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Different Worlds Same Province: Blended Learning Design to Promote Transcultural Understanding in Teacher Education

Kathy Snow

University of Prince Edward Island, ksnow@upei.ca

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Different Worlds Same Province: Blended Learning Design to Promote Transcultural Understanding in Teacher Education

Abstract

The history of Canada's educational offerings for Indigenous students was based in colonial and assimilative practice. As such culturally responsive pre-service teacher education needs to respond not only by moving away from historical practice but with a moral and social imperative through programming that aids reconciliation. Current literature outlines the challenges that both Indigenous and mainstream teacher candidates have in developing efficacy towards transcultural skills development. In an effort to respond to both types of students, during the design and development of a 16-month community-based Bachelor of Education program, that was offered in parallel to a campus based program, a model of blended-education for cultural understanding was developed. Using the "elementary science methods" course as design case, this paper will outline the development of the blended model which paired campus- and community-based students. The challenges and successes of the design were determined through a thematic analysis of instructor observations of the pilot during the 2014-15 academic year. Four key themes emerged as important in fostering transcultural understandings within blended learning practice: student efficacy, relationship building, recognition of cultural bias, and legitimizing traditional ecological knowledge. Each of these will be discussed in the context of the course as well as transformative post-secondary educational experiences.

Historiquement, les programmes d'éducation pour les étudiants et les étudiantes autochtones au Canada étaient basés sur la pratique coloniale et l'assimilation. C'est pourquoi la formation des professeurs et des professeures culturellement adaptée doit répondre non seulement en s'éloignant de la pratique historique mais aussi avec des impératifs moraux et sociaux par le biais de programmes qui favorisent la réconciliation. La documentation actuelle présente les grandes lignes des défis qui se présentent tant aux candidats et aux candidates autochtones qu'aux futurs professeurs et aux futures professeures ordinaires pour développer une certaine efficacité envers le développement de compétences transculturelles. Afin de répondre aux deux types d'étudiants, au cours de la phase de conception et de développement d'un programme de baccalauréat en éducation de 16 mois basé dans la communauté qui était offert en parallèle à un programme basé sur le campus, un modèle d'éducation hybride pour favoriser la compréhension culturelle a été développé. Cet article, qui se base sur le cours de « méthodes de sciences élémentaires » en tant que conception de cas, présente le développement du modèle hybride qui avait jumelé les étudiants et les étudiantes du campus avec ceux et celles de la communauté. Les défis et les réussites de la conception ont été déterminés par le biais d'une analyse thématique des observations du projet pilote faites par les professeurs et les professeures au cours de l'année universitaire 2014-15. Quatre thèmes principaux ont été identifiés comme étant importants pour favoriser la compréhension transculturelle au cours de la pratique d'apprentissage hybride : l'efficacité des étudiants et des étudiantes, l'établissement de relations, la reconnaissance des préjugés culturels et la légitimation des connaissances traditionnelles écologiques. Chacun de ces thèmes sera discuté dans le contexte du cours ainsi qu'en tant qu'expériences éducatives transformatrices post-secondaires.

Keywords

Indigenizing post-secondary, teacher education, two-eyed seeing, blended learning, transcultural learning; Indigénisation post-secondaire, formation des professeurs et des professeures, vision à deux yeux, apprentissage hybride, apprentissage transculturel

Korteweg et al. (2014) in describe indigenizing mainstream teacher education as teaching “towards a new relational standpoint and teacher identity that honours Indigenous peoples, perspectives, cultures and knowledges” (p. 20). However, the issue of indigenizing teacher education, though critical, is frequently one sided with priorities focused on educating mainstream populations. Indigenizing teacher education, in this sense, does not address the need for greater numbers of Indigenous teachers in classrooms nor the barriers that prevent Indigenous youth from entering teaching, nor how to negotiate the systemic racism Indigenous teachers face once they enter the classroom. To specifically address Indigenous teacher shortages, Canada has a number of Indigenous specific programs for teacher education, notably the Indigenous Teacher Education Program (NITEP) based at the University of British Columbia (UBC) as the longest running program and the Inuit Bachelor of Education (IBED) at Memorial University in Newfoundland as the youngest. However, despite over 50 years, and more than 17 Indigenous specific teacher education programs across the country, the “radical change in Indian education” as called for by the National Indian Brotherhood (1973, p. 3) has not yet occurred. According to Battiste (2002), Canada’s educational institutions have fallen short in the acknowledgement and application of Indigenous knowledge and pedagogy to teacher education theory and practice. In 2015, the Truth and Reconciliation Commission (TRC) Calls to Action Report (TRC, 2015) outlined two specific actions (calls #62 and #63) to address shortcomings in post-secondary teacher education that still exist. These calls are directed at both supporting more Indigenous people to become teachers while also educating mainstream teachers in Indigenous knowledge integration. What I propose in this paper is that teacher education seated in Elder Albert and Murdena Marshall’s concept of two-eyed seeing offers opportunity for mainstream and Indigenous teacher candidates to not only develop teaching skills but transcultural capacity experiences to develop transcultural understandings between the two cohort groups. Arising from the course were unique observations of science education and understandings of concepts such as land, language, and pedagogy; however, the deconstructions of stereotypes and development of respectful relationships were also critically important as pre-service teachers were able to view a small window into the lives of “others.” This paper examines the design decisions made during the creation and offering of an elementary science methods course concurrently to two separate cohorts of preservice teachers: a community-based L’Nu specific cohort in parallel with a mainstream campus-based cohort. The cohort groups were brought together strategically in a blended learning course to promote two-eyed seeing and transcultural competencies. This course was a required component of the Bachelor of Education program, but beyond the content and process skills associated with general elementary education, I humbly attempted to teach for reconciliation through facilitating learning experiences to develop transcultural understandings between the two cohort groups. Arising from the course were observations of pedagogical approaches to support science educator development alongside decolonizing conceptions of land, language, and pedagogy. However, beyond becoming a science teacher, skills and development in becoming an ally or professional colleague through deconstruction of stereotypes and development of respectful relationships was also critically important.

Considerations Underpinning the Course Design

Cape Breton University (CBU), located in Nova Scotia, has a long-standing relationship with the five L’Nu communities on the island and has a long history of developing programming to support L’Nu students. The specialized programming offered by CBU has included including

modified enrollment processes, designated cohorts, the adoption of L’Nu pedagogy and content knowledge into classes, permanent Elders in residence, and wrap around services for academic and personal support. These among many other initiatives represent “best practices” illustrated in research literature addressing Indigenous student integration and retention in post-secondary (Harden, 2006; Smith & Gottheil, 2011; Snow, 2017). In early discussions of the L’Nu specific cohort program design, the Department of Education within CBU collectively set out not simply to modify and “integrate” L’Nu students and pedagogy into a mainstream approach to teacher education but to rethink teaching and learning within the Bachelor of Education program as a whole. Most notably the concept of two-eyed seeing (*etuaptmumk*), originating from Elders Murdena and Albert Marshall in the nearby community of Eskasoni, in partnership with CBU faculty was adopted as a frame for instruction. Two-eyed seeing is characterized by bidirectional learning or sharing between L’Nu and Settler from a position of mutual respect to develop a transcultural disposition that is greater than the sum of its parts (Bartlett et al., 2012). Elder Albert Marshall likens this greater understanding of the world as binocular as opposed to monocular vision, where individuals learn to see and understand the world from multiple cultural perspectives simultaneously (Bartlett et al., 2007). With *etuaptmumk* as the theoretical frame for positioning the course, I adopted a blended learning design, where both cohorts were separated during the face-to-face sessions, but worked together during the online portion of the course. The aim of this design decision was to build relationships across the two cohorts and support the development of transcultural understandings. Guided by the literature of Louie et al. (2017), the hope was that through connection of the two cohorts for discussions, sharing of created products, and critical reflection on encounters, candidates from both cohorts would develop their own decolonized educational approaches. With this aim, I turned towards an examination of Indigenous and Indigenizing teacher education to determine how to support the needs and strengths brought by L’Nu and mainstream students concurrently.

Approaches for Indigenous/Indigenizing Teacher Education

Archibald (as cited by Madden, 2015) outlines the dual role Faculties of Education play in supporting Indigenous students in post-secondary education as well as preparing all pre-service teachers to apply what they have learned and observed in their own classrooms. From a review of 23 teacher educators’ perspectives on Indigenous education, Madden (2015) identified four pedagogical pathways adopted by teacher education programs: learning from Indigenous models of teaching, decolonizing pedagogy, anti-racist education, and place-based approaches. Decolonizing and anti-racist approaches are likely familiar to most mainstream educators as they have been promoted in schools not only by Indigenous scholars, but more broadly to address cultural and socio-economic inequities created by Eurocentric education as early as the 1970s (Freire, 1974; Giroux, 1993; hooks, 1994; McLaren, 1989; Smith, 1999). Moving beyond developing critical thinking and self-reflection promoted by anti-racist education, Sanford et al. (2012) claim learning from traditional Indigenous models, alternate epistemologies, and the pedagogies associated offers a more significant shift away from cognitive imperialism or the imposition of the dominant culture worldview. Moving beyond Indigenizing mainstream teacher education, Archibald (2008) discusses the critical importance of engaging in local protocols for communication and traditional sharing methods, such as talking circles to support agency and deep learning among First Nations students. Ermine (2007) reiterates this claim, outlining the

importance of traditional learning and approaches to learning for Indigenous students, but cautions the sensitive treatment of some traditional knowledge, that may not be appropriate for all students.

Community-based programs are well-seated to promote agency for Indigenous students by situating education away from the physical institution and thereby creating physical distance and institutional flexibility to honor traditional learning in community (Carey & Russell, 2011; Keddie, 2012; Perso, 2012; Tanaka et al., 2007) In an example from BC, Tanaka et al. (2007) describe how pre-service teachers at the University of Victoria were able to transform their learning experience through a traditional pole-carving course which allowed them to experience traditional ways of learning and knowing they could enact in their future teaching. Battiste (2008) promotes a process of teacher education that involves both deconstruction and reconstruction, through extensive reflection on the history of Canadian colonization efforts and our own positionality. However, the emotional impact of course design which requests shifting and reflection in this way should not be underestimated (Root et al., 2019; Taylor et al., 2001)

In describing science education specifically, numerous authors have written on the importance of honoring Traditional Ecological Knowledge (TEK) which is founded in observing, questioning, predicting, classifying interpreting and adapting to the local environment (Friesen & Ezeife, 2013). While in describing teacher education at York University in Toronto, Vetter et al. (2014) outline placing land, Indigenous peoples, and relationships as central in the development of caring teaching practices. For non-Indigenous educators, adopting Indigenous approaches can feel daunting and disrespectful, therefore it is critical to develop relationships with Indigenous scholars/Elders and local Indigenous communities to learn how to move forward respectfully (Brayboy & Castagno, 2009; Madden, 2015; Sanford et al., 2012). For Indigenous students, negotiating the power dynamics associated with their identity and institutional experience in post-secondary is something they need to be better prepared for before they enter teaching (Hart et al., 2012). Positioned very differently, mainstream students must also develop transcultural bridging skills in the development of their professional identity (Scully, 2018).

Towards Transcultural Understandings

Transcultural learning is oriented towards developing a better understanding of self and other with the aim of reducing violence towards current and future generations of learning (Wulf, 2010). According to Delors (1996), transcultural learning involves learning to know, learning to do, learning to live with others, and learning to be by using all your senses. *Etuaqptmumk*, a two-eyed orientation as proposed by Marshall, offered a framework familiar to students in building transcultural understandings. Korteweg and Fiddler (2018), using the language of unlearning specifically with reference to mainstream students, reiterate the need for learning with Indigenous peoples as a pedagogical approach to education-as-reconciliation.

It is undeniable that the current state of education in Canada has been shaped and dominated by Eurocentric world views and muddled by ideologies of curriculum, racism, privilege, and identity (Dion, 2009, Tupper, 2011). For many practicing teachers, this is all they know and perhaps even all they feel comfortable expressing (Higgins et al., 2015; Louie et al., 2017; Tompkins, 2002). Therefore, it is not surprising to learn that in attempting to teach for reconciliation, Higgins et al. (2015) discovered resistance to the adoption of Indigenous paradigms by mainstream pre-service teachers. Higgins et al. (2015) characterized resistance as presenting two main actions or states: (a) lack of awareness of own culture and cultural biases, and/or (b) assumptions of knowledge and familiarity, particularly problematic are feelings of knowledgeable

about Indigenous culture based on stereotypes and misconceptions. An example of the first state is found in Tompkins' (2002) work with pre-service teacher in Nova Scotia. She stated that many students enter the program with small circles of experience. In essence, they are unaware of the world beyond their immediate relationships; therefore "unable to see". In countering resistance of this type, Vetter et al. (2014) outline the importance of creating a safe learning environment where "not knowing" represents an opportunity for learning. Dion (2007) describes false familiarity as knowledge of "molded images" created by dominant culture's portrayal of Indigenous Peoples in the media; she worked to counterbalance this by intentionally asking students to investigate their own understandings in relation to dominant discourse through the use of artifacts and critical reflection prompts.

Factors Shaping the Context of the Course Design

The transcultural learning needs of both cohorts, therefore, had similarities, but significant differences in shared experiences upon entry into the program. Grounded in community-based learning, with awareness of the resistance felt by mainstream students and seated in the guiding principles of two-eyed seeing for empowerment of pre-service teachers, I began to design the elementary science methods course.

Logistical Limitations

The in-community cohort was offered from 2014-2015 in an L'Nu community on mainland Nova Scotia through both face-to-face and blended learning offerings. Several aspects of the course were determined by university regulations and teacher certification requirements, including course contact hours and specific objectives in relation to methodology courses. Others were determined simply by the logistics of the program delivery. Specifically, the course was scheduled to occur in Fall of 2014 in a community that was located more than 400kms away from the main university campus. The fall term is a busy one for education faculty, and therefore the standard model of three hours once a week of face-to-face instructional time was not possible as instructors could not be spared to make the 800 km round trip weekly. Additionally, most community-based students worked full-time and therefore evening and weekend classes were required. A schedule of four weekend face-to-face sessions with online instruction was determined to be the most appropriate schedule for all three courses offered during this first term of students' enrollment.

My Own Position

Like the students, I was also very new to the university. I arrived at CBU and in the province in July, two months before the beginning of the course. Though I had taught elementary science methods courses several times before in Manitoba, including remote Cree communities in the northern part of the province, I was still a very new academic. Having completed my doctoral study working with First Nations women in Manitoba, I was somewhat familiar with Indigenous approaches and had been working to advocate for change at the post-secondary level, but I was unfamiliar with L'Nu culture. I knew nothing of protocols and very little about L'Nu traditional knowledge, and I had no established relationships in the area. As a non-Indigenous, new to the province faculty member, I was highly conscious of my own ignorance, and I knew I needed to learn how to approach teaching and learning from an open and respectful position. Maybe this was

an advantage; I was absolutely aware I knew almost nothing, so it seemed prudent to let go of control and develop an emergent curricula model as the course progressed, based on building upon student strengths.

The Student Cohorts

The course was designed to bring together two cohorts: a campus-based cohort of 20 mainstream students and a second L'Nu cohort located off campus consisting of students from four of the thirteen L'Nu communities in Nova Scotia. Slightly less than half of the L'Nu students were from the host community or a nearby community, while all of the other students had to travel long distances (upwards of 200kms) to the course location. While the mainstream students had predominantly entered the education program directly after a 3- or 4-year undergraduate degree, the L'Nu students tended to be working professionals with several years of experience in the workforce behind them, many as teacher assistants in schools.

The Course Design

For both cohorts, regardless of their proximity to campus, the course structure offered was exactly the same to ensure parity of experience. The course was divided into four parts and followed Kolb's (1984) experiential learning cycle: experience, reflection, conceptualization, and experimentation. Each part began with a face-to-face (F2F) meeting during which the objectives for the section were presented, and a debrief or reflection on the previous section. For the mainstream students, this meant travelling to the university campus, while I travelled to the community to work with the L'Nu cohort in the host community. In the first F2F meeting, time was used for introductions, team building, and sharing of administrative information. The intention of the F2F classes, which were held separately for each cohort in two different locations (campus and community), was to celebrate accomplishments and deconstruct experiences which occurred during the online portion of the course (reflection and conceptualization through discussion). There were minor occasions where a student might arrive late or need to leave early for specific personal events, but ultimately participation in the F2F sessions was 100% and did not waver throughout the course.

During the weeks between the F2F sessions, the students' work concentrated on active experimentation and concrete experiences. Students were introduced to new tasks of teaching such as lesson design, and they were prompted to observe others' lessons or share their own. All activities were facilitated through the University's mandated Learning Management System (Moodle). In the online space, both cohorts worked together asynchronously on the activities of the week. The learning experiences designed for the students were created to build into formalized assessment for the course and were structured to allow those that were currently working in schools to complete tasks that could be directly applied in their teaching. As is common for methodology courses, assignments were scaffolded to develop lesson design and performance skills alongside content knowledge of science and elementary science curricula. In the creation of lessons, pre-service teachers were asked to share a draft of their lesson plan in the online discussion forum and to provide feedback to at least two other students for revision based on course goals of inquiry-based learning/teaching methods and subject-specific content knowledge, which were to be integrated into the lesson which was then revised and submitted for assessment.

Pre-service teachers were asked to record and upload three videos to the Moodle for discussion: delivering a lesson, sharing a field trip visit, and presenting a “current issue in science education.” There were very few discussion forum prompts based on course reading and response, but rather discussions were focused on responses to the student created artifacts. Snow (2016) outlines how critical the online discussion space can be for students in finding their voice, therefore very little instructor-mandated responses were required, but rather a framework for safety through etiquette and communication that encouraged mutual respect and shared learning. Modeled from McAuley and Walton (2011), attempts were made to remove the traditional hierarchy of discussion forums to promote more authentic sharing. In my role as an online instructor, I attempted to position myself as a facilitator rather than expert knowledge holder and predominately engaged by asking questions for clarification or to promote deeper reflection following known strategies for active learning (Bonwell & Eison, 1991). I was also available by email and in the F2F setting for conversations that students did not want to share by more public means.

In summary, the design included four experiential cycles (Kolb, 1984), each increasing in complexity. The content and the process of the course addressed science education, two-eyed seeing, TEK, and the course was positioned such that mainstream and L’Nu students could learn from one another. However, to promote not only critical thinking, but agency in teaching regardless of positionality (L’Nu or mainstream), activities designed in the online/asynchronous portion of the course encouraged transcultural skills development, while F2F sessions (when cohorts were separated) created a safe space for reflection, debrief, and (re)conceptualization of what it means to be a science teacher.

Approach to Analysis and Evaluation

The degree to which this goal was met within the course design was the problem I was left to wrestle with as the course ended. Within teacher education, there is a tradition of reflective practice and teacher as researcher which has been identified as significant for professional development and school improvement (Cochrane-Smith & Lytle, 1999; Loughran et al., 2002). The approach that I adopted for this research was an ethnographic self-study, as I attempted to evaluate the strengths and weaknesses of the structure of the course and my approach to teaching. Teacher as researcher integrates the work of teaching with a research orientation that allows for in-depth self-study (Cochrane-Smith & Lytle, 1999). Bullough and Pinnegar (2001) outline self-study as an orientation that allows researchers to reflect deeply on self in relation to others. Self-study as method also aligns well with Indigenous research orientations in which researchers reflect on own positioning and continually evaluate the changing nature of experiences through building relationships with a service to others orientation (Wilson, 2008). Additionally, self-study offers beneficial outcomes by providing an opportunity to challenge learning practices and visions of what is possible (Loughran et al., 2002). As the course progressed from September to December 2014, I made regular notes of my successes and challenges within each component of the course and my observations of the students’ responses. Therefore, this article is based on my personal observations rather than student data. Critiques of self-study as a method, state rigour and validity are questionable when reporting on your own observations. To increase rigour, I regularly discussed my observations of the impact of the course design with colleagues through informal conversations as a form of member checking and instructional design feedback. As well, I shared interim observations of the course design at several professional conferences to gain insights from

peers on my observations. This format of deliberation, further testing and evaluation is outlined by LaBosky (2004) as a means to increase both rigour and validity of analysis.

What was Learned

Five key themes emerged as important to developing a transcultural blended learning design for teacher education, with implications for all post-secondary programs aspiring to respond to the TRC Calls for Action. Each theme represents a shift in pre-service teacher thinking, both from student to teacher as well as transcultural capabilities. What I initially observed as a possible limitation, the blended learning format for students new to the campus, provided opportunities for deeper reflection than might have been observed in a fully F2F environment across the two cohorts. I observed four course structure/activities promoted student: (a) efficacy development through self-pacing, (b) relationship building, (c) recognition of cultural bias, and (d) legitimizing TEK. How I derived these observations as well as the impact I observed within the course are discussed below.

Efficacy Development through Self-pacing

Regardless of cohort membership, the students were busy with complex lives outside of the education program; many mainstream students held full-time jobs while participating in the program, and most of the community-based students were working in schools. Assignments were structured with fixed but flexible deadlines to respect the students' professional and personal commitments outside of university. Students were asked to submit work at pre-set deadlines which had been negotiated during the first class, but they were also given the opportunity to submit any or all assignments up to the beginning of the end of term exam period. As education students did not complete exams, this meant students had a week without formal classes with no pressure to study for exams prior to the submission of final assignments. Although this extreme flexibility presents the danger that a student does little work during the term and completes the entire course during the final week, all of the students aimed for course deadlines.

The F2F interventions quarterly offered the opportunity to bring students back together if they had fallen out of sync in the three weeks in-between online sessions. There was usually a rush of task/assignment submissions the week before and/or the week after the F2F session. Rather than presenting new work at the F2F session, the practice of celebrating what was done, sharing completed tasks, and discussing them as a whole group appeared to inspire and offer clarity for those who had not completed tasks yet. Students who wanted feedback would be motivated to submit their assignments prior to the F2F for review and revision in advance of the final deadline. Removing the penalty for late assignments and the reduction of pressure around deadlines appeared to facilitate a professional responsibility among the students, supporting them not only in completing assignments, but helping to shift professional identity from self as student, to self as teacher, which is a challenge for many pre-service teachers. Pidgeon (2008), in describing Indigenous students' success, discusses the importance of reciprocity among students, the ability to give back to the learning community and home community through work. In this example, students supported one another through feedback of the F2F sessions which appeared to act as the motivator for meeting deadlines, rather than instructor/institutional authority. The cycle of deadlines associated with the F2F also appeared to encourage self-efficacy as learners; those who struggled with tasks could observe the task modelled and discussed and then subsequently submit

the work. In discussing self-efficacy, Linnenbrink & Pintrich (2003) outline a cyclical process of self-doubt leading to reduced engagement and reduced success; however, in this case, the collaborative spirit encouraged all students to support one another to build each others' confidence through caring mentorship. Llorens et al. (2007) outline similar findings, reporting that active learning and autonomy increases self-efficacy and motivation throughout courses. As an example, the online posts made by students were initially tentative and met the minimum requirements for assessment, but they increased in number, length, and quality as the course progressed.

The course did not suffer from a wane in participation, which is frequently cited in online courses and attrition/non-completion rates. Although the course itself being required for graduation would reduce attrition, students did not reduce their efforts to the bare minimum to pass. In parallel, as pre-service teachers developed professional efficacy, the relationship between the instructor and students shifted. Initial conversations with me were highly pragmatic and included questions such as the following: What do I need for this assignment? How much time should I spend on X? Conversations then shifted to advice for teaching, and questions such as: How would I address Y in my lesson design? What do I do when Z occurs?

Relationship Building

As is common in education programs, I adopted the position of “guide on the side,” through gradual release of responsibilities for leading the course. As the course began, I modeled and led more frequently; however, by the end of the course, the students were leading discussions online and during the F2F sessions. As the students worked with me, I positioned myself as a mentor offering advice and support rather than the instructor as expert. Particularly in professional programs, such as in education, where the instructor is also a model for future, mentoring is observed as an effective approach not only for immediate teaching and learning needs but for professional development beyond the degree (Guillory & Wolverton, 2008). This created space for the pre-service teachers to move forward as experts or learners in different aspects of the course. By nature of the course demographics, the course became two-eyed in its response as we had a balance of L’Nu and mainstream pre-service teachers teaching one another online. Gallop and Bastien (2016) outline the importance of peer-support for Indigenous students in post-secondary because it allows students to ask for help from less intimidating sources, as well as discuss issues in learning with other Indigenous students who may be facing parallel issues and questions. The F2F sessions acted as a networking space, where students could not only collaborate, but also validate each other’s knowledge, experiences, and concerns, which has been evidenced by Martin and Kipling (2006) as critical to indigenous students’ success.

I also aimed to build relationships within and between the cohorts. This was established through the online spaces. Discussions were structured initially as introductions, including the sharing of relatively neutral content such as name and grade level the candidate hoped to teach. Discussions progressed to more difficult topics, such as opinions on teaching concepts and working with students. Initially, the online space was structured to build trust between the two cohorts who did not see each other outside of this space. Trust can be a precarious issue between Indigenous and non-indigenous students, and trust is supported by respecting boundaries, being reliable and accountable, respecting knowledge shared, integrity, and being cautious with your assumptions (Brown, 2018). Initially, rules for discussion comments typical of online spaces were outlined, “keep it positive,” “what is said in Moodle, stays in Moodle.” However, I gradually increased the challenge by asking students to first use the “two likes and a wish” approach where

the first two comments on an item shared should outline what the student had done well, and the final one should note an area for improvement. Students were in this manner held accountable to one another through time to respond and the nature of responses made. By the final week, participants were asked to evaluate and offer feedback on assignments akin to instructor feedback, using assessment rubrics and applying the “critical friend” practice they had observed from me. Using the critical pedagogy approaches of Freire (1974) and Giroux (1993), students were taught to think and question before they spoke and to ask critical questions, rather than criticize. Cross-cohort conversations were initially slow to start, but eventually all of the pre-service teachers rose to the challenge, and furthermore, built professional relationships with each other. Students began to ask one another for advice across the cohorts through open, caring, and frank discussions. I assume that conversations occurred among cohorts that I was not privy to; however, when challenged by the content or tone of videos and messages, students frequently reached out to me to assist them in understanding the issue that challenged them and how to respond. Through these discussions and the reflection required before asking questions, mainstream students, in particular, began to recognize and be able to name their personal biases. For example, multiple students identified challenges with how information was presented making claim to a strong bias for Euro-centric approaches to scientific knowledge and validation, but they began to recognize L’Nu story as a rigorous approach to science as well.

Recognition of Cultural Bias

The most surprising observation for me came out of these frank discussions both online and F2F. The video assignments, which were often filmed in students’ homes or outside in their neighbourhood, allowed a window into personal lives and living spaces of the students. Unfortunately, many mainstream Nova Scotians have never visited an L’Nu community, so what they know of communities is based on what they see from the highway driving by or from the media. External to course content, mainstream students began to ask questions about life in the L’Nu community or make observations to me about how wrong their assumptions were. The approach of critical pedagogy applied to discussions and evaluation of the content of learning, such as lesson plans or presentations on issues extended to observations of the video artifacts themselves. While Tompkins (2009) outlined the challenge of encouraging students to “see” one another, meaning to understand the lived experiences of one another. The videos addressed this challenge directly because they offered a glimpse into personal lives and spaces that was surprising to students because they could literally see into the lives of their classmates in a way that is not offered in a classroom-based experience. It is well-documented that digital storytelling leads to increase engagement and motivation because students feel ownership and connection to content (Barrett, 2006; Gils, 2005) but also supports the development of empathy and bonds students to one another through the shared experience (Combs & Beach, 1994). Though obvious upon reflection, what is not clear in the literature is the role of seeing each other in the way Tompkins (2002) describes facilitated through digital storytelling. The observations students made were frequently surprising to them, and through the relationships that had been built, they began to question their personal misconceptions and biases. This process worked to disrupt the “molded image” (Dion, 2007) held by both cohort groups about each other. Through both one-to-one conversations and observations of the students’ interactions online, I observed the dissolution of a number of stereotypes. Though it was predominantly the mainstream students reflecting on personal assumptions, with generous support by the L’Nu participants, there was bi-directional

learning. L’Nu pre-service teachers have to deal with and address dominant culture bias every day in Nova Scotia, and the relationship developed through the course enabled L’Nu students’ insight into where and how misconceptions arise.

Legitimizing Technological Ecological Knowledge (TEK)

Through the videos and open content of lesson design, and through the resources available to the students’, lesson presentations illustrated different knowledge approaches. Again, seated in the two-eyed seeing process, L’Nu students tended to focus the context of the assignments in traditional knowledge, while mainstream students focused more on Provincial department of education resources. As the pre-service teachers presented and shared their lessons, this led to not only class content presented as two-eyed seeing, but also bidirectional learning. As each lesson was presented, discussions followed, where pre-service teachers questioned approaches, expanded on ideas, offered ideas to adapt lessons for different contexts and improve them. Dialogue between mainstream and L’Nu students not only legitimized TEK approaches, but enhanced lessons through the debriefing process by exploring parallels from “Western” and Indigenous science approaches. One assignment specifically asked pre-service teachers to visit a local community site, such as a museum, in order to plan a site visitation. In this case, students were asked to share a video walk-through of the site and determine appropriate educational activities and goals. Beyond encouraging students to see into each other’s lives and spaces, this activity acted as a site visitation for many students who had limited experience with TEK or L’Nu cultural resources. L’Nu students modelled TEK throughout the course, sharing lesson designs and approaches to learning that honoured traditional knowledge. Recognition and acknowledgement of L’Nu students between all students and myself as instructor helped students find their voices and positioning as part of the natural transition from student to teacher (Archibald, 2010; Friesen & Eezife, 2013). Furthermore, the classroom became a safe space to explore teaching with L’Nu ways of knowing for all students. Brayboy & Maughan (2009) outline the main limiting factors for mainstream teachers are related to respectful engagement, alleviating fears associated with cultural appropriation and lack of resources outlined. All of these factors were addressed to a greater or lesser degree within the course design. The acceptance and adoption of science-based lessons’ given context by or seated in L’Nu traditional knowledge was not accepted by all mainstream pre-service students. Some remained resistant to Indigenous pedagogies exemplified by L’Nu students as well as questioned the content selected for some lessons (Was it really science?). However, all students learned how to negotiate and respond to one another towards respectful dialogue (Brown, 2018).

Conclusions

All of the shifts observed in both cohorts: increased self-efficacy, relationship building, recognition of bias, and shifts in the perception of the source of legitimate knowledge, were a result of the critical reflection and discourse which evolved over time within the thirteen weeks of the course. Time and space afforded by the structure of the blended course design appeared to be critical. The time for thoughtful, measured responses within the discussion forum, offered space for critical reflection before any words were spoken that could not be unheard. Frequently, the F2F portion of the course became a debriefing space for conversations and questions arising from student interactions within the discussion forum, as students sought to deepen understandings or reconcile misperceptions. The separation of the two cohorts at this time was important as it allowed

the group, sometimes with my help, to bridge conversations within the cohorts. Having the ability to talk out observations with students' home cohort and return to the discussion forum to either view a video again with a new vision or slowly process responses to a discussion space allowed for greater depth of learning for both groups. The ability to face misconceptions, rewind a video, and face them again, to slowly process and observe alone allowed for deeper learning to occur. The flexibility and autonomy of the course structure encouraged students to develop responsibility towards one another, and in so doing, students had to learn to work together in a way that encouraged transcultural understandings.

Teacher education can and should be a practice of social justice in that perceptions, beliefs, and attitudes of non-Indigenous and Indigenous pre-service teachers are examined as a mechanism to develop skills for systemic decolonization of education. Pre-service teachers who experienced this course learned not only how to teach and adopt non-mainstream approaches to education, but how to question the status quo and beliefs about what education is and should be. Both of these purposes can be effected through the careful organization of learning experiences and spaces as illustrated in this example. Through the sharing of L'Nu traditional knowledge, and the legitimization of its application to elementary science education, both mainstream and L'Nu students set the ground work for ongoing change. Students also left the course with a set of resources, materials created together through collaborative feedback and sharing, which empowered them to think about and work with L'Nu content knowledge. Additionally, students were able to vet lessons with each other, observe the impact, and refine approaches within a diverse context. It was the asynchronous observation and response cycle offered by the blended learning design where the negotiation, reflection, and shifting of perceptions of education occurred. As students systematically progressed through a deconstruction and reconstruction process they were able to validate L'Nu content knowledge, teaching approach, and self which hopefully will have empowering after effects that will lead to real shifts in educational priorities as these teachers become the future curriculum writers of the province.

References

- Archibald, J. (2008). *Indigenous storywork: Educating the heart, mind, body, and spirit*. UBC Press.
- Archibald, J.-A. (2010). Introduction: Through our eyes and in our own words. *International Journal of Qualitative Studies in Education*, 13(4), 337-342.
<https://doi.org/10.1080/095183900413287>
- Barrett, H. (2006). Researching and evaluating digital storytelling as a deep learning tool. In C. Crawford et al. (Eds.), *Proceedings of Society for Information Technology and Teacher Education International Conference 2006* (pp. 647-654). Chesapeake, VA: AACE.
- Bartlett, J., Iwasaki, Y., Gottlieb, B., Hall, D., & Mannell, R. (2007). Framework for Aboriginal guided decolonizing research involving Metis and First Nations persons with diabetes. *Social Science & Medicine*, 65, 2371-2382.
<http://doi.org/10.1016/j.socscimed.2007.06.011>
- Bartlett, C., Marshall, A., & Marshall, M. (2012). Two-eyes seeing and other lessons learned with a co-learning journey of bringing together indigenous and mainstream knowledges and ways of knowing. *Journal of Environmental Studies and Sciences*, 2(4), 331-340.
<https://doi.org/10.1007/s13412-012-0086-8>

- Battiste, M. (2002). *Indigenous knowledge and pedagogy in First Nations education: A literature review with recommendations*. Apamuwek Institute.
- Battiste, M. (2008). Research ethics for protecting indigenous knowledge and heritage. In N. K. Denzin, Y. S. Lincoln, & L. T. Smith (Eds.), *Handbook of critical and indigenous methodologies* (pp. 497-509). SAGE.
- Bonwell, C. C., & Eison, J. A. (1991). Active learning: Creating excitement in the classroom. ASH#-ERIC Higher Education Report No. 1. The George Washington University, School of Education and Human Development.
- Brayboy, B., & Castagno, A. (2009). Self-determination through self-education: culturally responsive schooling for indigenous students in the USA. *Teaching Education*, 20(1), 31-53.
- Brayboy, B., & Maughan, E. (2009). Indigenous knowledges and the story of the bean. *Harvard Educational Review*, 79(1), 1-21. <https://doi.org/10.1080/10476210802681709>
- Brown, B. (2018). Supersoul sessions: The anatomy of trust. <https://brenebrown.com/videos/anatomy-trust-video/>
- Bullough, R., & Pinnegar, S. (2001). Guidelines for quality in autobiographical forms of self-study research. *Educational Researcher*, 30(1), 13-21. <https://doi.org/10.3102/0013189X030003013>
- Carey, M., & Russell, S. (2011). Pedagogy shaped by culture: Teaching narrative approaches to Australian Aboriginal health workers. *Journal of Systemic Therapies*, 30(3), 26-41. <https://doi.org/10.1521/jsyt.2011.30.3.26>
- Cochrane-Smith, M., & Lytle, S. (1999). The teacher research movement: A decade later. *Educational Researcher*, 28(7), 15-25. <https://doi.org/10.3102/0013189X028007015>
- Combs, A., & Beach, D. (1994). Stories and storytelling: Personalizing the social studies. *The Reading Teacher*, 47, 464-471.
- Delors, J. (1996). *The Treasure Within*. Report to the International Commission on Education for the Twenty-first Century. UNESCO. <https://doi.org/10.7788/ijbe.1996.24.1.253>
- Dion, S. D. (2007). Disrupting molded images: Identities, responsibilities and relationships—Teachers and Indigenous subject material. *Teaching Education*, 18(4), 329-342. <https://doi.org/10.1080/10476210701687625>
- Dion, S. (2009). *Braiding histories: Learning from aboriginal peoples' experiences and perspectives*. UBC Press.
- Ermine, W. (2007). Ethical space of engagement. *Indigenous Law Journal*, 6(1), 193-203.
- Freire, P. (1974). *Education for critical consciousness*. Continuum Books.
- Friesen, J. B., & Ezeife, A. N. (2013). Making Science Assessment culturally valid for Aboriginal students. In Widdowson, F. & Howard, A. (Eds). *Approaches to Aboriginal Education in Canada: searching for Solutions* (pp. 64-80). Canada: Brush Education.
- Gallop, C., & Bastien, N. (2016). Supporting success: Aboriginal students in higher education. *Canadian Journal of Higher Education*, 46(2), 206-224.
- Gils, F. (2005). Potential applications of digital storytelling in education. In *proceedings of the 3rd Twente Student Conference on IT*, University of Twente, Faculty of Electrical Engineering, Mathematics and Computer Science, Enschede, February 17–18.
- Giroux, H. A. (1993). *Living dangerously: Multiculturalism and the politics of difference*. Peter Lang.

- Guillory R. M., & Wolverton, M. (2008). It's about family: Native American student persistence in higher education. *The Journal of Higher Education*, 79(1), 58-87. <https://doi.org/10.1353/jhe.2008.0001>
- Hardes, J. (2006). Retention of Aboriginal students in post-secondary education. *Alberta Counselor*, 29(1), 28-33.
- Hart, V., Whatman, S., McLaughlin, J. & Sharma-Brymer, V. (2012). Pre-service teachers' pedagogical relationships and experiences of embedding Indigenous Australian knowledge in teaching practicum. *Compare: A Journal of Comparative and International Education*, 42(5), 703-723. <https://doi.org/10.1080/03057925.2012.706480>
- Higgins, M., Madden, B., & Korteweg, L. (2015). Witnessing (halted) deconstruction: White teachers' 'perfect stranger' position within urban Indigenous education. *Race Ethnicity and Education*, 18(2), 251-276. <https://doi.org/10.1080/13613324.2012.759932>
- hooks, b. (1994). *Teaching to transgress*. Routledge. <https://doi.org/10.3366/para.1994.17.3.270>
- Keddie, A. (2012). Schooling and social justice through the lenses of Nancy Fraser. *Critical Studies in Education*, 53(3), 1-17. <https://doi.org/10.1080/17508487.2012.709185>
- Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Englewood Cliffs.
- Korteweg, L., & Fiddler, T. (2018). Unlearning colonial identities while engaging in relationality: settler teachers' education-as-reconciliation. *McGill Journal of Education*, 53(2), 254-275. <https://doi.org/10.7202/1058397ar>
- Korteweg, L., Fiddler, T., Bissell, A., Primavesi, L., Clarke, M., & Moon, M. (2014). Circles of hope in Indigenizing mainstream teacher education. In G. Sheppard (Ed.), *Circle of hope in indigenizing mainstream teachers* (pp. 20-36). Sudbury: Laurentian E-Press.
- LaBoskey, V. (2004). The methodology of self-study. In B. Louie, M. Hammond, V. LaBoskey, & T. Russell (Eds.), *International handbook of self-study of teaching and teacher education practices* (pp. 817-870). Kluwer. https://doi.org/10.1007/978-1-4020-6545-3_21
- Linnenbrink, E. A., & Pintrich, P. R. (2003). The role of self-efficacy beliefs in student engagement and learning in the classroom. *Reading and Writing Quarterly*, 19(2), 119-137. <https://doi.org/10.1080/10573560308223>
- Llorens, S., Schufeli, W., Bakker, A., & Salanova, M. (2007). Does a positive gain spiral of resources, efficacy beliefs and engagement exist? *Computers and Human Behavior*, 23, 825-841. <https://doi.org/10.1016/j.chb.2004.11.012>
- Loughran, J., Mitchell, I., & Mitchell, J. (Eds.). (2002). *Learning from teacher research*. Allen and Unwin.
- Louie, D., Poitras Pratt, Y., Hanson, A. J., & Ottmann, J. (2017). Applying Indigenizing principles of decolonizing methodologies in university classrooms. *Canadian Journal of Higher Education*, 47(3), 16-33. <https://doi.org/10.7202/1043236ar>
- Madden, B. (2015). Pedagogical pathways for Indigenous education with/in teacher education. *Teaching and Teacher Education*, 51, 1-15. <https://doi.org/10.1016/j.tate.2015.05.005>
- Martin, D. E., & Kipling, A. (2006). Factors shaping Aboriginal nursing students' experiences. *Nurse Education Practice*, 6(6), 380-388. <https://doi.org/10.1016/j.nepr.2006.07.009>
- McAuley, A., & Walton, F. (2011). Decolonizing cyberspace: Online support for the Nunavut MEd. *The International Review of Research in Open and Distributed Learning*, 12(4), 17-34. <https://doi.org/10.19173/irrodl.v12i4.848>
- McLaren, P. (1989). *Life in schools and introduction to critical pedagogy in the foundations of education*. Pearson.

- National Indian Brotherhood. (1973). *Indian control of Indian education*. National Indian Brotherhood/Assembly of First Nations.
- Perso, T. F. (2012). Cultural responsiveness and school education: With particular focus on Australia's First Peoples; A review & synthesis of the literature. Menzies School of Health Research, Centre for Child Development and Education, Darwin Northern Territory.
- Pidgeon, M. (2008). Pushing against the margins: Indigenous theorizing of "success" and retention in higher education. *Journal of College Student Retention: Research, Theory & Practice*, 10(3), 339-360. <https://doi.org/10.2190/CS.10.3.e>
- Root, E., Snow, K., Doucette, MB., Augustine, S. (2019). Evidence of co-learning through relational pedagogy: Indigenizing the curriculum through MKM 2710. *The Canadian Journal for the Scholarship of Teaching and Learning*, 10 (1), p. 1-17. <https://doi.org/10.5206/cjsotl-rcacea.2019.1.8006>
- Sanford, K., Williams, L., Hopper, T., & McGregor, C. (2012). Indigenous principles informing teacher education: what we have learned. *In Education*, 18(2). <http://ineducation.ca/article/indigenous-principles-informingteacher-education-what-we-have-learned>
- Scully, A. (2018). *Whiteness and land in Indigenous Education in Canadian teacher education*. [Unpublished doctoral dissertation]. Lakehead University.
- Smith, L. T. (1999). *Decolonizing methodologies*. Zed Books.
- Smith, C., & Gottheil, S. (2011). Increasing accessibility: Lessons learned in retaining special population students in Canada. *College & University*, 86(4), 47-52.
- Snow, K. (2017). And still they persisted: A discussion of Indigenous Students perspectives on a year in a Pre-Nursing Transitions Program. *International Journal of Learning, Teaching and Educational Research*, 16(10). <https://doi.org/10.26803/ijlter.16.10.9>
- Snow, K. (2016). Social justice or status quo? Blended learning in a Western Canadian teacher education program, *Canadian Journal of E-Learning and Technology*, 42(3) p. 1-17. <https://doi.org/10.21432/T23K8T>
- Tanaka, M., Williams, L., Benoit, Y. J., Duggan, R. K., Moir, L., & Scarrow, J. C. (2007). Transforming pedagogies: Pre-service reflections on learning and teaching in an indigenous world. *Teacher Development*, 11(1), 99-109. <https://doi.org/10.1080/13664530701194728>
- Taylor, D. M., Crago, M. B., & McAlpine, L. (2001). Toward full empowerment in Native education: Unanticipated challenges. *Canadian Journal of Native Studies*, 20(2), 45-46.
- Tompkins, J. (2002). Learning to see what they can't: Decolonizing perspectives on Indigenous education in the racial context of rural Nova Scotia. *McGill Journal of Education*, 37(3), 405-422.
- Tupper, J. (2011). Disrupting ignorance and settler identities: The challenges of preparing beginning teachers for treaty education. *In Education*, 17(3). <http://ineducation.ca/article/disrupting-ignorance-and-settler-identitieschallenges-preparing-beginning-teachers-treaty-e>
- Truth and Reconciliation Commission of Canada (TRC). (2015). *Canada's residential schools: The final report of the Truth and Reconciliation Commission of Canada* (Vol. 6). http://www.myrobust.com/websites/trcinstitution/File/Reports/Volume_6_Reconciliation_English_Web.pdf

- Vetter, D., Haig-Brown, C., & Blimke, M. (2014). Culturally responsive teaching: Stories of a First Nation, Métis, and Inuit cross-curricular infusion in teacher education. *Learning Landscapes*, 8(1), 305-322. <https://doi.org/10.36510/learnland.v8i1.687>
- Wilson, S. (2008). *Research is ceremony: Indigenous research methods*. Fernwood.
- Wulf, C. (2010). Education as Transcultural Education: A Global Challenge. *Educational Studies in Japan: International Yearbook No. 5*. 33-47. <https://doi.org/10.7571/esjkyoiku.5.33>