

Traditional Village Project

By

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This project defines, through its review of the literature, the many challenges that Aboriginal youth face within the dominant Canadian education system that fails to fully acknowledge and integrate Aboriginal knowledge and ways of being. As part of a response to this problem, the construction of a traditional village as learning centre is proposed and detailed. Further in this project, a sample unit plan that integrates Aboriginal ways of knowing into science is presented. It is hoped that such a project will allow First Nations people to take control of their own education, for the benefit of all society.

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Dedication

I dedicate my dissertation work to my two daughters, Tyanne and Isabelle. You both have changed my life for the better. I will always watch over you and remind you that you are loved.

I also dedicate this dissertation to my late grandmothers, Violet Duncan and Ruby Wilson. Your love and encouragement has never been forgotten.

Chapter 1: Introduction

Who Am I?

I was asked once by a former teacher and then colleague at the time, “Ray, do you think you are assimilated?” To be honest, I was quite surprised by the question, as nobody had ever asked such a question before. I took a moment to digest what was asked of me and responded, “Yes.” He then said, “Really? Why do you think that?” I said, “I practice my culture when we have family potlatches and know a bit about what goes on in our Big house. I would not call myself an expert though. More importantly, I cannot speak my language. To me, language is the root of all cultures.” In the busy-ness of our day we went our separate ways and left our conversation for another day.

My name is Raymond Wilson; my everyday name is Humzidi, which comes from my great grandfather Tom Duncan. I come from many different roots of the Kwak kwakwa wakw people. I come from one of the four tribes of the Musgamagw people on my father’s side known as the Ha Kwa Mis and from my mother’s side of the family; I come from the Da’naxda’xw people. I was born and raised on Quadra Island and Campbell River and I am a member of the Lekwiltok Nation.

Dad, Daddy and Father!

Many things have changed since that initial conversation. One of the most important was becoming a parent for the second time and my oldest daughter going to grade school. Like all parents I want only the best education for my children when it comes to their schooling. And part of that world class education is learning about our culture and traditions in the public school setting. Now some say it should be just done at home. I disagree. It was the government’s policy of assimilation that tried to destroy the culture

and traditions of the First peoples of this continent. Therefore, it should be government policy to help revive the traditions of the original inhabitants of this great country we call Canada. I also don't know all there is to know about my culture, traditions and traditional way of life. So it would be very hard for me to do so. The policy of assimilation did its job very well in this regard. I had many aunties and uncles who went to Residential school, as well as two of my grandparents. Their lives were changed forever and it affects those who are still alive today. It also affects those who did not go to these schools. They are called intergenerational survivors. Until recently, there hasn't been much talk about those who didn't go to Residential school, but are affected nonetheless. If other students can learn about their history in the textbooks, why can't Aboriginal children do the same?

TRC Event

If there was ever an event that was life changing for me, it was the Truth and Reconciliation Event in Vancouver from Sept. 18-22, 2013. I witnessed many things over the 5 days I was in Vancouver. I also learned many things and I have always felt since, that it is my duty as a witness and now messenger to share my experience.

One of the first things I learned was the fact that I was very naïve. I thought because I teach about Residential Schools and had family members that went to these schools, I wouldn't be affected. Boy was I wrong! I had some very long days and it was a very emotional experience! There were many that spoke of their own experiences and the affects Residential Schools have had on them, even though they did not attend. I heard my story told on more than one occasion. My parents didn't go to Residential School, but like I stated previously, I have had many family members attend. My grandmother went at the age of 5 and didn't return home until she was 15. Like so many others, she lost a decade of

her life and most of her childhood. I felt very fortunate to attend this event. I almost didn't go, but I am glad I did. As money was tight all week and I was quite worried. The bus ride that I took from downtown to the PNE grounds where the event was held put me in my place, as I went by E. Hastings every day. Many of the faces on this street were mostly of Aboriginal descent. The connection to E. Hastings and to TRC event made everything around me very real. The fact that the Canadian governments assimilation policies have led to the sub – standard conditions of Aboriginal people is a connection that cannot be ignored. Canada needs to do what is right. All levels of Canadian government needs to do what is right. Survivors need to find a way to forgive, but the real question is, are governments and churches ready to seek forgiveness?

One of the most important things I took away from this week long event was, we can't change history, but we need to learn that history and learn from it. I think about my oldest daughter, as she is turning 6 and would have possibly attended or have had to go to Residential School if this policy was still in place. I wonder what I would have done? I wonder if I could have handled it? I wonder as frail as she is, could she have survived? I have seen the effects and understand more clearly now.

So what next?

I was asked on a number of occasions what I thought about the event. I firmly said a number of times, "To me this is just the beginning!" Not everyone in B.C. was at this event. The coverage by the media was sparse, except for the opening canoe gathering on the first day and the walk on the final day. People need to be educated. I have stated on a number of occasions of how B.C. First Nations Studies should be mandatory across the province and should be localized to the territory that schools reside in. Oppression is still happening

today and people are fooling themselves if they think Canada has moved on from the oppression of Aboriginal people. It's called legal assimilation and it is happening in the Canada we know now. Of course if you aren't Aboriginal you might not see it this way. Take a moment though and think. Whose story is in the textbooks? Whose version is it? The time for change is upon us. This change needs to happen not because it has to, but because it is the right thing to do. For far too long the Aboriginal people in this country have been subjugated to the oppression of a colonial government that sits idly by while the impoverished conditions of Aboriginal people get worse. Aboriginal are a resilient people that were once on the brink of extinction. It is time for them to have a seat at the table rather than begging on their hands and knees for scraps and only hearing that it's their fault in which they find themselves in.

Masters of Education

I haven't always had or voiced my opinions when it comes to the predicament Aboriginals find themselves in. My children and the TRC event have changed the way I look at the world. This Masters course has also been a catalyst. This program has opened doors that I didn't know existed. Every time I read a scholar in my interest area, I want to share what I have learned with anybody that will listen.

I have always thought of myself as being a good little 'Indian' who didn't want any trouble and did what he was told. Again, part of this comes from the residential school experience by where children were taught not to object to white authority. This has been passed down to generations. A once proud and confident people are a shadow of themselves and are now shy and timid.

This can change though. The old saying, “Knowledge is power” is very true and I am living proof of this. I was once that shy, timid person. Couldn’t speak in front of a group, refused to ask a question and dared not put my hand up. Even if I knew the answer, there was always that fear of being wrong.

I truly believe many of my people have no clue what has happened in the past and what is happening now to aboriginals in this country. Especially, if they are uneducated and have no interest in school or sending their children to school. This attitude needs to change though. If we are to be successful in the world we find ourselves in, we need educated people leading the way. This will not only benefit aboriginals, but will also benefit all Canadians.

Aboriginal people are the fastest and youngest growing population in Canada, and they have the highest proportion of population under the age of 25. These young people will need to contribute to Canada’s economy or Canada could find itself in some serious trouble on the economic front.

For far too long the Aboriginal peoples of this country have been oppressed by the dominant Euro-Canadian society that hoped to assimilate them into the so-called main stream society. This idea of making Aboriginals Euro-Canadian backfired and had unimaginable results. The oppression continues to this day and through various forms of government legislation, Aboriginals find themselves in similar situations their ancestors endured generations before them. One such form of oppression that still exists is in the current public education system. To this day, “Aboriginal students must leave their

culture at the door and adopt Western approaches to education and curriculum to succeed” (Hogue, 2012). This statement is especially true in the case of secondary school science.

In the next chapter I will review literature that presents promising hope for the future of Aboriginal education, most notably incorporating Aboriginal ways of knowing into secondary school science curriculum. A history of what traditional First Nations education looked like will be also be discussed along with the transition from this traditional model to the Residential school system and its affects. Defining what conventional science is and how Aboriginal students are affected by the current system will be looked at in depth, while examining the current literature that supports the need for incorporating Aboriginal ways of knowing into secondary science. Finally, I will consider how to go about incorporating Aboriginal ways of knowing into the current system of education by looking at the successful programs across the country.

The Traditional Village at Carihi Secondary School will be the major focus in chapter 3. Mostly looking at the Traditional Learning Centre where Aboriginal ways of knowing and knowledge will be used in a classroom setting. The hope with such a vast project is that aboriginal students will want to take science courses they normally wouldn't. Even more important, non-aboriginal students can learn of the knowledge that the first peoples of this land had, how it was used and the contributions it has had on today's natural medicines. With this new found knowledge comes a greater appreciation of the Indigenous peoples of Canada and the contribution they can make to society if such a project is completed.

Chapter 2:

Incorporating Aboriginal Ways of Knowing into Secondary School Science

Introduction

For far too long the Indigenous peoples of this country have been oppressed by the dominant Euro-Canadian society that hoped to assimilate them into the so-called main-stream society. This idea of making Aboriginals Euro-Canadian backfired and had unimaginable results. The oppression continues to this day and through various forms of government legislation, Aboriginals find themselves in similar situations their ancestors endured generations before them. One such form of oppression that still exists is in the current public education system. As stated previously, “Aboriginal students must leave their culture at the door and adopt Western approaches to education and curriculum to succeed” (Hogue, 2012). This statement is, especially true in the case of secondary school science.

My review of the literature presents key themes found in Qualitative research studies and other literature reviews that present promising hope for the future of Aboriginal education, most notably incorporating Aboriginal ways of knowing into secondary school science curriculum. With the current landscape of public education, there has never been a better time for change to the current system and acknowledgement of Aboriginal ways of knowing. If the current governments in power are serious about true reconciliation, they will start integrating Indigenous knowledge into the curriculum. Various provincial governments are starting to incorporate Indigenous knowledge into the

curriculum but there is still a long way if there is to be true integration of Aboriginal knowledge into the curriculum.

I will begin with a brief history of what traditional First Nations education looked like and then discuss the transition from this traditional model to the Residential school system and its affects. Defining what conventional science is and how Aboriginal students are affected by the current system will be looked at in depth, while examining the current literature that supports the need for incorporating Aboriginal ways of knowing into secondary science. Finally, I will consider how to go about incorporating Aboriginal ways of knowing into the current system of education by looking at the successful programs across the country.

Traditional First Nations Education

Long before Europeans arrived in North America, many of the First Nations people had their own forms of governance, healthcare, spirituality, resource use, social structures, and education. Education looked nothing like what you see in our schools today. “First Nations education was part of the fabric of the society through which values and skills for using and preserving the land and its resources were transmitted” (Campbell et. al., 2003, p. 52). The land and resources was the most important thing that First Nations had. Their lives revolved around the land and resources and they ultimately used it for survival. The care and respect for the land was part of these teachings. The environment in which they found themselves in was the classroom itself. “Children were regarded as gifts to the community and keepers of the culture. In order for the whole community to prosper, it was a communal responsibility to pass on collective knowledge. The community worked

together to support each member, and thereby, the whole group” (Campbell et. al., 2003, p. 53). The phrase “It takes a community to raise a child” is exemplified in the traditional teaching of First Nations people as, children would be taught by many different members of their family and community. This is something that still evident on reserve to this day. This is also similar to other Canadians who have immigrated to Canada where there is an emphasis on the entire family unit to help raise all of the children in a family. Canadians who have lived here their entire life and their relatives immigrated 100+ years ago may do this as well. It just isn’t as prevalent as it once was.

There are many features of traditional First Nations education. Some aspects you might find in today’s education system from K-12 and some you might not. Either way this traditional model was very different from education today and according to Tenning (2008) it worked.

“Traditional learning was hands-on, experiential, and took place out in the environment or within First Nations cultural practices. This learning was life-long and started at birth and ended at death. Children were the students and also the teachers: adults and elders could also learn from the wisdom of children. Children learned by watching and doing, but they also learned independently through coming of age ceremonies and by spending time alone. Children learned through an oral culture, where knowledge was passed down verbally through stories, songs, dances, and artistic representations. The education of First Nations children was holistic and children learned how everything was interconnected; everything had a spiritual connection. At the core of traditional education was the value of respect: respect for oneself, for others, for the

Creator, for the environment, for the ancestors, and for the generations to come in the future.”

There is a similarity at least in part for euro-centric cultures in BC too, the difference is that the teachers are the source community and responsible for creating that cultural context. Whereas, in the traditional first nations model everybody in the community was a teacher and were all responsible for the upbringing of all children in the community. Even if you look at most curriculum initiatives over the last 50 years, I think that life-long learning has been promoted. Promotion and implementation are two different things though and this is where the difference lies between the two. Some may argue that these seem like good things, but in many ways are they are not considered part of the ideal education system in the European and other cultures. This directly leads to one of my points where all systems of education need to be valued. In this case, it is the Aboriginal ways of knowing that is considered inferior from a Euro-Western point of view. When we look at placed based education or outdoor programs they are related to the similar principles that are in place when you talk about aboriginal education.

Although some of these features can be found throughout the different grade levels of our public school system. There is no real consistency from elementary to middle and finally high school. Students are taught in different ways and methods as they navigate in their learning from K-12. Traditional First Nations education had a real purpose. That purpose was to be a contributor in the community and to take care of the environment that they lived in. As survival was the ultimate goal of the entire community.

Residential Schools

“The Europeans took our land, our lives, and our children like the winter snow takes the grass” (Battiste, 1998, P. 27). One of the darkest chapters in Canadian history was when the government decided that in order to assimilate the First Nations people of this country they had to remove them from their homes and educate them in a system we still use today. A school system by where students are expected to read, memorize and regurgitate what they learned on a written test. “The tools of assimilation were mandated through the Indian Act, a set of laws that applied just to the First Nations people of Canada. Mandatory residential school education, cultural bans, and resource use restrictions were enforced through the Indian Act” (Tenning, 2008). “Residential schools were put in place in the 1860s. In 1920, Canada amended the Indian Act, making it mandatory for First Nations and Inuit parents to send their children to Indian residential schools. The last residential school in Alberta closed in 1988. The last federally operated residential school in Canada closed in Saskatchewan in 1996” (Minister of Education Alberta Education, 2005, p. 3).

The most damaging of assimilation policies was the residential school system, a system that was contradictory to traditional First Nations teaching practices in every way. To go from one form of learning where the child is valued for the gift(s) they had and were considered the keepers of the knowledge and culture of the community. Children were praised for positive actions, rather than being scorned for negative ones. One can't even imagine how a child would feel between the ages of 5 – 16 when being forcibly removed from all that you know. Not realizing the worst was yet to come. Whether being physically, mentally or sexually abused or witnessing such traumatic events, the results were and still

are catastrophic in this new way of learning. “Residential schools laid the foundation for the epidemic we see today of domestic abuse and violence against Aboriginal women and children” (Hanson, 2009). Many children have grown up without a nurturing family life. Countless adults lack adequate parenting skills and, having only experienced abuse, in turn abuse their children and family members.

“Many observers have argued that the sense of worthlessness that was instilled in students by the residential school system contributed to extremely low self-esteem” (Hanson, 2009). The results have been rates of alcoholism and substance abuse, which in some cases been a crutch to numb the pain. Suicide is rampant on many reserves, especially those that are isolated from the rest of the world. Aboriginals to this day are still dealing with the tragic events of the past, whether they attended these schools or not. “The residential school system is viewed by much of the Canadian public as part of a distant past, disassociated from today’s events” (Hanson, 2009). There is no doubt Residential schools have played a key role for Aboriginals’ current distain towards the public education system.

Conventional science: Time for a change

What is science? Science can mean many different things. Aikenhead (1999), defines science as, “The goal of conventional science teaching has been to transmit to show students the knowledge, skills, and values of the scientific community. This content conveys a particular Eurocentric worldview due to the fact that science is a subculture of Western (Euro-American) culture.” It is with this worldview that Aboriginal students are forced to leave their own personal worldviews and culture at the door and assimilate to the dominant culture of Western society if they are to be successful in the sciences. This is not

to say science isn't important. The benefits of introducing others ways of knowing in to the science curriculum will not only benefit aboriginal students, but also their non-aboriginal classmates. Aboriginal students that reside in territories that have been colonized, have similar experiences that are often very different from other students in the current public education system. "Whether or not it has been acknowledged by the Eurocentric mainstream, Indigenous knowledge has always existed" (Battiste, (2005). There needs to be some form of meaningful education in place for Aboriginal students and much work needs to be done.

For an example of the significant amount of work that needs to be done, all one has to do is look to our neighbors to the South, who find themselves in a parallel situation as Canada. "In 2003, the U.S. Commission on Civil Rights issued a comprehensive report titled, *A Quiet Crisis: Federal Funding and Unmet Needs in Indian Country*" (Barnhardt et al., 2005). The circumstances in the U.S. are that Aboriginal graduation rates are much lower than their non-aboriginal counterparts and they are more likely to drop out of school than non-aboriginals as well. The gaps in learning are also considerably larger for reading, math and science. The similarity between the two colonizing countries is no surprise to those that know the history of North America. For example, in 2011/2012 57% of all aboriginal students graduated compared to 84% of the non-aboriginal population in British Columbia (Ministry of Education, Aboriginal Report, 2013, p. 29). This is an alarming statistic for a country that is supposed to be an advanced and progressive nation.

These short-comings can, and do, have a drastic effect on the individuals, their families and the communities that they belong to. Governments continue to ignore the on-going high rates of poverty, and growing economic differences between the non-aboriginals and their

aboriginal counterparts. A recent example of such a thing is how government is withholding funding for non-essential services if chiefs don't release what they earn both as band administrator or personal finances. Whether one agrees with this or not, there is no doubt that most funding to reserves are essential and needed for survival. The last time a government did such a preposterous move was during the building of the CPR. Aboriginals and Metis alike were starved into a Rebellion. Some people I believe have a sense that there are problems and struggles. I truly think they do not know the cause though and without knowing the cause there can be no solution. Briggs, (2010) supports this notion by stating, "The effects of development have not achieved their claim of drawing together all nations into the realm of development, but rather has witnessed ever increasing levels of poverty." Poverty is a reality that many Aboriginals face on a daily basis. This reality is a feeling hopelessness where there seems to be no way out for a significant amount of the aboriginal population. The solution is simple. Honor the treaties that have been signed and recognize Aboriginal title and give the Indigenous people of this country their fair share of the resources that are being extracted from their traditional territories. Until this is done, there will be no movement from the sub-par living conditions that aboriginal people find themselves in every day.

Hickling-Hudson et al., (2003) compared the data from in their case studies and explored how far "the curriculum appeared Eurocentric in the sense of being biased towards the white supremacist worldview, how far it appeared to be offering alternatives, and the views of the teachers we interviewed about the curriculum." A variety of data, such as observations and interviews were analyzed qualitatively. Poverty because of the lack of education was a major focus in two of the case studies. "American Indians, Indians or

Native Americans have been forced to the bottom of the socio-economic and racial hierarchies in white dominant countries.” Poverty not only affects Native communities, but also the non -Aboriginal communities in countries where Aboriginals dwell. There has been much talk about the “baby boomers” retiring soon here in Canada and the need to fill their positions in the work place. With many non-aboriginals choosing to have fewer children, these vacancies will be left open, which will have severe consequences for our economy. Educated Aboriginals can fill these positions with proper education. This seems like a natural fit considering the Aboriginal population is one of the youngest and fastest growing populations in Canada. “The First Nations population grew 3.5 times faster than the non-Aboriginal population in 2006. Approximately 30% of the First Nations adult population is less than 30 years of age while 13% are 60 years of age and older” (Chief Assembly on Education, October 1-3, 2012, p. 2).

Indigenous Knowledge

What is indigenous knowledge? Mack, et al. (2012) define it as, “Traditional knowledge is rooted in observations made over thousands of years, shared over generations, and valued by a particular cultural group.” Indigenous knowledge is essentially localized to a specific group which is directly related to the environment that any particular group resides in. For example, a basket weaver is as much a scientist, as an artist and a spiritual teacher. One would never think that you’d separate out just the science part, but you can’t weave a basket without knowing the science. A great example of this is from Mack et al. (2012):

“When I weave a basket, I talk about the different dyes and how you make them and how the Oklahoma clay that we put on our baskets doesn’t permeate the cell walls it deposits on the outside. It makes a very nice dye but if you cut through the reed you’ll see white still on the inside of the reed, whereas if I make a walnut dye and if I use as my mordent alum and I use as my acid cider, that walnut dye will permeate the cell walls. You cut through the reed and it’s brown through and through. Now what I’ve just described is the difference between osmosis and dialysis. That Western science calls those scientific terms is really wonderful, but it’s not scientific terms if you are a basket weaver.”

It is through examples such as this that Indigenous knowledge can be similar and of value to Western science and all students in the public education system. So much science goes into examples like the one given. The only difference is that Indigenous Knowledge was never put in a textbook. Knowledge was passed down from generation to generation through oral teachings and by watching and doing.

Hogue (2012) reflects on how, “Aboriginal learners often do well in science and mathematics in elementary school where learning is more hands-on, but the abrupt switch from the more holistic approach of early education to a very specific curriculum focused, textbook-driven, approach at the higher levels makes it a difficult transition for students with alternative learning styles.” If individuals can accept that Indigenous knowledge and Western science have existed for centuries as indeed have many other culturally located knowledge bases. Education for both Aboriginal and non-aboriginal alike will be better off. Over the past couple of decades there has been more research on the topic. This research can only benefit the educators that teach secondary science.

Kitchen et al. (2010) in their Indigenous educational research stated, "Reflection and implementation by teachers can also help them instill in children greater awareness of traditional values and by so doing strengthen their pride in being Aboriginal people." Pride in traditional values is something that was lost because of the Residential School system that was put into place. If students can feel proud of who they are and see that their values and beliefs are respected by the education system, the result can only be a positive one, where success is not far off.

Indigenous knowledge: The Need for Integration

So why are there are so few Aboriginal scientists and engineers? Why do so few Aboriginal students continue to take science in high school and university? In Hogue's (2012) recent qualitative action research study, she states, "If they are required to take a science course, they will generally take one that involves little mathematics – such as environmental science – as mathematics is also a challenge for them." The study was very effective and made me better understand why there is lack of Aboriginal representation and success in post-secondary science education. Hogue collects a variety of data through focus group meetings, interviews and observations, which consisted of participants from the surrounding Blackfoot community and included elders, university professors and college instructors, teachers, directors of First Nations. Even more important, I was able to connect to the article and it made me understand why I personally struggled in subjects, such as math and science. I have always been a hands on learner. I learned best by watching and doing. This is why I was more successful in elementary school, rather than middle and secondary. Reading and memorizing was never my strong suite.

So why is there such a lack of success in the sciences? Aikenhead comments that “In some cases, the disparity between home and school environments is so great that some Native American students experience a kind of culture shock which significantly affects their attitudes toward school” (1999). Part of this culture shock stems from the residential school system, through which Aboriginal children were forced from their homes and educated in a Euro-centric model in order to assimilate them into the dominant society. This then resulted in many other greater offences such as abuse, isolation, loss of language and culture. In Hogue’s (2012) action research approach three of the individuals interviewed “talked specifically of residential school and how the classroom environment was often so bad that it served as a deterrent rather than an invitation to learning.” It is difficult to have an inviting environment for all students, especially Aboriginal students if scientists are already set in values and belief systems that are in place. This is why there needs to be a wide range of values and beliefs taught in the education system so that other ways of knowing can be understood and then appreciated.

Aikenhead (2001), states, “that science teachers tend to harbor a strong allegiance to values associated with scientism, for instance, science is: non-humanistic, objective, purely rational and empirical, universal, impersonal, socially sterile, and unencumbered by the vulgarity of human bias, dogma, judgments, or cultural values.” It is therefore difficult for Aboriginals to navigate in an environment that is foreign to them. Hogue (2012) recalls “The focus group members talked of having to learn in the “white” way from textbooks and lectures. This is contrary to the traditional “hands-on” and practical way of “learning by doing” in the Aboriginal paradigm.”

With good leadership and guidance though, this should not be the case. Teachers can avoid these assimilative ways of teaching by integrating indigenous knowledge into their classroom. If a teacher is able to cross this bridge, it would go a long way in helping the “many ethnic and cultural groups that are persistently underrepresented in science” (Riggs, 2004).

If educators cross the bridge necessary to integrate Aboriginal ways of knowing into secondary science, the results would be beneficial for all Canadians. Aboriginals rarely enroll in science courses later on in high school and are therefore under-represented in careers related to science and technology. More importantly, it would take down barriers that have existed since contact. “A teacher cannot accommodate culture effectively in a science classroom without appreciating the cultural nature of that science content” (Aikenhead, 1998).

Hickling-Hudson (2003) provides further support for breaking down barriers, but also suggests that it will be difficult for some, as it is all they know. “The need to ‘unmask whiteness’, which includes the practices and assumptions of ‘whiteness’, is often so accepted as the norm that it is invisible and beyond question for many teachers. It is rarely admitted at any level of the education system that today’s curriculum still draws from the white imperialist.” The journey to incorporate Indigenous Knowledge will take some work by all parties if it is to be successfully implemented. Mathematical and scientific knowledge is universal to humanity, but there are many different ways to approaching the teaching and learning of science. This is the difference from what and how science is taught today in our public school system. All too often teacher’s hands are tied by covering all the material in order to prepare students for the government exams.

Integrating Indigenous Knowledge into the classroom

Incorporating Indigenous Knowledge into secondary science will be no easy task. Aboriginal cultures across Canada and especially in B.C. are very diverse. Knowledge that will be implemented will have to be localized to the traditional territory a specific nation resides in. Although one might want to include other cultures, the fact of the matter is many of the public schools reside on the traditional territories of the original inhabitants of this country and have been here for more than 10,000 years. The first item of business would be to ensure a strong working relationship with the local nation or nations represented in the local community. Hogue (2012) in her action research study backs up this concept when she states, "The purpose of this study was to initiate and develop collaborative relationships between the Blackfoot community and the university, given the institution's central location within this southern Alberta community." If schools and school boards can reach out to the local communities, it increases the chances of incorporating local knowledge, as well as the success of Aboriginal students. This was evident in Mack et al. (2012), where in the past, "Western science challenged Maori worldviews and beliefs in New Zealand's schools. Now, culturally sensitive science education programs in some schools use contemporary science to confirm and validate, rather than dismiss, traditional Maori knowledge. The goal is to promote and encourage both cultural and scientific knowledge in the classroom, creating students who are academically prepared and competent in both mainstream and tribal societies."

If there is a true partnership between Aboriginals, governments and school boards, one that is based on equality and respect, the foundation for success will be positioned. The next task would be to get teachers of secondary science courses to buy in. Or better yet, the

training, hiring and supporting of Aboriginal teachers. Hogue's (2012) findings from the meetings of the focus group in her study found many of the similar responses about the teachers they had in their communities. "Many said the teachers who end up on the Reserve were generally "white" and often "not the best teachers" and "had little to no cultural knowledge or understanding" (p. 8). The most common response though was, "Most knew nothing of the Blackfoot culture and their ways of learning and coming to know." "They do not understand the culture and our ways" (P.9). Whether, Aboriginal or non-aboriginal, there needs to be better training in place for not only future teachers, but for the current teachers of our education system as well.

Mack et al. (2012) found similar findings, "that using teachers who have a strong knowledge of both contemporary science and Maori epistemology, involving the extended community in students' day-to-day education, and acknowledging the validity and applicability of both traditional knowledge and contemporary science improved science education programs in Maori communities." To further prove this point, Kitchen et al. (2010) explains how, "Teacher education programs were not equipped to provide them with Aboriginal knowledge or pedagogical approaches. NTEPs, which favor mainstream training processes, largely disregarded this knowledge and often discarded teacher candidates best able to teach through culture." There has been a change in teaching aboriginal knowledge in university, although it hasn't really been seen or noticed at this point in the public school system. Either time will help or more needs to be done.

Once teachers are trained, curriculum needs to be designed. This is where the partnership between schools and the local community will come in handy. The untapped knowledge of the local elders will have to be utilized if any integration is to be successful.

For far too long the knowledge of the elders has had little or no validity in the current education system. Aiken head (2001) provides an excellent example of curriculum in place that is both practical and relevant to a community in Saskatchewan. “Going on a snowshoe hike, finding indigenous plants that heal, listening to an Elder, interviewing people in the community, or assisting in a local wild rice harvest,” are just a few things that are being done to integrate the local knowledge of the indigenous population. Another example is from Mack et al. (2010), in an after-school field trip, Blackfoot Native Science Field Center participants learned to gather willow in a respectful way based on their tribal traditions. After their field trip they met at the local college to engage in engineering technologies, building snowshoes and backrests in the same manner as their ancestors. It is examples like these programs that enable participants to connect their personal interests to subjects that relate to their experience, allowing for flexibility and creativity that is not always possible in a formal classroom setting in today’s public education system. Programs like these are proof that it is possible to incorporate the local indigenous knowledge, as long as it is an equal playing field where all parties have mutual respect for one another.

Conclusion

The integration of Western and Aboriginal sciences has been long overdue. The oppression of Aboriginal peoples of this country must not continue, particularly in the case of education. For far too long Aboriginal students have had to leave their culture at the door in order to succeed in secondary science. Success is a program they feel comfortable taking, which in turn will help them receive passing grades in the hope of achieving higher

grades to move onto further education in the science and mathematics fields. The under-representation of Aboriginals in professions such as, medicine, dentistry, and nursing to name just a few proves that this integration is necessary. Not only for the well-being of the Aboriginal populations of Canada to pull them out of the hole that is poverty, but is necessary for all Canadians. The economic impacts of Aboriginals not in the workforce, specifically in the sciences will have a tsunami effect on our country's economy that will affect us all. There is much literature that supports this notion of integrating Aboriginal ways of knowing into secondary science. Governments and school boards need to acknowledge the importance of local knowledge in their school districts. Only then will non-aboriginal teachers and Aboriginal teachers be able to receive the training necessary to implement such programs. Some argue why not integrate all cultures into the public school systems. The government of Canada colonized this country and tried to assimilate the Indigenous peoples of this land, therefore it is their duty to do what is right. The landscape of education is changing and there has never been a better time than now to implement Indigenous ways of knowing into secondary science.

Chapter 3: Traditional Village Project



Fig. 1 Traditional Village at Carihi Secondary School

Aboriginal communities continue to suffer the effects of colonization and imperialistic policies that erode the base of Indigenous knowledge necessary for the healing and development of Aboriginal peoples (Battiste, 1998). This is why I am proposing my project of a Traditional Village at Carihi Secondary School in Campbell River, British Columbia. My project is to lead the province of British Columbia in the construction of a traditional village at Carihi Secondary School that consists of a carving shed, gathering place, a learning centre, smoke house, cooking pit and landscape with indigenous flora and fauna. My focus in Chapter 3 will be (phase 3) the Learning Centre where Indigenous knowledge will be incorporated into the science curriculum. In this chapter I will discuss why such a intensive project is necessary for both aboriginal and non-aboriginal alike. I then relate the project to my local school district and its goals for the aboriginal students of the community. The goals of the project, traditional learning and what learning looks like

today will also be discussed. And finally, how student success will be measured and an example of a unit plan will be presented.

Canada is ranked the 6th happiest place to live in the world (Helman, 2013). Yet for certain independent nations in this country, it can be the poorest or saddest place to live at times. There are many issues facing First Nations today and are so wide ranging it is difficult to know where to begin. One such issue is the discrepancy in education. The gap in education between Aboriginals and non-Aboriginals is a massive one that needs to be closed. Closing that gap is one of Canada's greatest public-policy challenges (Friesen, 2013). If we do not bridge this education gap between First Nations and other Canadians and it continues to grow, so will unemployment. This in turn would create pressure on our economy and there would be a need to increase the social funding and various programs for First Nations. This will not only affect the First Nation people of this country but all Canadians will suffer and will pay for this issue in the long run.

There has been plenty of funding or lack thereof in the past for various programs and services for First Nations education. Like National Aboriginal Day in this country or Aboriginal week in schools though, these are often token gestures in my opinion to keep the uneducated masses happy and to make it appear like governments and school boards are actually doing some service to the First Peoples of this country. "Curriculum is developed away from Aboriginal communities, without Aboriginal input, and written in English. Curriculum also serves as another colonial instrument to deprive Aboriginal communities of their knowledge, languages, and cultures" (Battiste, 1998). The current funding system regarding Aboriginals and their current situation has done very little. This is a recurring theme with governments in this country as it continues to try and solve its

'Indian problem.' The funding is becoming less and less every year due to budget cuts. This lack of funding does very little if it is not used properly. The lack of money and meaningful programs in place is one of the main reasons for the low attendance and graduation rates in our province. Government officials and school boards might argue that there has been remarkable progress of late, due to the increased graduation rates of those who declare their aboriginal descent. In 2009/10 Aboriginal grad rates in the province of B.C. were at 51%. Whereas, in 2013/14 the Aboriginal grad rates rose to 62% (B.C. Ministry of Education, 2014, p. 29).

This is a significant jump in a 4 year span, but when 4 out of 10 Aboriginal students still fail to graduate, it is hard to argue that there is not a substantial ways to go. The question is how do we get there so Aboriginal students can be on par with the 86% graduation rate of the non-aboriginal population (B.C. Ministry of Education, 2014, p. 29). This is a necessary question that needs to be answered. Canada's aboriginal population is one of the youngest and fastest growing population in Canada. "As Statistics Canada reported, 28 per cent of Canada's Indian, Métis and Inuit population is under 14 years of age, compared with 16.5 per cent for the non-aboriginal population. And the overall aboriginal population is growing fast: 20-per-cent growth nationwide between 2006 and 2011, compared with 5.2 per cent for the rest of the population" (Simpson, 2013). These numbers are staggering and the problem needs to be addressed. Otherwise, Canada will arguably have a bigger problem when the already high unemployment rates of the Aboriginal population gets even higher due to the fact that a larger number of young people will not graduate.

I believe my vision for Aboriginal education to be a step in the right direction. In talking with districts, elders, administrators, teachers and local community members, there is nothing comparable to my project or in development in the province of B.C. With the proper funding and support I truly believe that I can help to change the future for many Aboriginal students in my community and surrounding communities.

The community that I live and teach in is a coastal city in British Columbia on the east coast of Vancouver Island. This territory traditionally belongs to the Lekwiltok people of Cape Mudge. The Wei Wai Kai and the Wei Wai Kum, the Homalco, Kwikwah, Metis and various Nuu-chah-nulth bands all enroll students in the local school district. The total student population is 5,204. 1,113 or 21% of the student population is of Aboriginal decent. (District Information). In the following section I will discuss the goals of the project, what traditional First Nation education was like, and what the education system of today is like.

Project's goals

The goals for this Traditional Village Project include:

1. To provide both Aboriginal and non-Aboriginal students from kindergarten to grade 12 educational opportunities to learn and understand traditional aboriginal culture through old and new technology and history in a personalized and experiential environment.
2. To increase graduation rates for Aboriginal students.
3. To provide an opportunity for all students to feel a better sense of belonging within the education system.

4. To provide a conduit for collaboration between the school and community.
5. To provide students with the opportunities to apply their learning with a hands on approach.

Long before Europeans arrived in North America, many of the First Nations people had their own form of education. That approach to education holds little relationship to what one sees in our schools today. Traditional education was hands on, and took place out in the environment or within First Nations cultural practices. There was a care and respect for the environment that they lived in. The environment was their classroom and provided them with the necessities of life for survival. First Nations people adapted to this environment over thousands of years by trial and error and with the creation of new technologies.

The school system today is quite different from what aboriginal people were used to. The process of colonization has had a detrimental effect on Aboriginal peoples in British Columbia and continues to be an issue today. “Aboriginal students must leave their culture at the door and adopt Western approaches to education and curriculum to succeed” (Hogue, 2012). Although there have been strides in how to deliver material in the last decade or so, much of schooling still consists of reading, memorizing and answering questions with the hope of doing well on chapter tests and final exams. This is especially true at the secondary level. This form of learning is the complete opposite of traditional learning of aboriginal people.

There have been many levels of government, boards and other parties that have recognized the need for change if aboriginal students are to be successful. This is evident

in a memorandum which was signed by; the Chiefs Action Committee, the provincial Minister of Education, the federal Minister of Indian and Northern Affairs, and the President of the BC Teachers Federation.

"We the undersigned, acknowledge that Aboriginal learners are not experiencing school success in British Columbia. We state our intention to work together within the mandates of our respective organizations to improve school success for Aboriginal learners in British Columbia" (SD #72 Aboriginal Education Handbook. p. 2).

Until meaningful programs are put in place and policy makers are not just satisfied with marginal increases in graduation rates, there will be no true gains in the quality of education for the young aboriginal students of our province. Actions speak much louder than any words that are written or spoken by those that are in charge of the prosperity of aboriginal children.

Statistics highlight certain challenges, while personal stories reveal the immediacy of the problem:

"You spend so much of your time and energy trying to teach about Native culture, so that people understand. You do it so that this kind of thing doesn't have to happen, so there won't be a next time. I want my friends and teachers to learn about my culture so that they will understand and not pre-judge Native people. My culture is very beautiful, interesting, and full of history."(BCTF Aboriginal Education, 2014. p. 9).

The young speaker above is referring to the racist attitudes that she and other aboriginal students face every day. She believes that if we properly educate people of

different races, they will gain a better understanding of our differences, as well as the many things that we have in common.

The Traditional Village at Carihi is proposed as such an endeavour. It can potentially create true gains whereby aboriginal students can be on par with their non-aboriginal counterparts when it comes to graduation rates. By incorporating the heritage, language and culture of the local First Nations population, students will have a true sense of belonging and purpose necessary to succeed now and in the future. My project will also help to create a better understanding of First Nations culture that is extremely lacking in much of today's society.

Our local Aboriginal Education Advisory Council have developed the following education goals:

1. Continue to develop and enhance open and positive communication among all partners in Aboriginal Education.
2. Develop and use Aboriginal resources in schools and school curriculum and promote the instruction of Liqwala/Kwakwala and Coast Salish languages, and develop awareness of the Métis culture and Michif language.
3. Monitor the District's progress in building success for Aboriginal student performance on local and provincial assessments.

This diverse group has a similar vision when it comes to the education of our aboriginal students:

“Successful Aboriginal students will identify their heritage, language and culture

with pride, confidence and knowledge...throughout their school careers and beyond" (School District 72: Aboriginal Education Handbook, 2014. p. 8).

My project is designed to also help strengthen the collaborative partnership between the Aboriginal community and school district. It will be necessary for all parties, local, provincial and Federal to work together if the project is to be successful. British Columbia's education system was designed in an earlier century and as a result it cannot always meet today's challenges. BC's new education plan reinforces this idea. "Research reinforces our knowledge that no two students learn the same way or at the same pace and that effective learning is far more than just memorizing information" (B.C. Ed. Plan, 2015 p. 3). If we are truly to re-create a new roadmap of success for our students in the 21st century, there is need for reform and how we deliver education. My local School District has been dedicated to the achievement of personal excellence for all members of its learning community. While our Aboriginal students are experiencing greater success rates within our school district there is still room for significant improvement in the number of Aboriginal students who complete school and graduate with the necessary pre-requisites to carry forward into the next phase of their life. Consequently, our community has an obligation to provide our youth with a more personalized and applied approach to learning. This will lead to a higher degree of success for all students and in particular, Aboriginal students in our school district. Having provided context for the rationale and potential benefits of the project, this chapter now explores Phase 3 of the proposed traditional village. In particular, I will discuss in detail what programs should take place while incorporating Indigenous Knowledge in to the curriculum.



Fig. 2 Learning Centre at Carihi Secondary School

The Learning Centre

Phase 3 of the Traditional Village project will involve building the learning centre with a smoke house and cooking pit, as well as landscaping and traditional garden. This learning centre will provide the classroom and lab space to explore aspects of aboriginal culture such as traditional cooking methods and traditional medicine. Also, this centre will allow students to do cross-cultural studies with other Aboriginal cultures from around the world. This project will create a school and community environment filled with understanding, respect, acceptance, and belonging which will ultimately lead to greater success not only for our Aboriginal students in our schools, but for all students in our community.

Aboriginal students require a learning environment that honours who they are and where they have come from. A significant body of educational research demonstrates that Aboriginal students' self-esteem is a key factor in their school success (Hongyan, 2012).

There is a growing need for an educational environment that honours the culture, language and world view of the Aboriginal student. Schools need to be meaningful once again and they need to represent and include Aboriginal people's contributions, innovations and inventions in order for society to have a better understanding of Aboriginal people. Incorporating these ideas and opportunities can only nurture the self-esteem of Aboriginal students. This innovation can only help both aboriginal and non-aboriginal and pave a path of success to the future. As a district, we can demonstrate a leadership role for districts across the province. The Traditional Village Project will allow our school and district to ensure that:

- Aboriginal cultures are celebrated throughout the different school programs available to students in SD #72.
- Encourage to incorporate the diversity of Aboriginal peoples throughout the curriculum and acknowledge the uniqueness of Aboriginal cultures in our community.

Incorporating Aboriginal cultural content and perspectives should not just mean making a tee-pee or an igloo in Art class, an Aboriginal dance in Physical Education class, or reading a book written by an Aboriginal writer in English class. "Instead, entrenching Aboriginal heritage into a significant portion of the curriculum should help young Aboriginal students emerge as confident individuals who recognize that they are valued within Canadian society and begin to believe that they are fully capable of making a contribution" (Hongyan, 2012. p.3). A 'token' representation of Aboriginal people or culture in the curriculum must stop. Meaningful and lasting programs are the path to true

success for our Aboriginal children in our district and province. With this in mind, I the following section I will discuss how student achievement will be measured.

Student Achievement Measures

Measuring achievement among students is a key focus of this project - raising students' academic performance. It is not the only outcome, which is viewed as potentially significant and worthy of measurement. It is also the evaluation and assessment plan that will assess and compare the Aboriginal students' grades, attendance, participation rates in extracurricular activities and graduation rates before and after the project. Student satisfaction rates will also be measured before and after the project either by survey or anecdotally.

It is recognized however that student achievement is related to a number of variables. Attendance, project completion, conduct and general attitudes about school will also impact student achievement. Upon completion of the project, we will truly begin to understand the scope of the relationship between this project and student achievements. Our school district will then be in a better position to determine the appropriate uses of the Aboriginal curricula and how it impacts student performance. In addition, this project will also assess the degree of community interaction and student achievement based on displays of the students work produced as a result of the opportunities created by the project.

Summary

Attention to Aboriginal self-esteem – the connection between the physical, emotional-mental, intellectual and spiritual realms – is paramount if we are going to increase our success and graduation rates for our Aboriginal students. Aboriginal learners and their success are dependent upon educators and schools respecting this view. It requires changes in how we teach our Aboriginal learners. It means that the pedagogy in classrooms and the opportunities we create for them must be inclusive of Aboriginal culture, language and worldview (Battiste, 1998). The Traditional Village project will allow our Aboriginal students to develop a sense of identity and belonging through cultural activities. This project will also provide the opportunity for our non-Aboriginal community to understand the uniqueness of our local Aboriginal culture. This project will create a school and community environment filled with understanding, respect, acceptance, and belonging which will ultimately lead to greater success not only for our Aboriginal students in our schools, but for all students in our community. In the following section I present a sample Unit plan that would be offered, supported and enriched within the space of the proposed traditional village Phase 3.

Unit Plan

Introduction

People understand the world in many ways. Two ways of bringing meaning to the world are Traditional Ecological Knowledge and science. “Science has been the dominant way of making decisions about the environment. More and more, however, modern society is learning that the vast knowledge and experience indigenous people have with their land

and resources are extremely valuable. This knowledge and experience is called Traditional Ecological Knowledge” (Campbell, 2004. P 40).

This unit plan focuses specifically on the traditional ecological knowledge First Nations peoples have about plants. “The knowledge which First Nations people have developed over many generations about their lands and resources and their relationship with them” (Campbell, 2004. P. 36).

“The basis for such a unit plan is for Aboriginal students to make connections with their people, to learn about their own culture in a more traditional way, and to know that their elders’ knowledge and wisdom is as legitimate or more so than “academic” information about their people’s history, culture and ways of knowing that they get from textbooks, encyclopaedias, the internet, and other such secondary sources” (Thompson, 2003. P. 9). One of the important aspects of the village is the relationship with the local First Nations community and using them as a vital source of information in order to present the appropriate knowledge for each lesson taught. Although this does happen from time to time in our district, I believe the Traditional Village would be more of a welcoming place for First Nations community members. The legacy of residential schools has left a disdain and distrust for our public school system, the Traditional Village will change this image.

Science 10 (Plant Biology)

Prescribed Learning Outcomes:

It is expected students will:

- analyse how the increasing complexity of algae, mosses, and ferns represent an evolutionary continuum of adaptation to a land environment.
- analyse how the increasing complexity of gymnosperms and angiosperms contribute to survival in a land environment

(BC Ministry of Education, 2006. Biology 11 and 12 Integrated Resource Package. P. 18).

- use a key to identify a variety of local plants with their scientific and common names, as well as the local First Nations name.
- describe the habitat requirements of a variety of local plants.
- differentiate between: vascular and non-vascular plants, herbaceous and woody plants, annuals and perennials, trees and shrubs, monocotyledons and dicotyledons. (Thompson, 2003. P. 11,12)

Purpose

To provide opportunities for students to:

- Learn that our basic needs come from the four elements found within the natural world.

- Understand the Aboriginal world view including the interrelationship and interdependence of all creation.
- Investigate meaning, in an Aboriginal context, of specific words.

(Shared Learnings)

Lesson One: Learning About Traditional Plant Knowledge

Major Understandings

- Aboriginal peoples use the land and resources in distinct ways
- (Shared Learnings. P. 89).
- First Nations peoples had distinct ways of classifying and differentiating between plants.
- First Nations peoples had names and meanings for plants in their own languages.
- First Nations peoples were knowledgeable about the habitat requirements of plants in their territory (Thompson, 2003. P. 20).
- Aboriginal peoples use herbs and roots for nutritional and medicinal purposes (Shared Learnings. P. 89).

Preparing for Elder Visit and Plant Walk

- Discuss the Major Understanding section as a class before the elder comes in to your classroom.
- Get students to brainstorm and list of all the plants that they know.

- Get them to classify plants into as many different categories as possible (e.g. what they look like, where they grow, what they are used for, etc.).
- (Think, pair, share. KWL. Place mat, etc.).
- Get students to report findings to the class.
- Assign a plant to each student.
- They should find out as much as they can about the cultural uses of their plant. As a class, they should pool the plant knowledge they have learned.

Lesson Two: Plant Walk

- Plan a field trip. With the assistance of elders, teachers, and parents, have students find, observe and examine local edible and medicinal plants in a forested area. (It is a good idea to have at least one adult for every five children). (Thompson)
- Ask the guide to present information on the plants (e.g., contemporary names, traditional Aboriginal names, and traditional and contemporary uses).
- Students should also ask the elders or community members how they tell the difference between different plants. How did elders learn this from their elders? How did they show respect to plants that they were harvesting?
- In a field trip booklet, ask students to make drawings of the plants and record information about their names, locations and uses. Once they are back in the classroom, they can transfer their field notes to their notebook.

- Have students look around and examine as many plants as possible.
- Have students sketch plants that they have observed, noting the leaves, flowers, and fruits.
- Note the type of habitat that the plants are found in: moist, dry, rocky, sandy, etc.
- Also ask Elder or the knowledgeable community member ahead of time if individuals can record and take pictures during the fieldtrip. Students will have to be briefed about not distributing the recordings or pictures on social media. (Shared Learnings and Thompson)

Conservation and Safety

- For both conservation and safety reasons, it is important that students do not pick plants without consulting first with a teacher or an elder. For safety reasons, it is vital that the identity of the plant the student is picking is known to avoid poisonous plants that can cause painful skin irritations. In terms of eating plant parts, students need to consult with a teacher or elder to ensure that what they have is edible.
- Talk to the students about the respect that First Nations people have for plants and animals. (If an elder feels comfortable, ask them to do this.) Tell

students that it is important to respect plants in their natural habitat and that we are to take only what we need (Thompson).

When collecting plants, it is important to:

- Get permission from the band if collecting specimens on traditional territory.
- Pick only what you need.
- Pick only from common species of plants that have a healthy population.
- Never collect any rare, threatened or endangered species.
- Never take the largest plant, leaf, berry, flower, or other plant part.
- Always use sharp pruning shears or a sharp knife to collect plant parts. Cut back to the nearest living part of the stem to allow the plant to grow over and heal the wound.
- Restore all areas you disturb to their natural state. Replace rolled-over rocks and logs, put back leaf litter, etc.
- Since plants will be collected using a sharp knife or sharp pruning shears, it is important that the students are taught the safety issues around the use of such equipment and should be supervised if they are using them.(Thompson)

Lesson Three: Elder Visit

- Invite the Elder and/or other knowledgeable community member to the classroom.

- With help from the Elder or other community members create a learning centre that contains samples of a variety of edible and medicinal herbs and roots labelled with traditional Aboriginal and contemporary names.
- Wherever possible, include information on the uses, location, and appearance of the roots and plants.
- Ask students to make a drawing of each root and plant and to write a summary of the corresponding information for display at the centre (Shared Learnings p. 89).

Lesson Four: Feast with Elder and other community members involved in the learning that took place.

- Ask students to choose a locally available food and use a traditional preparation technique to cook it. Ensure that only traditional tools, materials, and cooking facilities are used. Once again you will need help from the local Elders or community members.
- Students may share the cooked food with their classmates and community members involved. Perhaps even the rest of the school, depending on how much food is available.
- Construct a display for the classroom of various food preparation practices and ask students to create charts explaining and illustrating the step-by-step processes of preparing these foods (Shared Learnings p. 89).

Lesson Five: Research on the medicinal properties of British Columbia's plants

- research available through the Ethno-Botany Program at UBC and/or on the Internet) to obtain information on the following topics:
 - research techniques
 - flora being studied
 - use of knowledge gained
 - effects of specific plants as medicines for particular diseases
 - effectiveness of drugs (e.g., antibiotics) produced by pharmaceutical companies from natural plant medicines (Shared Learnings. P. 91).
- Ask students to compare these findings with research on how Aboriginal peoples acquired their knowledge about traditional plants and their medicinal properties.
- Conduct a guided class discussion focused on such questions as:
 - What did Aboriginal peoples traditionally do to treat and cure illnesses? (e.g., rituals, sweat lodges, hot springs, traditional healers and/or pharmacology)
 - How did Aboriginal peoples know which plants and roots to use and in what quantities, dosages and combinations? (e.g., oral tradition, visions, accumulated wisdom and experience).

- What happened when Europeans and other non-Aboriginal societies introduced foreign illnesses and diseases into Canada and into Aboriginal communities? What were the impacts on traditional Aboriginal families, communities, economies, and/or environments? (Thompson)

Review:

- Science as a total cultural expression has an important role in Aboriginal culture.
- Relatedness of all things in the natural world is at the heart of Aboriginal culture.
- Aboriginal societies valued the land and resources in distinct ways.
- Aboriginal peoples have created unique resource management systems.
- Aboriginal science contributions, land and resource use philosophies, and technologies affect the rest of the world. (Shared Learnings)

The Elders believe that:

- Everything is related and connected to all creation
- Our beliefs determine the way we behave.
- If we believe the earth is alive and sacred, then we will treat the earth with respect and caring.
- The resources that come from the earth can be used responsibly.
- Pieces have connections and universal meanings.
- Science is based on wonder.

- People must open up to new ways of knowing and new ways of perceiving.

How is this view of science and the natural world different from and similar to that of other cultures/peoples? (Thompson)

Assessment:

- Observation
- Oral Reports
- Student self-assessments and peer assessments
- Samples of student work
- Projects and presentations
- Written reports
- Journals and learning logs
- quizzes and tests (written, oral, practical)

(BC Ministry of Education)

Look for evidence of:

- Students' understanding of the Aboriginal view of interrelatedness and interdependence in the natural world.
- Student participation in class discussions and activities.
- Students' understanding of the meaning of specific words from an Aboriginal perspective.

Have older students present plant uses to younger students. Have the older students set-up stations (station for each use: food, medicine, materials) and include hands-on materials and activities for the younger students to visit. Have groups of 4 to 5 rotate through stations. (Shared Learnings)

Summary

There has never been a better time to incorporate Indigenous Knowledge into the public school system. The time for action is now. In this chapter I have discussed the rationale and plan for developing, constructing and enacting a Traditional Village at Carihi Secondary School in British Columbia. This project not only relates to the community that I reside in, but to the many communities across our province and country. Canada and British Columbia pride themselves as diverse places to live and accepting of all. My project is an articulation of this diversity and acceptance. In this chapter I presented the goals of the project, discussions of traditional Aboriginal learning and gaps in contemporary learning approaches for Aboriginal youth. Finally, how student success will be measured was discussed along with the presentation of a sample unit plan that bridges Aboriginal and Western approaches, that all can use. Colonization has taken its toll on the First Peoples of this country. In my view, true reconciliation is achieved by accepting those who have the stories to back up their claim to this land and recognizing them. In the case of education, integrating Indigenous Knowledge is a crucial addition to a system that is broken for many, and is long overdue for a transformation. In the following chapter I will succinctly summarize my project. I will also discuss what aspects of my professional thinking, beliefs, intentions or activity has changed and which aspects have been reinforced as the result of my experiences throughout my MEd program. I will further discuss how my

graduate experience will affect my professional career. And finally I will conclude with three key recommendations for other educators who may be interested in engaging with my project topic.

Chapter 4: Reflection

In this final chapter I reflect upon and discuss the Traditional Village project, my educational experience growing up and my change in philosophy due to my involvement in our M Ed program. I will also discuss how the knowledge I have gained will affect both my personal and professional life now and in the future. Finally, I share my thoughts on how to fix a broken system for many students, both Aboriginal and non-Aboriginal.

Traditional Village

My overall vision for change consists in the construction of a Traditional Village at Carihi Secondary School. The Traditional Village at Carihi Secondary School will consist of a carving shed, gathering place, a learning centre, smoke house, cooking pit and landscape with indigenous plants and trees that were used for survival. The goals of my project were: (1) to provide both Aboriginal and non-Aboriginal students from kindergarten to grade 12 educational opportunities to learn and understand traditional aboriginal culture through old and new technology and history in a personalized and experiential environment. (2) to help increase graduation rates for Aboriginal students. (3) to provide an opportunity for all students to feel a better sense of belonging within the education system. (4) to provide a conduit for collaboration between the school and community. (5) to provide students with the opportunities to apply their learning with a hands on approach. My M Ed project focused on a description, rationale and sample Unit plan for Phase 3 of the project which will involve building the learning centre with a smoke house and cooking pit, as well as landscaping and traditional garden. This learning centre has been planned to provide the classroom and lab space to explore aspects of aboriginal culture such as traditional cooking

methods and traditional medicine. One of the main goals of the learning centre is to insure that Indigenous knowledge is intertwined within the current science curriculum. The success rate or lack thereof for aboriginal students is minimal at best. It is hoped that the construction of the learning centre, as forwarded in this project, will encourage aboriginal students to attend more regularly and achieve success, with the ultimate goal of graduating with a dogwood diploma.

Changing the Course

There have been many life-changing moments throughout my life. As for others, these moments have come during different stages of my life. All I have ever known as the acceptable way to experience education, as either a student or teacher, is the current public school system in British Columbia. I thought of this system as 'the way' one was to learn if you were to be successful. I do not recall anything that resembled, acknowledged or included First Nations culture when I went to school. There was one language class in the Likwala/Kwakwala dialect but I was unable to take it as universities did not recognize this, my language, for entry into post-secondary. I did not question that reality at that time, as I was raised with the idea that education is important if we were to lead successful lives. There is truth to this. I do believe that people need to be educated if they want to enjoy a prosperous and comfortable life. Education is a necessity in life that all should enjoy and be successful in. As all educators know though, students learn in different ways and at different rates. The Western way of the learning is not the only way to learn and has done very little for those that struggle and will not go on to post-secondary school. This 20th century, cookie-cutter, factory model rewards those who can memorize and repeat, many students retain or gain little within this model.

I have never thought of Aboriginal ways of knowing as inferior. I just never thought of these ways as being included in the curriculum because in the past this was not part of the norm. My own learning journey during the past two years in this M Ed program has changed my feelings and understanding regarding this matter though. This is especially realized through my research of the literature, and coming across authors such as Battiste and Aikenhead. My research has made me realize that other ways of knowing should be accepted into the curriculum and classroom, especially those of the First Peoples of this land. Aboriginal people in Canada have been marginalized. Although there are some Aboriginal programs in place, the actual implementation into the everyday curriculum and classroom is marginal. Token gestures such as Aboriginal day and week should not be accepted anymore. There are many diverse First Nations groups in British Columbia and I have come to realize that their rich culture should be celebrated every day in our school systems.

I strongly believe that First Nations people need to take control of their own education. We cannot let other governments continue to control the education of our children. There has been very little progress up to this point, and very little has been said or done by the government to warrant their continued education of our young people. This change in control needs to happen early in life; during the pre-school or kindergarten years. A relative of mine recently said to me, "My mom told me to get educated in the white man's system in order to gain his tools to fight him with them." I now believe this to be true as I have thought the same thing. I had to sacrifice part of my culture to gain these tools. Now that I am educated, and journeyed to earn a graduate degree, I want the same

for my children. Except, I want them to be educated and immersed in their own culture throughout their many experiences in the education system.

I have come to understand the current education system is outdated and was created in a different time for different reasons. With the current challenges in education there has never been a better time to create a massive change. A friend of mine who is Metis once told me, "First Nations people had it right;" meaning that the way they lived, worked together, looked after one another, and most importantly, the way they educated their children was better than present realities. The time has come when our dominant white society needs to get over its cognitive dissonance, and to be more accepting of the different values and beliefs that our diverse society holds, especially when it comes to educating Aboriginal children. People need to understand and respect the different value systems that cultures hold. My value system is different than the dominant white society's. It is not better, it is just better for me and for other aboriginal students if curriculum is tailored to their local territory.

Opening New Doors

I have not really put much thought into how much my graduate experience will affect my professional career. At first glance I would think it would open new doors in order to advance my career if I choose to do this. Whether moving into administration as a vice-principal or principal, or district principal of aboriginal education, the possibilities are endless. I have even dreamt of working in education at the Ministry level. The biggest factor in it all will be, what best serves my people and their cause. This is not limited to just education.

As for how my graduate experience will affect my colleagues, school or district. I am once again unsure of what the future will bring. I have always been there for colleagues when they have needed advice or resources. I reckon this will stay the same. I have never pushed my values and beliefs on another. My colleagues know that my door is always open. I have gone as far as teaching somebody's class when an aboriginal issue came up in class and the teacher felt uncomfortable. Maybe this will happen more. I know I would not mind doing more teaching about aboriginal issues throughout my district.

As far as my M Ed project goes, this is something I have dreamt of and have been putting together for several years. This program accelerated my knowledge regarding the need for such a learning space. I have made some inroads at the District level by going to a school board meeting and presenting the project idea to the board. I have also been in contact with the media including radio and newspaper. But there has been little progress lately, which may not be surprising considering the recent tensions between the government and educators in this province. My project is always met with the same response, "What a great idea, don't give up!" This is one of the main reasons why aboriginals need to take control over their own education, and perhaps influence the present dominant system. I am not saying that my project is perfect or that it is the only answer. I do know the current system fails more than just aboriginal students, and maybe our ways of knowing and learning can also help those individuals.

I always thought that my schooling would help with the betterment of myself, my family and my people. This thought process still has not changed. The challenge now is how do I make my dreams a reality? I am in a good place as far as work is concerned. I have put my time in teaching various courses and alternate programs. I am content...for

now. The school I teach at is great. The administration and staff make it a special place to work. The students are even more amazing. It is hard to predict the future. There are greater days ahead for me no doubt. I am just not sure what or when that is yet.

Recommendations

Incorporating Indigenous knowledge into the curriculum is just a start towards fixing a system that is long overdue for a change. My project is just one way to improve the way we can learn for both aboriginal and non-aboriginal students. I think much more can be done. My project is a great idea that can definitely be expanded on. As I have gone through this entire graduate process, and with my nine years of teaching experience I have come to the realization that one of the biggest problems with our education system is how we coup kids up between four walls for 5 or more hours a day. All the while we expect them to stay seated, focused and more importantly behave. It is no wonder there can be issues in the classroom. Kids are tired and bored from the same thing year after year, especially when they get to the junior and secondary levels. Although the focus of my project has been on affording aboriginal learners to connect themselves to knowledge in a more traditional setting, I truly believe that an authentic setting and space out on the land and experiencing nature at its best and worst will benefit more than just aboriginal kids. I can think of the Traditional Village project further as place where teachers can prepare and debrief all students regarding their experiences out in the environment.

There is much work to be done when it comes to our current education system. Like many I am opposed to anything that subverts and eliminates Aboriginal culture. The current system plays a role in this elimination. It often turns a blind eye to introducing

Aboriginal knowledge into the curriculum. We need leaders who will stand up to make a change. Although I believe that no one race is superior to another, I also believe strength comes from demanding, not asking. Many assumptions must change if there is to be any progress in our education system when it comes to incorporating Indigenous knowledge into the curriculum. My M Ed project is one important step I many towards this change.

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Appendix

(A) Plant Identification Sheet

Plant Name:

Common Name:

Genus Species:

First Nation:

Where Found (Location):

First Nation Uses:

Sketch of Leaf/Berry/Fruit/Root and/or Sample

Adapted from First Nations Science and Ethnobotany Unit K-10: Shared Learnings in
Action

(B) Think, Pair, Share Activity

Think:

Pair:

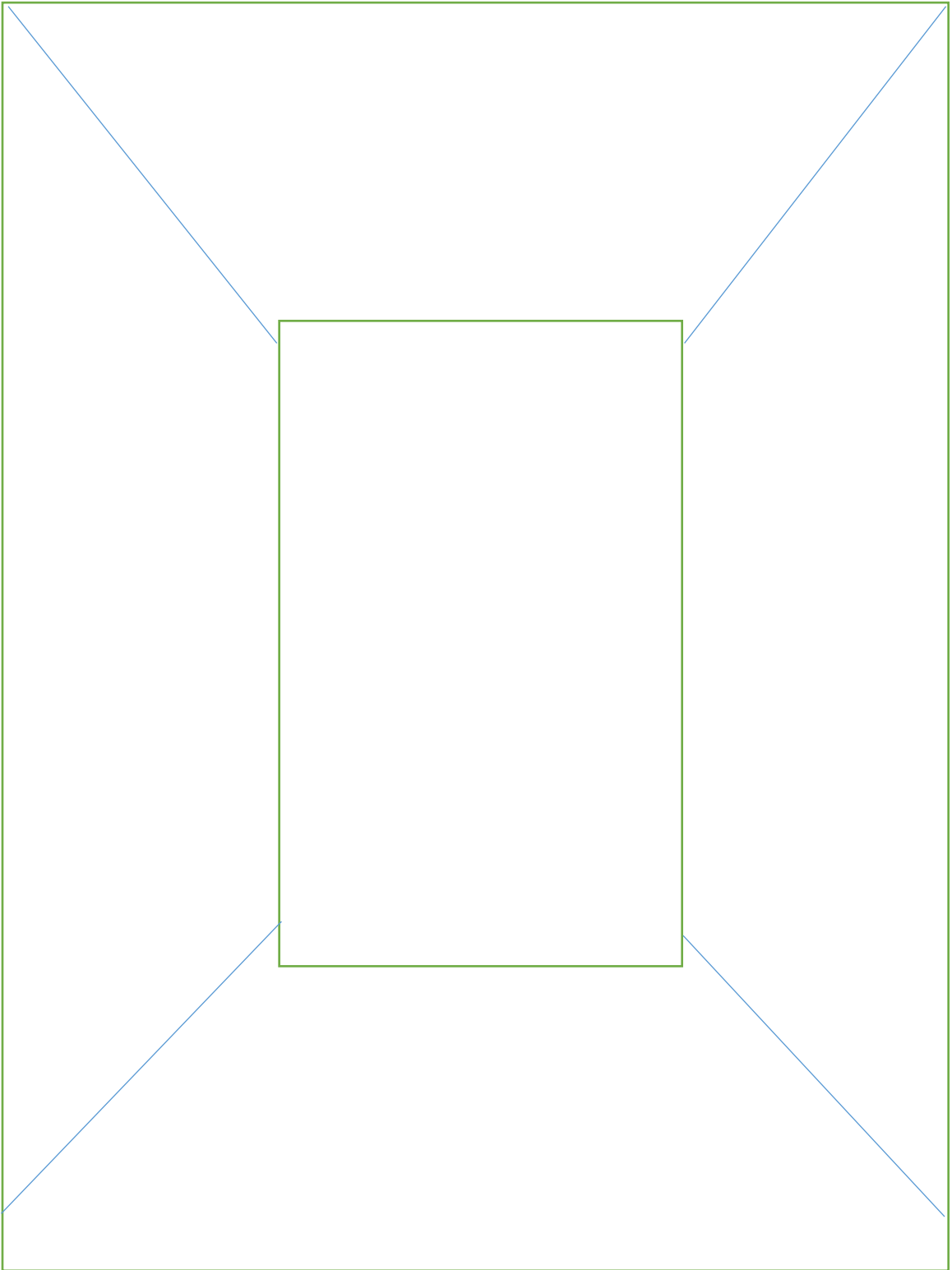
Share:

(C) KWL Activity

Know:

Wonder:

Learn:

(D) Placemat Activity

(E) Food Preparation:

Step 1:

Step 2:

Step 3:

Step 4:

(F) Research on the medicinal properties of British Columbia's plants:

Research available through the Ethno-Botany Program at UBC and/or on the Internet to obtain information on the following topics:

Research techniques:

Flora being studied:

Use of knowledge gained:

Effects of specific plants as medicines for particular diseases:

Effectiveness of drugs (e.g., antibiotics) produced by pharmaceutical companies from natural plant medicines (Shared Learnings. P. 91):

Ask students to compare these findings with research on how Aboriginal peoples acquired their knowledge about traditional plants and their medicinal properties.

Class discussion:

What did Aboriginal peoples traditionally do to treat and cure illnesses?

(e.g., rituals, sweat lodges, hot springs, traditional healers and/or

-pharmacology)

How did Aboriginal peoples know which plants and roots to use and in what quantities, dosages and combinations? (e.g., oral tradition, visions, accumulated wisdom and experience).

What happened when Europeans and other non-Aboriginal societies introduced foreign illnesses and diseases into Canada and into Aboriginal communities? What were the impacts on traditional Aboriginal families, communities, economies, and/or environments? (Thompson)