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## Secondary School Student Researchers Use Digital Video as a Learning Tool for Retaining and Transferring Indigenous Knowledge

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Indigenous students' use of digital video is a form of modern storytelling. It represents a conduit for traditional and cultural wisdom to traverse into the modern world. The advent of handheld film/video cameras and movie-making software allows Indigenous students the opportunity to preserve the stories and knowledge of their Elders.

Jason Ohler in his book, *Digital Storytelling in the Classroom* (2008) provides revelations about digital storytelling in education, many directly relevant to this research project. "It is the special responsibility of teachers to ensure that students use technology to serve the story and not the other way around" (Ohler, 2008, p. 6). Essentially, Ohler is saying that if you don't have a good story to tell, the technology will not make the story any better. Ohler concludes that the digital revolution enables all of us to tell our own story in our own way.

Storytelling is a traditional and effective method of learning in Indigenous communities (Cajete, 1999; Campbell, Menzies, & Peacock, 2003; Iseke & Moore, 2011; MacIvor, 1995). Manuel and Posluns (1974) believe that the production of digital videos allows the student to be the storyteller, the messenger:

Story-telling was often used among [N]ative peoples, not only for moral teaching, but for practical instruction.... One advantage of telling a story to a person rather than preaching at him directly is that the listener is free to make his own interpretation (p. 27).

Cajete (1999) asserts that by "combining story with experience, Native Americans are able to achieve a highly effective approach to basic education" (p. 128).

There is a direct relation between the use of digital video and traditional methods and philosophies of Indigenous learning and knowledge: experiential learning, storytelling, and creativity. Cajete believes that "[e]xperiential learning is the most basic and holistic type of human learning" (p. 55). He furthers this discussion by stating, "experiencing through watching, listening, feeling and doing gives reality and meaning.

Through students producing their own videos on topics of their own choice, they engage in experiential learning; they are learning by doing” (Cajete, 1999, p. 55).

The production of digital videos allows our students an avenue to communicate their personal stories. It is these stories and experiences from themselves, their Elders, and their communities, which may allow a better understanding of the world around them, one that may help bridge Indigenous and Western worldviews.

## Purpose

This research project was developed as part of the Science Education Research Project (Snively, G. & Williams, L., 2016), and was an extension of a five-year participatory research project on Indigenous students’ understandings of health and wellness (Riecken, T., Tanaka, M., & Scott, T., 2006). Students using digital video making as a learning tool in the documentation and reflection of Indigenous Knowledge (IK) with regard to science was the focus of the project. By working within the nexus of Indigenous cultures and the public-school system the project examined ways that digital technologies, specifically digital video, can be used to include IK as well as Indigenous Science (IS) within the British Columbia (BC) secondary science curriculum.

Using video as a tool for students to explore ideas and concepts from their culture is a well-established practice in education (Aronowitz & Giroux, 1991; Goldfarb, 2002; Iseke & Moore, 2011; Riecken, Strong-Wilson, Conibear, Michel, & Riecken, 2005). Rather than drawing on youth cultures as distinct from the adult world, this research represents a focused application of video technology to elicit and represent Indigenous scientific knowledge.

## Background to the Study

Three distinct sources we used to gather data: weekly student journals; student, staff, and community participant interviews; and the films the students produced. The project used Participatory Action Research (PAR) methodologies to draw upon the interests of the participants themselves to focus the research. Thus, students used digital video as a tool for facilitating learning, and the students selected the topics of their inquiry within the broadly defined topic of “science.” As a tool for research, PAR focuses on engaging participants in identifying research topics and finding answers to questions that are of concern to them as community members. In this project, IK and IS provided the material from which students looked for answers to questions that they identified as being of concern to them or their community. Student researchers worked with their families, community resource people, and community Elders to gain understanding of IK and IS (Lyall, 2009).

Fals-Borda (1991, pp. 8-9) identifies four techniques from PAR that can be used to establish a counter-vailing sense of power among groups that have been disadvantaged by their interactions with the larger dominant society: (1) collective research, (2) critical recovery of history, (3) valuing and applying folk culture, and (4) production and diffusion of new knowledge. Elements of these four techniques were woven throughout the project as it progressed.

From a learning perspective, the intention and purpose of this research investigated how the use of digital video contributed to:

- Developing a positive learning environment in the science classroom.
- Reflecting and documenting IK and IS.
- Developing students' understanding of IK and IS.
- The development of students' research, leadership, and technological capacities.
- A developed sense of pride and self-efficacy in the accomplishment of a completed video.
- Building language capacity and language transfer systems.
- The development of a bridge of understanding between Indigenous Science and Western Science worldviews.

## **Location and Participants**

Participants were enrolled in the First Nations Graduation Program (FNGP), a small alternative program with approximately twenty-five students, at the Westshore Centre for Learning and Training (WCLT). The WCLT is located in Colwood (a municipality in Greater Victoria) within Sooke School District (SD 62). It is a suburban school with students coming from on or off reserve communities. The program is a cohort style, with myself and John Lyall (of the Kwakwaka'wakw First Nation) teaching, and offered to students who have usually not achieved well in a public school. The FNGP is focused on Indigenous students, although not exclusively. Lying in traditional Coast Salish territory, SD 62 is home to three First Nations: Scia'new, Pacheedaht and T'sou-ke. The Sooke School District enrolls approximately 800 Indigenous students, of which approximately 150 are from the three local nations (Sooke School District, 2008).

Created in September of 2002, the FNGP is an alternative option for school aged and adult Indigenous students continuing or returning to their schooling. Its goals are to:

- Provide a safe, caring, open and exciting community for learning,
- Integrate First Nations culture and language,
- Involve the local community through the involvement of Indigenous artists, cultural instructors, and Elders, and

- Interact and meet with the community. (FNGP, 2002)

The FNGP students were the primary participatory research group and completed a video project on the subject matter of IK and IS, submitted their journals, and completed a post-project interview. Another group of students, aged sixteen and over, registered in the Fast Forward to Graduation (FF) program, and reflected on the use of digital video as a learning tool.

Several staff participated in the research project by assisting students, facilitating the project, or were interviewed for the students' videos. In order to protect the privacy of the young participants, codes and a number were assigned to describe students. This ensured that the students who took part in the study were not identified by their real names. Students in the First Nations Graduation Program (FNGP) were assigned the code FN1 and the Fast Forward (FF) programs the code FF6. Westshore staff, including FNGP and FF staff were designated as donated staff.

## Data Sources and Research Methods

Data used to answer the questions guiding this study came from a variety of sources associated with FNGP courses offered between the years 2004-2007. These included weekly student journals, interviews with students, community participants and staff, and a content analysis of the ten digital videos created by the FNCP students. Sample post interview questions included:

- What does IK mean to you?
- What does science mean to you?
- What is the topic of your class project? Why did you make a film on this topic?
- The subject of this research project is IK with regard to science, how does your topic relate to this subject?
- What does knowledge transfer mean to you?
- A sense of place to me is ...

### Descriptions of the Videos

The core components of the data and the underlying principle behind this research project were the production of student videos based on IK and IS. Using a class definition of science as “a way to understand the world around us,” the videos reflected students' diverse understandings of their world through the dual lenses of science and culture. The medium of filmmaking within the parameters of PAR, where students chose the specific subject matter of their choice, produced a diverse collection of films. At times, the actual request for science knowledge to be included in the films was not followed, but the videos produced were

still a good learning tool for documenting a range of IK and IS examples and cases. The ten videos submitted for the data pool are listed below in date order.

Students who had previously attended the FNPG and wanted to participate in this project produced the first two videos from 2004:

#### **Evolution of a People, 2004**

A twenty-five minute video that is a powerful look at Indigenous culture, history, and the will to survive. It examines the views of contemporary Indigenous peoples queried on their perspectives on the significance of language and culture in their histories and in modern life today. The video examines the challenges facing Indigenous cultures and the significance of language and culture for the participants' children and children yet unborn. This video broadly examines IK, its worldview, and its knowledge transfer systems.

#### **Seafood for Life, 2004**

A six-minute video on the importance of seafood for a west coast Indigenous community and its culture. The video presented many varieties of seafood as the Pacheedaht people harvested them from the tide-pools of Botanical Beach. This video primarily examined the significance of place to Indigenous Knowledge and the environment. In the opening narration, the student video-maker introduces herself and the video, as follows:

I am from Pacheedaht; we are People of the Seafoam, in Port Renfrew, BC, which is along the west coast of Vancouver Island. This video shows some of the traditional foods we have gathered from Botanical Beach, which includes mussels, slippers [chitons], rock stickers [limpets] and sea urchins (Seafood for Life, FN 15, 2004).

The next two videos were selected for inclusion in the data-gathering phase because the students in the FAST Forward and First Nations Graduation Program wanted to participate and their subject material was relevant:

#### **Youth and the Environment, 2006**

This eight-minute video presents students and staff members' personal reflections about why it is important to take care of the environment. It explores a Western Science perspective on the many challenges and perils facing the Earth and the environment today, and student and community perspectives on the need to protect the environment. Youth explored ideas and

beliefs related to ecosystems, pollution, environmental issues, sustainability, the importance of place, and how all of creation is inter-connected.

### **Irwin Park Community Project, 2006**

A twenty-five minute class documentary on a local park restoration project. This video examined the significance of place to IK and the environment, and the benefits of project based learning. The project was “designed to provide students with an alternative form of learning” (Irwin Park Community Project, 2006). The video presents numerous interviews, nature shots and documentation of the naturalization and restoration of the park, which took the form of removing invasive species such as scotch broom, and planting Indigenous trees and plants in the park. Students and community members learned from Elders, park naturalists, Langford community members and city workers through “hands on,” place-based activities about the natural environment at Irwin Park, including tree and plant classifications, and Irwin Park habitat investigations.

The significance of language to Indigenous Knowledge was examined in the next two videos:

### **Language, 2007**

An eleven-minute video on the local Coast Salish language and its significance to Scia'new First Nations people in understanding the world around them. Indigenous Knowledge transfer through understanding the natural world is presented in the video through community participant 4:

When I was a young baby, my grandmother used to take me and speak Ditidaht to me, and she would make me understand many things ... she would take me 100 yards from our house, and she would say “Klubasha klee asi (phonetic), I want you to tell me what that tree does, and when you find out, come and tell me.” So, I learned about nature first and I got to understand the world around me.

### **Nuu-chah-nulth Language, 2007**

A seven-minute video on the Nuu-chah-nulth language, its historical and present state, and its cultural significance to the student video-makers. The focus of the film was an interview with a fluent Nuu-chah-nulth Elder.

The following two videos focused on IK and IS and include cultural elements that are an important aspect of Traditional Ecological Knowledge (TEK):

#### **The Moon, 2007**

A five-minute video on the moon, paralleling WS and IS perspectives, with a Nuu-chah-nulth oral history of the thirteen phases (or faces) of the lunar cycle. Pairing the astronomical perspective of the lunar cycle with an Indigenous perspective adds a more holistic understanding of the moon. A FNGP student narrated Nuu-chah-nulth artist Tim Paul's analysis of the moon:

The film told of the arrival of food sources such as salmon and the size of crops, as well as weather conditions and other environmental information. Cultural knowledge was linked to the respectful interaction between humans and the environment (Paul, 1999, p. 31).

#### **Sciá'new Cultural Event, 2007**

A five-minute media arts class documentary of a cultural day hosted by the local Sciá'new First Nation. This video primarily examined the significance of place to Indigenous Knowledge and the local environment. The "place" of significance in this video is Beecher Bay, a region rich in marine life and significance to the Sciá'new First Nation.

Two videos on drugs and alcohol included extensive research on the effects and impact they have on the human body. The videos are a combination of "facts" presented through a WS lens and personal narratives from Indigenous youth and community members:

#### **Drugs and Alcohol, 2007**

An eight-minute video interviewing Indigenous youth on their perspectives on drugs and alcohol and its social, family, and personal impact. Interviewees tell compelling stories of hardship and courage as they attempted to overcome their personal challenges.

#### **Pros and Cons of Marijuana Use, 2007**

A six-minute video investigating the pros and cons of marijuana use for medicinal purposes and guidelines for the safe use of the drug. The video includes an interview with a medicinal marijuana user.

All films were presented publicly at the WCLT following their production. Family and friends were invited to celebrate the completion of the films and they asked questions of the student filmmakers. It was a great way to bring the community together and to witness what the filmmakers were learning from their cultural knowledge. It was evident that the students were proud of their work.

## Research Findings

The purpose of this research was to investigate whether using digital video in the documentation and reflection of IK and IS was a positive learning tool. Four interwoven themes emerged through the research project: Indigenous Knowledge, learning & knowledge transfer, capacity, and sense of place and identity—providing unequivocal evidence for the utility of digital video as a positive learning tool that can be used to link IS and IS with WS in the science classroom.

Through the production of their videos, students clearly indicated how the process of choosing a topic and creating digital videos on WS and IK aided in developing a positive learning environment in the science classroom. One student commented that “It [producing videos] makes school a lot of fun, it also brings a lot of respect” (FN 12, 2007). Video making also proved a valuable tool in the archiving and reflection of IK. Students began by trying to understand, investigate, and document the world around them, and created videos to document their world. One of the teaching staff noted in an interview that, “Students can look back on, reflect on, and share with students for years to come. It is helpful to have them recorded for their future generations” (Staff 3, 2007).

The development of students’ research, leadership, and technological capacities were enhanced as they were introduced to the exciting world of research and the medium of digital video to express their findings. As one student reflects:

Research to me is a big word, but a fun word. To be able to go to different places, and meet new people, listen to their experiences, share their knowledge, collaborating with team members, and then coming out with the finished project months later, it is really amazing. My experiences at Westshore have been very meaningful to me, and I have always enjoyed doing the research for a video project (FN 11, 2007).

Students and video participants developed a sense of pride and self-efficacy in the accomplishment of completing a digital video:

It is my work, and I am proud of it, and more than anything, I will promote it as much as I can, and if I have the opportunity to go somewhere to show it, to give them that understanding, I will (FN 15, 2007).

Students' videos, not only presented their understanding of Indigenous Knowledge, but presented a bridge of understanding between Indigenous and Western Science worldviews.

Throughout several students' videos, the knowledge contained within Indigenous language was seen as a vital aspect of IK and IS. "As we separate from our language, we separate from nature" (John Powell, Kwakwaka'wakw artist, 2004). This statement connects Indigenous languages, a vital strand of Indigenous Knowledge, to nature. If the objective of WS is to understand systematically the world around us; then the connection of Indigenous languages to nature allows educators a pathway to appreciate the natural environment through Indigenous eyes.

The will to survive in the face of adversity forms an integral component of an Indigenous Knowledge system. This resilience and resistance comes with a price, the charge of responsibility. "It is important to do things the way they are supposed to be done, to honour those people who suffered back in those days" (Evolution of a People, community participant 17, 2004). This resilience and resistance also generated optimism amongst Indigenous peoples that ancient IK systems will continue to survive and thrive again.

It is my hope, with everybody's interest coming back to our culture and our roots, and realizing the importance of it, we grow strong again. It might not be what it was before, but it will definitely come to a point where the government is never, ever going to get rid of us, the way we are (Evolution of a People, community participant 15, 2004).

For the community participants, who expressed their ideas within the students' videos, the importance of children in the knowledge transfer systems of Indigenous people is paramount. Whereas knowledge transfer to children seems obvious in any knowledge system, the importance of children is foremost in Indigenous Knowledge. One participant expressed it this way "If we didn't honour our children, our culture would die, who we are, our very existence would cease, that's why children are the most important thing in our culture" (Evolution of a People, community participant 15, 2004).

The importance of Elders as facilitators in the knowledge transfer systems of Indigenous peoples is vital. Elders teach responsibilities and relationships among family, community, and all of creation, reinforcing intergenerational connections and identities. They are the keepers of wisdom and knowledge through continuous experiences and apprenticing with their forbearers (Little Bear, 2009; Williams & Snively, 2016) — thereby serving as an invaluable archive of knowledge. The simple notion of students asking their Elders or their grandparents questions about IK is an overwhelmingly positive outcome of this research project. Too often today, Indigenous youth seek their knowledge in mediums not congruent with Indigenous ways of knowing. Sitting with Elders is often reduced to coffee table chat, the knowledge that they possess seemingly not important in today's world. However, having students ask their Elders questions with respect to IK may

assist in re-igniting that knowledge transfer system. Engaging Elders validates the knowledge that they possess.

Video is a great tool for learning. An Elder who never thought that the knowledge that they held was sacred, put it this way: “Sharing what you know is important. It lights a fire, bringing alive that Indigenous Knowledge and applying it to one’s life” (FN 11, 2007).

This project employed “a learning by doing” methodology, a vital strand of an Indigenous Knowledge transfer system. Cajete asserted that “experiential learning is the most basic and holistic type of human learning” (1999, p. 55). The students were learning by doing, and they took note of that fact: “I am producing it (the video) the way I want to” (FN 10, 2007). There is a strong reciprocal relationship between sense of place, sense of identity, and Indigenous Knowledge. One participant said it very simply: “Indigenous Knowledge to me is respect of who you are, and where you come from” (FN 16, 2007).

Indigenous Knowledge includes a knowledge base and a knowledge system that forms relationships with the world around us. It is a knowledge system that demonstrates these relationships in a respectful and reciprocal manner, and one that requires us to take the responsibility to pass this knowledge on to coming generations. The lens of IK, and by extension IS, can assist all learners to understand the natural world and to form respectful, reciprocal relationships with the environment. As such, it should be explored as a complementary worldview to WS.

The use of digital video as documented in this research project produced several key outcomes. Personal capacity development occurred among students in the form of advanced computer and camera technological skills and research skills:

When we first started playing around with the computers, I didn't really know a heck of a lot about computers. And now, you can pretty much throw any program out in front of me, and I can figure it out if I need to (FF 1, 2007).

For some students, personal capacity development occurred in the form of ownership of their learning, and this new knowledge and expertise encouraged them to want to share their videos with a bigger audience. In his video, student FF 2 expressed a lighter sentiment, although it clearly demonstrates ownership of his video:

I just hoped that everyone would enjoy it. At the presentation, everyone did enjoy it; a lot of people actually asked me for a copy of the video, everyone had a good laugh (FF 2, 2007).

Personal capacity development also came in the form of an increased sense of self-efficacy and accomplishment. In response to the interview question, “What have you learned in this project?” one student noted “it created a sense of self-esteem and self-accomplishment, and makes you motivated to move on and do more” (FN 11, 2007). These are powerful and important outcomes for students enrolled in alternative education programs, many of whom had rarely experienced a sense of accomplishment in their previous school settings.

Indigenous community capacity development comes with the recognition that the student videos represent a kind of cultural archive. “How does video work as a tool for learning about IK?” Teacher and researcher John Lyall stated:

For one, it archives [knowledge]; that is of critical importance. I have spoken of how the Kwakwaka'wakw recorded our songs in the 1930's. Now 60-70 years later, we are still learning and using those songs in our cultural practices today. So, our ancestors had the foresight to archive it. It seems like a simple thing, but simple things are not always done.

In an era when all children are “born digital,” digital video making presents a new avenue for our youth to tell their traditional knowledge in a modern way. One staff member noted that digital video making is “Another way of expressing what they are learning” (Staff 1, 2007). One of the students said that it has “introduced a new medium, other than pen and paper. When I get to use a camera and video, it made it so much better” (FN 10, 2007).

Students are well versed in the multitude of technological devices available today, from the digital recording device used to capture the footage to the computer software used to create the videos. For many of these students, the process of creating videos mirrors the process of learning—the processes by which they acquire knowledge. In the process of expressing what they are learning, the students were offered many opportunities to examine and re-examine their footage and to ask themselves “does this sound reasonable?” (FN 11, 2007). The media arts instructor discusses the learning opportunities provided in using digital video:

You really have to stand in a neutral ground, to weigh the pros and cons about what your message is going to say. There is a continual consideration of your ideas... the students will be able to go into so many rounds living with the idea and finding ways to express these ideas to each other. It is a phenomenal way because it is very neutral (Staff 1, 2007).

## Conclusion

This research project developed a greater understanding of the significance of IK and IS for learners in a science classroom in an alternative learning program. The use of digital video was seen as a highly positive tool for students to learn and reflect about their culture and language, and how that relates to science as a way to understand the world.

From an educator's perspective, building community capacity revolves around communities recognizing that their people may use this research project as a model for their own learning. Any videos made on Indigenous Knowledge will only add to our learning about the very cultures that Davis (2009) warns us are on the verge of extinction. The use of mobile phones and other video recording devices, with the ability to upload material to YouTube and other social media networks, broadens the availability of the material to other cultures.

By using digital video as a form of storytelling, IK was presented as a complementary worldview to WS. IK, at its root, is based in place. Through a beneficial interaction and mutual acknowledgement of the value of both knowledge systems, we can better understand the world in order to form respectful, reciprocal relationships with the environment around us.

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