1999).

What is also unclear is whether particular IE practices apply equally across knowledge topics. Can computer science lessons be taught as easily within IE frameworks as traditional ecological knowledge (TEK)? Furthermore, if tribal educators are teaching tribal students within a tribal learning environment, does it matter? Does a practice automatically become an indigenous education practice when all western elements have been removed and the instructor-student relationships are built within the norms and conventions of their own Native community? In any case, the boundaries defining regional, local, and community indigenous teaching practices are blurry. Perhaps this is optimal; the lack of pedagogical overlap should not be considered a weakness. On the contrary, this paper seeks to argue that immersion in a community (tribal) education environment offers the best possible gains from IE while supporting the many goals of self-determination.

### **The Role of Self Determination**

Regardless of how homogenized indigenous education circles may become, there are two elements of the Native American experience that remain crystal clear and forever embedded within the

psychologies of American Indian scholars and practitioners: the legacy of assimilation through schooling and the need for sovereignty and self-determination at every level of governance.

Few nations of the world were witness to forced schooling as a brutal weapon of the state like it was used against the Native peoples of America (Adams, 1995). From the early nineteenth century and lasting well into the twentieth century, Native children were forced to attend government run schools as a means to *Americanize* their learning, language, beliefs, and customs. At the height of this effort, Native children were sent to Indian boarding schools where they were forbidden to resemble anything indigenous. Separated from their families for several years at a time, children were taught that Indian cultures were inferior to western, Christian ones and that to succeed, they needed to adopt western norms and practices.

The effort largely failed to Americanize Indian people (Coleman, 2007). It failed to eliminate Native cultures and traditions and the desire to self-govern. However, the negative effects of forced schooling on Indian self-esteem and culture degradation are well documented (Davis, 2001; Deyhle, 1997; Kidwell, 2007; Smith, 2004). The legacy also left Indian people with a deep mistrust of public schooling and strong prejudices towards Indian individuals who volunteer to pursue western education. It is difficult at every level of learning for Native students to avoid being accused of 'going white' or 'turning their back on their people' while pursuing education in western or European schools (Brayboy, 2008).

From the perspective of American and Canadian Indian communities, the preferred form of instruction for their children is the one that is homegrown, within their own communities and governed with the norms and social priorities of their people (Berry, 1968; Lipka, 2005; Rasmussen, 2004). This is consistent with a largely universal view of themselves—that they are sovereign, independent tribal groups who are better served when left to their own devices.

The concepts of self-determination and indigenous education are inseparable (Deyhle, 1997). So much so, that when one focuses on instruction practices that embrace self-governance and community-held beliefs, the tenets of indigenous education are revealed. When students are completely immersed in community schooling efforts administered by their own tribal instructors within a setting designed and built by their own community members, the specific indigenous practices become irrelevant. Indigenous or Native instruction is simply instruction without the need of a modifier.

The reality of most Native students, however, is to have one foot in a western school and another at home within their tribal community. While many indigenous education advocates will view this as

unacceptable, most Native American adolescents consistently find themselves in such a predicament. In topic areas where western and Native paradigms diverge, learning is likely to be troublesome, difficult, and even stressful (Cajete, 2005; Ogbu, 2003; Steele, 1997).

### **The Indigenous Model of Inquiry**

Within science education, there exists perhaps the largest chasm between Native and western paradigms and practices. Creating culturally relevant science instruction for Native students is fraught with dangers and pitfalls in part because the differences between western and Native science frameworks are enormously wide. However, creating relevant science instruction for Native students may also be the most important and critically needed area of indigenous instruction growth. The growing dependence on outsiders for expertise in areas like health, the environment and infrastructure threatens to undermine practices of self-determination.

Dozens of scholars have documented the growing need and acceptance for TEK inclusion into scientific debate. This is especially true with respect to Climate Change. (Laidler, 2006).

But indigenous science education is more than inserting TEK into a discourse that maintains a western model of inquiry. It is also more than adopting a teaching practice that follows a set of rules or guidelines. Rather, in what Garrouette calls the Second Step, science teaching needs to focus on the cognitive and social intersections between knowledge and practices. These include paying attention to the community's ways of knowing (or remembering), thinking, and method of inquiry in which communicating science concepts are specific to a community of people (Garrouette, 1999). This community-based epistemology and corresponding narratives provide the foundation for relevant science education.

### **An Ojibwe Example: The Tribal Youth Science Initiative**

The Ojibwe, or Chippewa, are the second largest ethnic group of American Indians in the U.S. They have lived in and around the Great Lakes region for thousands of years and have maintained strong ties to culturally relevant resources throughout. Three of these resources are wild rice (manoomin), the Sugarbush (maple) and forest lands (timber and other plants). Climate change and its effects have already impacted these resources and the trends are alarming tribal and non-tribal resource managers.

Wild rice, an annual native grass, grows in shallow water along the shores of northern lakes and rivers. Highly sensitive to water changes and invasive species, wild rice often struggles against the damaging effects of extreme storms and faces increasing competition from warmer climate species. Sugarbush provides spring sap when cold winters give way to spring thaw. Several observers have

noted an increase in seasons with early thaws. This causes the sap to flow too soon and stop before traditional tapping begins. Forest managers have witnessed culturally significant plants like birch giving way to warmer broad leaf species that, without intervention, will permanently alter the woodland ecology including the wildlife and understory species.

In response to these changes, the Ojibwe are left with few choices. They must either mitigate and combat species invasion and destruction or adapt. Wild rice beds were traditionally managed with a light hand. Harvesting and family traditions ensured annual propagation and the removal of competing plants. But each year management and protections are more aggressive. In addition to reseeding damaged or blighted areas, managers use a variety of approaches to combat invasive species like purple loosestrife, cattails, and giant reed grass with hand pulling, cutting or herbicides.

In the forests, managers are conducting more detailed surveys of significant resource populations and preparing for manual plantings, fire controls, and nursery developments. There is hope that management and mitigation will offset climate change effects, but there is a lingering question for all those involved: what if it doesn't? What options remain for a people whose identities and traditions are inseparably tied to natural resources?

Whatever the answers, the need for Ojibwe youth to understand the issues and become prepared to assist in the future is ever pressing. A recent program at the Lac Courte Oreilles Tribal Community College for middle school tribal youth attempted to connect participants to their communities and local climate change issues they are likely to inherit.

The Tribal Youth Science Initiative (TYSI) is an innovative new media project for young people (ages nine to fourteen) held at the community college on the Lac Courte Oreilles (LCO) Indian Reservation (Ojibwe) in northern Wisconsin. The participants of the one-week informal science project are local middle-school aged children who live within the LCO community. Each participant is part of a video production team whose objective is to produce a science related news story that becomes part of a combined multi-media "WLCO Science Report".

In the program, the video production process itself becomes a vehicle for science and media skill development. Local community elders and community-based natural resource scientists from the Great Lakes Indian Fish and Wildlife Commission (GLIFWC) discuss science topics. Instructors from the UW-Madison Department of Life Sciences Communication and faculty from the Lac Courte Oreilles Ojibwe Community College use pedagogies that incorporate indigenous knowledge systems. In its inaugural year, the program and production areas focused on culturally significant resources

like wild rice, fish, water, and the Chippewa Flowage. In the second year, the program focused on climate change and seasonal effects.

### **Students Document Learning With the Answers to Four Questions:**

During the second year, the students were again divided into four groups, each charged with a particular climate change focus: wildlife, plants, water, and culture. All groups had to answer the following questions in their video production:

1. What have you observed?
2. What are you concerned about?
3. What is climate change?
4. What should we do about it?

To answer the questions, the students had access to the Internet, several recent documentaries on climate change, local elders and tribal scientists from the Great Lakes Indian Fish and Wildlife Commission. During the production process, each group was required to write a script, narrate a soundtrack and conduct at least two interviews. They were also responsible for creating a unique music bed using Acid music software.

The finished videos provided strong evidence the students learned the basic concepts of climate change in addition to the specific concerns and issues facing their community. Below are several segments of the videos. They are organized as examples of answers to the above questions.

#### ***What have you observed?***

Tribal Elders:

“The weather has changed quite a bit. It got warmer. When we were young people, the weather was cold. It would get 40 below, and a lot of snow. Snow would be 12 feet deep. 10 and 12 feet deep”.

“It’s hard to catch fish now. It seems that they are going deeper or they are just...going out of existence”

“Seemed like we had more snow than we do now. The snow banks were way above our heads. We don’t have as much snow as we used to.”

“For those animals, we never used to see those animals that we are seeing now. The wolves are coming closer to the houses and all those animals we never used to see. They used to stay back deep in the woods. But now there’s no woods for them so they are all coming closer peoples’ homes and everything.”

“We used to have lots of berries that were close to the road too. And now there’s hardly any. You can’t find any.”

“The weather change that we have seems to have a big effect on the wild rice. The water is the one really being affected by our weather change and (there is) not enough rain. The lake has to be at a certain level all the time to seed the beds again for the next year.”

Tribal Scientists:

“The storms aren’t coming as often as they used to. They are more fierce now.”

“There’s old stories of how those plants and those animals moved when the food moved. And there’s reasons for that. In the last few years, few decades or so, there’s been a lot of changes happening. Things are moving north as the climate is changing.”

“Ice is off the lake, they call it the ‘ice-out date’, has been moving earlier and earlier over time. So it’s quite a bit earlier now than it was say a hundred years ago.”

### ***What is climate change?***

Student Narrators:

“Scientists are expecting warmer temperatures as a result of the build up of greenhouse gasses. Some of it happens naturally, but it also caused by humans burning fossil fuels....this acts as a greenhouse to warm the earth.”

“The earth is heating up due to human activity. Ice sheets are melting rivers lakes and streams are getting warmer or drying up. Storms are more severe.”

“But changes are not just happening at the north and south pole. Water changes are affecting our lands too.”

“The climate is changing. The earth is changing. It is getting hotter. People are burning oil, gas, and coal, which releases a gas that acts like a blanket. This is called the greenhouse effect.”

“The polar ice caps are getting smaller, stranding the animals and people who depend on the ice. Similar effects are felt here at LCO.”

Tribal Scientist:

“I tend to think climate change is the effect humans are having on our global environment.”

***What are you concerned about?***

Student Narrators:

“If our climate keeps getting warmer, what will happen to our wild rice and maple syrup?”

“If the fish are affected, than the animals that depend on the fish will be affected too. Animals like the bear, crane, loon and eagle that hunt the fish are part of the web of life. The Ojibwe are part of the web too. These animals represent the dotems, our clans. What would happen if they disappeared?”

Tribal scientist (in response to the above question):

“That’s a scary question. Hopefully that will never happen. Those animals are our spirit animals and they take care of us spiritually as well as some of those animals being our food. There’s a real high level of respect for those animals. I’d really hate to see them disappear.”

“Water temperatures are also expected to rise. If that’s the case that means there shallower beaches, harder to launch boats in places. Increased plant growth may also affect other boating activities.”

“There are a lot of things that could move wild rice further north, out of areas that are traditionally harvested. It could affect rice in a lot of ways. It could affect the water and much of wild rice is really driven by water. The levels of water and temperatures of water. Changes to those things could have a big impact.”

“Wild rice is on the southern part of its range here in northern wis. Climate change could do a lot of things. It could move wild rice out of some of the historic areas where people have harvested for generations. “

“Ice out date as been moving earlier and earlier than say 100 years ago. If this continues we expect ice to move in later in the fall and earlier in the spring.”

Tribal Elder:

“The Ojibwe Nation and the Ojibwe people don’t have the luxury of time to adapt physically and biologically to that kind of change.

Student Narrator (echoing above elder):

“Will the rice leave? Will the Ojibwe people have to move with the rice once again?”

***What can we do?:***

Tribal elder:

“Young people can pray and use the water in a good way. They can learn their language.”

Tribal scientists:

“We have to do everything we can to combat climate change and use those alternative energy sources and conserve energy consumption and watch when you’re brushing your teeth that you turn the water off when you don’t need it.”

“Other ideas to slow global warming are walking, biking, instead of driving, using fuel efficient cars, use compact fluorescent lighting and learn as much as you can about solar and wind power.”

“There’s little things you can do like riding your bike someplace instead of having somebody give you a lift in a car and just turning off light switches.”

Student Narrator:

“If the climate keeps changing, Indian people will have to change. The diets will be different. The customs will be different.



“We will have to adapt or risk losing the resources that are important to the Ojibwe people. “

“We’ll have to walk more. We’ll have to take care of the rice. We’ll have to take care of the fish. “

“As Ojibwe people we all have a choice. We can help slow down global warming and help our spiritual mother, the Earth.”

### **Spiritual and Cultural Significance Captured in the Videos**

Woven in every climate change video was an Ojibwe sense of reverence, need, and spiritual connection to natural resources. The students framed stewardship in as much of a spiritual obligation as a communal and ecological one. Although the student groups worked completely independent of each other, the religious and community reverence was evidenced in each piece:

#### **Tribal Elders:**

“Water “is our way of life. Things that we do every day. We keep it clean, we eat the fish out of there. Water is the center of our life.” (Water group)

“It’s the heart of our culture and beliefs and the way we lived a long time ago. And today.” (Wildlife group)

#### **Student Narrators:**

“Water connects everything on earth. It is the lifeblood of all living beings lakes streams clouds animals plants and humans. It is the thread that ties us all together. “ (Water group)

“If there is less ice and snow in the winter, how will the spring be different. Will walleye still spawn in the springtime? Or will other species take their place? What will it mean to our people if the walleye leave?” (Wildlife group)

“When we take care of ourselves, we take care of our people and the Earth.” (Culture group)

“Wild rice and maple syrup have been part of the Ojibwe culture for many centuries. Rice camps and sugarbushes bring Ojibwe people together in spring and fall.” (Plants group)

Soundtrack:

Shaking of the rattle in darkness to mirror the beginning of time—a reference to the Ojibwe creation story. (Culture group)

## **Observations and Conclusions**

Taken as a whole, the compiled videos reflect the sensitive nature of climate change and the perplexing concerns facing managers and community leaders. The students frequently re-presented the angst caused by the uncertainty of the future. There were several references to traditional practices and just as many examples of unease if these practices are forced to change. In a few cases, students presented a desire among elders and managers to confront change consistent with ways they had always confronted change. In this case, because the Ojibwe were once able to migrate and move with moving wildlife and rice populations, they offered re-migration as a credible and realistic adaptation. However, given the current forced Reservation living, migration does not present itself as an easy solution.

While the final artifacts reflect strong elements of science, they do so within an Ojibwe epistemology. From a practitioner's standpoint, the only guiding force was one that attempted to immerse the students' experience in the community. From the college setting to the experts, to the food and language throughout, the project was completely Ojibwe. It was modern, hi-tech, complicated and intense but entirely within the walls—both real and symbolic--of an Ojibwe learning environment.

The tribal college environment in which the students found themselves was arguably very different from the school year learning environment. All but one student attended the local public middle school in nearby Hayward. The school is part of the Wisconsin public school system and is administered as such. However, the Ojibwe learning environment these students experienced over the summer was within a different set of norms and conventions (compared to the Hayward school). The manners, etiquettes, salutations, prayers, groupings and status were all Ojibwe. There was no attempt to remove or alter these conventions. On the contrary, the designers and instructors made every effort to immerse the participants in Ojibwe ways of knowing, communicating, and thinking. The video artifacts accurately reflect the cultural immersion and provide a concrete example of indigenous science learning.