Critical Mathematics and Critical Literacy for Indigenous Students in an Urban

Alternative High School Program:

An Action Research Study

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CRITICAL MATHEMATICS AND LITERACY

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Abstract

The purpose of this action research study was to improve the education of Indigenous students enrolled at an inner-city urban alternative high school for adolescent mothers and/or mothers-to-be. Seven adult students agreed to participate in this study, as did the English Language Arts teacher who facilitated the critical literacy classroom activities. The study investigated the impact that critical mathematics and critical literacy activities had on developing students' critical consciousness (Freire, 2000), which is a key component of transformative learning (Mezirow, 1997).

The research questions addressed were:

1. Do these critical math and literacy activities contribute to adult female Indigenous students' critical reflection and if so, in what ways?

2. Do these critical math and literacy activities lead adult female Indigenous students to take critical actions against oppressive forces and if so, in what ways?

3. Do adult female Indigenous students find these critical math and literacy activities valuable and if so, in what ways?

4. What have I learned about enacting critical pedagogy in the classroom?

During a 3-month timeframe, from April through June of 2016, students engaged in various critical mathematics and literacy activities as part of their regular Essential Mathematics and English Language Arts coursework. The data collected included student work samples from completed Essential Mathematics and English Language Arts courses, post-course student participant interviews, informal conversations with the English Language Arts teacher, and personal observations taken from Essential

Mathematics classes and kept in my researcher journal. The qualitative data sets were then unitized, coded, and analyzed for critical incidences and emergent themes.

The findings indicate that the cumulative effect of the critical curricular activities enacted during this study led to critical consciousness development in students, and thereby contributed to a more transformative learning experience for them. The findings also indicate that action research was integral to changing the mathematics and English Language Arts classroom practices in this study.

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Todd Hunter

Chapter 1 - Introduction and Overview

I planned this action research study with the intent of improving the schooling experience of Indigenous students in a western Canadian, inner city alternative high school for young mothers and mothers-to-be. Furthermore, I aimed to show that by applying critical pedagogical approaches to the teaching of Mathematics and English Language Arts, students would experience an increase in critical consciousness, resulting in a more transformative education experience. This chapter provides an overview of the learning environment in which the study took place, as well as a description of the participants and my positionality. I also tell the story behind the study and explain its purpose and significance.

The Story Behind the Action Research Study

Having originally taught predominantly non-Indigenous middle-class students in suburban high schools, my move to inner city adult education teaching was a disorienting experience, marking the beginning of my own 'transformative learning' (Mezirow, 1997) process. I now found myself teaching students whose lives made it extremely difficult for them to achieve success in school. I also noticed that many of these students, and many who faced multiple barriers to school success, were Indigenous. As I began to work with these students, many of whom struggled with their in-class learning, I started to question why it was that our society and schools had failed them so miserably. Thus, I began to slowly pay closer attention to Indigenous issues in the news and in conversations, which were often related to politics, and I started to make an effort to learn more as I was tasked with teaching a Canadian Studies course. I was also further disoriented, and permanently,

profoundly moved by encounters with two older adult students who disclosed to me that they were abused in Indian Residential Schools.

I have since been steadily learning about Canada's colonial exploits, as a settler nation, and its effects on the Indigenous peoples of this land, and especially about the genocidal Indian Residential Schools system, which is "a tragic part of Canada's history" (Truth and Reconciliation Commission, 2015, p. 135). Although the last of these residential schools closed in 1996, the literature suggests that Canadian public schools have remained ineffectual in meeting the needs of too many Indigenous students. A 2002 report on Aboriginal education in inner city Winnipeg high schools suggests:

> The life experiences and cultural values of many Aboriginal students and their families differ significantly from what they experience in the schools, which are run largely by non-Aboriginal, middle class people for the purpose of advancing the values of the dominant culture. The educational system marginalizes Aboriginal students, does not adequately reflect their cultural values and their daily realities, and feels alien to many Aboriginal people. (Canadian Centre for Policy Alternatives, 2002, p. 3)

The city in which the study takes place has "the largest intertribal student population of Aboriginal students in Canada in any urban setting" (Laramee, 2008, p. 61) so the situation demands that educators here create a more equitable school system. Only then might we be able to defeat grim realities like the fact "that young Aboriginal men have a greater likelihood of ending up in jail than they do of finishing high school" (Comack, 2012, p. 219). I recognize that the challenge to do so is immense when we consider that Indigenous students are still required to learn an arguably Eurocentric curriculum.

Although there is an expectation for Indigenous perspectives to be weaved into course

content (Manitoba Education and Youth, 2003), I have observed that inner city

Indigenous students, who are more likely to be low-income, are still expected to continue

to conform to traditional Eurocentric school cultural norms, and are judged by the same

standards as non-Indigenous students, who are less likely to be low-income. So I do not

find it surprising that Indigenous students who live in the city where this study took place

are "almost three times more likely to be poor than non-Aboriginal children" (Canadian

Centre for Policy Alternatives, 2009, p.30) and thereby disproportionally fail to meet

those standards.

One of the key factors that likely contribute to the continued inequity of

Indigenous student achievement in our schools is the fact that there are not enough

Indigenous teachers. Although I know many non-Indigenous teachers who try to create a

more culturally inclusive learning environment, I wonder if Indigenous teachers may be

more successful in teaching Indigenous students; if perhaps the experiential and cultural

divide between non-Indigenous teachers and Indigenous students might be too great to

bridge successfully. In the province of Manitoba, one of the Canadian provinces with

higher proportions of Indigenous students, only 1313 (9%) of the 14,539 teachers

working in public schools identified as being Indigenous (Manitoba Education and

Advanced Learning, 2013). During the 1999-2000 school year, only 112 of the 2023

teachers in one of Manitoba's urban school divisions were Indigenous, which was 400

teachers short of the number needed to have a proportionate Indigenous teacher to

Indigenous student ratio (Canadian Centre for Policy Alternatives, 2002, p. 42).

Therefore, data suggest that most Indigenous students will continue to be taught by non-

Indigenous teachers for the foreseeable future, which makes it imperative to find more effective ways to prepare non-Indigenous teachers to work with Indigenous students. Teacher-research conducted by non-Indigenous teachers who work with Indigenous students has the potential to contribute new understandings to help educators develop better school programs for inadequately served students.

Description of the Community and School

Usually no more than one hundred students attend the urban alternative high school where this study occurred. The students range from fourteen to twenty-one years-old, and they are all pregnant and/or single mothers with children who are less than 3 years of age. The findings of an early meta-analysis of student achievement in alternative schools suggests that although most alternative schools only have small positive effects on students, the schools with specifically-targeted populations, such as in the school used for this study, have more positive effects on school performance, self-esteem, and attitudes toward school (Cox, Davidson, & Bynum, 1995). More recent studies (Wu, 2014) suggest that this finding about alternative schools still holds true. Although some students who attend the school come from outside the city's core area, most of the students are low-income core-area residents who identify as Indigenous. Many, if not most, of these students have faced many obstacles that impeded, and continue to impede, their schooling. Often poverty-related, daily life challenges manifest themselves in a variety of behaviors at school, including sporadic attendance and emotional distress. Naturally, the challenge of parenting in poverty adds more stress to these students' lives. However, my conversations with veteran staff members suggest that many of the students who spend considerable time at the school exhibit exemplary learning behaviors.

In general, I have found that the school staff tries to create an equitable learning environment so that these traditionally marginalized students are able to achieve course credits. I also find that the school staff also aims to provide care and concern for students while helping them become independent by teaching them positive parenting and domestic skills, as well as providing valuable early childhood education experiences for their children. In many ways I would say that this school shares characteristics of Jane Roland Martin's (1995) idealized "schoolhome" – a school that provides a nurturing home environment and teaches essential domestic and social skills, in addition to traditional academics, so that students become better equipped for independent living in adulthood. A Phillips (2013) alternative school-focused study on effective student-centered learning found that learning improved when it was explicitly connected to students' lives, and that a nurturing environment supported successful learning – two characteristics shared by the alternative school in this study.

The staff of the school seems to recognize the importance of trying to provide as many supports as possible to each individual student, and so staff composition in the school has evolved over time to include a full time social worker, several educational assistants who work as early childhood educators, in addition to teachers and a school principal. The current on-site school principal is a former graduate of the school, bringing valuable leadership, life experiences, and historical perspective to the unique needs of the school and its pupils.

Upon enrolment, the school's social worker works closely with each student, their families, and any social agencies they are involved with (e.g., Employment and Income Assistance, Child and Family Services) in an attempt to try to understand their unique

personal histories and present life circumstances. The social worker maintains regular contact with students to help them navigate the cycle of crises that often arise in their lives so that they continue to stay in school. Having previously worked in another setting where students also had support from social workers, I have observed firsthand how crucial the social worker's role is to the alternative school staff's ability to meet the needs of its clientele.

The childcare workers are distributed within the school's childcare centers to provide educational programming for the children while students attend classes. They also supervise students in these centres, since students are required to assist in a centre for one scheduled class each day. Students serve in the childcare centers to learn valuable childcare skills while ensuring educational assistants are not required to care for more children than current daycare regulations allow.

A public health nurse visits the school regularly and college nursing students hold *Healthy Baby Program* sessions with the student-parents, in addition to prenatal classes for pregnant students. The school also provides breakfast and lunch for students, which eases some of their financial and caregiving strain. Since 'buffer" times are scheduled throughout the day for students to drop off and retrieve their children from the childcare centers, it is not surprising that one pervasive challenge is the shortage of in-class time for students to complete core academic course materials. Nevertheless, many students still manage to achieve course credits and a handful of students, usually between five and ten, graduate from the school each year. A smaller number experience success but go on to graduate from other schools (usually because their children have aged beyond the maximum allowed to be retained in the childcare centres). Core courses are set up so

individual students can progress at their own pace, and many of the students are old

enough to graduate with their Mature Grade 12 diploma (8 credits required, with 4 credits

at the grade 12 level). This means students can still graduate within a reasonable amount

of time, typically after a year or two in the program.

Brief description of the classrooms. The Mathematics and English Language

Arts classrooms in the school are adjacent to each other, looking out onto a quiet street

corner from the second floor of the school. They are spacious heritage-building rooms

with lots of natural light, effectively buffered from the noise generated in the childcare

centres and food lab. Each room has a number of trapezoidal school tables that each

accommodate two students. There are also a handful of computers along classroom walls.

Since students enter and exit courses at various times throughout the school year, they

work mostly individually with teacher guidance, and occasionally in pairs or small

groups. Currently, all of the teaching staff have taught for more than 20 years each

(though none have taught exclusively at this school), while all of the educational

assistants working in the childcare centres have being doing so for more than 20 years as

well.

Brief description of student participants. Student participants in this study were

Indigenous female adult students who had young children of their own attending

childcare centers in the school. These students were working toward completing their

Mature Grade 12 diploma, which means that they had not previously completed enough

high school credits to complete the regular high school diploma and/or could not do so by

the age of 19. The Mature Grade 12 diploma only requires four Grade 12 credits, which

must include a Math 40S and an English 40S credit, in addition to four other high school credits (Manitoba Education and Youth, 2003).

Explanation of My Positionality and Perspectives

I am a White teacher, and thereby representative of the dominant Canadian settler culture, in an urban school of predominantly Indigenous students. Although there are a small number of non-Indigenous students in my classes, I am carefully considering how to address race relations via critical pedagogy that also analyzes the forces of economic oppression to which all of my students are subjected to because they are young, unwed mothers or mothers-to-be. Regardless, my research on critical pedagogy has caused me to consider White identity and how its cultural domination within professional learning communities – my school is composed of predominantly White teachers - problematizes effective schooling of Indigenous students.

I know I have spent most of my life unaware of the advantages afforded me as a White male, representative of the dominant Canadian settler society, and I would argue that "my schooling gave me no training in seeing myself as an oppressor, as an unfairly advantaged person, or as a participant in a damaged culture" (McIntosh, 1988, p. 1). I am now trying to learn and understand how "this singular focus on the Other blinds us from seeing how settler history, myth, and identity have shaped and continue to shape our attitudes in highly problematic ways" (Regan, 2010, p. 11). As a result of my learning journey, I hope I can become a further advocate for and ally of Indigenous students. Osborne (1999) lamented that our schools have started to become global economic training institutions as a result of neoliberal education system reforms. Robinson (2015), an education critic, suggests that neoliberalism has caused increased standardization,

competition, and corporatization in our schools. Since the students in my school represent a demographic group that I consider to be at risk of becoming further marginalized by more of these neoliberal reforms, I believe it should be our primary objective as educators to empower these students to change their futures, and that of Canadian society, for the better.

Explanation of how the research focus evolved. After having read Silver's (2013) *Moving Forward, Giving Back: Transformative Aboriginal Adult Education,* I began to consider the kinds of school changes that might benefit the students, especially the Indigenous students in my alternative school setting. Since the transformative education programs described in the book are guided by critical pedagogy and transformative learning theory, I returned to Paulo Freire's *Pedagogy of the Oppressed* (2000), and started to learn more about these theories. As I read, I began to see how his critical pedagogical approaches might improve student learning and engagement for disenfranchised students, and Indigenous students in particular. By developing students' critical awareness of the societal forces that have undermined their school success and societal status, followed by critical action against those forces, I started to consider ways Freire's critical pedagogy could contribute to student empowerment, positive self-transformation, and social change. This heightened awareness of oppressive forces combined with sociopolitical actions taken against those forces is what Freire (2000) referred to as critical consciousness. Encouragingly, studies show that increased student critical consciousness results in improved school engagement (McWhirter & McWhirter, 2016). It is also linked to the acquisition of higher-status careers in adulthood (Diemer, 2009) for some learners, which suggests that the desired critical consciousness outcome

of critical pedagogy is compatible with one of the modern school system's main desired outcomes: career success for graduates.

Significance of the Study

Within my school division, and among my teaching peers, I have observed a growing sense of urgency to develop more successful school learning models for our Indigenous students. In the school in which I teach, which has a majority of Indigenous students, this need seems even more urgent. Teachers are also concerned about the future prospects for our students' children. A 2009 study on school attendance in the province of Manitoba revealed some relevant statistics. Almost 90% of school-aged students do not complete high school if they present with three risk factors: a) they have a teen mother, b) they live in a household that relies on income assistance, and c) they have contact with Child and Family Services (Manitoba Education, Citizenship & Youth, 2009). I have observed that this triad of risk factors applies to many of my students' children who attend the school's childcare centers, or will attend after they are born. School staff members hope our graduates will be able to end their dependency on income assistance and social services, and thereby eliminate one of those risk factors for their children. Success in graduating will also help our students escape joining the almost 40% of Aboriginal people in Canada over 25 years of age without a high school diploma (Statistics Canada, 2011).

Based on many conversations I have had with veteran staff at this school, staff see positive social and academic growth in our students who become successful, and they would like to improve their ability to foster such growth in all students. However, staff are also concerned that high school graduation is insufficient preparation for students to

transform their futures in positive ways, which is essentially what we hope to help our students do, so there is general desire to focus our students toward post-secondary education and training. These conversations have also revealed to me that, as a school staff concerned with helping our low-income students work towards satisfying careers, we are well aware of the current lack of adequate-paying employment options for our Grade 12 graduates in our neoliberal economy. Instead, we expect most of our students will need to complete post-secondary studies, where they will essentially be competing with students of higher socio-economic standing to access the higher-paying job market. We will also need to educate them about how to avoid working towards a lifetime of wage slavery to service debts incurred by historically high property values and rising living costs, because "in essence, neoliberalist states guarantee "free" markets for the poor, government protection for the rich, with devastating results. The poor are at the mercy of the greed of the rich and are led to further impoverishment and ultimately to enslavement" (Nikolakaki, 2012, p. 7). Encouragingly, there appears to be a growing number of community development-based post-secondary programs in the western Canadian provinces, such as this city's Inner City Social Work and Access programs, that target our students' demographic. I hope to direct more of our graduates toward these kinds of programs.

The Research Purpose and Questions

The purpose of this study was to investigate the impact of curricular activities implemented in the Mathematics and English Language Arts classrooms over a 3-month period. These activities were designed to raise students' critical consciousness of the societal forces that have undermined their success in school and society. The hope was

that these activities would contribute to a more transformative education program for students. My aim was to investigate, design, enact, and evaluate critical curricular units in Mathematics and English Language Arts. The following research questions guided this action research study:

1. Do these critical math and literacy activities contribute to adult female Indigenous students' critical reflection and if so, in what ways?

2. Do these critical math and literacy activities lead adult female Indigenous students to take critical actions against oppressive forces and if so, in what ways?

3. Do adult female Indigenous students find these critical math and literacy activities valuable and if so, in what ways?

4. What have I learned about enacting critical pedagogy in the classroom?

Explanation of the Action Strategies Used

The English Language Arts teacher and I implemented critical curricular activities in both our Mathematics and English Language Arts programs. All students in our school are required to take courses in these two subject areas so all students were given the opportunity to benefit from the activities. In addition to a literature review of critical activities tried elsewhere, activity design required analysis and review of current course content and delivery to identify areas where students could question taken-for-granted knowledge and develop their critical consciousness. This review also required revision to, or the addition of, critical math and literacy learning activities in our Mathematics and English Language Arts courses. This process of evaluating, revising, and creating new critical learning activities was ongoing and took many months. It began once I started

researching critical pedagogy and ended before student participants began completing activities in their mathematics and English Language Arts courses.

After students completed courses that required completion of these critical course activities, I collected data via student interviews and their completed coursework. I also met weekly with the English Language Arts teacher, who already had previous experience teaching social justice-themed course content, to discuss her observations and thoughts on enacting critical literacy activities in her classes. Additionally, I kept my own researcher journal to document my observations and thoughts on enacting critical mathematics activities in my classes. My hope was that the findings from this action research would spawn a new action-reflection cycle (McNiff & Whitehead, 2011, p. 9).

I completed the study within a reasonable three-month timeframe. Although my school has continuous student intakes throughout the year, there were seven Indigenous adult students who managed to complete both the English Language Arts and Essential Mathematics courses that contained the critical math and literacy activities and who agreed to participate in this study. As the personal interviews would later reveal, each student participant was already along a transformative learning process at the beginning of this study because of having already experienced disorienting dilemmas (Mezirow, 1997) and the time to reflect and grow from those experiences.

Definition of Terms

The following definitions of relevant terms were adopted for use in this study. They appear in alphabetical order.

- *Action research* is practitioner research in which the practitioner applies research to solve a problem in practice (McNiff & Whitehead, 2011).

- *Critical consciousness* is the point at which students are able to identify and analyze forces of oppression (Freire, 2000).

- *Critical pedagogy* refers to a philosophy of education and social theory in which students learn to identify and analyze forces of oppression so that they can begin to work against those forces (Freire, 2000).

- *Critical literacy* is critical pedagogy as applied to language learning; learning to read the word and the world (Freire, 2000).

- *Critical mathematics* is critical pedagogy as applied to the learning of mathematics (Frankenstein, 1990, and Skovsmose, 1994).

- *Critical reflection* is awareness of societal forces of oppression (Freire, 2000).

- *Critical action* refers to physical actions taken to combat societal forces of oppression (Freire, 2000).

- *Transformative learning* refers to changes in the ways students view the world and live within it (Mezirow, 1997, and O'Sullivan & Morel, 2002).

Structure/Layout of the Thesis

Having established the context and purpose of the study in Chapter One, Chapter Two offers a comprehensive literature review of existing theory and research. The discussion includes a review of critical pedagogy as an overarching theoretical focus for the action research study, followed by a review of critical pedagogical approaches specifically applied to mathematics education (critical mathematics) and English Language Arts education (critical literacy). Since the action research study centers on adult Indigenous students, a review of adult Indigenous education literature is also included. Chapter 3 provides an overview of the methodology and procedures used in

carrying out the study. Details discussed include the participant selection process, the research tools I used, and the data collection and analysis techniques. The delimitations of the study, limitations of the methodology, ethical considerations, and criteria used to ensure research quality are addressed. Chapter 4 discusses the findings resulting from an analysis of the collected data. This data included student interviews, coursework artifacts, and a researcher's journal which included notes from teacher-teacher conversations and observations made in mathematics classes. A synthesis of the findings from all data sets is included. Chapter 5 includes a summary of the study, conclusions, and implications and recommendations for changed teaching practice. It also includes a discussion of limitations and recommendations for future research.

Chapter 2 - Literature Review

The review of the literature relevant to my study focuses on four areas. First, I investigate and discuss general elements of critical pedagogy most relevant to the goal of helping students in my school develop critical consciousness as well as considering the types of oppressive forces that affect these students. Next, I look at feasible critical pedagogical classroom activities specific to Mathematics and English Language Arts classrooms. Lastly, I review Indigenous education literature to identify some effective practices and critical curricular topics that may be beneficial for these students in particular, as part of a consciousness-raising education intended to contribute to each student's transformative learning process. Since transformation is characterized by a "shift of consciousness that dramatically and irreversibly alters our way of being in the world" (O'Sullivan & Morrell, 2002, p.18), it can take many years to occur, if at all, so it is unrealistic and unfeasible to attempt to assess student transformation within this 3-month study. However, a review of the literature might reveal some ways in which teachers can contribute to transformative processes via critical pedagogies and best practices in Indigenous education.

Critical Pedagogy

The vice principal communicated that the school's mission is to foster academic success while providing appropriate resources and supports to students so that they develop personal independence and effective parenting skills. For almost all of our students, these achievements require significant academic and social transformations. If transformative education is the ultimate goal of our alternative school, then, according to the literature, applications of critical pedagogy can support transformative learning

processes. Servage (2008) argues that critical pedagogical approaches are necessary for school staff who mean to support actual transformative change in students, and she questions the effectiveness of professional learning communities who do not "turn to critical reflection in the sense that it is used by critical pedagogists" (p. 66). Silver (2013) argues that critical pedagogical approaches are crucial for Indigenous students, and that such an education can be transformational, leading to significant personal healing, increased capacity for critical thought, and liberation from the conditions of poverty as students enter the work force.

One key component of this critical pedagogy study is critical consciousness. Freire (2000) and other critical pedagogues explain that students have achieved critical consciousness when the students are fully aware of societal forces of oppression, and how those forces have impacted and/or continue to impact their lives, and then act against these forces of oppression. In doing so, they transform themselves and work towards a more equitable and just society. Kincheloe (2008) advocates for context-specific teacher practices to help specific students with specific needs in specific communities achieve critical consciousness, which is how this study is being designed. This approach aligns with Dewey's (1938) notion that knowledge must be considered within the contexts in which it is formed and to which it applies.

"Generative themes" is a critical pedagogical concept that Kincheloe (2008) attributes to Freire (2000). This concept is the method by which students learn to decode what they read in connection to understandings about the world. Kincheloe (2008) describes this process as looking for meaning in words to uncover "the unstated dominant ideologies hidden between the sentences as well" (p. 16). Using students' existing

knowledge earned from lived experience, teachers probe this practical knowledge to pose

new problems to generate new learning, centered in the cultural and historical contexts in

which the students live. He explains that this "Freirean problem posing…contends that

the school curriculum should in part be shaped by problems that face teachers and

students in their effort to live just and ethical lives" (p. 16). He further explains that this

explorative problem posing methodology rejects the teacher-as-all-knowing-expert and

student-as-passive-memorizer paradigm. Instead, teachers become facilitators of students

who exercise freedom by producing self-directed learning.

In Canada, it may not always be possible to teach students entirely based on the

principle of generative themes. Canadian teachers are legally obligated to teach mandated

curriculum, so it is possible that the prescribed curricular outcomes will not correspond to

students' actual lives at the time they are required to meet these outcomes. For instance,

many of Manitoba's Essential Mathematics financial literacy-based curricular outcomes

require students to learn about purchasing homes, vehicles, and financial products,

though most high school students, especially low-income ones, are years away from

doing those things. In my experience, students I taught from more affluent families were

able to engage in learning these topics, and many demonstrated they already had some

financial literacy understandings. In contrast, students I taught from lower income

families really seemed to struggle with financial literacy-themed content, and more so

than with other mathematics concepts. Standardized exams function as a disciplinary

technology (Foucault, 1975) to ensure teachers and students study these topics, even if

they would receive a better education studying other things. Fortunately, other learning

outcomes in mathematics curricula do allow teachers more freedom to draw from

students' lived experiences, while current English Language Arts curricula do not restrict teachers to specific content at all.

Freire (2000) warns against the perils of prescribed curriculum (such as those mandated by the Western and Northern Canadian Protocol):

> One of the basic elements of the relationship between oppressor and oppressed is *prescription*. Every prescription represents the imposition of one individual's choice upon another, transforming the consciousness of the person prescribed to into one that conforms with the prescriber's consciousness. (p. 47).

As an alternative to depositing prescribed curriculum into the minds of students (his banking concept of education), Freire suggests teachers and students engage in critical conversations together to begin all learning. He suggests that these discussions should start from students' own lived experiences, to discover dialogic generative themes that will guide future learning. This educational method will raise student awareness of oppressive forces until they reach critical consciousness, which is the point at which they can identify societal injustices and take actions against them. As teachers reject the banking concept of education in favor of "*educational projects*…carried out *with* the oppressed" (p. 54) in "a permanent dialogue" (p. 68), Freire suggests the teachers will be facilitating "education as the practice of freedom" (p. 81) as they strive for a "constant unveiling of reality" (p. 81). At this point, he believes students can become empowered by their newly generated knowledge and motivated to take action to change themselves and society for the better. He suggests that if teachers use dialogue with students to generate themes for learning content, then the students' education will become a

liberating one so that they may realize their potential to become more fully human, as a result of becoming de-dehumanized by society's oppressive forces.

Kincheloe (2008) echoes Freire's anti-state-mandated curriculum and calls for significant critical reform to curriculum development processes in which "knowledge is something that is produced far away from the school by experts in an exalted domain" (p. 17). He argues that teacher research is an essential component of any critical pedagogy and charges teachers to become researcher-practitioners who "are aware of the complexity of the educational process and how schooling cannot be understood outside of the social, historical, philosophical, cultural, economic, political, and psychological contexts that shape it" (p. 17). Kincheloe argues that mandated curricular content standards and external expert-driven staff development lead to a dumbing down of expectations for students and a de-skilling of teachers. He also suggests that teachers need to become researchers of their students, so that they can be further understood and effectively taught. This research is facilitated when teachers and students engage in constant dialogue so that teachers can learn about students' community and life problems, so that teachers can then "help students frame these problems in a larger social, cultural, and political context in order to solve them" (p. 20). The teacher's critical listening is informed by an understanding of how student consciousness is socially constructed.

In my teaching context, school cannot be entirely conducted via dialogic emergent themes due to the need to prepare students to write their grade 12 standards tests. However, it may still be possible to identify as many curricular outcomes as possible that allow for critical pedagogical work and that are linkable to students' lives. Luckily, both the Essential Mathematics and English Language Arts curricula provide some freedom

for teachers to do so. This approach may be less than ideal, but such is the reality of working within and against a school system that, according to Kincheloe (2008), overwhelmingly reflects and extends social stratification in favour of the dominant, White culture.

In addition to being impacted by White cultural hegemony (Gramsci, 1971), a Canadian culture that is essentially Eurocentric in origin, Indigenous students in my school are negatively impacted by racialized poverty, in addition to intergenerational trauma and internalized racism resulting from colonization (Silver, 2013). Since all my students are female, helping them to begin to deconstruct the "White supremacist capitalist patriarchy" (hooks & McKinnon, 1996, p. 814) could be beneficial as well. Allen (2004) argues that critical pedagogy should also address the nature of forces of oppression, and he suggests the idea of "Whiteness" merits particular attention in any critical pedagogy, if critical teaching practices are to achieve the emancipatory success they promise for marginalized students.

> Instead of naturalizing critical pedagogy's fixation with class, I suggest that a closer examination of its initial assumptions is needed. We need to delve into the implications of basing critical pedagogy upon class rather than race. For instance, what would critical pedagogy look like if it had been founded upon the belief that White supremacy, not capitalism, is the central problem of humankind? (Allen, 2004, p. 1)

Allen's query offers a contrast to the central tenet of Freire's original work, in which the extreme economic oppression experienced by the peasants was not considered a result of racism, but rather by economic exploitation. I argue that both of these oppressive forces

affect the students in my school, who are predominantly low-income and Indigenous.

Building awareness and understanding of how racism, colonization, and White Eurocentric patriarchal cultural hegemony impact the students in my school should be incorporated into the design of critical curricular activities, and Czyzewski (2011) insists that such a critical pedagogy is necessary for all of Canadian society to deconstruct its racist and colonial past if it is to achieve reconciliation with Indigenous people in Canada. However, the resultant oppressive force of modern-day, urban poverty experienced by my students should likely be considered within a broader critique of the contemporary ideological regime of neoliberalism in Western societies marked by growing and extreme income inequity; income achievement for low-income people has become increasingly less attainable as a consequence of neoliberal policies. Nikolakaki (2012) reinforces this point:

> The central focus of the neoliberalist discourse is the deregulation and
> privatization of public systems (including public schools) and the dismantling of
> trade and tax barriers in order to maximize the global mobility of capital…the
> consequence was that the rich got richer at the expense of the poor getting poorer.
> (p. 5)

Kincheloe (2008) adds that "market-driven, globalized economic systems pushed on the world by the United States and other industrialized nations via the World Trade Organization (WTO) and the International Monetary Fund (IMF) have exacerbated poverty and its attendant suffering" (p. 12).

Giroux (2011) agrees that the world has been terrorized by neoliberal ideology over the past few decades. He provides several compelling arguments on the negative

effects on youth in American society as a result of neoliberal/neoconservative educational

reforms. He states that in a neoliberal society

> social problems become utterly individualized and removed from the index of
>
> public consideration. As public concerns collapse into private issues, it becomes
>
> more difficult to connect individual problems with broader social considerations.
>
> (p. 90)

English (2014), who analyzed financial literacy programs in the U.S. and Canada, echoes

Giroux's sentiment that neoliberal ideology individualizes problems. She found that these

programs targeted the poor and conformed to the neoliberal viewpoint. She says,

> [T]hat being poor or bankrupt is a moral failing, caused by personal greed and
>
> illiteracy about financial matters. There is no mention of the role of banks,
>
> government, international finance, and the effects of climate change in any of
>
> these sites and resources. (pp. 48-49)

Furthermore, she argues that the poor are being blamed for their economic plight and

"told that if they follow the suggestions of the available financial literacy programs, they

will somehow manage to escape their debt, regardless of the structural and economic

barriers that are at play in the global economy" (pp. 48-49).

Apple (2006) also describes neoliberalism as a destructive force, and suggests that

its ideological hegemony has created a school system primarily concerned with

economics. In Apple's opinion, schools have become even less interested in helping

students achieve critical consciousness, and serve instead to further disenfranchise

traditionally marginalized groups.

In these neo-liberal times, we need to…remind ourselves of the ethical and

political concerns that should animate our social and ideological criticism, to

remind ourselves of the importance of engaging in truly critical education, to

reconnect with the dreams, visions and, yes, even Utopian hopes that are denied in

a society in which profits count more than people. (p. 18)

It is hard not to consider some of these criticisms while critiquing Manitoba's

Essential Mathematics curricula, which seem to be aimed at lower achieving students.

Essential Mathematics course topics are overwhelmingly dominated by consumer

decisions, personal money management, and banking education for wage earners. These

topics appear worthwhile for all students to learn, but there is literally no critique of

capital-versus-labour or wealth-versus-poverty included in the specific curricular learning

outcomes, which would be "essential" learning for economically oppressed students if

they are to recognize and overcome economic exploitation. In my experience, teachers

focus on the specific learning outcomes when planning lessons, as do virtually all of the

education publishers who make learning materials for these courses. This means that

most students who achieve these learning outcomes do so via non-critical approaches,

and thus they might mistakenly come to accept that society's poor-punishing financial

systems are natural, and that getting a good grade in Essential Mathematics will ~~help~~

equip them to prosper in this society. Consequently, I believe the government's attempt

to provide weak mathematics students with real-life math topics they might encounter

after graduation is commendable, but it resulted in a missed opportunity by not explicitly

suggesting critical pedagogical approaches within the Essential Mathematics curricula.

Meanwhile, affluent White kids (an accurate description of literally all of my former

Advanced Placement Calculus students) study algebra on the path to rewarding, well-paid

university-educated careers. Recognition of this educational juxtaposition of mathematical expectations for students based on socio-economic class compelled Robert Moses in 1982 to found the Algebra Project in the United States. The Algebra Project was "a deliberate attempt to demonstrate that all children, no matter how poor or how alienated from society at large, can and will learn higher-level mathematics, given an appropriate curriculum, pedagogy, and support" (Wynne & Moses, 2008, p. 39).

Keeping in mind the afore-mentioned criticisms, and also accepting the regrettable reality that students are able to choose against studying pre-calculus mathematics, I endeavored to infuse critical pedagogical approaches into my Essential Mathematics courses so that students could meet learning outcomes while developing critical reflection on economic inequality and exploitation. In doing so I hoped students would become less financially vulnerable in their future lives. Luckily, Manitoba's Essential Mathematics curricula are not so prescriptive as to inhibit the ability to infuse critical pedagogy in the mathematics classroom. The general learning outcomes are not prohibitive at all, while some of the specific learning outcomes offer ample opportunities to infuse critical pedagogical approaches. By using recommendations for teaching Indigenous students in the government curriculum framework and the learning strands for Essential Mathematics 40S (Manitoba Education and Advanced Learning, 2014) along with recommendations made by the National Council of Teachers of Mathematics (2014), I was able to infuse the following critical pedagogical perspectives into classroom activities and discussions, required readings and assignments, and independent student research:

- In *Analysis of Games and Numbers* and *Probability,* students considered whether lottery and gaming corporations extort the majority of their funds from the most financially vulnerable citizens;

- In *Vehicle Finance,* students considered predatory lending practices targeting the poor, and whether lack of public funding for effective transit makes it harder for financially vulnerable citizens to achieve financial independence;

- In *Statistics,* students learned how statistics could be used by those with power to further oppress the already oppressed (standardized testing was one topic considered), and students analyzed social and political issues including economic inequality;

- In *Career Life,* students compared career options for those who grew up in poverty versus those who grew up wealthy;

- In *Home Finance,* students learned about mortgage discrimination and the ways in which mortgage lenders profit from mortgagees, again comparing home purchasing scenarios between those born with privilege and those without; and

- In *Business Finance,* students compared business start up viability between those born with privilege and those without, as well as the roles nepotism could play into the success or failure of individual businesses

- In all loan scenarios, students were encouraged to use the expression "bank profit" instead of "interest", and were made aware that people who

need to take out loans for major purchases were already financially

vulnerable when compared to those who already had wealth

- Students were given opportunities to compare Indigenous philosophies

    and perspectives on macroeconomic and microeconomic issues to those

    commonly represented in Canada's capitalist economy, especially related

    to environmental issues

- Daily news stories at the local, national, and international level that

    required mathematical understandings were shared and discussed with

    students

In summary, critical pedagogues offer the hopeful belief that those context-specific critical approaches to teaching, especially when curricular topics emerge from critical lived-experience conversations with students to expose society's oppressive forces, can be successfully transformative. The oppressive forces that impact the students in my school include systemic poverty, White-dominated capitalist patriarchal culture, the ideological hegemony of neoliberalism, and the historical impacts of colonization (such as the intergenerational traumatic legacies of the Indian Residential Schools). Critical pedagogues hold promise for marginalized students who might otherwise be regulated by the school system to become, at best, compliant, low-skilled wage slaves might instead become fully educated, employed, and empowered change agents of themselves and their communities.

Critical Mathematics

The National Council of Teachers of Mathematics (NCTM, 2014) acknowledges that "too few students – especially those from traditionally underrepresented groups – are

attaining high levels of mathematics learning" (p. 2). Critical mathematics, which can be

described as teaching mathematics for social justice, has the potential to empower and

motivate students toward higher academic success. It also meets several of the NCTM's

current guiding principles for school mathematics. More specifically, critical

mathematics "engages students in meaningful learning", ensures "all students have access

to a high-quality mathematics curriculum", and "develops connections among areas of

mathematical study and between mathematics and the real world" (p. 4). However, I

found fewer scholars who consider enacting critical pedagogy within mathematics

classrooms than in literacy classrooms, likely because "many believe that mathematics is

value-neutral and apolitical" (Aslan-Tutak, Bondy, & Adams, 2011). Fortunately, there is

some consensus among these scholars that "critical pedagogy enacted in the mathematics

classroom adopts the pedagogical theories and practices of critical pedagogy, while

explicitly using mathematics as an analytical tool for examining and challenging social

injustices" (Stinson, Bidwell, & Powell, 2012, p. 79).

Skovsmose (1994) suggests that a critical mathematics education "can be used for

the purpose of empowerment, because it can be a means to organize and reorganize

interpretations of social institutions, traditions and proposals for political reforms" (p.

52). Gutstein (2003) insists that, "no one would argue that learning to read is unimportant

in understanding society. Similarly, mathematics can be a valuable tool in deepening

one's awareness" (p. 40). Other critical educators agree that, "students need guidance to

become more aware of their world, question how and why injustices came to be, and

come up with solutions to problems. They are more than capable of becoming critically

conscious citizens and it is up to us, as educators, to work with them in order to take steps

to transform our world" (Shibli, 2011, p. 71).

Although few would argue that mathematical understandings are not required to

consider solving society's problems, there is less agreement as to where, when and how

these critical pedagogical practices designed to raise critical consciousness best fit into

traditional mathematics instruction. Nolan (2009) suggests that the ideal mathematics

classrooms oriented towards social justice should not just be "centered on deploying

mathematics as a neutral tool to analyze socially unjust facts and figures", but should

begin instead "by challenging the often invisible normative and regulatory aspects of

schools and mathematics" (p .214). Nevertheless, my review of the critical mathematics

literature suggests that statistical analysis is the branch of mathematics most amenable to

critical activities. Lesser and Blake (2007) assert that analytic mathematical skills,

especially statistical analysis, are integral to any effective critical pedagogical analysis.

They posit that the investigation of mathematical inequalities using tools like statistical

analysis is necessary to "recognize, analyze, or fight against social inequalities" (p. 351).

Furthermore, they suggest that the "use of mathematics' analytical reasoning and tools

(e.g. data analysis, graphing and modeling) to explore several specific, concrete real-life

scenarios which stimulate a sense of social justice could influence student empowerment"

(p. 352). They also suggest that the use of mathematics to engage students in important

social issues can, in turn, result in increased learner engagement with mathematics.

Shibli (2011) agrees that statistical analysis is one area of mathematics

appropriate in incorporating critical pedagogy. She helped her low-income and high

racial minority class develop critical awareness of systemic poverty using statistical

analysis. She achieved this by having her students compare U.S. Federal government poverty calculations to those of the Self-Sufficiency Standard provided by the Centre for Women's Welfare (the Centre for Women's Welfare calculates minimum budgetary amounts needed to survive in various U.S. regions without the aid of any financial assistance). Shibli noted that her students became emotionally and intellectually engaged in discussions about the allotments and fairness of tax-collected government spending, especially for considerations of spending effects beneficial to the wealthy and unbeneficial to the already-financially vulnerable.

Stinson, Bidwell, and Powell (2012) also attest to the critical consciousness-raising ability of analyzing statistics to expose class, race, and gender oppression. They discuss Bidwell's experience with teaching about the issue of racial profiling using statistics with her International Baccalaureate Algebra II students. They explain that although most of Bidwell's class was composed of affluent White students (as were my mine when I taught Advanced Placement Calculus), in-depth study and critical conversations between and with students over the course of a few days convinced Bidwell "that the project was a success" in "highlighting the complexities of the issue" (p. 85). Likewise, a discussion of Powell's experience (p. 89) indicates that her Minimum Wage historical analysis lesson, conducted in her community college Algebra class composed of mainly African American adult students who also worked and had families, was worthwhile in creating stimulating student discussion and increased awareness of social issues. Frankenstein (2015) also found data analysis to be appropriate for critical mathematical learning and champions "the power of numeracy to clarify and deepen understanding of sociopolitical and economic issues" (p. 293).

One obstacle to systemic integration of critical pedagogy in mathematics classrooms lies with the tendency of some mathematics teachers and students to expect traditional expositional instruction methods based on teacher-initiated curricula, which Freire (2000) would categorize as "banking education". Braz Dias' (1999) action research study, in which adult literacy program instructors reflected on their efforts to apply Freire's pedagogical principles to mathematics teaching, revealed that student engagement decreased during critical mathematics instruction. Even though implementation of Freire's critical pedagogy was a primary goal of the instructors' teacher training, they struggled to engage their students in critical activities. Dias identified teacher trainee normative views of mathematics teaching as obstructive to their engaging in reconceptualization of the legitimacy of mathematical knowledge, the relativization of such knowledge, and the sequencing of mathematics learning. Brantlinger (2013) found many of his adult students were similarly resistant to social justice mathematics lessons as they felt critical mathematics activities distracted from the learning of mathematics. Though he found critical mathematics activities succeeded in raising student awareness of social issues, they did so at the expense of class time devoted to pure mathematical skills instruction. Nevertheless, he spoke supportively of the need for critical literacy education but at the conclusion of his study he questioned whether "high school mathematics can and should be reconceived as a critical literacy" (p. 1077). Interestingly, one of the National Council of Teachers of Mathematics (2014) Guiding Principles explicitly states the need for curriculum that develops connections between mathematics and the real world, so devoting class time to social justice issues need not be viewed as time away from core mathematics learning.

Patrick (1999) summarizes the main features of critical mathematics as described

by Skovsmose (1994) and Frankenstein (2015), both of whom were influenced by Freire.

- Using dialogical processes such as shared problem solving, joint teacher-student
  decision making about processes and content and the teacher as empowerer rather
  than as the fount of all knowledge;

- Developing critical consciousness by encouraging students to reflect on how
  historical, cultural, social, political and economic experiences and issues influence
  their mathematics learning;

- Developing the skills of critical reflection on mathematics, the use of mathematics
  and issues raised by the mathematics;

- Creating a learning environment that enables students to learn most effectively;
  and

- Through critical consciousness, encouraging students to take some form of
  transforming action in relation to mathematics and mathematics learning either in
  their lives or in their community. (Patrick, 1999, pp. 89-90)

Patrick (1999) designed an adult critical mathematics course according to the above

principles and found that the critical approach was successful in raising students' critical

consciousness and mathematical understandings. However, according to her action

research study, she was not bound to mandated curricular outcomes, nor was Gutstein (as

cited in Skovsmose & Greer, 2012) when he taught mathematics for social justice courses

in urban Chicago. Brantlinger (2013) was bound to mandated curriculum, and most

public school teachers are. So the ability of teachers to learn in partnership with students

via Freire's (2000) dialogic generative themes is may not be entirely possible in

mathematics courses that have mandated learning outcomes if some of those outcomes do

not emerge thematically from dialogue with students (I have yet to encounter a single

conversation in any math class that revealed a desire or need to learn precision

measurement – a mandated unit of study in Essential Mathematics 40S – for example),

especially if class time must be devoted to helping students prepare to write standards

tests based on the mandated outcomes (precision measurement questions are included in

the Essential Mathematics 40S standards test). So teachers must be judicious as to where

and when they can infuse this element of critical pedagogy in their mathematics

classrooms. However, in courses without standards tests, there should be ample room for

most mathematics teachers to achieve social justice learning goals throughout most of

their classroom instruction.

Lesser and Blake (2007) describe several classroom-based applications of

mathematics to social justice topics. These include algebraic function generalizations

compared to prejudicial stereotyping and exponential growth applied to inequitable

wealth distribution. However, most of the social justice-themed applications of

mathematics that Lesser and Blake discuss center on statistical analysis to reveal

oppressive forces, and then to have students consider the societal impacts of these forces.

These classroom exercises include a body image analysis activity in which real women's

body measurements are compared against those represented in Barbie dolls. Another

activity asks students to consider Federal government spending. Another gets students to

analyze racial disparities in mortgage loan approvals and other racial profiling data.

Another has students question then analyze data to determine the efficacy of random drug

testing. Another has students calculate the probability that innocent people have been

falsely executed under the death penalty. Yet another requires students to analyze the

distortions and biases in 2-dimensional maps. Lesser and Blake (2007) explain that the

goal of critical activities in the mathematics classroom is not to reach "definitive answers

to all questions, but to nurture the students' overall spirit of critical inquiry as they gain

mathematical power in general, while empowering themselves to understand more deeply

a meaningful situation (and thereby making mathematics itself unexpectedly meaningful

to them)" (p. 358). They do however, share Brantlinger's (2013) concern that "time

devoted to social justice issues might keep the required "purely mathematical" goals of

the course from being met" (p. 358) while others, such as Stocker (2007) and Gutstein

(2006) insist that social justice goals and traditional mathematics learning goals can be

met simultaneously.

     In summary, the critical mathematics literature offers a number of implementation

recommendations that complement the main tenets of Freire's critical pedagogy, as well

as descriptions of practical classroom-tested activities. The scholars also provide

cautionary warnings applicable to the classroom teaching context for this study. First,

statistical analysis activities that tackle real-world social issues seem to hold the most

promise in helping students achieve critical consciousness. These activities should

encourage discussion in a safe, supportive learning environment focused on reflective

mathematical thinking. Ideally, these activities would center on themes emergent from

students' lived experiences, and from student-to-teacher dialogue, and time spent

engaging in these activities can help teachers achieve fundamental mathematics learning

curricular goals and social justice goals simultaneously. However, for courses in which

students must write standards tests based on specific learning outcomes, time spent

engaging students in critical mathematics activities must be weighed against time spent

preparing students to write their standards tests. There is also the caution that some

students might resist critical activities if they feel those activities distract from their pre-

conceived expectations of traditional mathematics classroom learning. Taking all these

recommendations into consideration and applying them to Manitoba's Essential

Mathematics 40S course, much of which lends itself to critical pedagogical approaches, it

seems feasible to infuse critical mathematics that can raise student critical consciousness

of social issues while simultaneously achieving provincially-mandated curricular

outcomes. Indeed, to do so could be an effective strategy to put NCTM's principles into

action.

Critical Literacy

Critical literacy practice can be described as "reading and writing practices that

challenge an omnipresent, unstated social agenda of power" (Lesley, 2008, p. 177) or

classroom activities that "engage students in reading, writing, and speaking back to texts

through a lens on power, privilege, and oppression" (Schieble, 2012, p. 212). From these

critical perspectives, all language use is considered to be politicized, and thus critical

literacy practitioners insist students should learn how to read the word and the world

(Freire, 2000) by considering whose views and beliefs are represented in text. In the

English Language Arts classroom, this approach can be described as practices that "help

students develop and use literacy not only to appreciate language and literature but also to

raise awareness of social issues and affect positive change in the world" (Petrone &

Bullard, 2012, p. 122). In doing so, teachers can help students learn "who they are and

how they came to their places within the social order" (Pirbhai-Illich, 2010, p. 260) and

how power impacts "the lives of socio-economically disadvantaged peoples" (Johnson,

2011, p. 29). Janks (2014) suggests that "critical *literacy* education focuses specifically

on the role of language as a social practice and examines the role played by text and

discourse in maintaining or transforming" (p. 349) social orders that privilege some

people over others.

There are a substantial number of English Language Arts educators who advocate

for critical literacy practices. Gaber-Katz (1996) suggests that:

> critical literacy practice aligns itself with progressive activists and theorists who
>
> together offer a critique of society and a commitment to work towards envisioning
>
> and creating a just and equal world through educational programmes which
>
> address issues such as racism, sexism, classism, and 'ableism' (p. 51).

Walton (2012) argues that critical literacy teaching can promote inclusivity by building

sympathetic understandings of marginalized people, while Locke and Cleary (2011)

argue that critical literacy teaching raises students' performance on standardized

assessments while empowering "students to view the positions offered by texts as both

contestable and resistible" (p. 136).

Tisdell (2007) suggests critical literacy approaches are more effective if those

approaches are extended to non-text media. She cites Henry Giroux's (2004) insistence

that pop culture media has more potential to influence and educate the public than

traditional classroom media as justification to adopt critical media literacy approaches.

Tisdell also argues from her own experience, in which she was better able to help her

students learn "how the world of the media and popular culture can both resist and

reinforce the interests of the dominant culture" (p. 6) by having the students analyze

television and film before engaging with print text. Pirbhai-Illich (2010), through an action research study conducted in an alternative Canadian school, experienced successes once she adopted critical media literacy approaches with her previously unmotivated, at-risk Aboriginal middle-school students. She found that "engaging students required tapping their interests in using electronic media, accepting their lived experiences, and inviting them to use their funds of knowledge in multiliteracies" (p. 264), resulting in improved attendance, increases in student reading levels from two to five grade levels, and vastly improved student writing.

Petrone and Bullard (2012), who advocate for critical literacy approaches but question the overwhelmingly positive advocacy of critical literacy teacher-researchers who gloss over implementation challenges in critical literacy journal articles. Petrone and Bullard's meta-analysis of these critical literacy journal articles revealed that some teachers admitted students resisted critical literacy approaches because the approaches caused "intense feelings of vulnerability, anger, even rage, defensiveness, and denial" (p. 127). Pirbhai-Illich (2010) suggests student resistance can be a major challenge of critical literacy work, especially when teachers are working with marginalized youth because "critical literacy that investigates issues of identity and power may be problematic for those who have been and are oppressed" (p. 262). She also cautions that "critical consciousness-raising and identity work with students take time, and critical literacy projects may require several repetitions before they become meaningful to students" (p. 262). Johnson (2011) cautions teachers who are considering critical literacy approaches to recognize that "teachers are not free to act in whatever way they see fit. Rather, educators are circumscribed by school rules, education policies and media politics" (p.

31). Belzer (2004) suggests that critical pedagogical approaches are risky, especially if teachers and students represent different races, and that critical classroom activities are fraught with unforeseen challenges in addition to some expected student resistance.

Researcher-practitioners offer many recommendations for teachers who, in spite of the risks and challenges, still choose to enact critical literacy approaches. Most of these recommendations mirror the general recommendations of critical pedagogy, including connecting course content to students' lives and soliciting problem-posing student questions that require analysis of power and privilege. Janks (2014) suggests that teachers can help students learn to "understand the connections between the local and the global, between now and the future, and between "us" and our constructed "Others" while developing "a social conscience served by a critical imagination for redesign" (p. 50) by using the following framework, which the English Language Arts teacher and I referred to when revising and designing critical literacy activities:

1. Make connections between something that is going on in the world and their students' lives, where the world can be as small as the classroom or as large as the international stage;

2. Consider what students will need to know and where they can find the information;

3. Explore how the problematic is instantiated in texts and practices by a careful examination of design choices and people's behavior;

4. Examine who benefits and who is disadvantaged by imagining the social effects of what is going on and of its representation/s; and

5. Imagine possibilities for making a positive difference (p. 50).

She describes an application of these guidelines put into classroom practice using bottled water, a product most students have access to, to lead students in critique of the bottled water's label, and then into research of the bottled water industry within a global water scarcity context to expose power relations and exploitation of natural resources.

A review of the critical literacy literature also reveals the importance that teacher-researchers place on classroom text choice to help students understand the concept of social identity construction. Belzer (2004) was able to create "a classroom context that encourages critical analyses of the social circumstances that press us into fulfilling certain roles and expectations based on race, class, gender, and a host of other socially constructed categories" (p. 5). She found success by choosing readable and relatable classroom texts for single mothers on social assistance, a similar population to most of the student body in my school, on topics that included self-esteem, relationships, and women's health. Lesley (2008) experienced success with at-risk high school students once her class "began to read a text that the students identified with and had personal connections with through the popular media" (p. 187), which, in Lesley's case, was a book of poetry written by deceased gangster-rap artist Tupac Shakur. Hall and Piazza (2010) agree that "if texts and curriculum are decentered from the lives of our students, then many may not see the relevance in engaging critically with the ideas they are presented" (p. 94). They provide the example of one teacher's lack of success in tackling racism using Harper Lee's *To Kill A Mockingbird* precisely because the teacher's urban African-American students expressed they could not relate to the text. Walton (2012) advocates for first-person narrative texts, including Mark Haddon's *The Curious Incident of the Dog in the Night-Time*, which require readers to reimagine themselves as

marginalized identities to better understand how personal identities are constructed. Gaber-Katz (1996) advocates for student-created stories that explore and describe individual identities. Bean and Moni (2003) suggest many modern young adult novels are particularly well suited to critical literacy work. Novels are also good for helping students consider how individual identities are socially constructed because the novels usually focus on societal conflicts using first-person narration, and often "deal with issues that are relevant to teens, including racism, pregnancy, divorce, substance abuse, family conflicts, and political injustice" (p. 638). Schieble (2012) agrees with using young adult novels in critical literacy work, but suggests that critical classroom conversations (which can include students' internal dialogue via journal writing) with young adult novels must include analysis of Whiteness, since White Eurocentric patriarchal discourses continue to be presented as normal in young adult literature. When comparing the in-class English Language Arts student library against these recommendations for text choice, I noticed there were several texts that seemed to fit the criteria. Interestingly, when I asked the English Language Arts teacher which texts were most popular with students, she indicated at least one that specifically met each recommendation above, including young adult novels that juxtaposed Indigenous and White identity, first-person narratives that related to popular media, and the list included Mark Haddon's *The Curious Incident of the Dog in the Night-Time*. Coincidentally, during our discussion, the English Language Arts teacher lamented that she couldn't teach her favourite novel - Harper Lee's *To Kill A Mockingbird* – because the students in our program couldn't relate to it.

Indigenous Education

Laramee (2008) defines Aboriginal education as having "three conceptually distinct sets of meaning: 1) the education of Aboriginal students, 2) education that is about Aboriginal worldviews, cultures and experiences, and 3) educational purposes and practices that reflect Aboriginal values and aspirations" (p. 57). Although this action research study is targeted at the education of Indigenous students, a review of the literature reveals that the integration of elements from the other two sets of meaning is integral to effectively teaching these students. Laramee suggests that filling this "void of knowledge about the realities of Aboriginal peoples' lives, traditions, contributions, beliefs and worldviews" (p. 59) might strengthen the relationship between Indigenous and non-Indigenous people.

Calls to action on Indigenous education reform (Truth and Reconciliation Commission of Canada, 2015) include the full participation of Indigenous peoples to re-design the education system, plus the funding and infrastructure to make it happen. However, the Canadian government has yet to make this happen. Having sat as a member on a Manitoba Teachers' Society standing committee focused on Indigenous education, I met several Indigenous educators from across the province who explained that most federally-funded First Nations-run band schools follow-provincial curricula so that students can work toward provincially accredited graduate diplomas, which are required to enter most post-secondary institutions and the job market. In this way, provincially-accredited school diplomas could be viewed as one of many disciplinary technologies (Foucault, 1975) that guarantee the continued colonial control of Canada's Indigenous population. So instead of a radical restructuring of our education systems, non-Indigenous educators who unwittingly assert Western cognitive imperialism (Battiste,

1998) are forced to consider how far we can "cross the cultural, social, and political boundaries to contribute in a meaningful way" (Fitznor, p. 227) to Indigenous students' education and lives so that they might become less socially excluded in Canadian society. This means we must be content, for now, to try and help these students learn to "walk with ease and confidence in two worlds" (Ministers National Working Group on Education, 2002, p. 1) by Indigenizing existing classroom content. It is troubling to note that scholars such as Battiste (1998) are highly skeptical that "the "add-and-stir" model of education" (p. 21) will lead to a liberating education for Indigenous students to help them reconcile their exclusionary status in mainstream society, especially as these students continue to be taught primarily by non-Indigenous teachers (Manitoba Education and Advanced Learning, 2013).

Having established that the less-than-ideal accommodating approach to Indigenous education in Manitoba is the paradigm we must work within, there are a number of considerations and practical recommendations that emerge from the research. In general, specific education recommendations seem to support one overarching goal: school system-wide recognition of Indigenous cultures, worldviews, and experiences as equally valid to those of Canada's dominant Eurocentric society, as reflected in culturally appropriate school and classroom practices. The hope is that successful implementation of these recommended classroom practices will result in "bridging two worlds" (Manitoba Education and Advanced Learning, 2008), the Indigenous and non-Indigenous ones, in our school system.

According to the research, effective classroom practices for Indigenous students (which are likely effective practices for all students) include "the need for a holistic

approach to schooling and for engaging parents and community in that process" (Raham, 2009, p.75). I believe a warm, caring, respectful classroom environment is essential to this approach, as is the requirement for teachers to combat racism towards Indigenous people, with the hope that "Aboriginal perspectives integrated across the curriculum from the earliest grades to high school will begin to address the causes of racism" (Canadian Race Relations Foundation, 2002). *Making Education Work* (Manitoba Education and Advanced Learning, 2011), a five-year Province of Manitoba and Canadian Millennium Scholarship Foundation research project, confirmed that Indigenous high school students benefit from: sustained trusting relationships with adults in the school; supportive academic environments (with tutoring, mentoring, and quiet and safe work spaces); learning about their culture and connecting to heritage and communities; and strong relationships between the school and family (p. 20). All of these schooling recommendations to support Indigenous students generally echo Silver's (2013) transformative adult Aboriginal education descriptors, though he also advocates for critical pedagogical classroom practices, a viewpoint shared by Wishart (2009) and Fryberg et al. (2013) who insist that the development of strong cultural identities using critical practices is imperative to fostering academic success in disenfranchised Indigenous youth. Interviews conducted by Manitoba's Seven Oaks School Division (2010) with successful Indigenous students revealed that they attributed their successes to having a strong sense of belonging combined with a strong sense of cultural and family identity, plus caring student-teacher relationships. These students also acknowledged pervasive racism and racial stereotyping towards Indigenous people, plus a lack of meaningful Indigenous content in their coursework as barriers to their success.

Beyond classroom and school environment recommendations to support Indigenous students, there are calls for a broad inclusion of Aboriginal worldviews, cultures, and histories into classroom content, since "Aboriginal people are integral to the social fabric of Canada. Curricula in all subjects and grades must be developed and implemented to respectfully reflect this" (Minister's National Working Group on Education, 2002, p. 31). A report prepared by The Coalition for the Advancement of Aboriginal Studies for the Canadian Race Relations Foundation (2002) provides a comprehensive overview of the knowledges that should be embedded in school content, organized into the four directions and presented using a learning circle, which is based on the traditional medicine wheel, that reflects the fluid interconnectedness of knowledge acquisitions and understandings. The north direction investigates the importance of integrating Aboriginal worldviews. The east stresses teaching about the history and effects of colonization on Aboriginal Peoples, with a special focus on treaty education. To avoid over-generalizing and stereotyping, the south stresses the importance of teaching about the diversity of many original peoples and cultures, and the west focuses on educating students on how Indigenous people are working towards repairing damages caused by colonization as they move towards a more positive future. The Coalition argues that this new respectful approach to teaching all students the history of the relationship between Canada and its Indigenous Peoples, plus the presentation of Indigenous knowledge and perspectives as equal to Eurocentric ones in daily classroom practice, can help re-establish the harmony intended in the original treaties between Indigenous Peoples and European settlers. This intended harmony includes shared the respect and stewardship of Turtle Island (North America).

Although there seems to be some consensus on the descriptors of effective learning environments for Indigenous students, I was unable to find any specific literature on proven Indigenous education strategies related to raising critical consciousness in English Language Arts and Mathematics teaching. However, there is general support for critical literacy approaches, plus the integration of storytelling, discussion circles, Indigenous guest speakers, and cultural activity-based field trips (Kanu, 2006). There is also some discussion of the benefits of alternative assessment of Indigenous students. Benefits include "measuring students in different ways, recognizing diversity, shifting to more oral means of assessment, and accommodating Aboriginal learning styles" (The Council of Ministers of Education, 2002, p. 37). One such alternative assessment would be to allow Indigenous students to use spiraling four directions journey-based writing as opposed to the colonial tripartite intro-body-conclusion format (St. Clair, 2000). Otherwise there is just an expectation, apparent in department of education and school goals, that teachers will integrate Aboriginal perspectives into instruction.

Kanu (2005) suggests that even for teachers who whole-heartedly embrace the call to infuse Indigenous content in their teaching, the "wide social-cultural divide between those charged with the responsibility of delivering this education and the students for whom it is intended" (p. 66) is unlikely to produce the intended results. On the other hand, Kanu (2005) described the success of one Indigenous teacher who provided an immersive Indigenous education experience for students, in which Indigenous worldviews and content appeared equal to Eurocentric teaching. More discouraging were Kanu's reports of conversations with non-Indigenous students in classrooms where Indigenous content was being integrated by non-Indigenous teachers

which "revealed that these activities had little or no effect on the students in terms of how they perceived Aboriginal students or of moving them toward the interrogation of power structures in society" (p. 56). In later research, Kanu (2006) elaborates: "the occasional inclusion of non-dominant cultural perspectives in the school curriculum neither entrenches multiple perspectives as part of mainstream academic knowledge nor sufficiently responds to diversity in the classroom" (p. 121). Related to mathematics education, the view that cultural groups learn more when the learning originates from their own worldview and culturally-based knowledge is shared by proponents of ethnomathematics (D'Ambrosio, 1985). In other words, an additive approach to integrating Indigenous perspectives, such as suggested in Manitoba Education and Youth's (2003) *Integrating Aboriginal Perspectives into Curricula* teacher support document, may not be the most effective approach to raise critical consciousness among non-Indigenous or Indigenous students.

Even if educators work tirelessly towards effective Indigenous education within our current school system, the research reveals there are myriad, often situation-specific considerations that will cloud our ability to measure whether we are reaching our Indigenous education goals. The Canadian Council on Learning (2009) elaborates on the challenges to measuring successes in Indigenous education:

Given the wide range of contexts across the country, existing indicators of academic success must be approached with a degree of caution; and the urge to over-simplify resisted. For example, Aboriginal learning indicators among Aboriginal youth can vary tremendously among Aboriginal groups, across

geographic regions and between communities, rendering any attempts at

generalization ineffective at best. (p. 38)

From many years of experience working in adult education, I concur that we must look at

achievement differently for marginalized students. I had several students who failed to

complete courses, who years later achieved success. There were others who dropped out

but formed strong classroom friendships with others who remained in school who then

led them back to school in the future. Still there were others who did not complete

courses, but whom I met in the community years later to find out they were happy,

productive citizens. In some cases, I encountered past students who were dramatically

transformed from the societally marginalized person they were when I first met them

many years before. These observations speak to how long transformative processes can

take, but also how ineffectual our usual quantitative grades and credits achievement

indicators are for many students. For Indigenous learners, the Canadian Council on

Learning (2009) suggests a culturally appropriate holistic framework of measurement

composed of the lifelong learning journey, knowledge domains and sources, and

community well-being. These recommendations challenge conventional measurement

approaches that "typically focus on the discrepancies in educational attainment between

Aboriginal and non-Aboriginal youth (in particular, high-school completion rates) and

often overlook the many aspects of learning that are integral to an Aboriginal perspective

on learning" (p. 4). According to the Summary Report of the 2009 Council of Ministers

of Education, Canada Summit on Aboriginal Education, leaders acknowledged that

"many Aboriginal people complete their education later in life" (p. 13). This recognition

supports the criticism of traditional age-expected completion data to assess Indigenous student success.

Now, having developed a deeper understanding of critical pedagogy, especially as applied to mathematics and literacy learning, plus a stronger awareness of Indigenous education issues that could impact my study, I was prepared to design and initiate my own research study that could add practice-based knowledge to these research areas.

Chapter 3 - Methodology and Research Design

This study was completed using an action research methodology, which, in a classroom-teaching context, can be described as "systemic investigation conducted by practitioners to provide information to immediately improve teaching and learning" (McMillan, 2012, p. 343). Action research has also been described as "a distinctive approach to inquiry that is directly relevant to classroom instruction and learning and provides the means for teachers to enhance their teaching and improve student learning" (Stringer, 2008, p. 1) and has become well-established as a research methodology in education (McNiff & Whitehead, 2011). To complete the study, I took on a dual role of both teacher and researcher. I was involved in implementing new pedagogies, collecting data from participants, analyzing the information gathered, and using new understandings gained from the process to change my teaching practice. By completing and then reporting on this look-think-act cycle, I improved my teaching practice while generating practical knowledge that could advance the field of critical pedagogy for other educators.

Justification for Methodology/Approach

Action research as a teacher-researcher was a good fit for this study because action research was developed to help practitioners like me find ways to understand then contribute to solving real-world, practice-based problems by applying a rigorous research approach. In my case, I hoped to change my classroom practice, and possibly whole-school practices, so that students there were more likely to receive an education that might contribute to meaningful transformative learning processes, in that they might better be able to overcome significant societal barriers to achieve more positive futures for themselves and their communities. The research has resulted in new knowledge that

may change future educational practice in my unique school setting. I also endeavored to provide insight into the utility and effectiveness of critical pedagogical curricular activities that have the potential to better serve the needs of Indigenous students, and I provide evidence to suggest that I have achieved that.

My Practice-Based Research Questions

As indicated in Chapter One, the purpose of this study was to investigate the transformative impact of critical pedagogical curricular activities implemented in the Mathematics and English Language Arts classrooms in my school. While implementing these activities, I intended to raise students' critical consciousness, which is their awareness of societal forces that have undermined their success in school and society, their support for egalitarianism, and their physical actions taken against those forces. The literature suggests that critical approaches have the potential to contribute to a more transformative education program for students. My aim was to design, enact, and then evaluate the critical curricular activities used within the Mathematics and English Language Arts programs from April to June 2016 (many of the adult students enroll in double-period Mathematics and English Language Arts courses so that they can complete the courses in three months).

The following practice-based research questions, as noted earlier, guided this action research study:

1. Do these critical math and literacy activities contribute to adult female Indigenous students' critical reflection and if so, in what ways?

2. Do these critical math and literacy activities lead adult female Indigenous students to take critical actions against oppressive forces and if so, in what ways?

3. Do adult female Indigenous students find these critical math and literacy activities valuable and if so, in what ways?

4. What have I learned about enacting critical pedagogy in the classroom?

Description of the Critical Mathematics and Literacy Activities

A critical curriculum "brings high level academic understandings together with students' lived experience and provides them with the intellectual means for complex analyses" (Comber, 2015, p. 365). In the English Language Arts classroom, many scholars "have advocated for increased attention to critical literacy, arguing that teaching for critical literacy helps students achieve academically, promotes social justice, and facilitates personal empowerment" (Petrone & Bullard, 2012, p. 123). "Given the global escalation of gaps between rich and poor" (Comber, 2015, p. 362), these critical literacy goals extend to the mathematics classroom as students learn personal and government finance, so that they might better prepare themselves to battle against the rampant exploitation of economically disadvantaged groups of people to which they belong.

According to Minott (2011), "the tasks of the teacher in a critical literacy classroom" (p. 75) should include the following recommendations:

- build ample processing time into student lessons;

- guide student responses and criticisms judiciously;

- encourage students to critically analyze learning media (texts, video, etc.) and question its content;

- emphasize the use of multiple perspectives during the analyses;

- allow students to journal multiple viewpoints; and

- facilitate conversations based on student perspectives

Also keeping in mind the critical literacy framework proposed by Janks (2014), the English Language Arts teacher and I designed critical mathematics and literacy units and activities that were used with the student participants in this study, and we felt we could easily accommodate these critical literacy learning elements due to the school's self-paced, continuous progress model. The critical classroom activities included planned units, and unplanned events, such as classroom discussions started by students unrelated to assigned work, that occurred during classes.

Each new student to the school completes critical literacy activities including the English Language Arts critical literacy unit (see Appendix 1). The English Language Arts teacher, who developed most of the material for this unit, ensured it met government-mandated curricular outcomes while using a critical pedagogical approach so that students might also develop critical consciousness. Specifically, students are expected to gain a critical awareness of unequal power relationships in society while studying gender, race, culture, ethnicity, and identity formation. The English Language Arts teacher retained student work; and therefore, a collection of student-generated responses to the critical questions contained within this critical literacy unit was possible once each student participant consented to letting me use their coursework as data for the study.

Students in Essential Mathematics courses also follow government-mandated curricula. To infuse a critical pedagogical approach, I designed a short critical mathematics finance unit (see Appendix 2) for all students to complete before they begin any of the finance-related Essential Mathematics course units. By completing this critical mathematics unit, I hoped students would gain a critical awareness of economic inequality and exploitation while studying money, trade, capitalism, and interest. As

described earlier, I also infused social justice-themed topics into learning materials for a number of Essential Mathematics 40S units, I instigated several mathematical discussions on current news items, and engaged students in a number of critical conversations throughout the term as themes emerged during student learning.

Wherever and whenever possible, I also reframed course content while working with students to encourage critical pedagogical perspectives. As an example, when a student was learning about business loans, I would ask them to consider which business owner is more likely to fail – the one whose family provided all the start up and running capital, or the one who secured business financing through a bank. We would then discuss well-known wealthy people and whether they had unfair advantages over others that helped them become successful (i.e. the neoliberal myth of meritocracy). I also documented the unplanned, sporadic critical conversations that occurred throughout the research study in my research journal. Additionally, I saved all student work so that I could retrieve it later in the event that a student became a participant and gave consent for their responses to be used as data for this study.

Description of Specific Research Approach

Smith (2014) suggests that, "Further work needs to be done in the area of exploring effective processes for deepening critical consciousness in professional learning contexts" (p. 471). My action research project responded to this need by forcing me to become a more critically conscious educator, and then using the critical curricular activities described above with Indigenous adult students who take Mathematics and English Language Arts courses in my school.

Critical consciousness (Freire, 2000) is integral to the transformative learning process (Mezirow, 1997). To gather insights into each student's level of critical consciousness, each student participant was interviewed 7within two weeks of their completion of Mathematics and English Language Arts courses that contained the critical curricular activities. To facilitate the interviews, I developed a semi-structured interview protocol (Appendix 3) based on the *Critical Consciousness Scale* developed by Diemer, Rapa, Park, and Perry (in press).

The *Critical Consciousness Scale (CCS)* scale is one of only three existing scales I could locate that researchers have used to measure critical consciousness, as well as participants' critical reflection on perceived inequality. I assessed the CCS to be the best choice to model interview questions for my own study as the CCS measures participants' endorsement of egalitarianism, a component of critical consciousness noted by Freire (2000) that is not measured by the *Measure of Adolescent Critical Consciousness* (McWhirter & McWhirter, 2015) or the *Critical Consciousness Inventory* (Thomas et al., 2014). The *CCS* also measures participants' level of critical action, which is the final stage of critical consciousness as described by Freire (2000).

The *CCS* is a survey that uses a 6-point Likert-type scale and assesses students' critical reflection on societal inequalities in educational and occupational opportunity, their level of endorsement for egalitarianism, and their critical action participation level in efforts to change perceived inequalities. I decided that I would get richer, more in-depth data for my study if I opted to conduct interviews rather than surveys, but I kept the three components of critical consciousness as defined in the CCS intact in my Interview Protocol.

In the measurement of critical consciousness, Diemer, McWhirter, Ozer, and Rapa (2015) advocate for multi-method data collection strategies "such as the complementary use of observational and interview data in conjunction with survey methods" (p. 813). While teaching, I observed students in my mathematics classroom as they engaged in critical mathematics activities. Then, within two weeks of each student's completion of their ELA and Math courses that contained the planned and unplanned critical activities, I conducted an audiotaped interview with each participant that took no more than one hour each. I transcribed each interview verbatim then unitized, coded, and categorized the data, along with the data contained in my researcher journal and student coursework, into themes as part of my data analysis. The analysis revealed ways that the curricular activities led to increased critical consciousness for each student participant, thus indicating that these critical curricular activities were valuable additions to support their transformation towards becoming empowered adults who are better able to overcome societal power imbalances.

Student Participants and Recruitment

All students complete critical curricular activity-infused coursework in our Mathematics and English Language Arts courses. However, a select group of Indigenous adult students, who all happened to be mothers of young children, was recruited to participate in the study. They were not asked to participate in the study until after they already completed the courses containing the critical math and literacy units. Their participation meant that they consented to having me interview them and to having their already-completed assignments in Mathematics and English Language Arts analyzed as data by me.

Data Collection and Analysis

Student interviews and coursework, as well as the English Language Arts teacher's comments and my own researcher journal observations, were examined to determine whether student participants showed evidence of critical reflection, support for egalitarianism, and critical action, the components of Freire's (2000) described critical consciousness, and in what ways. Additionally, I examined the teacher-generated data to see what the English Language Arts teacher and I learned about enacting critical pedagogy in the classroom.

The English Language Arts teacher, a veteran educator with social justice teaching experience who was also committed to developing critical consciousness in students, consented to provide one data source during the 3-month study. At least once a week, I met with this teacher to discuss her thoughts and observations from facilitating critical literacy activities with her students. I summarized the main ideas of these conversations into my researcher journal, and had the ELA teacher verify my summaries.

At the end of each day in which my own students engaged in critical mathematics activities, I recorded my own thoughts and observations from facilitating these activities. Botha (2011) found his auto-ethnographic field journal writing valuable in helping to mix Western research methods with Indigenous ones so I was hopeful my own reflective journaling would provide useful data. Specifically, I was looking for critical consciousness growth in students, as evidenced by "*illuminative* or *transformational moments, epiphanies,* or *critical incidents*" (Stringer, 2008, p. 89) that might occur while they worked through critical mathematics activities. I recorded descriptive observations using the "useful framework – what, who, how, where, when, why" (Stringer, 2008, p.

96) to reveal interesting context for when, and if, students exhibit heightened awareness

of oppression or indications of sociopolitical action as a result of engaging in these

activities. I also tried to note moments in which students seemed more engaged than

usual, and when they exhibited visible reactions to the content. I expected these reactions

would be verbal comments or outbursts as students learned about social injustices, but I

was aware that student reactions could manifest in ways I could not predict. I also tried to

note if students did not appear to exhibit reactions to the critical content at all, as that

would provide useful feedback on the efficacy of the critical mathematics activities as

well. Additionally, I also made reflective notes on what I was learning about enacting

critical pedagogy in my mathematics classroom. I also ensured that these field journal

notes were completed by the end of each day in which students worked through critical

math activities.

"Key experiences may also appear in representations" (Stringer, 2008, p. 96), so

at the end of the three-month study, in which a number of students completed the courses

containing the critical pedagogical activities, I collected all of the consenting participants'

classwork. I reviewed these student-created documents to find evidence of heightened

critical reflection, and to "provide a more comprehensive understanding of CC (critical

consciousness) and how it develops" (Diemer, McWhirter, Ozer, & Rapa, 2015, p. 819). I

transcribed and took photos of student-generated artifacts that provided evidence linking

their work to key indicators of critical consciousness development.

Lastly, I conducted audio-recorded interviews with each participant using an

interview protocol (Appendix 3) intended to extend and better understand participant

survey responses. Semi-structured interview questions are open-ended by nature, thereby

allowing interviewees some freedom when responding as the prompts "enable

participants to reveal more details of the phenomena they are discussing" (Stringer, 2008,

p. 61). Each response was audio-recorded and later transcribed by me "to capture the

voice of the participants, describing things as they would describe them" (Stringer, 2008,

p. 64). I also conducted member checks with the participant "to confirm the accuracy of

the notes, or to extend or clarify information given" (Stringer, 2008, p. 64).

To analyze the data collected from all of these sources, I followed Stringer's

(2008) categorizing and coding step-by-step procedure which required me to:

1. **Review all the data**. To do so I separated then looked through the

   transcribed student interviews and began to identify common themes that

   could align with my four research questions.

2. **Divide the data into units of meaning**. To accomplish this I dissected

   and highlighted already-transcribed participant interviews into words and

   phrases that appeared to connect to emerging categories that aligned with

   my research questions. Some question responses yielded many small units

   of meaning.

3. **Identify any patterns, connections, or commonalities in the data to

   formulate themes, categories, and subcategories**. I coded the grouped

   data by assigning a title for each group that identified the type of

   phenomena it contained. In one instance a student response generated a

   unique theme of its own.

4. **Organize the grouped data into a category system**. Using the now

   coded groups, I arranged them into a chart that clarified meanings.

5. **Use the non-interview data to complement the analysis**. At this point, I

   reviewed the content from my researcher journal to find any counter-

   perspective commentary and/or support for the perspectives drawn

   directly from the student interviews.

6. **Use the categorized system as a framework of concepts from which**

   reports and accounts can be developed. At this point I analyzed,

   revealed, and organized meaningful understandings that made the

   deduction of observations and conclusions easier to do.

The triangulation of participant-created artifacts, interviews, and teacher-generated comments in the researcher's journal was a strategy I applied to enhance the credibility of the findings for my action research study. These data sources provided valuable insight into the usefulness of the critical mathematics and literacy activities in contributing to transformative learning as evidenced by critical consciousness development. The following table illustrates the data collection and analysis methods I used to address the research questions:

Table 1

Data Collection and Analysis Matrix

QUESTION	METHOD#1	METHOD#2	METHOD#3
Do these critical math and literacy activities contribute to student critical reflection and if so, in what ways?	*Student Interviews*: Student interviews were transcribed and analyzed to find evidence of existing and/or emerging critical awareness of societal power imbalances (critical	*Researcher's Journal*: Teacher observations of student critical reflection were recorded in a researcher journal.	*Student-Generated Artifacts*: Student work created during critical literacy and mathematics activities were analyzed to find evidence of critical (table continues)

	reflection), and in what ways		reflection, and in what ways
Do these critical math and literacy activities lead students to take critical actions against oppressive forces and if so, in what ways?	*Student Interviews*: Student interviews were transcribed and analyzed to find evidence of student actions taken against, societal power imbalances (critical action) and/or evidence of intentions to take sociopolitical actions in the future, and in what ways	*Researcher's Journal*: Teacher observations and/or awareness of student critical actions taken were recorded in a researcher journal	*Student-Generated Artifacts*: Student work created during critical literacy and mathematics activities were analyzed to find evidence of, or intentions toward, sociopolitical action, and in what ways
Do adult female Indigenous students find these critical math and literacy activities valuable and if so, in what ways?	*Student Interviews*: Students provided oral feedback on what they perceived to be the most engaging and valuable content learned as Indigenous students, and in what ways	*Researcher's Journal*: Teacher observations and/or awareness of student responses to Indigenous issues were recorded in a researcher journal	*Student-Generated Artifacts*: Student work created during critical literacy and mathematics activities were analyzed to reveal Indigenous issues that resonated with Indigenous students, and in what ways
What have I learned about enacting critical pedagogy in the classroom?		*Researcher's Journal*: Teacher reflections on enacting critical pedagogy in the classroom were recorded in a researcher journal.	

Ethical Considerations

Recognizing the primary goal of respect for human dignity, this research satisfied

the three core principles of respect for persons, concern for welfare, and justice, as

specified in the Tri-Council Policy Statement: Ethical Conduct for Research Involving

Humans (Canadian Institutes of Health Research, Natural Sciences and Engineering

Research Council of Canada, and Social Sciences and Humanities Research Council of

Canada, 2014). To show respect for persons, students were provided with a clear

description of the research study and its beneficial intent to inform a more

transformational education for students, plus its possible risks, such as learning about

Indian Residential Schools (IRS) and other harms done to Indigenous peoples in Canada.

Once the students were properly informed of the study and its methodology, then they

were invited to participate in the study.

In this study, I was in a power-over relationship with my students. To mitigate my

power-over them, I openly declared it on the informed consent letters and explained to

students that I was aware of it. I declared that they should not feel pressured to

participate, especially since I was only asking for secondary usage of schoolwork they

had already completed. Students were also told that their choice to participate would not

affect their grades or their relationship with me. Since I am the only mathematics

instructor in the school, I already knew the students who participated in the study. To

further mitigate feelings of obligation to participate, third party recruitment was used.

Upon completion of their courses, the school social worker met with potential

participants to explain the study and offer students the opportunity to participate

voluntarily. Students were asked to sign the voluntary, informed consent form once they

had received full disclosure of all information needed to make an informed decision

about participating in the research, and reassurance that if they no longer wanted to

participate they could tell the social worker (rather than me, as teacher-researcher) and

there would be no negative consequences. In addition, students were told that any data generated by anyone who decided to withdraw would be immediately culled and deleted or shredded.

Pseudonyms and not real names of participants or the school and division are being used to report the research results. All data has been kept confidential and participants signed a pledge of confidentiality. Audio data was securely stored on my private, password-protected iPhone then transferred via USB to my private, password-protected laptop computer. Student interview transcripts and written, student-generated classwork were safely stored in a locking file cabinet.

I assumed the dual role of teacher and researcher for this study. As such, I was "fully cognizant of conflicts of interest that may arise" (Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, and Social Sciences and Humanities Research Council of Canada, 2014, p. 99) which, for this study, was my "power-over" teacher-student relationship. To mitigate this conflict of interest, potential student participants were made aware that they would be participating anonymously until after they completed the critical curricular activities and all coursework had already been graded; that I would only be made aware of their identities as participants when it came time to do personal interviews. So I only asked for secondary use of data for the coursework they had already completed. They were also assured that my secondary role as researcher would in no way inhibit my primary obligations and duties to students as a classroom teacher. I disclosed this information, along with acknowledgement of the "power-over" conflict of interest, along with a

description of how I intended to mitigate this conflict of interest, on the participant

consent form.

In working toward students' deepened awareness of sociocultural realities that

may have negatively affected their own lives, a necessary component of critical

pedagogy, concern for the emotional welfare of the student participants was paramount to

this study. I was concerned it would be upsetting for Indigenous students to study the

historical and contemporary injustices inflicted upon Indigenous people if they did not

already have some knowledge in this area, and they may have family members who had

been directly affected by colonial injustices, such as Indian Residential Schools (IRS). To

mitigate some of the necessary risk involved in a decolonizing education, the English

Language Arts teacher and I followed the lead of the IRS *Where Are The Children?*

website (http://wherearethechildren.ca/en) which was to inform students of the potentially

disturbing content and give them the choice not to view any learning materials they felt

would cause them distress. We also informed students of emotional supports available to

them should they become upset, including the telephone number to the 24-hour IRS

national survivors' crisis line. We also had a social worker available had they felt the

need to access counselling support. Student participants were also reminded that their

participation during interviews was voluntary and that they were not required to comment

on any subject that made them feel uncomfortable. Additionally, since all of the

participants in this study were adult Indigenous students, there was additional concern for

the collective welfare of Indigenous families and the communities that individual

participants belonged to, so participants were asked to ensure they considered the welfare

of others whom they may have chosen to share emotionally-sensitive learning materials with.

The core principal of justice, the obligation to treat people equitably and with fairness was reflected in the study participant recruitment process. All adult Indigenous students enrolled in Mathematics and English Language Arts classes at the school were given the opportunity to participate in the study because they represent a marginalized demographic in the public school system. Though student participants could have been pregnant, parents of young children, or both, all of the student participants who consented to participate in this study happened to already be mothers of young children and not pregnant at the time. These students completed the same in-class work as all students, so that they were treated fairly in relation to their peers.

Timeline for Study

The number of adult Indigenous students who actually worked with the critical mathematics and literacy activities was dependent on the school's continuous enrolment. I estimated it would take a student three months to complete the English Language Arts and Mathematics courses containing the critical activities, and I felt fortunate to be able to collect comprehensive data from seven consenting students by June of 2016 (I had originally hoped there would be at least 6).

Criteria for Quality

To ensure research quality, I employed Anderson and Herr (2015)'s action research-specific quality and validity criteria, which are:

1. Process Validity – I attempted to conduct this study in a dependable and competent manner, guided by the processes described in Stringer (2008). I am

reasonably confident that my data collection techniques answered my research

questions. To ensure that the research process was adequate to solve my research

problem, I used more than one data collection method and cycles of collective

reflection to ensure the study was dependable.

2. Democratic Validity –To try and ensure that the intended beneficiaries of this

   research informed the study, I collected data from the students themselves that

   encouraged reflections from multiple perspectives so that they had the opportunity

   to inform my own future teaching practice, along with potential whole-school

   improvement. I also added my own reflections and observations, and those from

   the English Language Arts teacher, to my researcher journal to use as data that

   provided other educational perspectives.

3. Catalytic Validity – I am optimistic this study will achieve catalytic validity and

   move educative processes in the school that support transformative learning

   forward. It will achieve further validity if the study influences others to make

   positive transformative education changes in their own school contexts. Ideally,

   this study will result in real, measurable and lasting school improvement since

   student learning materials have been created for this purpose. I also hope my

   reflections as a non-Indigenous educator of Indigenous students will be

   informative to other non-Indigenous teachers and aid in their own learning.

4. Dialogic Validity – To ensure this research was exposed to critical and reflective

   dialogue, I shared my study with my thesis advisory panel. Additionally, the

   English Language Arts teacher, who is a veteran teaching colleague with

   experience in developing Indigenous education materials, acted as a critical friend

to discuss and critique my work. The thesis will also be published and be made
public property through the electronic database MSpace at the University of
Manitoba. I also plan to write an article based on this study to submit to a peer-
reviewed journal, and/or to make a conference presentation.

5. Outcome Validity – This study provides evidence that critical consciousness
   increased in the seven students who participated in the study. The results of this
   study will inform my next cycle of action research, which will involve creating
   more critical mathematics and literacy activities, especially focused in the areas
   where the data indicated students achieved the least development. This research
   study might also lead to new understandings that may help reframe Indigenous
   education issues, and issues in critical mathematics and critical literacy, to inform
   future research. Mostly, I am grateful that this action research project has helped
   me as a teacher to improve my own practice and to try and help my school
   become a more transformative learning institution, especially for Indigenous
   students.

Delimitations of the Study

Since one focus of this study was to find ways to increase Indigenous student
achievement, it would be plausible to have expected a more comprehensive review of
specific teaching methodologies that have shown promise for Indigenous students. I did
not do this because there is little research to suggest that there are unique teaching
methods to increase Indigenous student achievement beyond what I have already
mentioned. Instead, critical pedagogy subscribes to the belief that effective teaching is

context-specific. Hence, the context-specific nature of action research made it a best-fit research paradigm for this critical pedagogy-focused study.

It might have been possible to extend this study to all of the adolescent and non-Indigenous students who are pregnant and/or mothers of young children in the school, but I chose to limit the participants to only the school's Indigenous adult students for two reasons. First of all, critical pedagogy was originally developed for and with adults so they seemed a better fit for this study. In my experience, the adult students in the school have also been more likely to attend on a regular basis, making them better candidates to participate in the study. Secondly, the provincial department of education has emphasized a call-to-action to develop more successful education programs for Indigenous students in particular (Manitoba Education and Advanced Learning, Aboriginal Education Directorate, 2008), so I hoped that by restricting participation to Indigenous students only, I would be doing my part to heed that call.

To add valuable data to this study, I also collected teacher observations from the English Language Arts classroom. I taught my own mathematics classes during the same class periods as the English Language Arts classes, so it was impossible for me to observe English Language Arts students during class times. Instead, I chose to meet ~~met~~ weekly, on average, with the ELA teacher to discuss and document her classroom observations and reflections on teaching practice.

Though it is reasonable to expect that parent perspectives could have aided this research study, I did not include students' parents in this study because very few of the school's students live with their parents. Also, all of the student participants were already adult parents themselves. I also restricted this study to adult students only, even though

there are adolescent students in the school. I chose to focus only on the adult students in my school because they tend to have more consistent attendance, and also because Freire's (1970) critical pedagogy was originally developed with, and for, adult students.

Advantages of the Methodology

There are clear advantages of having used action research to complete this study over using other approaches. First, using action research in the school provided a rigorous academic approach to use real data within the school to inform school change, rather than externally collected data. Second, this action research study directly connected student learning to the professional development of a teacher, a connection that is not always examined in other teacher professional development activities. Third, the results of the research and data collection in this study led to actions that will continue to bring about real school change, whereas the action component is not a requirement in other research models. Lastly, I can contest to the fact that the in-school action research process has fostered a culture of inquiry and reflective educational practice, if only between me and the English Language Arts teacher, that has aided our professional development and will last beyond the completion of this study.

Chapter Four – Findings and Discussion

The purpose of this study was to investigate the impacts of critical pedagogical curricular activities implemented in the Mathematics and English Language Arts classrooms in my school. By implementing these activities, the English Language Arts teacher and I intended to contribute to students' critical consciousness development, as indicated by their awareness of and reflection on societal forces that undermine success in school and society, their support for egalitarianism, plus any actions taken against those forces. In this section I share and discuss findings related to my research questions.

This study provided three data sets to analyze: i) transcripts from the student interviews, ii) completed student coursework as artifacts, and iii) observational field notes, personal reflections, and notes from conservations with my teaching colleague written in my researcher journal. The raw data for each data set were first coded into labeled units of meaning then sorted by emergent themes. These themes were then ordered by how often they occurred in the interview data. Then the results were closely examined for information that would answer one or more of the research questions. In this chapter, I first present the results that emerged from an analysis of the three data sets used in the study. Later I look across the data sets and synthesize the findings in order to formulate answers to each of the four research questions posed.

Findings: Student Interviews

There was a total of 302 unitized comments generated by the seven interviewees. Table 2 presents thematic categories that emerged from an analysis of the student-participant interviews that corresponded to one of the three components of critical consciousness: critical reflection, support for egalitarianism, or critical action. Table 3

presents thematic categories that emerged from the interviews related to factors that

seemed to influence student-participants' critical reflection growth. In both tables, the

frequency column presents the total number of interviewee comments that related to each

thematic category, in descending order. Each frequency is also converted to show the

percentage of the total number of unitized comments.

Table 2

Student Interviews: Themes by Category and Frequency

Thematic Categories	Frequency	% of Total
Critical Reflection		
Critical awareness and reflection on economic inequality	60	27.0%
Critical awareness and reflection on racism	35	15.8%
Critical awareness and reflection on other issues negatively affecting Indigenous peoples	24	10.8%
Critical awareness and reflection on impacts of social constructionism	23	10.4%
Critical awareness and reflection on sexism	21	9.5%
Expression of personal empowerment	21	9.5%
Critical awareness and reflection on negative stereotypes	19	8.6%
Critical awareness and reflection on White privilege	10	4.5%
Critical awareness and reflection on classism	5	2.3%
The myth of meritocracy	4	1.8%
Total Number of Comments	**222**	**100%**
Egalitarianism		
Support for egalitarianism	22	100%
Total Number of Comments	**22**	**100%**
Critical Action		
Raised awareness of injustice through social media	5	33.3%
Expressed an intent for future sociopolitical activism	5	33.3%
Contacted people in positions with political influence to address injustice	2	13.3%
Signed petitions to combat injustice	2	13.3% (table continues)

Contacted traditional media outlets to address injustice	1	6.7%
Total Number of Comments	**15**	**100%**

Table 3

Student Interviews: Factors That Influenced Critical Reflection Growth

Thematic Categories	Frequency	% of Total
Increased critical reflection linked to learning at school	21	48.8%
Increased critical reflection linked to learning from personal experience	14	32.6%
Increased critical reflection linked to learning from family & friends	8	18.6%
Total Number of Comments	**43**	**100%**

The most prevalent theme that emerged from the seven students interviewed, whom I have given the pseudonyms Ava, Beth, Cora, Dawn, Ella, Faith, and Gwen, was critical awareness and reflection on economic inequality. This theme was a major focus of several critical mathematics activities imbedded within and added to their Essential Mathematics course. Cognizant of the research that says financial literacy education for students is usually an ineffective neoliberal vehicle to blame low-income individuals for "illiteracy about financial matters…no mention of the role of banks, government, international finance, and the effects of climate change" (English, 2014, pp. 48-49), I endeavored to help students research and understand those roles, especially the economic forces that have direct bearing on their livelihoods. Responses revealed that all of the student participants, who live well below the poverty line, seemed well aware that others enjoy financial privileges they do not. When asked to identify the people most likely to

become successful in life, Ava said they were the "privileged, the ones that are able to afford it and can burn money". Cora called them "the people that have more money", while Dawn described them as "people who already have an advantage growing up". Faith felt "like if your parents have money then, like you can do anything". Gwen suggested "wealthier people… have things handed to them". Students were also able to identify economic barriers that work against those who faced financial hardship. Ava said "you need money to get anywhere. You need it for school supplies, you need it for clothing. Without money you don't really have anything. You can't get anything so you can't really go anywhere in life." Beth, while considering the impact of already having money on one's future, said

> I feel like it helps people…because you're not struggling to get to school, you're not struggling to eat, you're not struggling to have a place to live; you're not worried about those things because you have it. You're worried about your school and your future I guess.

Cora suggested a lack of access to money would inhibit the ability to continue schooling or to pay rent. Dawn observed that not having money for school supplies and clothing had a negative effect on one's confidence, which in turn decreased the likelihood of future success. Ella offered her own experience as an example of economic advantage versus disadvantage:

> I'm trying to get into this program that I'm trying to get into right now. There's another girl in school here, she got into it because she had help from family members that could borrow her money. So she got into the program. Versus me –

I have no money, so I have to come up with money myself somehow to pay for

that exact same program. So money really does help.

Faith suggested that the necessity to seek student loans could be a deterrent for many who

might otherwise enter post-secondary schooling, and stated "I feel like, for me, it's going

to be hard if I don't get sponsored because then I'm going to have to really work my ass

off to pay off my student loans day by day". Gwen posited, "Having money you have

confidence that you can do things, and not having money stresses you out because you

have to find a way to get the money". From these comments, it appeared personal

experience may have led to their heightened awareness of these inequalities, and not

necessarily from in-class critical math activities, but some comments, as summarized in

this section, suggested in-class learning did have an impact on raising critical awareness

of economic issues.

Other student comments suggested that at least some of the in-class critical

mathematics activities that occurred during this study, many of which focused on finance,

were successful in raising students' critical reflection. A few of the students commented

on an economic issue related to the fairness of welfare payments that was an issue

explored during one of the critical mathematics activities. Ava, Cora, and Faith argued

that insufficient Employment and Income Assistance (EIA) payments in relation to rental

housing costs created an economic barrier to recipients that those who were not on EIA

likely didn't face. Their comments suggest that at least those critical math activities

related to this issue were successful in contributing to an increase in students' critical

reflection in this area. Ava in particular credited the critical finance unit for helping her

understand economic inequality and power:

Math class, where we did - basing everything on finance and how everything is

controlled based on money…has kind of opened my eyes to the issues there are…

I'm thinking a lot differently on how society sees people. Money gets you

everywhere even if you don't work for it…there's a lot of people who just inherit

money…and they're not focusing on real issues that their money could be put to

good use. I see how corrupt everything is in the system, so my opinions on that

have changed very much. I was not really aware of any social or political issues

there were until you guys showed me. In math, the Finance Primer, where you

think about society and how the world is run by money.

At least in Ava's case, it appears critical math activities helped her develop "connections

among areas of mathematical study and between mathematics and the real world"

(National Council of Teachers of Mathematics, 2014, p. 4) while "explicitly using

mathematics as an analytical tool for examining and challenging social injustices"

(Stinson, Bidwell, & Powell, 2012, p. 79). Ava's response to having completed these

critical math activities also demonstrates that "mathematics can be a valuable tool in

deepening one's awareness" (Gutstein, 2003, p. 40).

All of the student participants demonstrated critical awareness and reflection on

racism and discrimination against Indigenous people, which was the second most

prominent theme to emerge from the interview data. Students' critical reflection in this

area is reflective of our efforts to provide students with a critical pedagogical

decolonizing education as advocated by Silver (2013), but although students discussed a

magazine article in class which suggested that their city was especially racist towards

Indigenous people, student comments revealed that their own personal experiences and

family influences already made them aware of the racism and discrimination they face as Indigenous people. Ava talked about a Facebook page she discovered "saying 'Indians are dirty, we need to get rid of them' and 'they're just using all of our taxpayers' dollars and the government's money'". She also shared her story of working at a gas station with an Indigenous male who was told he would be fired unless he cut his long hair, even though his long hair had cultural significance. The boss said the employee "looked dirty" with his long hair. Ava also suggested that being Indigenous "lowers your chances of getting ahead in life because people judge you". Beth stated she felt many Indigenous people struggled to get ahead in life because of racism and told a story of how she witnessed both White privilege and discrimination against Indigenous people at the same time.

> My mom would always tell me things like this happened, how Indigenous people, or any person, is not treated the same as a White person… but I didn't see it for myself until as I got older I started to see things. Like just this past year, my boyfriend's mom and dad got custody of his nieces because they were taken by CFS - they're White, like pure White, straight White - and they got taken, probably let's say Monday, then so, on probably Wednesday, their parents got to come over. So they were already getting visits, sleepovers, all kinds of stuff. They got to see them whenever they wanted. They could call up the foster family and say "hey, we want to see them" and they'd bring them. And then on Thursday of the next following week they had custody of them. But my aunty, she's Indigenous, and when her son was taken away she wasn't allowed to see him, not ever - maybe once a month - and she like - oh yeah, my boyfriend's sister was

missing visits a lot, and if she missed a visit they didn't care, they said "ok, come

next week, you can visit your kids". If my aunty missed a visit she wouldn't be

able to see her kid probably for the next two months. So I seen, CFS is one of the

big things where they treated Indigenous people differently, and I've seen it

myself… it makes me upset that they didn't treat my aunty with that same respect

towards her son. And she did all these kind of programs, did drug tests and

everything, like she was doing good - she did everything they told her to do. This,

my boyfriend's sister - they drug tested her I think like once, but never the

boyfriend, and they lived together with the kids, so I don't know - it makes no

sense to me.

Perhaps Beth's shock in witnessing discriminatory practices herself, even though she said

her mother had already taught her about the racism towards Indigenous people, could

indicate that Ava still needed to experience a disorienting dilemma (Mezirow, 1997) to

experience further transformation. Cora's assertion that "the native people are treated

worse" than others agrees with Ava's observations. Dawn admitted how racism lowered

her self-esteem:

For me, being Aboriginal, I don't get a lot of people saying "oh yeah, you look

like the type of person that would graduate from university because I don't, right?

I don't - that's just a lot of people expect me to not...or something, you know? …it

all just goes with the whole...(sigh)...I guess racism against Aboriginal people and

racism against Aboriginal women because we're not thought of to be smart or

have any good work ethic or anything. So that would like, stop me - like it used to

stop me; that's why I didn't go to school...because I didn't think I could do it

because other people thought I couldn't either.

While discussing her future, Dawn revealed she planned to become a dental hygienist and

then leave the city "because I don't want to deal with the racism. I want to go up into

northern communities and to go help out my own people because then I will feel safer in

my work. I'll be more comfortable." Ella suggested she might face challenges seeking

employment, saying potential employers "could look at me and say maybe she's not

going to work hard enough… 'cause I'm native and they could be stereotyping me." She

also lamented that some people think Indigenous people are "incapable and alcoholics,

and that bothers me because they didn't all just become alcoholics just cause. It's

something that happened in their life to get that way. We don't just choose that type of

life." Faith admitted how disparaging comments made to her by non-Indigenous people

upset and demotivated her in her quest to complete her education. All of these comments

revealed critical reflection on racism and discrimination, but none suggested that their

awareness of these oppressive forces was increased by critical activities completed in

school. However, several student comments reflected knowledge learned from critical

activities they completed on Indigenous issues, which shows they were engaged by the

learning activities and suggests that these activities might have deepened their

understandings. This finding agrees with the idea that critical pedagogical classroom

practices are vital to effective Indigenous education, as recommended by Silver (2013),

Wishart (2009), and Fryberg et al. (2013).

Some of Gwen's comments were especially insightful and showed that she made

deep connections between modern-day racism and Canadian colonial policies – a topic

which she investigated in one of the critical literacy activities. Gwen suggested that colonial attitudes toward Indigenous people remain and explained: "They get looked down on and they're not expected to succeed. Even though more are nowadays – I see lots - but like still people look down on them from like back when there were residential schools" and expressed "it's a shame people always compare their own race with another one, when really everyone has the same red blood in their veins, the same organs, we all have the same feelings. Just because our skin colour is different or we speak different languages it means we're different, yes, but we are all still human." Gwen's sentiments echo sentiments shared within critical literacy units she completed that explored race as a social construct without scientific basis, colonization, and the Indian Residential Schools system. Gwen's comments clearly demonstrate that she experienced an increase in critical reflection as a result of having completed critical literacy activities centered on Indigenous issues.

All of the other students also revealed their critical awareness and reflections on other historical and contemporary injustices that targeted Indigenous peoples in Canada, which suggests that the critical activities exploring these topics could have had a substantial impact on the students. Ava shared her desire to have her daughter get to know her Indigenous culture, language, and ceremonial teachings. She acknowledged that these were things she might have known had the cultural genocide of Indigenous people never occurred, and perhaps if her father had not been forced to attend Indian Residential School. Her comments also demonstrated an awareness and understanding of other issues including Missing and Murdered Indigenous Women, and she mentioned media coverage of overwhelmingly negative statistics on Indigenous peoples such as teen

suicide rates. Beth discussed the after-effects of Indian Residential Schools on young

people:

> If they're Indigenous, chances are they might, well most likely, be coming from a
>
> bad family...or a misguided family because of residential schools, like the whole
>
> cultural genocide thing, which has had an impact for generations and generations
>
> and generations… it all goes back to residential schools.

Cora echoed Beth's sentiment that Indigenous parents are more likely to be struggling as

a result of intergenerational residential school trauma and cultural genocide. Both Beth

and Cora also expressed awareness and understanding of the Murdered and Missing

Indigenous Women issue, as did Dawn, Ella and Gwen. Dawn also demonstrated

awareness and understanding of the Idle No More movement, while Ella showed

awareness and understanding of the problems that children who live on reserves face.

Faith mostly discussed poverty-related issues that were more likely to afflict Indigenous

people living in the city. Students explored all of these issues during critical math and

literacy assignments, and some directly credited the in-class critical activities for raising

their awareness of Indigenous issues, which shows that some of these activities

successfully contributed to students' critical consciousness development.

Beth, whose mother worked for the Assembly of Manitoba Chiefs, said the

English Language Arts activities "actually taught me a lot, even things that I didn't know,

that my mom never even knew." Cora credited her critical awareness of the legacies of

the Indian Residential Schools from learning about it in the English Language Arts

course. During her interview, Dawn told me

you're like one of the persons that I know that has more knowledge about

Residential Schools and all of the background stuff than most of the native people

that I know, which is bad...none of my family went to Residential Schools

because we lived in Berens River, which is a small island which nobody can get

to, so whenever they said they were going to make a trip to go there for kids they

would hide them all in the bushes so none of my family was taken...they knew...

The first time I ever got an interest in anything like that was in (ELA teacher)'s

classroom when we did the booklet about that type of stuff...that's what made me

think about the stuff more...culture and identity...because before that, in schools, I

never learned any of that. Even on the reserve, I never learned any of that in

school. So that was the first time.

Dawn's comments imply that learning about Indian Residential Schools, and likely other

historical and contemporary injustices directed at Indigenous peoples, was valuable to her

and would be valuable to other Indigenous students. Her comments also speak to the

curricular disconnect between what she was taught, and what she feels she should have

been taught. Dawn's disillusionment with her previous formal education also supports the

critical pedagogical belief that students should learn what is relevant to their lives. The

fact that Dawn, as an oppressed person, felt that learning about the nature and history of

systemic oppression against her people was valuable is also consistent with The Coalition

for the Advancement of Aboriginal Studies report (Canadian Race Relations Foundation,

2002) that recommends this knowledge be imbedded in Indigenous education

programming. Gwen also indicated her appreciation for studying Indigenous issues, and

said she increased her awareness and understanding of the Missing and Murdered

Indigenous Women (MMIW) issue as a result of studying it in class. She also commented that she views "the RCMP differently now because of the rates and stats" which indicates increased critical reflection on this issue.

During the interviews, a number of insightful student comments demonstrated critical reflection on the ways identities are socially constructed, which relates to critical literacy activities the students completed on culture and identity. At one point during her interview, Gwen commented that her sister ended up behaving in a way consistent with the negative societal norms her sister learned to accept, which reveals critical awareness of how social constructionism can influence people's lives. Other participants also gave examples of how social constructionist norms influenced people's lives. Ava described social pressures as "kind of what they're telling you and you feel like maybe their right, maybe I can't. I guess I should just do this. They kind of change the way you see things; they make you stop doing what you would like to". Ava further discussed a likely scenario for those who grow up in a bad environment, giving a bleak example of "a lot of people around them are into drinking and drugs and smoking and gangs and then they join the gangs and then they get killed or they commit suicide. Negative." In her English Language Arts coursework, Beth acknowledged then argued against socially constructed norms:

> I disagree with the fact that so many people expect you to graduate, get married and then have a baby because I feel like every person grows and matures at their own pace. A lot of people need extra motivation to get certain things done. Every person is different. So you can't actually tell someone how they're "supposed" to

be. Usually people who disagree with others can get hurt or feel left out. A lot of the time society won't listen to what the different opinions are.

Dawn provided a positive outcome of social constructionism, suggesting "that people who have seen people go to work and doing stuff like that, they are the ones who can do it better than other people can" but admitted that, as an Indigenous person, she wouldn't have many people saying she could graduate from university because "just a lot of people expect me not to". Dawn also shared a social constructionist perspective on kids who grow up in poverty:

That'll stop them from getting anywhere in life because people who don't do anything with their lives, even from a young age, they get used to it – they just expect to stay home all the time and not do anything. And so, just getting used to that lifestyle will stop them, and then people who don't have any view of the outside world and how it could be better for them, they won't look for it…it becomes normal and they just wait for cheques all the time, and that's just the normal for them.

Faith reflected on how the norms her birth parents established for her inhibited her personal development: "when I was younger I was never taught anything so when I grew older I didn't know how to manage my emotions or how to treat other people, because my parents never, never showed me how to do stuff like that". She further explained, "I was neglected and that's why I grew up not knowing how to manage my feelings". Gwen commented on how the norms and expectations for different racial groups largely determined their overall levels of achievement. The students' analytical insights into the ways norms are socially constructed demonstrates that they learned to dissect the idea of

"normal", which was a goal of the critical literacy activities on culture and identity they all completed in their English Language Arts course. The students' comments suggest that these critical literacy activities contributed to an increase in their critical reflection on the impacts of social constructionism. Ava in particular directly credited these critical literacy activities with helping her to recognize and analyze oppressive cultural practices. Her acknowledgement that these critical activities, which engaged her "in reading, writing, and speaking back to texts through a lens on power, privilege, and oppression" (Schieble, 2012, p. 212), suggests that these learning activities strongly contributed to her increase in critical consciousness.

Twenty-two of the student comments expressed support for egalitarianism. Freire (1970) argued that egalitarianism – the desire for equality among all people - is a necessary component of critical consciousness. During their interviews, all of the student participants were asked to imagine and describe what an ideal society would look like, and all of them expressed support for a society in which everyone was equal. The students' support for the core value of egalitarianism demonstrates their ability to achieve critical consciousness. Ava said her ideal society would be free of discrimination. Beth described an ideal society as one in which people "treat everybody the same…no colours, no cultures, no women, no men, heights, weights" and one in which women wouldn't "feel degraded by men because men wouldn't be allowed to degrade them". Cora simply wished "for everybody to be treated the same". Dawn agreed that "people should be treated equally" but felt that society is so far away from that ideal to even imagine what it would look like. Ella acknowledged that she was taught to look at and treat everyone equally, and specified equal opportunity and pay, and the absence of discrimination as

hallmarks of an ideal society. Faith imagined that in an ideal society "everybody should be treated the same…I feel like everybody would be happy". Gwen said that people in an ideal society would "get the same amount of respect no matter what age, race, gender – everything." The students' comments revealed their critical awareness of societal inequities in the way individuals are treated, plus the desire for all people to be treated equitably, though it is unclear from their comments to what extent these views developed as a result of completing the critical curricular activities. However, at one point during her interview, Faith acknowledged that she considers the well-being of others a lot more now as a result of completing the critical units, which suggests that critical activities completed during her courses might have influenced her stated support for egalitarianism.

Kincheloe (2008) has advocated for context-specific teaching to help specific students in specific communities achieve critical consciousness. Since we recognized that North American society has been described as a "White supremacist capitalist patriarchy" (hooks & McKinnon, 1996, p. 814), the English Language Arts teacher and I decided that our students, all of whom are female, would need to be able to deconstruct patriarchal society and sexism to achieve critical reflection on this oppressive force so that they could learn to fight against it and succeed in spite of it. The belief that once a student achieves critical consciousness of societal forces of oppression that they are then prepared to act against those forces is the main tenet of Freire's (2000) critical pedagogy.

Student participants were asked about their status as females in society, and all of the student participants reflected critically on ways in which sexism affects their lives and the lives of other females. Ava commented that many people still say, "that's a man's job" and she argued that many women interested in careers in the trades could be

discouraged from entering or completing courses due to male dominance and discrimination against women. Ava also argued that being born female "lowers your chances of getting ahead in life because people judge you…I see a lot of people being judged because they're women". While discussing job opportunities, Beth agreed, "there's a lot of sexist people, too, like that would rather not have females work with them, I guess. There might be a girl that likes to do labour work but they probably wouldn't hire her". Beth also expressed her dream for a society in which "women wouldn't feel like they have to be this skinniest, prettiest, heel-wearing thing, or feel degraded by men" which also showed her critical awareness of the subjugation of females in our patriarchal society. Cora also shared her awareness of workplace sexism, simply stating, "some people don't want females" in the trades. She also suggested that there were people in charge of First Nations bands' post-secondary sponsorship funding who would not fund Indigenous women interested in entering trade training. Dawn shared her belief that too many women are still expected "to be at home doing at-home jobs like taking care of the kids and taking care of the house", and she argued that "it's a disadvantage" to be a female trying to get ahead in life. Ella argued that "a lot of people" and "not just men" believe that women are not as capable of high achievement as men are. She also indicated women would face more barriers in some occupational fields than men would. Faith commented on her belief that women faced more workplace discrimination if trying to secure positions of authority.

Sometimes, like, if you're going into a job that guys think it should only be meant for guys, like a cop or something, like I feel like they'll just tease you or be like

'you can't do this cause you're a girl'. They will make you feel bad just because

you are a woman.

Gwen stated, "females get looked down upon because the world is sexist in that way". She also discussed how females faced unique barriers to success such as pregnancy and the expectation to stay home and care for siblings when parents are unable to. So the students were all able to share critical reflection on what it means to be a female in our society. Once again, the students did not directly credit critical learning activities with increasing their critical reflection in this area, but all of them shared that they now feel empowered as females to succeed in the future.

Ava, Dawn, Faith, and Gwen made strong statements that revealed their sense of empowerment, which is a desired outcome of Freire's (2000) critical consciousness. Ava's comments were similar to those made by the others interviewed, and she stated that, as women, "we're capable of doing what everybody else can". She also felt that by becoming a successful Indigenous woman, people could see her "as a strong female figure" trying to better her life and the people around her, but cautioned that she'd "have to fight to be the positive one", which shows her acknowledgement that, as an Indigenous woman, she would still have significant barriers to overcome. Dawn, after telling the story of how a school principal expelled her from school then told her mom that she wasn't going to go anywhere in life, and now nearing graduation, stated "here I am, yeah." She then explained: "I have motivation and am working on the confidence to get where I am going". Faith, referring to a lack of family support and encouragement for her to complete her schooling, said "I'm making a difference in my community…I can show them that I can do it. That is how I feel that I can help. I can show them that if I can do it

with my three babies then anybody could do it." Gwen, considered barriers to success for

Indigenous women and argued, "Well, if you stick to it, it shouldn't matter. Like, if you

keep going – I see a lot of girls, they just keep going – even though they're Indigenous

they decide 'I'm going to do it' – it's just the attitude". Though we were aware that

"concrete real-life scenarios which stimulate a sense of social justice could influence

student empowerment" (Lesser & Blake, 2007, p. 352) and we engaged students in such

scenarios, I was pleased to hear them express confidence and optimism. Other

participants echoed Gwen's comments about the importance of a strong and positive

mindset to succeed. Dawn suggested that success is "all up to you". Ella argued that

people who succeed are those "who have their mind set on something they want to do

with their life". Faith said she learned that in order to succeed, she had to "change [her]

mindset". Gwen agreed that she felt success was due to "your attitude mostly", and felt

that, in order to actually help people to succeed, "they've got to want to help themselves".

At some point during their interviews, all the participants also indicated they felt a

positive and supportive learning environment was instrumental to their school success,

which agrees with Silver's (2013) suggested characteristics for effective adult Indigenous

education programming. Nevertheless, the students all made statements that showed they

felt empowered to succeed in the future, which both the English Language Arts teacher

and I would describe as transformative change from the people these participants were

when they first enrolled in the school. Though it is difficult to assess how much of a

student's transformative change towards empowerment can be attributed to in-class

learning, their comments suggest that our critical pedagogical applications supported

their transformative processes (Servage, 2008).

In summary, all seven students interviewed demonstrated some level of critical consciousness. Furthermore, 197 of the 222 (almost 89%) comments based on critical reflection discussed themes related to thematic content embedded in our critical curricular activities, which suggests that these learning themes had a lasting effect on the students. When asked if they could identify what influenced their reflections on social and political issues, 21 of 43 (49%) student comments credited in-class learning with their critical reflection growth. Even though 14 of the 43 comments (33%) cited learning from personal experience, and 8 of the 43 comments (19%) cited family and friends as important contributors, it became clear from an analysis of the data that participants believed in-school learning contributed to their critical reflection development. This finding provides further evidence to support Servage's (2008) claim that critical pedagogical approaches are necessary to support actual transformative change in students. Had the students interviewed indicated that in-school learning had the least influence on their critical reflections, that would have suggested their transformative changes were more influenced by disorienting dilemmas (Mezirow, 1997) experienced outside of school than by the critical curricular activities implemented in this study. Dawn's comments sum up the kind of critical awareness development we were hoping to foster by implementing critical curricular activities:

> Well the more I think about it and the more it makes sense to me on how the
> world is working, or how it could kind of improve itself…but before I never
> thought about anything like that.

Dawn then explained that she learned to think critically "from my teachers, from reading books…since I came here." Ella also credited her learning experience in our classrooms

as a reason for helping her develop critical awareness of societal issues, and Faith directly

credited critical literacy learning in English Language Arts class for helping her become

more aware of societal issues. Since some of the student participants credited the critical

literacy and mathematics activities implemented for this study as helping them become

critically aware of certain issues, this interview data supports this study's hypothesis that

enacting critical pedagogy in the mathematics and English Language Arts classrooms

contributed to transformative learning, as evidenced by these students' critical

consciousness growth. The breadth and depth of the students' interview responses,

coupled with their acknowledgement that in-school learning had a strong impact on their

critical reflection abilities, also affirms the claim that students "are more than capable of

becoming critically conscious citizens and it is up to us, as educators, to work with them

in order to take steps to transform our world" (Shibli, 2011, p. 71).

      Not unrelated to their critically reflective comments on poverty, racism, and

sexism, six of the students cited negative stereotypes as being an oppressive social force

they were acutely aware of. Ava observed that some people stereotyped women as being

dainty and thereby physically incapable of doing manual labour, Indigenous people as

being dirty and lazy people who "just take the government's money", and teen mothers as

being failures without futures. Beth mentioned a school friend of hers who was bullied

during middle school by kids who told her that because she was black, she was only good

at dancing and not school, and that she would likely just become a stripper when she got

older. Dawn insightfully lamented that there are likely people with job-hiring authority

who think Indigenous people are "into drugs and alcohol and that's all we care about, and

so my first paycheck would go to alcohol or something, you know. So I think that would

stop people from hiring me as a person for sure". Ella expressed her dismay at people on

a public transit bus she overheard talking about how Syrian refugees were terrorists, and

people she'd heard in the past who referred to black people as criminals. Ella also

acknowledged negative stereotypes of Indigenous people: "some people think Indigenous

people are just alcoholics, or incapable of learning and growing. Some people that don't

actually know about Indigenous people. They just stereotype them." Ella also cited an

example from her school experience in which a couple of non-Indigenous adolescent

mothers negatively stereotyped the Indigenous students at the school. When discussing

the incident, Ella admitted that

> [I]t bothered me because the way they talked about 'us' native girls. And I'm
>
> going to say 'us' native girls because that's all she pointed out to… the native
>
> girls in this school. She didn't talk about the White girls or the Caucasian girls or
>
> the black girls, just 'native girls', and that bothered me because I'm one of those
>
> native girls.

Faith shared a similar experience.

> Some people, I think a lot of people, look down on a lot of Indigenous people
>
> because of like the poverty they're in and just like, they – I don't know – they
>
> make people feel bad. If you go to university, I feel like they will treat you
>
> different from the Caucasian, the Filipinos, and stuff like that because they won't
>
> think you're very smart.

Gwen discussed the demotivating effect of stereotypes on her sister. "My sister, she's

Aboriginal and she didn't really make it through school because she didn't think she

could, and now she's on the system, because that's what she thought". The students'

ability to identify oppressive systemic power structures behind the words used to stereotype people demonstrated an application of the critical pedagogical skill to read the word and the world (Freire & Macedo, 1987), an indicator of critical consciousness.

However, in spite of critical reflection on stereotyping, a couple of the participants made comments that suggested they were also stereotyping people. At one point during her interview, Ava said "I notice that a lot of White people, Asian and Filipinos, they're always getting the best marks and everyone expects everything of them because well, not to be racist but, 'you're Asian, you're smart and you can do it'. At another point Ava said "a lot of Asian people get far because 'look at that guy, he must be smart'". At one point during her interview, Beth, one of the only students not receiving income assistance, recited a common stereotype attributed to people on income assistance: "women who have multiple kids, kid kid kid kid kid, and they get more and more money and they don't do nothing". Informed by the research, these comments reminded me that it is possible to achieve critical consciousness in some ways, even if not in others, and that critical consciousness growth is "a constant unveiling of reality" (Freire, 2000, p. 81) as part of a transformative process that may never be completed. Still, my hope is that as their growth continues, eventually these students will reach a point in their development at which they no longer stereotype others.

During the interviews, whenever the students' comments discussed economic disadvantage and privilege, I prompted them to describe the people they viewed as privileged further. A few of the participants indicated that these people were likely White. Ava described them as "White and sheltered…they're in the more expensive, rich areas with the large houses and insanely humungous backyards" and affirmed that if

"you're a White person, you can get anywhere you want in life". Beth suggested "a lot of

White people are really rich" and that people "who have, let's say, privileges, White

privileges, will go through school a lot easier probably". Gwen also referenced White

privilege: "Caucasians have more…they have more rights, I guess. Not rights, but like,

privileges I guess? They're not looked down upon." The fact that some of the students

identified White privilege as a significant feature of society agrees with Allen's (2004)

premise that critical teaching practices must help marginalized students address "White

cultural hegemony" (Gramsci, 1971) as a societal force of oppression if their education as

a "practice of freedom" (Freire, 2000, p. 81) is to be truly emancipatory.

Interestingly, though all of the student participants were able to identify several

forces of oppression, only two of the students identified classism as one of those forces.

Faith argued that Indigenous people were more likely to be discriminated against because

so many of them lived in poverty, and Ava discussed her personal experiences and belief

that financially disadvantaged people might be discriminated against when they applied

for jobs based on their appearance, which is often directly related to their socio-economic

position. She argued that "getting a good job – usually if you're not presented in a certain

way you're judged right when you walk in… so if you can't afford the look they're

looking for it's hard to get a job". Ava further discussed how classism could affect young

people going to school:

> If you're young and you don't have the newest electronic – like cellphones or
>
> handheld game devices, or the newest clothes or name brand clothes, a lot of
>
> students in the class actually judge you and they're like 'that kid's poor, they
>
> can't afford anything'.

I found it interesting that these students were able to identify classism, considering none of the critical curricular activities focused on it directly. This is another finding that emerged from the data which suggests that the students' critical consciousness growth was not only a function of critical pedagogy enacted in the classroom.

Since many of the student comments demonstrated critical reflection and support for egalitarianism, the first two component's of Freire's (2000) critical consciousness, it is probably unsurprising that many of these students acknowledged they had already engaged in critical actions, the third and final component of critical consciousness. However, the critical curricular activities that the English Language Arts teacher and I enacted in our classrooms focused primarily on tying to develop critical awareness and reflection on societal power imbalances, so I was surprised to learn that five of the seven student participants interviewed had already taken critical actions against societal injustices while the other two expressed support for taking critical actions in the future. In "Freirean praxis, people who suffer abuses take up the cause of liberation with increased courage and dynamism" (McLaren, 2000, p. 8) so the fact that the students started to take critical actions against oppressive forces affirms the central goal of critical pedagogy. Ava said she managed to get a Winnipeg-based Facebook group that posted hateful comments about Indigenous people removed. She said she also raised societal awareness of the hate group by contacting local television and newspapers, all of whom eventually ran the story. Beth said she had signed petitions, written Facebook posts to raise awareness of injustices, and that she had spoken to her mother, who works for the Assembly of Manitoba Chiefs, to source someone who will "come here to teach girls about their rights with CFS and stuff". Cora said she had not participated in any

sociopolitical activities, but that she was interested in joining protest and awareness walks for MMIW. She also indicated that she might use Facebook to express her concerns on social or political issues in the future. Dawn said she shared Facebook posts and signed petitions about social justice issues, and gave feedback to the Canadian government regarding the MMIW inquiry. Ella said she had not previously participated in any activism, but that she was going to start participating in the MMIW walks because her aunt is one of the missing. Ella also expressed her desire to become an Indigenous motivational speaker for kids on reserves. Faith said she has become active on Facebook in support of positive parenting and MMIW. Gwen said she became active on Facebook in support of gay rights and MMIW. The fact that students engaged in these kinds of socio-political activities, all of which related back to course topics in which we implemented critical curricular activities, agrees with Freire's (2000) hypothesis that critical awareness/reflection naturally leads to critical action. He called this the "praxis: reflection and action upon the world in order to transform it" (p. 51).

Paradoxically, even though all the student participants demonstrated critical awareness of societal power imbalances, some of them still revealed support for the myth of meritocracy, which is the disproven (McNamee & Miller, 2004) belief that anyone can reach the same level of achievement if they just work hard enough. The fact that a person on Employment and Income Assistance is paid as little as $677 per month to live on was first shared with students in a critical mathematics activity. Having reminded students of this fact during their interviews, Beth – one of few students not on social assistance – argued "it's a really tight budget but if you worked for it, worked and tried you probably wouldn't need to be on assistance". Dawn, when asked what it would mean for all people

to be treated equally, responded: "I don't think we can be. It all goes back to what you worked for and what you gave out of your life and your time is what you get." Ella suggested that "one of us girls in this school could become mayor" and that it was each individual's "fault for not getting a good job" if they were poorly paid. Gwen argued that the amount of people that are paid to work is entirely dependent on "supply and demand". DiAngelo (2010), who experienced similar frustration in dispelling successful White people's stubborn belief in the myth of meritocracy, explains that this societal focus on individuality is deeply entrenched by the dominant, White culture and "posits that there are no intrinsic barriers to individual success, and that failure is not a consequence of systematic structure but of individual character" (p. 4). Ava was the only student interviewed whose comments clearly demonstrated that she recognized people in society compete on an uneven playing field when it comes to career success. However, in my observations, Ava demonstrated a more developed critical consciousness in this area of study than the other student participants did, so perhaps the others will eventually reach similar conclusions.

Findings: Artifacts from Student Coursework

Though I analyzed over a hundred completed course assignments, there were only seven individual student assignments, in total, in which I could find evidence of critical consciousness growth to use as artifacts, but at least one of them proved to be highly beneficial to this study. Two of the student artifacts aligned with the interview theme of student empowerment, one indicated a desire to take critical actions in the future, one aligned with the theme of reflection on economic inequality and privilege, and the remaining three artifacts all demonstrated critical reflection on Indigenous issues.

Cora expressed empowerment in an assignment that required her to write a promise to her child. In it, she simply wrote, "as your parent I promise to give you a better life than I had". Her comment demonstrated that she was aware that her life was not as good as it should have been, and that she now had the confidence to assert that her child's would be better. In my opinion, Cora's statement of empowerment was significant and reflective of her transformative growth as a person and student; she entered the school as a very quiet and shy student with sporadic attendance (I thought she might stop attending altogether at one point), but she gained confidence in her academic abilities, became more assertive in her social skills, and graduated from the school a different person.

In one of her English Language Arts class assignments, Ava also expressed empowerment:

> I am becoming freer to continue my freedom. I would like to get my own place. I no longer feel sheltered or hidden. I want to take that next step into motherhood and that step for myself in school to College or University. I want to stand up for what I believe in and to do that I want to bring awareness to some serious problems in society that others just ignore.

Ava's comments are significant because they reveal both her personal transformation (she feels confident to move forward in a positive direction towards motherhood and post-secondary schooling), plus her desire to facilitate positive change in society. In another of her English Language Arts assignments, which was focused on identity, Ava revealed her future intent to become involved in environmental and animal rights activism, which is a more specific descriptor of the facets of society in which she'd like

to make positive change. Ava's intentions towards further personal and community transformation exemplifies the desired outcome of critical pedagogy: a critically conscious student who is willing and able to act against oppression and in doing so, positively transform themselves and society. Ava's physical actions towards her stated goals which may also benefit greater society, combined with the critical reflection on society's oppressive forces that she has already demonstrated, can be described as praxis (Freire, 2000), which is an informed and committed action. Carr and Kemmis (2004) describe this praxis as *"not simply action based on reflection. It is action which embodies certain qualities. These include a commitment to human well being and the search for truth, and respect for others. It is the action of people who are free, who are able to act for themselves"* (p. 190). Ava's praxis will provide evidence that her ongoing transformation, as evidenced by her interview comments and completed coursework, was influenced by our critical pedagogy.

In her critical mathematics course work, after researching economic systems and income inequality, Ava provided more evidence that she had achieved some level of critical consciousness on this issue of economic inequality and privilege:

People who have less money have a restriction on freedom, have less to function…in our capitalist society the winners seem to be the wealthy, the ones born privileged. I don't think it's fair because living in a world where you aren't born privileged is harder because the ones born privileged get to make the decisions for the way life goes on, but they don't see it through the majority of the population's eyes…in the past Indigenous people would do things as a collective: sharing, and there isn't sharing in capitalism. I think there may be less poverty if

the Indigenous people designed our economic system… this does not seem like a

fair system to me because in the world everyone must work to have life

necessities and wants while those who are born into money sit there and take life

for granted because they are already born with what they need to have it

all…under our current financial system the ones who seem to be the losers are the

people who work hard to live the lives that they have and in a sad twist the

winners are the ones who are born with anything and everything they could ever

want without having to work for any of it.

Ava's comments provide evidence that the critical mathematics activities that required

students to research economic systems and to consider Indigenous perspectives helped

her develop heightened critical awareness and reflection in this area of study. Ava's

insights suggest that she was fully engaged in these critical math learning activities,

which agrees with Lesser and Blake's (2007) assertion that using mathematics to explore

important real life issues can increase student engagement with mathematics itself.

The remaining three student coursework artifacts showed deep learning

engagement with critical literacy activities focused on Indigenous issues, an approach

recommended by Silver (2013) to effect transformative learning (Mezirow, 1997) with

Indigenous students. In an English Language Arts assignment, Dawn wrote an insightful

comparison between the Indian Residential School experience and the modern practice of

child apprehension by Child and Family Services:

I read a lot about the schools, now that I have my full attention to it. It reminds me

of what I'm going through right now, with my child being taken away from me

and put in a home. It's taking him away from his family. Even though Aboriginal

people are put in charge of doing that now, it does not make it better than the

priests and nuns… it doesn't make me feel any better that Aboriginal people are

taking my son away, doesn't matter what race you are.

The fact that Dawn was able to connect personal injustice to contemporary societal

injustice to historical injustice suggests that the critical literacy activities focused on

colonization were successful in raising her critical reflection on related issues, a

decolonizing Indigenous education approach advocated by Kanu (2006), Silver (2013)

and others. In another critical literacy assignment related to colonization, Gwen

compared the Indian Residential Schools system against the United Nations definition of

genocide (which was the purpose of the assignment) and concluded "what the

government did was pure genocide", which demonstrated critical reflection growth on

this issue.

The last student artifact proved to be of paramount importance to the value of this

study. In one of her completed critical literacy assignments, in which students analyzed

whether different types of people were fairly represented in mass media, Beth

commented on how statistics about Indigenous people seemed skewed in a negative way

and that the media portrayed Indigenous people in negative ways. At the completion of

her English Language Arts course, Beth completed a self-directed project in which she

chose to produce a video that would more accurately profile some of the women included

in the list of Missing and Murdered Indigenous Women. In the video, she showed how

each of these women have value, even though mass media dismissed them. The video

showed how these women had real lives, families and friends. More importantly the

video showed that these women were loved, so they should not be conveniently forgotten

by the RCMP and mass media. Beth's video was so impactful that the school principal

had it shown at an Aboriginal education focused conference, and the response from

attendees, which included members of a government education agency, was so positive

that there have been requests for Beth to upload the video to YouTube so others can see

it. Beth was also asked to submit the video to an Aboriginal film festival. Beth's story

could serve as an exemplar for the idealized result of a critical pedagogy: Beth developed

critical awareness of and reflection on unjust media portrayals of Indigenous people, after

which she chose to take critical action by producing a video to combat that injustice. In

doing so, she is achieving critical consciousness related to a societal injustice and is in the

process of transforming herself and the community. Beth's story also provides evidence

that enacting critical pedagogy in the classroom can contribute to transformative learning

for some students.

Findings: Researcher's Journal

In my researcher journal, I recorded notes from weekly conversations I had with

the English Language Arts teacher on the successes and challenges of enacting critical

pedagogy in the classroom. I also recorded my own observational and reflective notes on

events that occurred during my mathematics classes. The following table presents the

themes that occurred within the data, along with the number of times those themes

emerged.

Table 4

Researcher's Journal: Themes by Category and Frequency

Thematic Categories	Frequency	% of Total
Classroom conversation focused on economic inequality and privilege	15	34.9% (table continues)

Teacher observed student illuminating moment = increased critical reflection	10	23.3%
Classroom conversation focused on issues negatively affecting Indigenous peoples	5	11.6%
Classroom conversation focused on sociopolitical activism	4	9.3%
Teacher noted difficulty in eliciting critical conversations	3	7.0%
English Language Arts teacher noted difficulty in getting students to validate online sources	2	4.7%
Teacher observed student(s) lack of engagement with big issues / narcissism	2	4.7%
Teacher observed student(s) overwhelmed by course material	1	2.3%
Teacher noted difficulty in creating critical pedagogical activities that didn't stray too far from curricula	1	2.3%
Total Number of Thematic Categories	**43**	**100%**

One finding from the journal data was that whole-class discussions initiated by students seemed to help them build critical awareness and reflection on social justice issues. The occurrence and nature of these classroom conversations were especially significant because whole-class conversations occur infrequently due to our school's individualized work-at-your-own-pace programming, so most classes run quietly with little interaction between students. The English Language Arts teacher and I both felt that the occurrence of these conversations demonstrated increased student engagement in those topics, which agrees with Willard's (2015) finding that collaborative reasoning positively impacts students' conceptual understandings. Support for educational benefits of student-initiated conversations also agrees with Freire's (2000) recommended methodology for teaching, and the essence of his described critical pedagogy: once learning themes have been generated from conversations with the students (dialogic generative themes), teachers should then engage in "*educational projects*…carried out

with the oppressed" (p. 54) to achieve a "constant unveiling of reality" (p. 81). In doing

so, teachers facilitate "education as the practice of freedom" (Freire, 2000, p. 81).

Throughout the 3-month study, the English Language Arts teacher and I observed and

participated in a number of classroom discussions that we felt contributed in a

meaningful way to students' development of critical awareness and reflection on a variety

of issues.

The most frequent conversations I observed were those that focused on economic

inequality and privilege. These conversations analyzed career and business start-up

options for those born into wealth versus those born into poverty, economic exploitation

of the poor (included discussions on lotteries and predatory lending practices),

intergenerational wealth transfer, and economic systems. During one of these economic

themed classroom discussions, both Ava and Dawn concluded that capitalism is a good

economic system, but if, and only if, you have money. Their conclusion demonstrated

their ability to reflect critically on economic systems, which was evidence of their critical

consciousness growth. During another mathematics class discussion, Dawn expressed her

opinion that it wasn't fair how economically privileged kids don't have to struggle as

hard to get into post-secondary programs. Dawn's comments demonstrated both her

critical reflection on privilege, but also her support for egalitarianism; both are indicators

of critical consciousness growth. During a different whole-class mathematics discussion,

a few students related a scene from a movie they had watched in which a billionaire

business owner brags about his "self-made" success having started out with "only" a

multimillion dollar loan from his father. They related that comedic scene to people like

Donald Trump, who was born a multimillionaire, and acknowledged that many

successful business owners had help from their already-wealthy families. During another

whole-class discussion, one student remarked, "born rich, die rich". In my personal

reflections on some of these conversations, I noted that a lot of conversations moved

quickly into students relating issues to pop culture (celebrity stories, movies they'd

watched, etc.), which reminded me of Tisdell's (2007) and Pirbhai-Illich's (2010)

comments on the need for critical media literacy education for youth. These students'

critical reflection on economic privilege indicated they had developed some critical

consciousness growth related to economic issues.

On one occasion, a whole-class discussion started by a student's poster on gender

pay gaps turned into an entire learning activity on income inequality. As a group we

searched online and read reputable information on income inequality in Canada, which

included interpreting several graphs and statistics, and engaged in meaningful discussions

to deepen understandings about probable causes and effects of the "global escalation of

gaps between rich and poor" (Comber, 2015, p. 362). Some of the students related

discussion items back to a climate change documentary they had viewed, which enabled

me to introduce the concept of neoliberalism and how many academics believe "that

market-driven, globalized economic systems…have exacerbated poverty and its attendant

suffering" (Kincheloe, 2008, p. 12). Although some of the classroom discussion escalated

to university-level discourse, I observed that most of the students remained engaged and

committed to making connections between what they already knew and to deepening

their understandings of major world problems. This classroom conversation, which began

via a Freire (2000)-advocated dialogic generative theme, evolved into a critical

mathematics learning project carried out with students that provided evidence to support

Lesser and Blake's (2007) assertion that analytical math skills are integral to critical pedagogical analysis, and also that using mathematics to deal with important issues could increase student engagement with the mathematics. Had I just presented the statistics and graphs as part of prescribed mathematics assignments, which Freire (2000) refers to the banking concept of education, I am skeptical that as many of the students would have been as engaged to analyze and interpret the numbers. Instead, this whole-class critical mathematics learning activity that ended up requiring data analysis exemplified "the power of numeracy to clarify and deepen understanding of sociopolitical and economic issues" (Frankenstein, 2015, p. 293). Another result of this classroom learning (which took place at the beginning of the school day) was that at the end of that school day, and apparently after she had continued conversations with other students throughout the day, Faith told me that she intended to become a politician in the future so that she could make a bigger difference in society. Faith's intention towards future critical action is another example from the data that supports the claims of the critical pedagogues that argue critical reflection and egalitarianism naturally lead to critical action.

The English Language Arts teacher and I observed and noted a number of incidents in which students had illuminating moments, or moments in which they expressed heightened critical awareness and reflection on an issue. Shibli (2011) argues that statistical analysis is useful to help students uncover oppression and in one English Language Arts class, Beth recognized bias in the use of statistics and facts which led her to remark that she never considered that statistics could be inaccurate. This "aha" moment led Beth to critique media portrayal of Indigenous people, and especially the Missing and Murdered Indigenous Women issue, which in turn convinced her to take the

critical actions discussed earlier (starting with the video she produced). A discussion in

mathematics class with Ava about White privilege caused her to reflect on her own

experience, after which she surmised that her brother doesn't get followed as much by

employees and security when shopping as she does, because he "looks White" and she

doesn't – a revelation that shows critical reflection on racial profiling and White

privilege. During a few English Language Arts classes, students working on a bucket list

assignment made comments which indicated they felt better prepared to ensure positive

futures for their children as a result of better understanding how the world works, and one

day a former student stopped by to let the teacher know that she had made positive

lifestyle changes as a result of creating her own bucket list. Each of these learning

moments observed demonstrated that the critical curricular activities we implemented in

our classrooms positively contributed to student's development of critical consciousness.

We also noted that a number of the classroom conversations focused on the

Indigenous issues we knew impacted students' own lives. Increased student engagement

with these issues supports Kincheloe's (2008) claim that teachers should become

researchers of their own students in order to frame problems that are relevant to their

lives. Our deliberate integration of Indigenous history, perspectives and world-views also

agrees with the Indigenous education literature, while the decision to use decolonizing

critical pedagogical approaches to Indigenous content agrees with the transformative

adult Indigenous education methodology advocated by Silver (2013). These

conversations included discussions of misogynistic Facebook posts attacking an

Indigenous female activist who protested discriminatory behavior by a popular male

radio disc jockey, racial profiling, and the legacies of Indian Residential Schools. As

evidence that these conversations supported critical consciousness growth, Dawn

remarked during one class that, outside of our school, she didn't know any Indigenous

people who learned about the history of injustices perpetrated against them, and that they

needed to in order to understand how certain aspects of their lives became "normal".

There were a number of Indigenous issue conversations that also concerned

sociopolitical activism. These conversations took place when mainstream media would

cover the legal battle that Cindy Blackstock launched against the federal government of

Canada, a battle that she eventually won, proving that the federal government knowingly

and actively discriminates against children on First Nations by funding education and

social services to these children below that allotted for non-First Nations children. As

several of our students had previously lived on First Nations reservations, or had relatives

living there, these news stories provided an opportunity to connect unjust present-day

colonial policies to those of the past. It is possible that drawing these connections

influenced Dawn's critically reflective conclusion that children apprehended through

Child and Family Services today is similar to children being taken away to attend Indian

Residential Schools.

Though our professional teacher-to-teacher conversations revealed we felt that

our critical curricular activities were having a positive influence on students'

transformative education, we also discovered some difficulties and frustrations in trying

to enact critical pedagogy in the classroom. For one, we both noted that it was often

difficult to elicit critical conversations, and we were unable to foster collaborative

learning on a regular basis. On a couple of occasions, the English Language Arts teacher

shared her frustration in getting students to validate online sources before using them.

She expressed concern that many of her students continued to accept information taken

from online sources as factual, even after being taught how to fact-check, which David

(2009) acknowledged as a common difficulty for all teachers as online student research

increases in classrooms. She also observed students who would not engage with the big

issues we wanted them to research, and she concluded that too many students were so

focused on their own concerns that they could not, or would not, consider the life

experiences of others, which made helping them develop world-views very challenging.

Similarly, I noted that several of my mathematics students really struggled with my

critical finance unit, as they seemed to have no world-view on money-related and/or

economic issues; they only seemed to be able to focus on their own experience with

money. Though Watters (2013) suggests there is an epidemic of student narcissism,

which she blames on shifts in societal values towards individuality along with student-

centered pedagogy, it was unclear whether these students were similarly self-focused in

other aspects of their lives. Regardless of the cause, these students were difficult to

engage in larger issues. I also noted how I struggled to enact critical mathematics

activities while helping students meet specific learning curricular outcomes. This was a

challenge I expected to encounter as it was noted earlier by Brantlinger (2013), but I was

also frustrated that I found it very difficult to achieve both goals simultaneously, since

critical mathematics practitioners like Gutstein (2003) insisted social justice goals and

mathematics instructional goals were not incompatible. In retrospect, I think I was

challenged more by the difficulty in reconciling a continuous progress, work-at-your-own

pace classroom with social justice teaching that could have been, in my opinion, much

more effective using more traditional, whole-class instruction.

Synthesis of Findings: Looking Across Data Sets

I am confident that the findings from the three data sets collected have provided valuable insights into my research questions. The first question was:

1. Do these critical math and literacy activities contribute to adult Indigenous female students' critical reflection and if so, in what ways?

There is ample evidence in the data to suggest that the activities provided opportunities for student critical reflection in ways that traditional lessons may not have. During the interviews, many of the student comments demonstrated critical awareness and reflection on a number of different oppressive forces in society. These included critical reflections on economic inequality, racism, other issues negatively affecting Indigenous peoples, the impacts of social constructionism, sexism, negative stereotypes, White privilege, and classism. Though some students already had some level of critical awareness before completing the classroom activities, some student comments directly credited particular critical classroom activities with helping them develop their critical reflections. Students also made several statements of personal empowerment, which is a desired outcome of transformative learning and indicative of critical consciousness growth.

Student artifacts revealing critical reflection growth included reflections on their lives and Indigenous issues. These reflections were imbedded in class assignments. As noted earlier, one student produced a video that demonstrated thoughtful and comprehensive critical reflection on the Murdered and Missing Indigenous Women issue, which was a topic she researched in her English Language Arts class, and one in which she admitted she previously knew little about.

Observations and reflections in my researcher's journal also documented student growth in critical reflection.

2. Do these critical math and literacy activities lead adult female Indigenous students to take critical actions against oppressive forces and if so, in what ways?

As a result of heightened critical awareness and reflection on societal injustices explored during the critical curricular activities, five of the seven student participants interviewed said they had taken critical actions to combat these oppressive forces, and three of the five indicated they had only started taking critical actions after becoming a student at this school. The 5 critically active students raised awareness through social media, contacted people in positions of political influence, signed petitions, and contacted media outlets to address injustice. One also created a video addressing injustice that has been viewed publicly by people in government. No observations of student critical actions taken were noted in my researcher's journal.

3. Do adult female Indigenous students find these critical math and literacy activities valuable and if so, in what ways?

During the interviews, many of the student comments focused on issues relevant to adult Indigenous females, especially the Missing and Murdered Indigenous Women issue and the legacy of Indian Residential Schools, which suggests that they found these critical activities valuable. A few of the student artifacts also focused on these issues.

In my researcher's journal, I also noted a number of critical classroom activities and discussions initiated by and focused on topics relevant to these students. During one of these classroom conversations, Dawn insisted that all Indigenous people should learn what she learned about Indigenous issues in our classes.

4.   What have I learned about enacting critical pedagogy in the classroom?

The interviews revealed that the students experienced increased engagement with the issues addressed via critical pedagogy. As a result, I have learned that, specific to my teaching context with adult female Indigenous students who are mothers of young children in an urban alternative high school, enacting critical pedagogy in the classroom is a useful approach that contributes to students' critical consciousness development. I was surprised to learn that some of the barriers to enacting critical pedagogy in the classroom, as discussed in the literature review, never materialized. I did not observe student resistance to critical activities triggered by defensive emotional responses to the content (Petrone & Bullard, 2012), nor did the English Language Arts teacher as she had students investigate "issues of identity and power" (Pirbhai-Illich, 2010, p. 262). I also didn't feel like the racial difference between my students and I made the critical activities risky, as cautioned by Belzer (2004). However, I noted a few minor challenges, including difficulties in eliciting critical whole-class conversations, engaging self-focused students in critical activities, and designing learning activities that didn't overwhelm students. I also found it a challenge to design critical learning activities that also met existing specific learning outcomes for courses and that didn't force student learning to deviate too far from mandated curricula, which was a common challenge mentioned by Johnson (2011). I found it especially difficult to enact critical mathematics without being able to facilitate whole-class instruction, due to the school's continuous progress learning model.

As I reflect on my own role as a learning partner with the students engaged in critical pedagogical practices, it would be remiss of me not to consider my own critical consciousness and transformative learning development. In retrospect, I'm not sure I

would have been capable of designing then enacting any critical pedagogical activities in this study had I not already been somewhat critically reflective on oppressive forces that impact low-income adult Indigenous females. Admittedly, I had already experienced a few significant disorienting dilemmas (Mezirow, 1997) over about a decade that, combined with further learning to deepen my new understandings, led me to want to learn to become an effective teacher of traditionally marginalized students.

When I first started teaching predominantly low-income adult female students, I started to gain critical awareness of many injustices females could face in a male-dominant society, especially the punishing financial realities single low-income mothers face. I gained further awareness of facets of systemic patriarchal oppression as my wife experienced workplace discrimination after disclosing her pregnancy, and again when she returned from maternity leave. I believe I achieved some level of critical consciousness on gender inequality in working with my adult female students at that time, and in counseling my wife, by helping them recognize then strategize to overcome barriers they faced as females in a patriarchal society. Now that I have two daughters attending school, I am becoming increasingly aware of how society's patriarchal characteristics begin to influence the lives of children.

As I taught a number of Indigenous adult female students, I also started to gain awareness of the racism Indigenous people experience as some of my students shared their stories. I learned more about this racism from an Indigenous professional colleague who relayed their own painful experiences. However, I don't think I really moved forward from critical reflection on this systemic injustice to a desire to personally take critical action, until a few years later when I happened to teach in a different program that

had some male Indigenous students. On one occasion, I encountered a favorite student of mine, who was considerably older than I was at the time, outside class time and noticed he was visibly upset. He confided how angry and upset he was that the Canadian government required residential school survivors who suffered physical and/or sexual abuse to describe their abuses to government officials who would then decide whether the survivor would receive extra monetary compensation beyond the standard amount allotted to all survivors. I remember how helpless I felt as I watched a kind and intelligent man with a great sense of humour, and whom I admired for returning to school to graduate, as he wept and shook uncontrollably while he repeated that there was no way he was going to tell a stranger how he had been sexually abused as a boy in his residential school. He looked like a terrified child in a man's body, and I couldn't find any words to say to comfort him. At the time, like most settler Canadians, I knew nothing about the Indian Residential Schools or what took place in them; I felt like a teacher who had no education. Viscerally disoriented, I started learning everything I could about the residential school system (this preceded the Truth and Reconciliation Commission), and then all things related to Canadian colonialism, and the history, perspectives, and cultural practices of Indigenous people. My incident with that student demarcated the beginning of my transformation from colonial-settler ignorance to the point I'm at now, in which I am taking critical actions by trying to teach Indigenous students in ways that will help them overcome significant barriers to achieving future success in Canadian society. As a result of working with and interviewing the students in this study, I have furthered my learning on Indigenous issues, and students continue to teach me about their lived experiences and cultural perspectives.

My desire to enact critical pedagogy as a critical action to help mostly low-income, adult Indigenous female students develop critical consciousness also speaks to my transformation as a teacher. Over two decades I have transformed from a teacher who prided himself on effectively and efficiently delivering curriculum via Freire's (2000) "banking model of education", to one who tries to engage in "*educational projects*" (p. 54) with students as we strive for a "constant unveiling of reality" (p. 81). In other words: I used to do things right, but now I try to do the right things. This research study has convinced me that my transformative learning as an educator has been worthwhile, and though I feel I am still a beginner at enacting critical pedagogy in the classroom, I am eager to further my development as a critical educator.

Chapter Five: Conclusions and Recommendations

Summary of Study

The purpose of this action research study was to contribute to the transformative learning of adult, female Indigenous students enrolled at an inner-city urban alternative high school for mothers and/or mothers-to-be, and to improve my own teaching practice. Seven adult students, all of whom happened to be mothers of young children, agreed to participate in this study, as did the English Language Arts teacher. The English Language Arts teacher facilitated the critical literacy classroom activities and I facilitated the critical mathematics classroom activities. The study investigated whether these critical mathematics and critical literacy activities contributed to developing students' critical consciousness (Freire, 2000), which is a key component of transformative learning (Mezirow, 1997), and in what ways. The study also investigated what I learned about enacting critical pedagogical activities in the mathematics and English Language Arts classrooms.

During a 3-month timeframe, from April through June of 2016, students engaged in various critical mathematics and literacy activities as part of their regular Essential Mathematics and English Language Arts coursework. Data collected included post-course student participant interviews, plus student work samples from the completed Essential Mathematics and English Language Arts courses. Thirdly, I kept notes from weekly conversations with the English Language Arts teacher, plus personal observations and reflections from teaching my Essential Mathematics classes. I wrote all this data into a researcher journal. The three qualitative data sets were then unitized, coded, and analyzed for critical incidences and emergent themes.

The findings indicated that the critical curricular activities used during this study contributed to helping students develop critical consciousness, and thereby led to a more transformative learning experience for the students. As a result, I believe these students are better prepared to overcome systemic forces of oppression as they endeavour to improve their lives and the lives of those around them. The student interviews revealed that students had developed heightened awareness and reflection on a number of oppressive forces in society, and they were especially astute at deconstructing the forces which they perceived to have greatly impacted their own lives, such as racism and sexism. Though the students acknowledged that the influences of family, friends and personal experiences contributed to their increased critical reflection on some issues, they also credited this increase to the things they learned in their English Language Arts and Essential Mathematics classes via the critical curricular activities we enacted in this study.

Student artifacts also revealed some growth in critical reflection, and one artifact, a video on Missing and Murdered Indigenous Women, demonstrated the achievement of critical consciousness on that issue. The student who produced the video was observed early on in her English Language Arts course becoming critically reflective of the way Indigenous people were negatively portrayed in the media. In response, and out of respect and empathy for the women included in the Missing and Murdered list, the student decided she would take action by producing a video that re-humanized some of the women who she felt were dehumanized by commercial media. This student's process from being disoriented by what she learned about this issue in a critical literacy activity, to becoming critically reflective, to producing the video as a critical act that also

expressed her support for egalitarianism, demonstrated her transformation into becoming critically conscious on this issue via a critical pedagogy.

Teacher observations of illuminating moments that revealed students' heightened awareness and reflection on societal imbalances also provided evidence that the critical curricular activities influenced critical consciousness development in these students. Additionally, recorded teacher notes on critical classroom conversations initiated by students resulted in educational projects with the students that led to heightened critical reflection. These events were further evidence that critical pedagogy-guided activities contributed to students' critical consciousness growth. Interview, artifact, and researcher journal findings also indicated that although the cumulative effect of critical pedagogical approaches in the classroom was positive, each student demonstrated differing degrees of critical consciousness growth and in different areas. Personal reflections on enacting critical mathematics in my classroom revealed that my novice foray into critical teaching aided my own transformative learning process as an educator. Consequently, I look forward to improving my ability to enact critical mathematics in my classes.

Conclusions

The findings of this study support the findings of previous studies that showed critical pedagogy enacted in urban alternative schools contributes to the growth of critical consciousness in students. This action research project, which took place in an urban alternative high school for adolescent and young adult mothers and/or mothers-to-be, showed how critical pedagogical activities enacted in both English Language Arts and mathematics classes positively contributed to critical consciousness growth, and thereby

transformative learning for the students in the study. As a result, mathematics and English Language Arts teaching practices in this school have also been changed.

The findings also indicated that although the cumulative effect of critical pedagogical approaches in the classroom was positive, it was not easy to pinpoint which critical activities were most effective, especially since each student demonstrated differing degrees of critical consciousness growth and in different areas. As a result, I did not gain confidence in the efficacy of any particular critical learning activity. Consequently, I learned to abandon confidence in my ability to provide efficient mathematics instruction as I committed to learning in partnership with students to try and help them develop critical consciousness. On a day-to-day basis, this often seemed like a lofty and intangible endeavour, but the end result proved the critical activities to be worthwhile.

I also noted how I found critical mathematics activities difficult to enact while simultaneously helping students achieve specific learning outcomes pre-determined by government. However, I am confident that the quality of my mathematics instruction and student learning have increased, even though I became frustrated with limited opportunities to facilitate whole-class critical mathematics activities due to the program's continuous progress model.

Reflecting on the action research process, I found that this methodology provided me with the most valuable professional development I have received in over 20 years of teaching. The opportunity to directly apply relevant research to my own unique teaching context has helped me grow as an educator, especially since this study was conducted with the aid of a colleague who already had some experience teaching for social justice,

and who was also focused on improving education for the same students. Consequently, my experience with action research has convinced me that it provides invaluable context-specific professional development for teachers as opposed to common conference-style professional development which is generally aimed at all teachers.

Implications and Recommendations for Changed Practice

One implication for my school is to incorporate more critical pedagogical activities in the school's operation, and to not limit these activities to only the mathematics and English Language Arts classes. Secondly, even though continuous progress learning made it easier to incorporate Minott's (2011) recommended critical literacy tasks into student assignments, the lack of opportunities to facilitate whole-class activities limited the design of critical pedagogical activities. One possible recommendation is to reschedule the school day for students so that there are regular, preferably daily, opportunities for teachers and students to learn together on social justice-themed educational projects generated in dialogue with the students. In doing so, staff and students would commit to Freire's (2000) idealized education as a practice of freedom. A general recommendation for all schools is to incorporate action research into regular school planning and improvement initiatives. Since schools create annual school plans that track progress on goals and objectives, incorporating cycles of action research into school planning would provide individual schools with meaningful context-specific data to guide continual school improvement.

One implication for me, as a teacher, is to develop my skills as a critical mathematics educator so that I may become more effective with students in the future. Though I found it challenging to design appropriate critical mathematics activities,

especially since I was used to focusing only on helping students meet specific learning outcomes embedded in curricula, I have more confidence now that a critical approach to teaching mathematics can be used to achieve social justice goals while simultaneously helping students meet those specific learning outcomes. In doing so, the mathematics classroom can become integral to helping students develop critical consciousness. Another implication for me is to continue to be a researcher as well as a teacher, since action research has proven invaluable to me and my teaching by providing a context-relevant research methodology that I can directly apply to my classes. Consequently, I plan to seek out professional development opportunities that will help me acquire new knowledge and skills in the field of critical classroom pedagogy and action research.

Limitations

There are a number of limitations in this action research study. I was the only one doing the qualitative analysis so the conclusions are limited to my interpretations, as is the teacher-generated data. Also, this is a short-term study on the potentially transformational learning effects of critical curricular activities in two school subjects. Transformational processes can take a long time, so some positive effects of these curricular activities may not have become apparent yet by the time the interviews were conducted.

My data measurement design included an interview protocol (Appendix 3), which proved to be an effective tool to generate meaningful data to assess each student's critical consciousness growth and the ways in which growth did, or did not, occur. However, since all designs are imperfect, there could have been protocol questions added that would have provided even more valuable data to inform this study. Another limitation of

conducting the interviews only at the end of students' course completion was that they may have forgotten key elements of their learnings during their courses.

To overcome limitations of using only an interview to gather data, I also gathered student-created artifacts and completed a researcher journal that contained both my own reflections and observations, plus those discussed with the English Language Arts teacher. However, these supplementary data-gathering methods were also susceptible to errors and omissions in my interpretation of the data. Also, although the English Language Arts teacher made vital contributions to this study, she was unavailable during the data analysis stage, so I am the only one who completed the qualitative analysis of the collected data. Therefore, the conclusions are also limited to my interpretations.

Recommendations for Future Research

The completion of the action research cycle in this study – the desire to help disenfranchised students overcome systemic injustices through teaching changes in mathematics and English Language Arts, the research into anti-oppressive teaching practices, and the design and enactment of critical classroom activities - has convinced me that critical pedagogical approaches enacted in my school's mathematics and English Language Arts classrooms positively contribute to the transformative education of students. In the next action research cycle, I would like to extend critical activities into all subject areas to see if doing so would contribute even more to student transformation. To measure a whole-school commitment to critical pedagogical approaches, I would also like to add quantitative data collection to the study, such as attendance and standardized test scores, to try and determine whether the quantitative measures schools are often judged by are also positively affected. My hope is that the results of a larger, whole-

school improvement study could provide a more generalizable model for other alternative schools looking to positively influence the transformative learning processes of their students.

I would also like to see future research focused on critical consciousness-raising training for teachers, so that more of the teaching workforce will become critically aware of privilege and oppression, and thereby become better equipped to educate oppressed students. Had I not experienced disorienting dilemmas (Mezirow, 1997) then deepened my new understandings as part of my own transformative learning, I doubt I would have ever found myself in the position of teacher-researcher enacting critical pedagogy in an alternative inner city classroom with adult female Indigenous students. Without a significant number of similar transformations taking place in the Canadian teacher workforce, I am skeptical that the Truth and Reconciliation Commission recommendations for improved education will lead to the settler Canadian critical consciousness needed to teach Indigenous students effectively.

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Appendix 1 – Critical Literacy Unit (student handout created by the English

Language Arts teacher)

English Language Arts: Growing up Female

We are influenced not only by our parents but also by the world around us. Movies, songs, advertising and social media bombard us every day with ideas and images. We are often not aware of the impact of these ideas. It is easy to accept what we see very day as "normal" and the "way things are" …but are they? As women, as parents, it is up to us to question the attitudes that shape our ideas. It is up to us to question the attitudes we want our children to experience. What lessons do we want them to learn about what it means to be a girl…or a boy…in today's world?

Understanding Patriarchy

Patriarchy is a social system in which males hold primary power, predominate in roles of political leadership, moral authority, social privilege, and control of property; in the domain of the family, fathers or father figures hold authority over women and children. Many patriarchal societies are also patrilineal, meaning that property and title are inherited by the male lineage. Patriarchy does not mean that all men are powerful and all women are powerless. It DOES mean that men hold the most powerful roles in a society; personality traits and social activities closely tied to men are more valued. Women are systematically underrepresented (or even unrepresented) in the economic, justice, political and military aspects of their society. Some definitions of patriarchy state: **patriarchy is a system of male domination in which men dominate women through the control of female sexuality with the intent of passing property to male heirs** (think about that for a moment…).

The control of female sexuality through the institutions of patriarchal marriage is not incidental to patriarchy, but rather is central. The customs that surround patriarchal marriage including the requirement that brides are untouched sexually or "virgin," the "protection" of a girl's virginity by her father and brothers, the seclusion of girls and women, the requirement that wives must be sexually faithful to their husbands, and the enforcement of these customs through shaming, violence, and the threat of violence. All have one purpose: to ensure that a "man's" children are his. While we assume a child's biological mother is the one caring for the child, it is not so easy to be certain about the biological father. If a woman has more than one lover, then without DNA testing, only recently discovered, it is nearly impossible to be absolutely certain who a child's father is. One solution to this dilemma is to define fatherhood in other ways. The second is to control women's sexuality absolutely.

If you contrast this with a matriarchal society, the difference is pretty stark. The Masuo culture of the Himalayas which has been recently studied is a classic example. In Masuo culture, women and men define themselves through their connections to maternal clans. When a girl reaches the age of sexual maturity, her mother prepares a room where she can invite a man to dine with her. If **she** chooses, she invites him to spend the night with her. Children produced from such unions become part of the maternal clan. The "fathering" role is assumed by the uncles and brothers of the mother and the mothering role is shared among sisters. If **either** member of a couple tires of their sexual relationship, they end it and find other partners.

This story illustrates an important difference between the matrilineal and matrilocal customs of the Masuo and those of the patriarchal cultures with which we are

familiar. Among the Masuo, women choose their sexual partners freely and are free to end one sexual relationship and find another. There are no illegitimate children because all children have mothers. There are no "loose" women (think about the meaning of that term) or "whores' because women are free to have sex with whomever they choose. There is no shaming and no "ownership" of the other person.

Questions:

- In your own words, define patriarchy.

- Is our society a patriarchy? Explain how you know this.

Go to the following website www.unwomen.org

    a. Look for the tab "what we do"

    b. Under each tab there is a heading, with each heading, there is a link to facts and figures

    c. Based on the information presented, what can you say about the world-wide status of women? Would you say that we live in a patriarchal world? Explain.

Quotes:

"We've begun to raise daughters more like sons... but few have the courage to raise our sons more like our daughters." ― Gloria Steinem

"Girls can wear jeans and cut their hair short and wear shirts and boots because it's okay to be a boy; for girls it's like promotion. But for a boy to look like a girl is degrading, according to you, because secretly you believe that being a girl is degrading." ― Ian McEwan

"When you grow up as a girl, it is like there are faint chalk lines traced approximately three inches around your entire body at all times, drawn by society and often religion and family and particularly other women, who somehow feel invested in how you behave, as if your actions reflect directly on all womanhood." ― M.E. Thomas

"Girls can be athletic. Guys can have feelings. Girls can be smart. Guys can be creative. And vice versa. Gender is specific only to your reproductive organs (and sometimes not even to those), not your interest, likes, dislikes, goals, and ambitions." ― Connor Franta

"A part of a healthy conscience is being able to confront consciencelessness. When you teach your daughter, explicitly or by passive rejection, that she must ignore her outrage, that she must be kind and accepting to the point of not defending herself or other people, that she must not rock the boat for any reason, you are NOT strengthening her prosocial sense, you are damaging it--and the first person she will stop protecting is herself." ― Martha Stout

- What is the main idea behind all of these quotes?

- Which quote resonates with you the most? Explain why it matters.

To Educate a Girl

Go to the following link and watch the video: www.viewchange.org/videos/to-educate-a-girl

To Educate a Girl Questions

1. In Nepal, how does the caste system affect educational opportunities for girls?

2. What do the Young Champions do? What strategies do they use to get girls to go to school?

3. Describe the school that Manisha's sisters attend.

4. Why is Manisha not attending school? What affect does this have on her now? What affect do you think it will have on her future?

5. What are Mercy's fears about attending school?

6. What are Mercy's family's hopes for education?

7. What is "Chatting With my Best Friend?"

8. How is Swarnima's experience of education different from the experiences of the girls who listen to her show? Why do you think that is?

9. The children in the "Go Back to School" march have some very specific messages for their community. What are those messages?

10. "Chatting with My Best Friend" is only a radio show. How has it made a difference in the lives of its listeners'?

11. What does the Girls' Education Movement do? It slogan is "Girls on the lead. Men as allies. Adults providers of wisdom." What does this slogan mean?

12. Sujani stated "To educate a girl, you have to have the support of the family." What does this mean? Is this true in Canada as well? Explain.

13. Sujani has become a role model to her sisters and her own mother. How are beliefs about education passed from generation to generation?

14. Mercy's grandmother and mother both had children without being married. How has this affected their ability to be educated? How is this different from your experience?

15. What role can boys and men play in helping girls achieve equal access to education?

16. What sticks out in your mind about Nepal and Uganda?

17. What are some ways that education improves the lives of girls and women throughout the world? How is this relevant to you?

18. What evidence of patriarchy in action did you see in this documentary?

19. How do you think higher levels of education will impact you and your children?

Culture, Race & Ethnicity definitions

These concepts are complex and are often confused or thought to mean the same thing – but they do not. Many different definitions of these terms exist, and the following are examples:

Culture. Culture is not about superficial group differences or just a way to label a group of people. The observable aspects of culture such as food, clothing, celebrations, religion and language are only part of a person's cultural heritage. These things make up how you live and what makes you accepted in society.

- It is an abstract concept.

- It is diverse, dynamic and ever-changing.

- It is the **shared system of learned and shared values, beliefs and rules of conduct** that make people behave in a certain way.

- It is the standard for perceiving, believing, evaluating and acting.

- Every family or group of people has its own culture.

Race. The term 'race' is not appropriate when applied to national, religious, geographic, linguistic or ethnic groups. Race does not relate to mental characteristics such as intelligence, personality or character.

- Race is a term applied to people purely because of the way they look.

- It is considered by many to be a social construct. (we made it up)

- It is difficult to say a person belongs to a specific race because there are so many variations such as skin colour.

- All human groups belong to the same species (Homosapiens).

Go to the following website: http://www.pbs.org/race/002

This will take you to a "Sorting People Activity". Complete the activity and answer the following questions.

1) How many did you group "correctly"?

2) What did you learn from doing this activity?

3) Explain why it does not make sense to classify people according to "race".

Ethnicity. Ethnicity is a sense of peoplehood, when people feel close because of sharing a similarity. It is when you share the same things, for example:

- physical characteristics such as skin colour or bloodline,

- linguistic characteristics such as language or dialect,

- behavioural or cultural characteristics such as religion or customs or

- environmental characteristics such as living in the same area or sharing the same place of origin.

Culture, Race & Ethnicity questions

1. How does culture define who a person is?

2. What is your culture?

3. What parts of your culture are connected to your ethnicity?

4. What is a common belief about race and how is it untrue?

5. Identify some stereotypes you know of about a particular group of people. (List 3)

6. List some of your values, beliefs and customs (3 of each).

7. What are some of the things from your culture that you are proud of? (List 3)

8. What are some of the things about your culture that you don't like? (List 3)

9. How would you describe Canadian culture?

10. How is your culture the same or different than Canadian culture?

11. Explain the difference between race, ethnicity and culture.

12. Had you ever thought about this before? What does it mean when we say that "race is a social construct"?

13. What does it mean when you consider that race doesn't really exist?

Culture in Canada Pre-Contact

Every culture is different, but they have things in common. These are the "nine universals of culture". No matter which culture you are talking about, there will be evidence of these NINE things:

- Material culture (food, clothing, homes, tools, weapons)

- Artistic culture (decorations, colour, beauty)

- Social culture (do they live in large family groups, small families, matriarchal or patriarchal)

- Language culture (language spoken, slang)

- Social Control (laws, rules and discipline)

- Conflict and War (how they fight, who they fight with)

- Education (how are children taught?)

- World View (how do they see the world and their place in it? Respect for nature or control)

- Economy (how do they make money? Trade goods, farm or build?

1) What was life like for the Indigenous peoples prior to European contact?

2) Are there things that have stayed from Indigenous cultures, even in today's world?

3) Why does culture change?

4) What is the difference between culture and ethnicity?

Now that you understand all that makes a culture unique, you will look at two videos. Borrow the DVD from the teacher called "Finding Focus" and watch the short films Memere Metisse and 504938C.

Memere Metisse

Before viewing answer the following questions:

- Do our personalities stay the same throughout our lives? Explain.

- How might a person develop pride in their cultural heritage?

- How might a person develop shame in their cultural heritage?

After viewing answer the following:

1) Janelle says "she is completely embarrassed of our cultural heritage and that makes me sad". Why is the ending of the film so important for Janelle?

2) Memere says, "Will I ever be a proud Metis? I don't know about that" What change does Memere undergo?

3) Why was Memere so ashamed to be Metis? List two reasons.

4) Why is Janelle so proud of being Metis?

5) Why is there such a difference between Janelle and her Memere when it comes to embracing their cultural heritage?

6) Choose three scenes from the film where you think Memere is moving toward

accepting her culture.

504938C

Before viewing answer the following:

- 504938C was Ervin Chartrand (the film maker)'s number while he was locked

    up in Stoney Mountain. Why would he use that as the title of the film?

- What are some difficult decisions made by prisoners when they leave jail?

    Choose two.

After viewing answer the following:

1) What elements of culture do you see in the opening scene? Think back to the 9

    universals and state which are evident.

2) There are flashbacks to the prisoner's life before jail. What culture was in

    evidence in those flashbacks?

3) Why does the guard say "See you in a week?"

4) Who is waiting for him when he leaves the gates? Who do you see first?

5) What decision does he have to make?

6) After seeing the gang members waiting for him, did you agree with the guard?

    Explain.

7) What culture do you feel he will choose? Explain.

- How was each video an examination of culture?

- The video about Memere showed a person coming to terms with her ethnicity

    and finally her culture. Have you ever heard of anyone sharing this conflict

    before? Explain.

- The prisoner in 504938C clearly shows a conflict between two cultures. His ethnicity has not changed but he has a choice over which culture to accept. Explain this idea.

- What have you learned about your own culture through exploring these concepts? What is important to you?

Understanding The Effects of Colonialism

Before you view the "Schooling the World" videos:

1) Define: monoculture, colonization, systemic racism, and bias

2) Explain what you know about the Residential School system in Canada.

Go to www.facebook.com/schoolingtheworld and watch both videos.

After You Watch:

1) What is the point of the film "Schooling the World"? What does the filmmaker want you to learn?

2) Is Monoculture a good thing? Explain.

3) The film's narration says "If you wanted to change an ancient culture in a single generation how would you do it? You would change the way it educates its children." What do you think this means?

4) List four other countries/continents that have been colonized besides Canada.

5) Residential schools no longer exist in Canada. Has the type of thinking that spawned them in the first place ended? How do you know? How does this make you feel?

Meet with the teacher to discuss the following:

1) What do you now know about colonization?

2) What do you think are the impacts of colonization?

3) What is systemic racism?

The 8 Stages of Genocide (Adapted from an article by Gregory H. Stanton)

The definition of genocide:

"In the present Convention, genocide means **any of the following acts** committed **with intent to destroy, in whole or in part, a national, ethnical, racial or religious group**, as such:

(a) Killing members of the group

(b) Causing serious bodily or mental harm to members of the group

(c) Deliberately inflicting on the group conditions of life calculated to bring about its physical destruction in whole or in part (purposely denying food, clean water and shelter)

(d) Imposing measures intended to prevent births within the group

(e) Forcibly transferring children of the group to another group.

The following acts are punishable as genocide:

(a) Genocide (Carrying out the act of killing, or one of steps a-e, above)

(b) Conspiracy to commit genocide (Planning it)

(c) Direct and public incitement to commit genocide (Encouraging others to commit it)

(d) Attempt to commit genocide

(e) Complicity in genocide. (Helping to commit it)

Some think that genocide means the intent to destroy **in whole** a national, ethnical, racial or religious group. Most are intended to destroy only **part** of a group. The definition clearly includes the "In part".

THE GENOCIDAL PROCESS

There are eight stages to genocide. Each stage builds on the other. The eight stages of genocide are **classification, symbolization, dehumanization, organization, polarization, preparation, extermination, and denial**. All genocides have these stages in common.

• **Classification:** the division into "us and them." This is extremely common in human society. While it is not a sign that genocide is on the way, genocide would be impossible without an "us" and a "them".

• **Symbolization:** words or symbols are applied to the "them": the yellow star that Jews had to wear under Hitler, skin color, classifications put on ID cards. Again, the symbolization of human differences is common and is not necessarily a sign of genocide, but genocide cannot proceed unless there is some distinct way to tell people apart.

• **Dehumanization**: the "them" become social pariahs: they are seen as less than human, as animals or a kind of disease. The Tutsis in Rwanda were called cockroaches before they were killed by the thousands. Killing them was no longer murder – it was just ridding the country of something bad. Dehumanizing words, like "nigger," belong to this step. Unlike the first two steps, dehumanization is not commonly found in most societies! It is the first step of the road to genocide.

• **Organization**: To kill people in large numbers you need organization: leaders, followers, a chain of command, duties, meetings, guns, training, hate speeches. Sometimes it is the government that does this, but often it is a paramilitary group that seems to be acting on its own (but which the government is either secretly helping or at least turning a blind eye toward). The killing might start at this stage, but not on a huge

scale. Examples: the SS in Nazi Germany, the Ku Klux Klan in America, and the Janjaweed in Darfur.

• **Polarization:** The first people killed in any genocide are not the pariahs themselves but those in the mainstream who speak up for them. The voices in the middle are silenced through threats, arrests or even killings. The message of hate now goes unchallenged.

• **Preparation**: The pariahs (the unwanted) are often separated from the rest of the country – into ghettos, camps, reservations or some undesirable part of the country. Their property is taken from them (they are not coming back!). This step leaves them defenseless.

• **Extermination:** the **mass killings**, the genocide is set in motion.

• **Denial:** The leaders of the genocide downplay it or tell complete **lies** denying there was a genocide. As long as they are in denial the killings can go on.

Visit and read the articles: http://www.theglobeandmail.com/opinion/what-canada-committed-against-first-nations-was-genocide-the-un-should-recognize-it/article14853747/ and http://rabble.ca/blogs/bloggers/pamela-palmater/2013/07/human-rights-museum-or-harper-propaganda-genocide-canada-deni then borrow the "In Focus" dvd from the teacher. You will watch "Two Scoops" by Jackie Traverse.

Before Watching

1) The title of the film echoes a Raisin Bran commercial. Why do you think Traverse chose this title?

2) This is an autobiographical film. What does that mean?

During Watching

1) Jackie says the woman had the "kindest voice she'd ever heard". How do you think this leads to her feeling of being betrayed?

2) Find another point in the film where Jackie is betrayed.

3) Notice how Jackie uses colour and black & white. Where does she use colour? Why?

4) Jackie asks, "Why wasn't the focus on helping the family rather than destroying it?" Answer this question based on what you have learned so far.

After Watching

1) Jackie uses simple, cartoon-like drawings in the film. What is the purpose of doing so?

2) How does the film connect with the reading on Cultural Genocide/Conniving Trickery that you just read?

3) Did you know about the 60s Scoop before now? How does knowing this happened make you feel?

Genocide Questions

1) What is the crime of genocide?

2) Do you believe that genocide has happened in Canada? Explain your answer, using quotes from the readings as proof. Use at least three quotes.

3) Explain the connection between colonization and genocide.

4) Many believe that colonization and genocide have long term effects on the survivors and their children. What do you think these effects will be?

5) Do you think the 60s Scoop was an act of genocide? Explain with reference to the appropriate article.

Residential Schools and the Colonial Experience

Borrow the resource *In Focus* from the teacher and watch the film, "Against the Grain."

Before Viewing

1. What do you think is the meaning of the term "intergenerational impact"?

During Viewing

1. Why did Indigenous people support the schools?

2. Watch for the scenes where abuse/dehumanization is described. What are your feelings on hearing these incidents described?

3. What is the inter-generational effect of these schools on families?

4. How did Hugh Mckay summarize the purpose of the schools?

After Viewing

1. The Truth and Reconciliation Commission was created to help promote healing. Explain the connection between remembering, naming and healing.

2. Money cannot help a person to heal, so why is it important that a money settlement be part of the process?

3. Part of the documentary focuses on short interviews of "regular" citizens. Very few seem to know anything about residential Schools. How did you feel watching this?

The Aftermath

Visit http://www.heretohelp.bc.ca/visions/trauma-and-victimization-vol3/indian-residential-schools and read the article.

Residential School Questions

1) The last school closed in 1996. Is this a really long time ago? What effects are still felt in Aboriginal communities?

2) How do we learn to parent our children? Why were the schools so devastating to families?

3) What are some issues that Charles Brasfield traces directly back to residential schools?

4) How do the things parents experienced affect their children? How many generations can these problems impact?

We Were Children

Watch the video "We Were Children". Get the video from the teacher.

Questions:

1) "We Were Children" follows the true stories of residential school survivors. What are some of the impacts the experience has had on their lives?

2) How did the film affect your knowledge of residential schools? If you have seen the film before now, how did your viewing change as a result of what you have read in this unit? If the film was new to you, how did it add to what you have already learned?

Appendix 2 – Critical Mathematics Unit (student handout I created)

Essential Mathematics: FINANCE

There are a number finance-related units in the Essential Mathematics program (Personal

Finance & Consumer Decisions in the 20S course, Interest and Credit & Managing

Money in the 30S course, plus Home, Vehicle and Business Finance & Career Life in the

40S course), in addition to many finance-related problems embedded in Statistics units.

So exactly what is "finance"?

> "Finance" is a broad term that describes two related activities: the study of how
>
> money is managed and the actual process of acquiring needed funds. Because
>
> individuals, businesses and government entities all need funding to operate, the
>
> field is often separated into three sub-categories: personal finance, corporate
>
> finance and public finance.
>
> (http://www.investopedia.com/ask/answers/12/finance.asp)

Discussion Questions

- Why do "individuals, businesses and government entities all need funding to
  operate"?

- What is "money" and why is it so important?

- How did Indigenous societies function before the introduction of money?

- In today's society, what other ways do people get things they need and/or want
  without using money?

- From your own observations and experience, what is good and bad about a
  money-driven society?

Further research: *What is money?*

http://www.investopedia.com/articles/basics/03/061303.asp, *Beaver pelts*

http://www.thecanadianencyclopedia.ca/en/article/beaver-pelts/

Like the United States of America, Canada has a capitalist economy that is driven by consumers who pay for goods and services. This means that individuals, rather than the government, own and profit from the businesses in which they employ people to work (non-profit organizations, which are funded by charitable donations, and government services, which are funded by taxes, are not privately owned). Critics of capitalism blame the economic system for social and income inequality, rampant consumerism, unfair distribution of power, repression of workers and trade unions to force wage-slavery, unemployment, economic instability, global poverty, and environmental destruction.

Discussion Questions

- Do some or all of the criticisms of capitalism seem valid? If so, why do we subscribe to this economic system?

- Can you describe positive aspects of capitalism?

- In what ways does capitalism function differently in Canada than in the United States?

- In our capitalist society, who seem to be the winners and the losers? Does this seem fair? Why or why not?

- If Canada is considered a rich country, then why are so many Canadians poor?

- Are Indigenous peoples in Canada fully integrated into the capitalist economy? If not, should they be? Do they want to be?

- If Indigenous peoples, who traditionally used barter/trade systems, designed our economic system instead, how might it look different than it does now?

- In a pure capitalist society, individuals have to pay for every product or service they want. List any products or services you believe people should not have to pay for. Why not?

Further research: *If not capitalism, what?* http://www.agjohnson.us/glad/if-not-capitalism-what/

Capitalism https://en.wikipedia.org/wiki/Capitalism

Although tribes in Canada used to hunt, gather, and create necessities for living (food, shelter, etc.) collectively, present day people in Canada must use the monies they receive from work and other sources to buy these necessities. With the exception of a wealthy minority (and a relatively small number of Indigenous people in Canada who live on Indian reservations and are thereby not allowed to purchase property there), to obtain private ownership of expensive items such as land and houses requires the borrowing of money from financial institutions, which we generally refer to as banks (though technically not all money lenders are considered banks). In Canada, if a person borrows money from a financial institution, they must pay that principal amount of money back, but they must also pay extra money in the form of interest (and sometimes they are also charged fees just to borrow the money in the first place, or penalties if they pay the money back too slowly). As an example, if a person is charged 10% simple interest to borrow $100 from a bank for one year, they will have to pay the bank back the $100 plus 10% of $100 (10 per cent means 10 per hundred, which is $10 for each $100), which means they will pay the bank back $110 even though they only borrowed $100. As a

result of interest charges, it is not uncommon for a person in Canada to borrow $300,000 to buy a house then pay over $450,000 back to the bank over a standard 25-year loan repayment schedule.

Discussion Questions

- If individuals must use the money they earn from working to obtain basic necessities for survival, such as food and shelter, what happens to the individuals who find themselves without work? What is life like for the "working poor" (people who work but still struggle to pay for the things they need and want)?

- Individuals who inherit enough wealth do not need to work, or to borrow money from banks. Instead, banks pay these wealthy individuals interest just to use their money, so that the banks may use that money to lend out as loans and profit from. This means that banks, and a minority of wealthy individuals, profit from each person who must borrow money to pay for cars, houses, etc. Does this seem like a fair system to you? Why or why not?

- Can you imagine and describe a fairer way for the Canadian banking system to function? Who seem to be the winners and losers under our current financial system?

- Historically, some cultures and religions viewed the charging of interest, or usury, as sinful. In the world today there is a growing number of Islamic law-compliant banks that do not charge interest, and an emergent sector of micro-finance options for businesses (such as Kickstarter) that do not charge interest. Why might some people be against the charging of interest? Who benefits from charging interest?

Further research: *Usury* https://en.wikipedia.org/wiki/Usury

Interest http://www.investopedia.com/terms/i/interest.asp

Committee on Monetary and Economic Reform http://www.comer.org/

Appendix 3 – Interview Protocol for Student Participants

Question #1 (critical reflection on societal power imbalances): In your opinion, can you describe who – as in what types of people – seem to complete high school, achieve the highest levels of education (like college diplomas or university degrees) and/or get the best jobs?

- In what ways does having money, or not, affect things like graduating from high school, getting a good job, or getting a college or university education?

- In what ways might a person's racial or ethnic group influence their chances of graduating from high school, getting a good job, or getting a college or university education?

- How might being female influence a person's chances of graduating from high school, getting a good job, or getting a college or university education?

- How might being Indigenous influence a person's chances of graduating from high school, getting a good job, or getting a college or university education?

- In your opinion, who are the people who get ahead in life, perhaps more so than others? (use these further prompts, if needed) Can you identify any racial (Caucasian, Indigenous, Latino, etc.) or ethnic groups (Metis, Filipino, Chinese, etc.) that seem to face more challenges to "get ahead" in life? Are there any groups that seem to "get ahead" more than others?

- In what way does having money, or not (being poor), help or hinder a person's chance of "getting ahead" in life?

- In what ways do you think that being an Indigenous woman helps or hinders your chances of "getting ahead" in life?

Question #1 (b): Keeping in mind the ideas you've discussed up to this point in the interview, what has led you to hold these opinions?

Question #2 (endorsement for egalitarianism - *NOTE: handout a copy of this question to interviewees so that they can focus on and consider the numbers given): A Manitoban on Employment and Income Assistance is required to live on no less than $677 per month before paying rent (http://www.gov.mb.ca/jec/eia/pubs/eia_general.pdf). Is this fair? Why or why not?

Approximately half of Manitobans make less than $2600 per month and more than 10% of Manitobans make over $6250 per month. Is this fair? Why or why not?

- What does it mean for all people to be treated equally?

- How do you think all groups of people should be treated in an ideal society? What would this ideal society look like?

Question #2 (b): Have you always felt this way? If not, what has influenced your beliefs about equality?

Question #3 (sociopolitical activism): Some people choose to participate in activities that address political or social issues (such as Missing and Murdered Indigenous Women). They might do this in a lot of different ways. For example, they might join a civil rights group (such as the Manitoba Association for Rights and Liberties), political party (like the Green Party), club, or organization (such as Idle No More). They might sign a petition or write a letter to a school or community newspaper or publication, or even make a post on Facebook or Twitter, about a social or political issue. They might contact a public official to voice their opinion on a particular social or political issue. They might join in a protest march, political demonstration, political meeting, or work on a political campaign.

Can you tell me about a time (or several times) when you did any of these things?

If "yes":

- Can you tell me about any social or political issue discussions you have participated in?

- How have you used electronic devices/technology for expressing your concerns about social or political issues?

If "no":

- If, in the future, you decided to participate in activities that address political or social issues, for which topics or issues do you think you'd be most motivated by? What kinds of activities do you think you'd be most likely to engage in? (*might need to review list of activities from beginning of Question #3)

- Are there any social or political issue discussions you would consider participating in?

- Would you consider using electronic devices/technology for expressing your concerns about social or political issues?

Question #3 (b): Do you think that your opinions and/or actions on social and political issues have changed since you started taking courses at this school? What might you attribute those changes to? In what other ways have you changed since you started attending this school?