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Science and the Swinomish: Teachers' Responses to Professional Development Created by Principals with the Support of Cross-District, Tribal, and University Partners

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Abstract

The purpose of this study is to explore teachers' responses to cross-district professional development created by their principals in a multi-district, rural, small-community setting.
This study is guided by the following questions: What benefits, if any, accrue for teachers from professional development that intentionally incorporates a multi-district focus? In what ways does this professional development benefit from support from cross-district, Tribal, and university partners? In particular, this study examines the extent to which cross-district collaboration benefits teachers in developing and presenting culturally relevant science lessons. In addition, the current study is inextricably connected to the setting in which the study occurred: two small, rural school districts that are deeply influenced by their proximity to and relationship with a Native American Tribe and its culture.
Funded by a 21st Century Consortium Grant, Western Washington University's Woodring College of Education and Huxley College of the Environment, in collaboration with the Swinomish Tribe, formed a partnership with the La Conner and Concrete School Districts to immerse K-12 teachers and principals in the Since Time Immemorial (STI) curriculum (Office of Superintendent of Public Instruction, 2012). The Concrete School District is situated near the headwaters of the Skagit River in northwest Washington State; the LaConner School District rests near the point where the Skagit River meets Salish Sea. Historically the Swinomish and Upper Skagit Tribes have relied on fishery in the Skagit River as a major source of cultural identity and a vital part of the Tribes' food supply. In keeping with the aims of the partnership, participating principals guided teachers in collaborative professional development to create science lessons focusing on topics such as salmon recovery, tideland impacts, and water use in the "Science and the Swinomish" project.
The value gained from sharing of ideas, not only about the project, but through the collaboration of educational practices in general, became an unexpected but welcome outcome, and a major benefit to both school districts. As one participating teacher stated, "Simply having the time to get to know teachers from another district was invaluable. Teaching in small districts can feel isolating at times, and it was so refreshing to visit another district/high school."

Keywords: Tribal mentoring, Tribal history, science, environment, inter-district collaboration, professional development, teachers

Project Overview

Beginning in the summer of 2016, Western Washington University's Woodring College of Education and Huxley College of the Environment, in collaboration with the Swinomish Tribe, partnered with the La Conner and Concrete School Districts in a project titled "Science and the Swinomish." The purpose of this grant-funded endeavor was to immerse K-12 teachers and principals in the *Since Time Immemorial* (STI) curriculum and in culturally-relevant science.

As principal investigators in this study, we used convenience sampling to identify participants (Merriam & Tisdell, 2016; Patton, 2015). Criteria for selecting participating school districts included: (1) small, rural location; (2) proximity to a Native American tribal center; (3) commitment by participating school districts to using the *Since Time Immemorial* curriculum as well as culturally-relevant science protocols; and (4) willingness of school district faculty and principals to engage in collaborative planning and presentation of science lessons. Having identified the Concrete School District and the La Conner School District as apt sites from which a suitable sample of teachers might be drawn, we first sought permission from the superintendents of these districts to contact teachers for an

initial session to explain the aims and parameters of the study. Teacher participants and their principals agreed that they would take part in all segments of the study: A summer institute focused on culturally-relevant and scientifically-sound explorations of Indigenous traditions and contemporary ecological realities; collaboration with job-alike peers in developing and presenting science lessons; cross-district observation of lessons by participating principals, accompanied by post-observation conversations among teachers and principals; and participation in surveys, discussions, and interviews to faciliatate data collection by the researchers.

The Science and the Swinomish project required participants to meet both during the summer seminar and on several weekends during the school year, time that was clearly outside the particpants' teaching contracts. A component of the grant that supported this research provided compensation for the time required of participating teachers and principals outside their school contract.

During the first summer of the professional development effort, participating teachers and principals engaged in training provided by Swinomish elders and staff from the Washington State Office of Public Instruction in the basics of the STI curriculum and in the aspects of the curriculum related to science, focusing on topics such as salmon recovery, tideland impacts, and water use (Office of Superintendent of Public Instruction, 2012). Utilizing environmental scientists from Huxley College at Western Washington University and the Shannon Point Marine Center (SPMC), as well as Tribal experts from the Swinomish Tribe, participants gained first-hand knowledge of locally relevant, culturally important issues based on current and historically-sensitive environment-sustaining science. The Science and the Swinomish project launched with a four-day summer institute, during which teachers, principals, and university faculty, guided by Swinomish Tribal leaders, combined classroom and field experience to begin development of a science-based and culturally-related curriculum consistent with the *Since Time Immemorial* initiative.

Beginning in the summer seminar and continuing through the school year, principals and teachers met collaboratively in-person and online to develop lessons and units that incorporated their new learning. Guided by WWU professors, teachers were able to ensure that their lessons were robust, scientifically sound, culturally significant, and enduring. Working with their principals through the autumn and winter, teachers adapted their lessons to the needs of individual classes and grade levels. In the spring, teachers from La Conner traveled to observe the lessons in action as they were piloted in Concrete; then Concrete teachers visited their job-alike peers in La Conner to observe their colleagues' lessons. Principals from La Conner and Concrete, mentored by WWU Education Leadership faculty, created an observation instrument and protocol for observation of lessons in both districts (University of Washington Center for Educational Leadership, 2012). Principals intentionally aligned their observation instrument with teacher evaluation protocols required by the State of Washington (Minimum Criteria for the Evaluation of Certificated Employess, 2019). Participanting principals and teachers shared their observations with each other in a debriefing session following each lesson.

Following the lesson pilots and observations, principals and teachers met to discuss and refine their work, incorporating formative assessment data and adjusting instruction as needed for future lessons. Participants shared and met in this way throughout the remainder of the school year, collaborating, teaching, and refining in an iterative process to build exemplar lessons and units of instruction designed to engage and inform all students. Further, through the in-depth process of developing and critiquing lessons, principals and teachers applied the knowledge and skills gained from this opportunity to lessons outside and beyond the immediate scope of this project. By the end of the first year, data collected through surveying participants showed that teachers and principals had improved their working knowledge of STI and Next Generation Science Standards (NGSS Lead States, 2013). The collaborative efforts of participants resulted in multiple lessons and/or units of instruction ready to implement and share.

Given an opportunity to renew the 21st Century Consortium Grant, the researchers extended the project into a second school year. Principals in both LaConner and Concrete recruited participating teachers from the previous year as well as new participants to continue the work of the project. Launched mid-school year, the second phase of the project was a mini-version of the first year's work, including three half-day work sessions to develop lessons collaboratively and to refine the observation protocols. Teacher participants again piloted their lessons during peer-observation visitations between the two districts, then met one final time to refine and prepare their lessons for publication.

As a culminating event, the Swinomish Tribe hosted an institute hosted and led by Tribal Elders who shared valuable lessons in historical education perspectives and the harm caused by cultural appropriation. The Tribe invited all the faculty and staff of both districts to participate in this institute. The lessons that were created through the project were then presented over two Tribal Education Committee meetings, and were submitted to the Swinomish Tribe for their review and approval prior to final publication.

Theoretical Framework

Almost a century ago the Meriam Report (1928) "discredited the use of standardized curriculum and textbooks. [Meriam] asserted that Native children must find a direct relationship between the curriculum and their own life experiences" (as cited in Harrington & CHiXapkaid, 2013, p. 500). In addition, a 2018 report by the Organisation for Economic Cooperation and Development (OECD) found that "teachers participating in training focused on teaching in diverse classrooms tend to report high levels of self-efficacy in teaching in diverse environments" (p. 152). In this frame of mind, the project set out to provide a stronger connection between the local Tribe and teachers, and help infuse classrooms with culturally-relevant content to engage students in their learning. Harrington and CHiXapkaid (2013) encourage non-Native teachers to "recognize the oppressive nature of failing to incorporate Indigenous perspectives in all content areas and of failing to foster a culturally relevant educational experience for Indian children" (p. 501). At the outset of the project, teachers in the Science and the Swinomish collaboration participated in a summer institute involving hands-on cultural experiences facilitated by Tribal leaders. While learning traditional weaving techniques, teachers learned of the importance of cedar and other natural resources; paddling in a traditional cedar canoe, participants gained a stronger appreciation for the ways in which the community was shaped by and connected to the Salish Sea and other local waterways. During panel discussions with Tribal elders and Swinomish Chairman, participants heard first-hand accounts of the historical trauma of the boarding schools and generational trauma that impact our students today. Through these experiences and ongoing discussions with Tribal liaisons, teachers were able to consider and embed Native culture and contributions into the lessons they wrote and piloted.

Research shows that "teacher collaboration without the benefit of outside expertise falls flat: Teachers tend to merely share existing practices and stay in their comfort zones" (Goodwin, 2016, p. 83). This project aimed to encourage teachers to push beyond their comfort zones through the valuable contributions of experts from both the University and the Tribe.

Methodology

This project was predicated on the idea that if principals support and understand what is needed to produce the effective instruction that is critical to student achievement; and if they have the skills to collaborate with teachers to put into practice rigorous, culturally relevant learning in science, including formative and summative assessment strategies, then principals and teachers will better facilitate students' higher levels of learning, sharing culturally-relevant, engaging content that meets the needs of all students, including those in the achievement and opportunity gap (Jensen, 2013; Rentfro, 2007; Silverman, 2016; University of Washington Center for Educational Leadership, 2014).

Conditions of the 21st Century Consortium Grant included an expectation that the Science and the Swinomish project would examine the overall effectiveness of participants' efforts; the researchers opted to use a pre- and post-survey instrument to gather participant responses and track their progress.

Findings

The following enumerates questions posed to participants and their responses.

How would you describe your familiarity with the history/culture of your school's local tribes after the grant trainings?

Prior to the trainings, teacher participants described their knowledge of the local tribes using words such as, "rudimentary," "lacking," "not familiar," and "some familiarity." At the end of the project, participants reported greater understanding of their local tribes. Participant responses follow (all participant responses are unaltered except to correct spelling):

- My knowledge has increased tremendously when it comes to the Swinomish Tribe. I still don't know much about the other local tribes.
- I have a much deeper understanding of the culture/history/issues.
- I feel that my knowledge of the culture and history of the Swinomish has increased, but I still have room for improvement. I need to spend some time increasing my knowledge of the Upper Skagit [Tribe].
- So much learning has taken place through the process of being involved with this grant. I have a greater perspective on tribal history, cultural events, language and a new passion to understand more. I also have developed a stronger relationship with tribal members who can help me understand the significance of events I witness or learn about.

Because the project partnered directly with the Swinomish Tribe, Tribal history and context were the focus of most of the culturally-relevant learning. However, Concrete School District, while local to the Swinomish, also draws

students from the Upper Skagit Tribe. One of the tenets of the information shared by tribal members was that one should be very cautious in making generalizations across even neighboring tribes; thus, participants from the Concrete School District felt that they needed greater connection with, and first-hand information from, their closer neighboring Upper Skagit Tribe. Cultural competence "starts with awareness, grows with knowledge, is enhanced with specific skills, and becomes polished through actual cross-cultural encounters" (Agramonte, n.d.). Our results demonstrated that the partnership between teachers and Swinomish Tribal members may have helped grow and polish participants' cultural competence.

In what ways did you bring increased cultural relevance to the sciences (or your subject) as a result of this project?

Teachers' reflections included the following:

- The project highlighted the importance of salmon and salmon fishing to the tribe and local community.
- Because of this project I made sure to include cultural relevance—one of the key aspects of climate change is the potential loss of Indigenous knowledge. I would not have included this prior to the [Science and the Swinomish] project.
- The teachers at our building were able to connect to the lives of students whose parents fish for a living with the content [of] salmon, habitat for fish, and the STI curriculum. It raises the status of students in the classroom with firsthand knowledge of fishing and salmon species.
- My language arts students shared what they learned with their history classmates; and, as a result of that sharing, my history classes began to approach history differently. They wanted to know both sides of the story and would discuss the effects for both the newcomers and the tribes they encountered.

How did your WWU mentors and cross-district peer relationships help you with improving instruction?

During the summer institute, instruction was facilitated by WWU professors in both marine science and education administration, as well as by Swinomish Tribal members for cultural instruction and connections to Indigenous ways of knowing. WWU and Swinomish mentors attended and provided ongoing support throughout subsequent workshops and project activities. Participant reflections included the following:

- The Western [Washington University] science professors were amazing and so accessible. They helped my partner and me as we designed the water quality portion of our lesson set.
- Resources such as the latest research and scientific knowledge are the backbone to effective instruction. Couple that with the connections made with job-alike peers and ideas begin to flow on how to teach students in a more effective way.
- One of the greatest benefits of the project was getting to experience the hands-on science lessons with the WWU professors. It gave specific ideas on ways to get students connected to marine science.
- I enjoyed the hands-on learning from the summer and wanted to give my students a chance to experience hands-on learning. I also had the opportunity to discuss group work with the other teachers and how to form groups. Finally, my peers helped me come up with formative assessment ideas for my lesson.

How effective was the inter-district classroom visit partnering principal/principal, teacher/principal, and teacher/teacher for observing a lesson and for giving and receiving feedback?

A 2014 report from the Rennie Center for Education Research & Policy states, "teacher collaboration is key to creating an environment for teachers to improve their practice" (Poulos, et al., 2014, p. 16). In Science and the Swinomish, participants worked in small collaborative groups over the course of two years learning, planning, teaching, and sharing progress. Teachers met in workshops several times over the school year, planned their lessons together, observed each others' lessons, and provided feedback to each other using an observation protocol designed by the principals for the project. Feedback on the collaborative nature of the program was positive, as shown below:

- This [collaboration] was easily the most valuable portion.
- I loved it. It was great to see teachers in a similar setting and how they approached things.
- The whole process of watching just one other teacher present a lesson is so enriching; therefore, this inter-district process which included multiple opportunities was so much more effective and rewarding.
- This was unequivocally the best aspect of the grant. There were rich discussions around the observations of lessons, good ideas of connections, and great feedback from teachers for each other. Without the inter-district visits there would have continued to be a form of isolation in working only with those in your own district.
- I loved this. It was great to see other teachers in action. I also learned from the other teachers and improved my own lesson as a result of their comments.

These results are especially encouraging given a recent OECD report stating that "only 44% of teachers participate in training based on peer learning and networking" (2019). Anecdotally, we found the cross-district experience to be both rewarding and effective. Given the small staff populations at each of the participating districts, teachers reported their appreciation for getting to know and learn from others who have similar jobs in the neighboring district.

What was the most valuable learning that came out of the inter-district relationships?

The La Conner and Concrete school districts have long been athletic rivals; being from the same region and division, students compete against each other across multiple sports. However, the districts are geographically far enough apart that teachers rarely have opportunity to work alongside or get to know their counterparts in the other district. This project provided mutiple work sessions to gather, collaborate, and build connections between members of each district. As demonstrated in teacher participants' responses below, relationships developed and participants gained insights into the experiences of peers in a school not so different from their own.

- Speaking the same science "language" with another colleague was so helpful in developing my lesson and fleshing out the details.
- For me, we are all here for just a short time. Sharing and caring about each other's culture and the local environment and ecology, then bringing that passion into the classroom, was invaluable.
- Simply having the time to get to know teachers from another district was invaluable. Teaching in small districts can feel isolating at times, and it was so refreshing to visit another district/high school.
- Initially just having the contact time to share ideas and resources, but we also developed friendships and deeper connections over time.

The Science and Swinomish teacher participants' experiences support and mirror those of Owens and Strahan (2016):

> By developing and implementing an interdistrict system that fosters in-classroom sharing and follow-up between teachers who have a desire to learn with peers who are expert practitioners of proven instructional methods, districts can facilitate a practical and deep transfer of knowledge that enables more immediate implementation and expansion of such practices within their schools. (p. 24)

Recommendations

For small, rural school districts, our study demonstrated the value of creating partnerships and working together to strengthen professional development and student opportunities. Similarly, our experiences support the idea that any school district working with a Native population could benefit from intentional, ongoing staff training in the cultural expectations and traditions of the Tribe they are serving; "examining mainstream education through the lived experiences and perspectives of Native students is a valuable tool for teachers and school leaders to transform mainstream education" (Harrington & CHiXapkaid, 2013, p. 495).

In addition to cultural training for teachers, the Science and the Swinomish project demonstrates the wisdom of providing participants with, and compensating them for, the time they spend working in the Tribal community. While many are often willing to work beyond their contract without additional compensation, expecting faculty members to do this work as volunteers is unsustainable and may leave gaps in the expertise needed to provide high-quality educational support programs. Compensating teachers for the work they do outside of the contracted time does not appear prominently in extant research, and so may merit further investigation; anecdotally, our participants felt this was one of the strengths of this project.

By working in the Tribal community, educators will have the opportunity to develop the relationships and first-hand knowledge needed to fully support the Native American students they serve:

> Incorporating authentic Indigenous knowledge in mainstream educational decision-making is vital in order to diminish the biased perceptions of tribal culture present in many mainstream school environments. The solution to transform mainstream education lies in learning about and using the culturally relevant education that still exists in Native communities (Harrington & CHiXapkaid, 2013, p. 496).

Creating strong, lasting relationships with tribal leaders and family members is at the heart of creating a positive school climate where administrators, faculty, and students know they have the skills, resources, and support needed to be successful in providing all students with a curriculum that is not only culturally sensitive, but also supplies an accurate history of the tribe's experiences both pre- and post-contact. As one participating principal summarized, "There's so much more that unites us than divides us, but we would have never known that if we hadn't worked together."

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