

**Exploring Canadian Undergraduate Environmental Science/Studies Programs'  
Engagement with The Truth and Reconciliation Commission's Calls to  
Action, Indigenous Epistemologies and Climate Change**

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## Abstract

Since settlers began colonizing this country, Indigenous (First Nations, Inuit, and Métis) person have been excluded from Canadian society, including educational institutions, and they are facing disproportional impacts of climate change. This research project fills gaps in knowledge of how Canadian Environmental Science/Studies Programs (CESSPs) are responding to the 2015 Truth and Reconciliation Commission's Final Report and Calls to Action, engaging with Indigenous epistemologies and addressing climate change. A case study of the 'U15' Group of Canadian Research Universities' undergraduate Environmental Science/Studies Programs (ESS) programs used semi-structured interviews and content analysis to explore how programs are responding. This research found that CESSPs are responding to the TRC Calls to Action in a variety of ways, such as engaging with Indigenous Ways Knowing (IWK) in course curriculum, and having climate change curriculum embedded in their course. Programs particularly are engaging with IWK by having curriculum developed by Indigenous knowledge holders, and using experiential learning. However, engagement with the TRC Calls to Action has not been fully incorporated within CESSPs, and IWK are not embedded in climate change curriculum. The results from this research project indicate that there is need for CESSPs to engage with the TRC Calls to Action further, and begin to decolonize the academy. Also, that some Department Heads were performing 'settler moves to innocence' by indicating that their departments were not responding enough to the TRC Calls to Action, that Indigenous faculty are not present in the departments, or that their ignorance of IWK is preventing them from engaging. The aim of this research project is to aid CESSPs in evaluating their programs and curricula concerning engagement around IWK, TRC Calls to Action, and climate change, and to advance CESSPs in the reconciliation process.

Keywords: reconciliation, Indigenous ways of knowing (IWK), Indigenous epistemologies, climate change, TRC, education, environmental science and studies, U15, decolonization, post-secondary.

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## Common Abbreviations

CESSPs – Canadian Environmental Science and Studies Programs

ESS – Environmental Science and Studies.

IRSSA – Indian Residential Schools Settlement Agreement

IWK – Indigenous Ways of Knowing

TRC – Truth and Reconciliation Commission

UNDRIP – United Nations Declaration on the Rights of Indigenous Peoples

## Introduction

The global impacts of climate change on human health, the economy, industry, food and water resources are the single largest issue our current and future generations are facing and Indigenous populations are at disproportionately higher risk to these effects (IPCC, 2018). Furthermore, there are ongoing conflicts between Indigenous peoples globally and colonial powers, where Indigenous peoples are fighting for their rights to land and territory in settler colonial states. A recent example of this is the resistance of Wet'suwet'en First Nation to the proposed 670-kilometer gas pipeline on their territory. Wet'suwet'en Hereditary Chiefs have enacted their own laws and jurisdictions against the Coastal Gas Link project of the Canadian Government and oil/gas industries. Wet'suwet'en First Nation's resistance demonstrates the strength and resilience of Indigenous peoples, in addition to the drive of the Canadian government to continue their colonial project and disregard the rapid rise in global temperatures and CO<sub>2</sub> emissions that has occurred since the industrial revolution causing flood, sea ice melt, and extreme weather (IPCC, 2018).

The Canadian federal government began to discuss and support reconciliation efforts with Indigenous peoples of Canada in 1991 with the Royal Commission on Aboriginal Peoples which released a report in 1996. However, this report failed to make a substantial impact therefore, in 2008 the Truth and Reconciliation Commission of Canada (TRC) was formed as part of the Indian Residential Schools Settlement Agreement (IRSSA) to discuss the lasting impacts of the residential school system in Canada, and outline Calls to Action for Canadian institutions to implement. The federal government has also become a full supporter of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) which recognizes Indigenous peoples right to self-determine, not be forcibly removed from their territories, and

have the right to free, prior, and informed consent (UNDRIP, 2007). The statements and gestures made by the Canadian government indicate they are moving towards the path of reconciliation - however - the forced occupation by RCMP on Wet'suwet'en Territory and injunctions agreed upon to remove protestors during the Coast Gas Link resistance suggest otherwise. This is just one example of the injustices that have encouraged me to develop a study that focuses on how the Environmental Science and Studies programs at post-secondary education institutions in Canada are responding to the TRC Calls to Action.

Throughout my 4 years as an Environmental Science undergraduate student at Queen's University, I have been provided with opportunities to begin my learning journey about the history of injustices towards Indigenous peoples by settler colonial states. Furthermore, I have continued learning about the connection between land, Indigenous life, and settler colonialism. Patrick Wolfe explains settler colonialism as a structure, because its goal is to destroy and replace life to gain land and resources (2006). Therefore, settler colonialism cannot be separated from land or environmental education because settler colonialism is dependent on land. If environmental education is to be decolonial and break down the structure of settler colonialism in which it was created it requires a discussion of how students and educators' identities are associated with land and whose identities are excluded (Calderon, 2014). With my personal experience as an undergraduate Canadian Environmental Science/Studies Program (CESSP) student, I will explore if decolonial education is occurring at the undergraduate level in similar types of programs across Canada, particularly if CESSPs are engaging with the TRC Calls to Action, Indigenous epistemologies and climate change.

## Brief History of Settler Colonialism in Canada

Settler colonialism is a distinct form of colonization in which it eliminates Indigenous peoples to gain access to land and resources (Wolfe, 2006). First contact from European power was during merchant capitalism – when the Europeans valued Indigenous peoples as a source of wealth, such as through the fur trade in Canada. Indigenous peoples were acknowledged and accepted by European settlers due to the value they had in trade. During the industrialization period in Europe, there was a new demand for natural resources and land with less emphasis on trade. Colonizers began to settle Indigenous peoples' land to extract the resources, populate the territories and gain wealth (Kubik, Bourassa & Hampton, 2009). In some cases, treaties were used as a mutual agreement between nations but have been misused by settler colonial nations to remove Indigenous peoples from their territory, consolidate power, and assert dominance over Indigenous peoples (TRC, 2015a). The Royal Proclamation of 1763 was used to claim British ownership over North America and created a framework for treaties to be used to assimilate Indigenous nations (Canada, 1996). The Royal Proclamation of 1763 and other government policies were used by Canada to gain control over Indigenous peoples and has created a power dynamic between settlers and Indigenous peoples (Canada, 1996).

The Canadian government created the Indian Act in 1876 as a way to control all aspects of Indigenous life, creating a framework for 'Native identity' and the reserve system currently used in Canada (TRC, 2015a). The Indian Act was used to create a long-lasting policy to assimilate Indigenous peoples by defining status, force Indigenous children into residential schools that did not allow them to speak their language where they were also victims of abuse, practice their cultural traditions and forced Western religions onto them (TRC, 2015a). Combined, the legal documents Canada created toward controlling Indigenous peoples,

establishing a residential school system, and perpetuating a history of racism Indigenous peoples face has led to intergenerational trauma that continues to impact Indigenous communities across Canada (Canada, 1996). For example, First Nations communities across Canada have been impacted by the residential school system used until 1996. Inuit peoples were relocated from their traditional territories in 1953 and 1955 by the Canadian government in order to secure ownership over the Arctic, which caused emotional and physical suffering (Canada, 1994). Métis people also have faced a history of marginalization due to the use of race science and racism by the settler society to erase them (TRC, 2016a). They have experienced similar violence from settler society of relocation, forced assimilation with residential schools, and the sixties scoop (Logan, 2015). First Nation, Inuit and Métis people all have unique histories with the Canadian government; however, each experience is similar in the fact that they have all battled against the settler colonial agenda of assimilation and erasure of their cultures and peoples. This history of colonization, cultural genocide, and assimilation is deeply embedded in Canadian society and is reflected in the current Western education system used in Canadian post-secondary institutions.

### Settler Colonialism and Education

The Canadian education system developed as North America was settled by French and English colonies in the 1600's. The education system was strongly shaped by the colonial mindset which created it and used by governing bodies to consolidate power (TRC, 2015a). Education was initially connected to religion, as priests were often the most educated members of a community and the community leaders (MacKay & Firmin, 2008). However, by the 1800s most provinces had structured Western education system which they separated from religion and the public education system was formed (MacKay & Firmin, 2008). The growth of western

education in Canada aligns with the enlightenment period that was occurring in intellectual groups in Europe, which called for a separation of church and state, and emphasised the value of the scientific method. This pedagogical change strongly influenced the Canadian education system used today.

Historically for Indigenous peoples in Canada, the western education system imposed on them was much different. The Canadian government, to erase Indigenous peoples from the territories, remove their identities from Canada, and gain control over their lands (TRC, 2015a) used residential schools. Churches were used as the administration for residential schools – which were present in Canada from the 1800s until 1996 (MacKay & Firmin, 2008). Beyond the general trend in Canada, the connection between church and education helped the colonizer’s goal to assimilate Indigenous peoples to western ideals (TRC, 2015a). Residential schools were used to attack Indigenous identity, cultures, and spirituality by forcing Indigenous children into dangerous setting where the children were not allowed to practice their cultures or speak their languages, which created long-lasting negative effects on Indigenous peoples.

### Current Context of Indigenous Epistemologies and Post-Secondary Education

Western epistemologies and Eurocentric knowledge systems have dominated Canadian universities since their establishment and have continually excluded or ignored Indigenous people’s presence (Louie et al., 2017). Since the TRC final report and 94 Calls to Action, there has been changes within universities to create more accessible post-secondary education for Indigenous peoples. However, there has been little change to the Eurocentric curriculum, which is used to educate students. Battiste et al., (2002) state that “This production of knowledge amounts to cognitive imperialism” and the continuation of this type of education is a mechanism of the ongoing colonization Indigenous peoples face (p. 83).

A study by Schaepli et al., found that Ontario post-secondary first year students have inadequate teachings about colonialism and its impacts on First Nations, Metis, and Inuit peoples in Canada, in addition to students having little interest on Indigenous topics and to discuss these issues (2018). These finding demonstrates that secondary and post-secondary education are not fulfilling the TRC Calls to Action on educating students on Indigenous history, settler colonialism, and Indigenous epistemologies by highlighting that first-year students in Ontario do not have substantial knowledge in Indigenous people's histories in Canada. Schaepli et al., also discuss how non-Indigenous students rely on formal education and media for information about Indigenous peoples (2018). These findings, echoed by many Indigenous and non-Indigenous scholars, highlights the need for post-secondary education to provide better resources to students for decolonizing academia and dispel settler colonial regime (Battiste, 2019; Calderon, 2014; Kerr, 2014; Louie et al., 2017). Indigenous scholars, activists, and knowledge holders involved in post-secondary education promote Indigenous views that have been systematically excluded from western education and discuss how exploring Indigenous epistemologies can decolonize this space (Battiste, 2019). Furthermore, scholars argue that Indigenous epistemologies are virtually absent in STEM undergraduate courses, which creates gaps in students' knowledge (Kimmerer, 2002). Inclusion of Indigenous ways of knowing (IWK) in western education can not only offer alternative ways of solving contemporary issues such as, climate change, but bring a cultural framework of respect and experiential learning which is not present in western education (Kimmerer, 2002).

### Climate Change, IWK and CESSPs

The Intergovernmental Panel on Climate Change released a report in 2018 outlining the adverse effects an increase of a 1.5-degrees Celsius will have globally and how these impacts

will disproportionately affect Indigenous peoples (IPCC, 2018). In Canada, climate change is already affecting Arctic communities where warming is 2 to 3 times higher than the global average (IPCC, 2018). Arctic ecosystems, sea ice extent, and weather predictability are all variables being impacted by climate change (Ford & Smit, 2004). As climate change poses more and more of a threat to Indigenous communities, western and Indigenous researchers have collaborated to understand the extent of the impacts and how to mitigate or adapt to the changes. There are multiple journal articles, reports, and documentary films that discuss IWK in concert with climate change and the unique ways communities are adapting to changes (Ford and Smit, 2004; Laidler, 2006; Pearce et al., 2009; Riedlinger, 2001; Turner and Clifton, 2009). There is a strong connection between climate change and environmental science/studies, but the transfer of climate science from Indigenous theories may not be explicit in post-secondary education (Henderson et al., 2017). Combining IWK with academic research is occurring more frequently and community-based research is becoming a more prominent method. However, the extent to which IWK is being transferred into curriculum at an undergraduate level is currently unknown and therefore will be a section of this research study.

## Methodology

An exploratory case study was used for this qualitative research and Saladaña's text "The Coding Manual for Qualitative Researchers" was used as a guide for data collection and processing (2009). The semi-structured interview method was selected over other methods (survey etc.) because it allowed the research themes to be chosen and for the interviewer to have a guide, while allowing the participants to address any issues they face (DiCicco-Bloom & Crabtree, 2006). Semi-structured interviews use a small sample size, which allowed the researcher to have more in-depth discussions with participants and obtain more specific findings

with a deeper understanding of ESSP's engagement with the TRC Calls to Action, Indigenous epistemologies, and climate change. The interview guide was adjusted so that it was flexible and could change for each interview to fit the participant's unique setting. Conventional content analysis was used to analyze the qualitative data. This form of analysis allowed the codes to be defined during the analysis based on the interview data (Hsieh & Shannon, 2005). Codes were created from the interviews themselves and then organized into categories and subcategories to determine the general themes present. This analysis used descriptive and analytical codes. Descriptive codes were used to determine the general themes or question answer codes and analytic codes were used to explore more in-depth the interviews and understand the meaning behind participant's statements (Hay, 2000).

### Research Overview

This study explores the institutional experiences of Department Heads in Canadian Undergraduate Environmental Science/Studies Programs (CESSPs) with respect to the TRC Calls to Action, Indigenous epistemologies, and climate change. I conducted semi-structured interviews with 7 Department Heads from the Canadian U15 group, a sample of convenience for the purposes of this undergraduate honour's thesis study. The interviews were used to identify the quality, quantity and extent of engagement of CESSPs with Indigenous epistemologies, the TRC Calls to Action and climate change from department heads perspectives. The findings from this study are intended to aid CESSPs in evaluating their programs and curricula in regard to engagement around Indigenous epistemologies, TRC Calls to Action, and climate change. These findings are also intended to advance academic departments in the reconciliation process, as mandated in the TRC's 94 Calls to Action.

## Literature Review

The focus of this study is to examine how CESSPs are responding to the TRC Calls to Action and engaging with Indigenous epistemologies and climate change. Since the TRC Final Report and Calls to Action was released in 2015, Canadian post-secondary institutions have begun responding in different ways. The TRC Calls to Action has 94 calls in which they request education institutions, religious institutions, and government bodies to decolonize their structures and progress reconciliation (TRC, 2015c). Decolonizing methodologies for post-secondary institutions in particular have been explored by both Indigenous and non-Indigenous scholars, many of which have outlined similar key aspects to performing decolonial work (Louie et al., 2017; Simpson, 2011; Smith, 2012). However, the current literature on post-secondary institutions engagement with the TRC Calls to Action suggests it is a slow process. Literature on how ESS courses engage with IWK and respond to the TRC Calls to Action is limited; however, similar studies for different undergraduate programs were examined for this study.

Climate change is the largest environmental issue our generation is facing and is impacting people globally, and the impacts of climate change are being felt by many Indigenous peoples already (IPCC, 2018). Many Indigenous nations in the Canadian Arctic have also started sharing their experiences with climate change and collaborating with research groups to explore adaptation and mitigation techniques using their traditional knowledges (Ford & Smit, 2004; Turner & Clifton, 2009). The important connection between Indigenous epistemologies and climate change has been noted by some academics; however, there has been limited exploration on how Canadian post-secondary institutions are engaging with climate change and IWK (Henderson et al., 2017). The literature reviews explores current writing on climate change and IWK and explore ways in which some academics suggest engaging with these themes.

The history of settler colonialism in Canada has created long lasting negative effects on Indigenous peoples. Residential schools, discriminatory policies and societal racism has created a system that historical has attempted to erase and assimilate Indigenous peoples (TRC, 2015c). Along with these systematic issues, climate change has been identified as having disproportionate effects on Indigenous and marginalized communities due to economic, social, and cultural barriers (IPCC, 2018). The goal of this literature review is to further examine the TRC Final Report and Calls to Action, the impact of residential schools and western education on Indigenous and non-Indigenous peoples in Canada, decolonizing methodologies being implemented by academics in post-secondary institutions, and current literature that explores post-secondary institutions responses to the TRC Calls to Action and engagement with IWK.

### TRC Final Report

A series of documents have been released in Canada and internationally in recent years that support Indigenous people's rights, identify the impacts settler colonialism has on Indigenous communities, and call for a movement towards reconciliation. After the 1996 Royal Commission on Aboriginal Peoples (RCAP), which outlined the need for Canada to move towards reconciliation was released, the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) signed by many nations in 2007 called for international action towards reconciliation (Canada, 1996; United Nations, 2007). However, these calls have historically been ignored as action after the 1996 RCAP was limited, and UNDRIP was not fully supported by Canada until 2016 (TRC, 2015a; TRC, 2016b). In Canada, the TRC Final Report and Calls to Action released in 2015 has created a wave of change, urging the Canadian government and settler society to begin on a path of reconciliation and educate Canadians on their country's history with Indigenous peoples and residential schools. The Indian Residential School

Settlement Agreement (IRSSA) propelled the TRC in 2006 (TRC, 2015a). The IRSSA was a settlement between over 18,000 individual lawsuits from Residential School Survivors and the Canadian government. The agreement required assessment of the trauma that residential schools had on Indigenous peoples, monetary compensation to be implemented, and required the Canadian government to support the Aboriginal Health Foundation, residential school commemoration, and the Truth and Reconciliation Commission of Canada (TRC, 2015a). The TRC released two volumes discussing the history of residential schools across Canada, including the different ways residential schools have impacted First Nations, Inuit, and Métis peoples. The TRC outlines the lasting trauma on Indigenous peoples and states 94 Calls to Action, which Canada – in all areas – should implement to begin reconciliation (TRC, 2015b).

The TRC Calls to Action report identified 94 calls in two main categories, Legacy and Reconciliation, then further categorizes the calls by the way they must be implemented by, such as through health, language and culture, or education (TRC, 2015b). For this research project, there was a focus on the section of education for reconciliation, which contains calls number 62-65 from the TRC. These four calls were used to create interview questions and explore how CESSPs are responding to them. Number 62 calls upon all levels of the Canadian government and educators to make age appropriate curriculum on the history and legacy of residential schools and the impacts of settler colonialism for students in kindergarten to grade 12 (TRC, 2015b). Furthermore, call number 62 asks all levels of Canadian government to provide necessary funding to post-secondary institutions to educate professors on how to engage with Indigenous epistemologies and methodologies in the curriculum, to provide funding to use Indigenous epistemologies and methodologies in curriculum (TRC, 2015b). Call number 63 requires the Council of Ministers of Education to create an annual commitment to develop and

implement curriculum focused on Indigenous peoples in Canadian history. This is meant to share information and best practices on the curriculums related to residential schools and Indigenous peoples, to build student capacity for intercultural understanding and respect, and to identify training for teachers related to residential schools, settler colonialism and Indigenous peoples (TRC, 2015b). Call number 64 requires the Canadian federal government to provide funding to elementary, secondary, and post-secondary schools for including comparative religious studies that incorporates Indigenous spiritual beliefs and practices (TRC, 2015b). Call number 65 asks the federal government to establish a national research program with funding to advance understandings of reconciliation (TRC, 2015b).

### Impacts of Colonial Education on Society

Residential schools in Canada were used to remove Indigenous children from their families, strip them of their identity, and assimilate the children into settler society (TRC, 2015a). In addition to the goal of residential schools, all other policies Canada created about Indigenous peoples were to eliminate Indigenous ways of life and assert control over their lands (TRC, 2016a). Until the IRSSA and the release of the TRC final report, the impact of residential schools had not been common knowledge to Canada (TRC, 2015a). The IRSSA and TRC has educated settler society on intergenerational trauma and the deep physical, emotional, and spiritual effects residential schools had on Indigenous communities (TRC, 2015c). In 1883, over 100 federal residential schools were established and, over the following decades, used to assimilate 150,000 First Nation, Métis and Inuit children (TRC, 2015c). These residential schools were in operation up until 1996 – when the last school closed. Children were alienated, not allowed to speak their languages, practice their traditions, lived in poorly maintained buildings, and on inadequate diets (TRC, 2015c). The education in residential schools was based

on chores or labour, religion, and the English language (TRC, 2015c). Extensive mental, emotional, physical, and sexual abuse took place in these schools. Residential schools were created by the settler colonial idea that Indigenous peoples were inferior to Europeans and Indigenous people's ways of life were seen as savage (TRC, 2015c).

Since the closure of the last residential school in Canada, education gaps have continued for Indigenous peoples (Ottmann, 2017). A report by the Auditor General of Canada found that only 41% of First Nations on reserve over the age of 15 are high school graduates, whereas 77% of settler Canadians are high school graduates (Auditors General of Canada, 2011). The education gap has been hypothesized to be caused by the systematic barriers Indigenous students face from elementary to post-secondary school (Ottmann, 2017). For example, some of the systemic barriers Indigenous students face include a curriculum that does not adequately represent Indigenous cultures, histories, financial, social, and cultural issues – which discourage or prevent Indigenous students from pursuing post-secondary education (Ottmann, 2017). Post-secondary institutions are attempting to close the education gap between Indigenous and non-Indigenous students by increasing the number of Indigenous students on campus, but these institutions must first acknowledge that their western education will be stronger with the inclusion of Indigenous epistemologies (Ottmann, 2017). Since the release of the TRC Calls to Action, there has been a rapid increase in Canadian universities responding to the TRC, such as by implementing strategic plans, recruitment, assessing program curriculums, and creating space for Indigenous epistemologies on campus (Mitchell et al., 2018). However, a study by Schaepli et al., found that Ontario post-secondary first year students have inadequate teachings about colonialism and its impacts on First Nations, Métis, and Inuit peoples in Canada (2018). Other studies have also suggested that university responses to the TRC need to be used to decolonize

post-secondary education and Indigenize curriculum (Draper, 2016; Mitchell et al., 2018; Ottmann, 2017).

### Decolonizing Post-Secondary Education

For this research, decolonization is defined by Tuck and Yang's understanding of decolonization; that it repatriates Indigenous land and life, and is accountable only to Indigenous futurity (Tuck & Yang, 2012). Decolonization in this definition solely promotes Indigenous self-determination in academia and should not be used as Tuck and Yang discuss as a metaphor, which it often is by academic institutions (2012). A study by Mitchell et al., found four principles, which they argue, are required for post-secondary institutions to decolonize their structures and respond to the TRC Calls to Action (2018). First, the process of decolonization should be informed by an Indigenous lens, interrupt colonial power dynamics, progress from conscientization to action, and transform curriculum in institutional spaces. Louie et al., also argue that normalizing the use of Indigenous epistemologies in curriculum will dismantle settler colonialism in education (2017). Linda Tuhiwai Smith also outlined 25 Indigenous projects being used by communities to reclaim Indigenous cultures and languages, which highlight the use of storytelling, oral histories, reclaiming history, and celebrating survival of Indigenous peoples (2012). These projects have been adopted by some scholars and used in university classrooms to decolonize curriculum (Louie et al, 2017). Leanne Simpson discusses the importance of Indigenous storytelling as a methodology for decolonization as it creates safe spaces for Indigenous people, Indigenous voices, and can normalize Indigenous epistemologies (2011). Furthermore, Marie Battiste outlined seven sites where decolonial work can occur in post-secondary institutions (2002). These sites are similar to those stated by Leanne Simpson with their emphasis on understanding settler-Indigenous histories, being guided by Indigenous Elders, having a critical mass of Indigenous students and faculty on

campuses, and transforming the institutions and curriculum so they engage with Indigenous epistemologies (2002). Decolonization for post-secondary institutions must be accountable only to Indigenous sovereignty and futurity and cannot be used to perpetuate settler moves to innocence or it will not be true decolonization (Tuck & Yang, 2012).

### Climate Change and Indigenous Epistemologies

The International Panel on Climate Change (IPCC) was created in 1988 and produced reports that explore the global impacts from climate change and both mitigation and adaptation assessments (IPCC, ). In 2018, the IPCC released a report titled “Global Warming of 1.5 Degree Celsius” which outlined the impacts if the climate warms by 1.5-degree Celsius above pre-industrial levels globally (IPCC, 2018). Global climate change is projected to impact human health, food security, water supply, and economic growth (IPCC, 2018). The IPCC report specifically outlines the disproportionately higher risk that vulnerable, disadvantaged, and Indigenous peoples will face from a rise in temperature (IPCC, 2018). These communities are at particularly high risk due to the regions they live in, use of resource-based living, and the legacy of colonialism which has caused poverty and low-quality living conditions in many First Nation communities (Pearce et al., 2015). The IPCC indicated that temperatures in Arctic regions are rising by 3 Degrees Celsius annually above preindustrial levels (IPCC, 2018).

The disproportional effects of climate change in Northern environments have not gone unnoticed, Indigenous communities have already reported the impact of climate change on their communities, such as the effects on sea ice, weather patterns, and animal migration patterns (Ford & Smit, 2004; Turner & Clifton, 2009). Indigenous communities have aided researchers in identifying signs of climate change by providing direct knowledge of weather and species patterns, due to Indigenous oral histories and the connection to the land through traditional

practices (Turner & Clifton, 2009). Through millennia, Indigenous peoples have adapted to changes in natural environments and have maintained this flexibility to adapt to climate change (Turner & Clifton, 2009; Pearce et al., 2015). The combination of IWK with western epistemologies to research and combat climate change has produced strong adaptation techniques for communities to use in response to changes in the environments (Pearce et al., 2009; Pearce et al., 2015).

Dyanna Riedlinger found there are 5 areas that IWK can complement western science in responding to climate change; firstly, as a local scale expertise, as a baseline data and climate history, formulating research questions, providing insight to impacts of climate change and adaptation techniques and for long term monitoring (2001). The 5 areas outlined demonstrate that IWK can be woven with Western science to better understand climate change, and to create unique community driven adaptation plans (Riedlinger, 2001). As stated above, there is a variety of research that has engaged with IWK in these 5 areas identified, however, research on how educational institutions are discussing IWK with respect to climate change is limited. Henderson et al., state that research on climate change education is nascent, and that it is vital to begin engaging in this type of education because of the climate crisis we are living in (2017). Climate justice is an important movement that has been gaining traction around the globe but has yet to appear in educational research (Henderson et al., 2017). The studies discussed above highlight that IWK and western science have been researched by academics for at least two decades yet, Henderson et al., emphasises the gaps in literature surrounding climate change education (2017). The gap in knowledge on climate change education, and the importance of discussing IWK and climate change is the reason the research performed in this study is asking participants how they engage with climate change curriculum and IWK.

## Current Literature on Canadian Education Responses to TRC

There is a large amount of literature produced on the TRC Calls to Action, decolonizing western education, and the connection of climate change with IWK demonstrates that researchers have begun decolonizing academic research. However, there is limited literature produced that explored how Canadian educational institutions are engaging with the TRC Calls to Action and IWK, and climate change. Some academics have explored how programs are engaging with the TRC Calls to Action or IWK, for example, a study by Bartlett et al., explore in depth how to weave Indigenous and western science into curriculum (2012). A study by Edwards and Hewitson similarly examined the inclusion of Māori ways of knowing in post-secondary education (2008). Both these studies found that inclusion of IWK into curriculum-fostered self-determination, decolonized students, and normalize IWK in education (Bartlett et al, 2012; Edwards & Hewitson, 2008).

Research that explores students' perspectives on Indigenous epistemologies, and explores the knowledge students in post-secondary institutions have about Indigenous peoples in Canada has been performed such as, a study by Laura Schaepli that used questionnaires to survey first year cohorts from ten different Ontario universities (2018). The data from this study was used to examine the role of colonialism in current primary and secondary curriculum (Schaepli, 2018). A similar study by Castleden et al., interviewed undergraduate students who participated in a transformative learning experience and found that students did not think their previous education on Indigenous epistemologies contained enough information (2013).

The studies discussed above however, do not explore the ways in which departments in post-secondary institutions are responding to the TRC Calls to Action. Exploring the way department heads perceive their engagement with the TRC Calls to Action, Indigenous

epistemologies and climate change can produce insight into methods that are working well, areas that need to be more developed and any barriers they face in implementing these concepts. Therefore, this study will fill the gap in the literature by exploring how universities are responding to the TRC Calls to Action at departmental levels. Specifically, this research will aim to examine how undergraduate CESSPs are responding to the TRC Calls to Action. Furthermore, there is limited information surrounding how post-secondary education discusses climate change in curriculum and if there is any connections being made between climate change and IWK in curriculum. Although multiple studies have made the connection between climate change and IWK in the research, they have not discussed how IWK and climate change are integrated into undergraduate curriculum.

### Research Value

Since the release of the TRC Calls to Action, there has been an increased engagement by settler society, institutions, Indigenous peoples, and ways of knowing (Mitchell et al., 2018). There has also been a rise in literature produced using collaborative environmental science research projects including Indigenous epistemologies (Pearce et al., 2015). Researchers highlight the importance of engaging with Indigenous peoples not only as being mandated by the TRC, but also because Indigenous epistemologies bring another perspective to western science and co-create solutions that respect both ways of knowing (Pearce et al., 2009). However, literature has not been produced on how these researchers are bringing similar ideals into the classrooms, particularly with undergraduate students.

This research will focus on CESSPs due to the strong connection that has been identified by scholars between environmental education and IWK (Calderon, 2014; Datta, 2018; Kimmerer, 2002; Tuck et al., 2014). Both IWK and environmental education are deeply

connected to the land, considered a relation for many Indigenous nations, and is the focus of environmental education (Datta, 2018; Kimmerer, 2002). This project not only examines CESSPs engagement with the TRC Calls to Action, but also studies the extent to which CESSPS draw on Indigenous epistemologies and how they are engaging with climate change. This research will begin to fill the gaps identified above, but further analysis of the CESSPs is required to gain a more complete understanding of engagement with the TRC Calls to Action across Canada and to determine if there are particular responses performing decolonial work and Indigenizing curriculum.

## Methodology

### Overview of the Research Design

The purpose of this chapter is to introduce the research methodology used in this study on how Environmental Science/Studies programs at Canadian Universities are responding to the TRC Calls to Action, engaging with Indigenous epistemologies, and climate change. A qualitative analysis of this case study was used as it allows for an in-depth understanding of the engagement of Environmental Science/Studies programs. This chapter will discuss the research plan, methodologies, procedures, data analysis methods, and ethical concerns.

### Research Question

1. How are CESSPs engaging with the TRC Calls to Action, Indigenous epistemologies, and climate change?

### Research Methodology

A qualitative analysis was chosen for this study since the research question relies on the perspective of individuals on their own leadership experiences in CESSPs. The qualitative semi-

structured interview method allowed me to design themes that I wished to focus on, while providing flexibility for the participants to guide the interview itself. This allowed participants to demonstrate their specific knowledge and ensured that the interviewer is able to best understand the social and personal content informing the participants' ideas (DiCicco-Bloom & Crabtree, 2006). Conventional content analysis was used to explore the qualitative data. This type of analysis allows the codes to be defined during the analysis based off the text and permits research be driven by the participants contributions (Hsieh & Shannon, 2005).

### Population/Sample

The sample population was initially aimed to be student leaders in undergraduate CESSPs at the U15 institutions; however, due to lack of participation interest from students, Department Heads of CESSPs were recruited. The criteria for the sample was an English-speaking Department Head, Chair, Undergraduate Chair, or Program Directors of CESSPs at each of the U15 institutions. The Université de Laval and Université de Montréal are not included in this research study because of the language barrier present. The U15 research institutions were selected as a pre-set manageable sample for an undergraduate research project.

### Limitations and Ethical Considerations

One limitation for this research study was the timeline permitted. An undergraduate Honours thesis must be completed in a two-semester period, which restricts the level of detail that can be collected and the sample size for this analysis. As noted above, I attempted to recruit student participants but with a lack of success in recruiting, I needed to revise my study design by December 2019 and seek ethical approval in January 2020 in order to complete the research. Another limitation for this study was the participation received, of 13 universities contacted, 7 responded, which limited the number of interviews that were done and did not allow for a

comprehensive dataset to be done. Ethical considerations include the small sample size, which could cause risk identification of participants to be higher. Furthermore, there is risk to participants' professional standing if a quote is attributed or misattributed to them. To mitigate this risk, participants were provided a detailed information letter stating the risk involved and rights of the participant and asking for consent from the participant. Participation in this study was voluntary and participants had the opportunity to refuse to answer questions they believe would have jeopardized their professional standing.

### Data Collection Process

First, clearance from the Queen's University General Research Ethics Board was sought and recruitment began after clearance was received. A digital search was used for each of the U15 university websites to find Department Head contact information to recruit participants. A digital search was also used to determine if each university had a response to the TRC Calls to Action. Recruitment was done by emailing Department Heads, or Directors to determine if they were interested in participating in this research study. After 1 week if there was no response, a second round of emails was sent out to participants. If participants responded indicating interest, then a time and date was scheduled for an interview. The participants were asked to read over the letter of information before participating in the interview. Verbal consent was received from the participants at the beginning of the interview and question periods before and after the interview were provided to allow participants to discuss any concerns or issues they have with the study. This study uses semi-structured interviews, which ranged from 20 to 40 minutes with me. The interviews were performed over the phone, recorded electronically, and transcribed. Interviews were conducted once verbal consent was received and occurred in single sessions with

participants individually. Of the seven participants, five identified as male, and two as female. Due to the small sample size, a gendered analysis was not performed.

The interviews began with initial questions about the department and university to determine the setting that each participant works in, the undergraduate programs offered, and the size of the department/programs (see Appendix 1). This information was used to provide context so that the researcher is able to engage with the participant during the interview. Next, more in-depth questions were asked in three main categories, TRC Calls to Action, Indigenous epistemologies, and climate change (see Appendix 1). These categories were developed to be flexible so that the participant could guide the interview based on their own experiences and knowledge. Probes were used throughout the interview to help the participants to fully answer the questions. Concluding questions were asked about the CESSPs and the participants' level of interest in these themes, (see Appendix 1). The participants did not have the opportunity to review their transcripts, unless somebody expressed an explicit desire to see transcripts or quotes in context – due to the limited timeline for the low risk project. A copy of the final report will be sent to participants if they expressed interest in reading it.

Data is encrypted and stored on a password-protected computer located in my supervisor's secure Research Lab. Encrypted data is also stored on my personal password protected computer. No one other than the research team have access to these files. Five years after the study completion, the data will be destroyed in my supervisor's lab. Data on my computer will be deleted by May 30, 2020.

## Data Analysis

Concept mapping of the transcripts was used to delineate themes and common threads in the data. Ian Hay in "Interpreting and Communicating Qualitative Research" describes concept

mapping as “visualizing data and their relationship” and it has the ability to identify unique statements which when grouped show themes in the data (2000). This method is useful for the analysis since it allows the researcher to visualize the data and identify themes more clearly, before the coding process began.

Coding of the transcripts was completed as the interviews were conducted and transcribed, and conventional content analysis was used to perform two rounds of coding. NVivo software was used to code the interview transcripts. This analysis method was used because it allows the codes to be defined based of the qualitative data retrieved from the interviews (Hsieh & Shannon, 2005). This allowed the codes to be driven based off each participant and themes were developed from the interviews themselves. Codes were then organized into categories and subcategories to determine the themes present and organized into a codebook (see appendix 2). Both descriptive codes; which were used to reflect surficial reoccurring themes in the data, and analytical codes; which go deeper into the context of the data to develop theories, were used for this analysis. Initially, descriptive codes were used to determine the general themes or question answer codes, then in a second round of coding, analytical codes were used to explore further into participants perspective and the meaning of these codes (Hay, 2000).

## Findings

The purpose of this chapter is to present the data retrieved in this study; both qualitative data retrieved in interviews and data retrieved from a digital search. The aim of this research is to explore how CESSPs are responding to the TRC Calls to Action, and engaging with Indigenous epistemologies and climate change. The research identified 14 themes that the interview data was categorized in; major themes such as familiarity with the TRC, struggles or difficulties, climate change curriculum and extent of TRC implementation were identified. A digital search of

CESSPs course curriculum and universities was performed to explore if at the university level there have been official responses to the TRC and if IWK are engaged with in CESSP course curriculum.

Table 1 identifies 13 of the 15 U15 Group of Canadian Research Universities and if they have an official response to the TRC Calls to Action.

*Table 1. Outlines the 15 Universities included in the U15 Research Institutions and if they have an official university level response to the TRC Calls to Action report released in 2015.*

U15 Research Institutions	Official University Response to TRC Calls to Action
University of Alberta	Yes
University of British Columbia	Yes
University of Calgary	Yes
Dalhousie University	No
University of Manitoba	Yes
McGill University	Yes
McMaster University	No
University of Ottawa	Yes
Queen's University	Yes
University of Toronto	Yes
Saskatchewan University	Yes
University of Waterloo	Yes
Western University	Yes

Table 2 identified 13 of the 15 'U15 Group of Canadian Research Universities and if the ESS programs offered at these universities explicitly engage with IWK in course curriculum and indicates if it is an elective or mandatory course.

*Table 2. Courses either elective (e) or mandatory (m) in Environmental Science and Studies program's curriculum. Data retrieved from online school websites.*

U15 Research Institutions	Courses in ESS program specifically on IWK
University of Alberta	Elective courses
University of British Columbia	Elective courses
University of Calgary	Elective courses
Dalhousie University	Elective courses
University of Manitoba	Elective courses
McGill University	Elective courses
McMaster University	No

University of Ottawa	No
Queen's University	Elective courses
University of Toronto	No
Saskatchewan University	Elective courses
University of Waterloo	Elective course
Western University	Elective courses

## Responses to TRC

All participants indicated that they had heard of or reviewed the TRC Final Report and Calls to Action after it was released, however, the familiarity with the document was relatively low and the participants had limited knowledge of exact calls in the document or have not reviewed the entire report.

*“Um, familiar but I wouldn't say you know that um, you know, for example you were numbering the um recommendations. I know the recommendations; I know some of the recommendations but not necessarily by number for example or you know the details of the final report.” (P3, Male)*

Participants also discussed the ways they saw their department responding to the TRC Calls to Action other than an official response, as the majority of universities in the sample have official responses to the TRC Calls to Action that are being used to engage with IWK at the university level (Table 1). Most participants discuss the inclusion of Indigenous epistemologies or histories in curriculum; either by adding in a section of IWK or Indigenous histories to current courses, or by creating mandatory courses that are focused on Indigenous epistemologies or histories. In particular, the majority of participants discussed electives available for students that engage with IWK, which was also found in the digital search performed as part of this research project (Table 2). Participants also discussed the ways the university is responding to the TRC,

highlighted the addition of senior administrative positions for Indigenous engagement or the addition of Elders as advisors at the university.

*“Yeah, there um so in some of our courses there are electives that we point out or um, you know, suggest as an option for students. Those electives are offered through the Indigenous studies program here on campus that do touch on ways of knowing, environmental issues and so on.” (P3, Male)*

*“We do it by a more um integrative approach. Or we try to add you know Indigenous content in the individual courses, indigenize individual courses, in some way where we can do it in a bit more seamless perspective.” (P2, Female)*

*“In response to the TRC and in particular to call 62, there is a requirement that every student that completes an Arts and Science degree must have at least three credit units, one semester course um, that deals with Indigenous learning” (P4, Male)*

*“The university hired their first [senior administrator for] Indigenous engagement.” (P5, Male)*

*“We have um an Elder in residence and this is somebody that we can go to if we have questions about maybe um trying to find ways to incorporate um Indigenous ways of knowing into our curriculum.” (P7, Female)*

Some participants also discussed a departmental review of programs, which are used to explore gaps in courses, and often survey both students and professors on what they want included. These reviews are used to determine where they can better engage with IWK in curriculum, and if there is student or scholars driving a call for more curriculum on IWK.

*“We’re at the stage of going through programs and um, reviewing them and seeing if there’s more that we can do...revise and update your curriculum in a program and one of the things that they’re addressing is indigenization of that curriculum.” (P2, Female)*

*“...Environmental science program, we took stock of where any relevant curriculum is coming up so that we can identify areas that we can grow the curriculum around Indigenous studies and scholarship.” (P7, Female)*

Some participants discussed the inclusion of specializations that are focused on Indigenous epistemologies, or the use of land-based learning courses that engage with Indigenous epistemologies.

*“It’s actually a land-based experiential learning course and it’s being delivered in cooperation with an Indigenous community...And it requires our students to spend time on the land with the members of that community.... Now what we’re trying to do now is take that land-based learning and gradually where we can bring elements of Indigenous ways of knowing into those land-based courses.” (P4, Male)*

Participants discussed that there is a need for more Indigenous scholars in their departments and stated that they do not have or do not know if there were faculty in their department that self-identify as Indigenous, whether Inuit, Métis or First Nation. Some participants also discussed the struggles they are facing with this call from the TRC, particularly challenges finding Indigenous scholars to fill their positions but have indicated that there is support from higher levels at the university.

*“Um Indigenous faculty, Indigenous students, Indigenous programming is only just starting to break out of the silos.” (P4, Male)*

*“That’s an objective we have for sure and have support up at the highest level at the university, you know, I feel fairly confident if I ask you know an excellent Indigenous scholar that I had a chance of attracting I almost certainly would be successful in getting you know a position for that person if I went to the provost office. Um, the problem is you know, finding people that are... we don’t get you know tons of self-identifying people applying for our positions unfortunately so that’s something we need to address.” (P2, Female)*

### Climate Change Curriculum and Connection to IWK

Participants discussed the importance of climate change curriculum in CESSPs and indicated that the undergraduate programs contain courses that discuss climate change in a variety of ways. As well, they indicated that curriculum discussed the social, economic, and physical impacts of climate change, forms of mitigation, assessment and adaption to climate change.

*“We have several courses that deal with the climate directly, or climate change and then climate change is also embedded into um other components or modules of multiple courses within the school; it could be climate change and urban systems or the impact of climate on populations, or the impact of climate on hydrological systems on flooding...established in certainly in the program content area, as well as embedded within multiple courses across the school.” (P3, Male)*

*“The impacts of climate change are certainly embedded I would say within...most of our classes it comes up. Certainly, impacts, ideas around mitigation and adaptation are brought up in some of the courses. I’d say climate change impacts, most if not all the*

*courses touch on it or integrate it to some extent and adaptation and mitigation to varying extents.” (P6, Male)*

In 2018, the IPCC released a report that highlighted the disproportional effects climate change on marginalized communities. Participants indicated that there was less emphasis on the social impacts of climate change in course content, but highlighted that some scholars are discussing environmental justice.

*“So, a course I believe touches, not just touches but incorporates that heavily environmental justice.” (P6, Male)*

*“um, the aspect of ecojustice coming with it um, no not as much.” (P1, Male)*

Participants also indicated that the inclusion of Indigenous epistemologies is not being emphasised in climate change curriculum and that creating a connection between IWK and climate change is more difficult. There was variation in participants’ perspectives on the importance of engaging with IWK in climate change. Some participants discussed that in certain courses there is engagement with IWK on climate change but that individual faculty or staff members bring it in.

*“I’m not fully sure if they do, my sense, and it’s only a sense is that there probably hasn’t been that integration at this point. Um but I don’t fully know.” (P3, Male)*

*“(sighs) I think it’s harder to bring it into the classroom.” (P4, Male)*

*“I believe personally, and I think it’s the perception as well, that um, while we certainly see a value of it, it might not be the way to maximize the available program.” (P1, Male)*

*“Um to some extent, yeah. I don’t know how prominent that is or um, how well that circle has been closed to link those two aspects together, um yeah, I’m not really sure. To some*

*extent it is for sure, but um, I'm not, I'm not really sure how extensive it is so far.” (P2, Female)*

## Outliers and Barriers

Throughout the interviews, the participants identified either institutional or personal barriers that they felt in trying to respond to the TRC Calls to Action and Indigenous epistemologies in CESSPs.

*“I think there’s a long tradition that goes way back into the 1970s of how we moved First Nations, Inuit students into our campuses. They were targeted at nursing, they were targeted at teaching, and they were targeted at sociology. In addition, in those places, there is a good solid foundation of engagement. In the STEM subjects there is a very late development here it is just really the last handful of years, and its dependent on champions those individual faculty that will undertake a significant transformation of their curriculum and their pedagogy to do this. So, it’s a very slow process.” (P4, Male)*

Institutional barriers are those that either are made by the academic structures in place or are created by university regulations. Some participants noted that engaging with Indigenous scholars or communities for course content can be difficult because it is difficult to find self-identifying Indigenous peoples in university faculties or the course structure itself is not conducive to including courses on IWK.

*“Well to me then the curriculum and content is informed mostly by first person narratives and issues from Indigenous or First Nations communities. Now, we have a challenge here, right now the portion of faculty with an Indigenous background in our campus is very small.” (P4, Male)*

*“changing one of those courses means that we got to put aside what we consider some key skills for someone to graduate with our degree. So, it’s a question of trade-offs and um maybe an elective in the undergrad would be possible.” (P1, Male)*

Some participants also discussed challenges with bringing Indigenous elders or community members into classes for guest lectures or other forms of knowledge sharing. They stressed the logistical issues of satisfying both communities and the university or finding routes to receive funding.

*“Actually, I have had trouble bringing, I guess I’m becoming more familiar with the customs as to how we would invite an elder into the classroom. And I haven’t quite figured that out there’s a cost involved so I haven’t been able to figure out the if the university will pay that cost.” (P7, Female)*

*“And so, every time somebody like myself comes into the community and says, you know is there a chance that x or y could share some time with our class. You know we got logistical problems, they’re just overwhelmed... you can wear a community out with the demands on their time. And I do think that is a systemic problem that is very hard to overcome” (P4, Male)*

Participants also indicated that there are personal barriers they feel when trying to engage with IWK and responding to the TRC Calls to Action. Particularly barriers appeared around discussing IWK in course content and feelings of being inadequate, not having enough knowledge to discuss IWK content in classes or some issues they face when engaging with Indigenous communities.

*“Our faculty members aren’t experts in this area um, given none of them are Indigenous or have that lived experience so they really feel quite intimidated and inadequate when you say okay you got to indigenize your curriculum” (P2, Female)*

*“That is, that’s a really hard thing to do and I think a lot of us are struggling with how to do that.... it’s difficult to figure out exactly how to do that when you know, the actual nitty gritty of what that means. So, it’s a shared goal I guess you could say, but the actual way of how do we do that is much more difficult at least to me to figure out.” (P5, Male)*

*“...just feeling that I didn’t have enough knowledge myself, and I felt inadequate and I didn’t want to do something that was inappropriate or insensitive. So, I was hesitant and then I just decided I need to bite the bullet and do something.” (P2, Female)*

## Discussion

### Engagement with the TRC and Indigenous Epistemologies

This research offers perspectives from CESSP Department Heads from seven of the U15 research institutions on their department’s engagement with the TRC Calls to Action, Indigenous epistemologies, and climate change. Many of the Department Heads indicated that their knowledge of the TRC Calls to Action is minimal but highlighted that their universities do have official responses to these calls to action. Engagement with the TRC Calls to Action at the university level is becoming more prominent as can be seen in Table 1 with all universities having an official response to the TRC Calls to Action. All participants also identified ways in which their university has responded such as, creating senior administrative positions for highly qualified Indigenous leaders, securing funding specifically for hiring Indigenous faculty, or engaging with Indigenous peoples on campus. These forms of engagement are necessary to begin

decolonizing universities as they bring Indigenous voices into the institutions who are able to share their own ways of knowing and understandings of the world with colleagues, students, and directors (Mitchell et al., 2018). However, the limited knowledge participants have on the TRC Final Report raises concern, since knowledge of the TRC Calls to Action and Final Report is outlined as a first step that individuals must take to be able to engage fully with Indigenous peoples and their histories in the TRC final report (TRC, 2015b).

Many Indigenous and non-Indigenous scholars have indicated that bringing Indigenous faculty into institutions is an important step to decolonizing institutions (Mitchell et al., 2018; Battiste et al., 2002). In the information collected, there were many comments on the need for more Indigenous faculty on campus, particularly in these departments where most participants indicated that there are no self-identifying Indigenous peoples present in as faculty. Participants discussed the barriers that are involved with recruiting Indigenous faculty, but some indicated that there are positions specifically searching for either self-identifying or non-Indigenous allies working with Indigenous communities. These findings indicate that universities are engaging with the TRC Calls to Action but that the inability to close the education gap between Indigenous and non-Indigenous peoples in Canada has become a barrier (Ottmann, 2017).

Additionally, the participants discussed how they perceive their department is responding to the TRC Calls to Action and most indicated that the department is not doing enough – which is not to say the departments are not trying. When probed further, some participants also discussed this could be due to a lack of Indigenous faculty on campus, or that they do not have enough knowledge in Indigenous epistemologies to fully engage. These findings demonstrate that settlers attempt to relieve themselves of guilt or responsibility for ongoing settler colonialism, also known as “settler moves to innocence” (Tuck & Yang, 2012). By the

participants expressing that they have not engaged with the TRC Calls to Action or do not have resources to be able to begin decolonizing their curriculum, institutions and participants are trying to absolve themselves from their part in continuing the colonial agenda.

Some participants did highlight ways in which their departments are responding to the TRC Calls to Action and engaging with IWK. The participants discussed reviewing program curriculum to find gaps in knowledge, including land-based or experiential learning in curriculum, and engaging with Indigenous epistemologies and the history of settler colonialism in course content as ways their departments are engaging with IWK and the TRC Calls to Action. However, various participants indicated that curriculum development is led by the scholar teaching the course therefore, curriculum engagement with IWK is driven by individual faculty. Performing a comprehensive review of CESSP's curriculum can provide department heads with a baseline of how the department is engaging with IWK in curriculum and promote organizational change (Oliver & Hyun, 2011). Engaging with IWK in course curriculum is an important form of engagement as it creates space for Indigenous perspectives in post-secondary institutions by normalizing Indigenous epistemologies (Mitchell et al., 2018). Land-based or experiential learning has been discussed by some scholars as decolonial, since it can be used to critique settler colonialism, centre content on Indigenous epistemologies or understandings of land, and repatriate Indigenous land and life if done correctly (Datta, 2018; Tuck et al., 2014). These forms of educating can deeply unsettle those who participate in the courses, and can advance post-secondary institutions on the path to reconciliation (Tuck et al., 2014). The different methods participants discussed in this research have been identified by many Indigenous and non-Indigenous scholars as decolonial practices. They promote and normalize IWK in post-secondary education, breaking down the structures of settler colonialism in

academia, and empower Indigenous voices by having curriculum led by Indigenous peoples (Battiste et al., 2002; Louie et al., 2017; Mitchell et al., 2018; Smith, 2012; Simpson, 2011).

### Engagement with Climate Change

Climate change curriculum is more entrenched in CESSPs at the undergraduate level with all participants sharing how climate change is discussed and emphasized in their curriculum. Participants mainly indicated that only the physical impacts climate change has on the environment and some of the risks it poses to human health and well-being are discussed in course curriculum. However, discussions of mitigation and adaption techniques indicate these concepts are not incorporated in all programs sampled. The IPCC highlights the importance of discussing mitigation and adaption techniques and how they can be used to mitigate the impacts of climate change (2018). As well, various research projects on climate change focus particularly on developing or examining mitigation or adaption techniques being used to fight climate change (Ford & Pearce, 2012; Pearce et al., 2015). As climate change is a global issue that affects everyone and all sectors, its impacts, methods of mitigation and adaption being used should be engaged with at the undergraduate level in all disciplines (IPCC, 2018).

The involvement of IWK in climate change education is limited, with most participants stating that connections between IWK and climate change are not yet or minimally present in curriculum with only stating a few examples used in curriculum. However, IWK and climate change have been significantly investigated by both Indigenous and non-Indigenous scholars. Research has focussed on Indigenous communities being impact by climate change, exploring Indigenous perspectives on climate change, how Indigenous peoples perceive climate change in their communities, and methodologies these communities use to adapt to and mitigate climate change (Pearce et al., 2009; Turner & Clifton, 2009). The breadth of this research indicates that

IWK and climate change are strongly connected, that scholars are aware of this connection, but the absence of this discussion in CESSPs indicates gaps in knowledge by the institutions.

### Barriers to Responding to the TRC Calls to Action

This research found specific barriers that the Department Heads are facing when attempting to engage with the TRC Calls to Action, Indigenous epistemologies, and climate change. Both personal and institutional barriers were discussed by participants that impacted their ability to engage. Some participants discussed the discomfort or lack of knowledge they have about Indigenous epistemologies which inhibit them from engaging with Indigenous epistemologies in their departments. Discomfort is often felt by settlers as a form of settler guilt, which is the feeling of guilt settler peoples have when discussing settler colonialism and the benefits settlers have reaped from this process (Tuck & Yang, 2012). It often also leads to forms of settler moves to innocence, which are used by settlers to remove feelings of guilt while perpetuating settler colonialism (Tuck & Yang, 2012). It is important then to move past these feelings of insecurity towards a journey of learning and engaging with Indigenous epistemologies to be able to engage in decolonial work (Tuck & Yang, 2012). Beginning on a journey of self-reflection to understand the histories of settler colonialism, and what it means from an Indigenous perspective, is critical to break down colonialism in education institutions (Mitchell et al., 2018).

Institutional barriers were also perceived by participants, specifically issues bringing Indigenous scholars, Elders, or knowledge holders into classrooms, finding ways to engage with Indigenous knowledge systems, or with the structure of Canadian post-secondary education which does not provide space for engagement. These barriers indicate that the participants do not have the resources in place to be able to engage with Indigenous epistemologies in their

curriculum. TRC Calls to Action 62 and 63 mandate all levels of Canadian government and the Council of Ministers of Education to provide funding and resources on best practices to integrating Indigenous knowledge into classrooms (2015b). These findings indicate that there is a disconnect between the 2015 TRC Calls to Action and current resources available to educators. However, the findings also demonstrate settler moves to innocence as discussed above, as there are multiple online resources that outline decolonizing methodologies and principles to engage with Indigenous epistemologies, which indicates that participants are not educated on the extent to which Indigenous and non-Indigenous scholars have researched methods to decolonize educational institutions (Bartlett et al., 2012; Battiste, 2009; Battiste et al., 2002; Louie et al., 2017; Mitchell et al., 2018; Smith, 2012; Simpson, 2011). The barriers that participants discussed highlight that settler guilt is a common issue they face, and that institutional barriers such as, limited funding or resources, indicates that the TRC Calls to Action 62 and 63 have not been implemented effectively in post-secondary institutions.

### Implications of Results

This research found that CESSPs are responding to the TRC Calls to Action in different ways, mainly by integrating Indigenous epistemologies in course content. Responses to the TRC are occurring largely at the university level with many participants highlighting the ways in which their universities are responding, such as by hiring Indigenous faculty and creating spaces on campus for Indigenous students. Departmental level responses were also perceived to be driven by individual faculty members, due to academic freedom, which highlights that at the departmental level official responses to the TRC Calls to Action are less frequent.

The research findings highlighted how CESSPs are engaging with the TRC Calls to Action, IWK, and climate change; methodologies CESSPs are using, and barriers the participants

discussed they face in trying to respond to the TRC Calls to Action. First, this research found ways in which departments are responding to the TRC Calls to Action that promote decolonial work. The use of land-based, or experiential, learning was discussed by some participants as a way to involve students with IWK. These methods of learning have been found to help engage students with Indigenous epistemologies, settler and Indigenous histories, and the ramifications of this history on current Canadian society (Castleden et al., 2013). Second, this study found that some CESSPs are engaging Indigenous knowledge holders or Elders in curriculum development or delivery, which many Indigenous and non-Indigenous scholars have discussed as being useful to educate students about settler-Indigenous relations, IWK, and Indigenous histories (Battiste et al., 2002; Smith, 2012). Third, this research found that there is a gap present in CESSP curriculum that discusses climate change with Indigenous epistemologies. By closing this gap, students will be able to understand how climate change disproportionately impacts Indigenous peoples and how these communities are using their ways of knowing to adapt to and mitigate climate change (IPCC, 2018; Pearce et al., 2009; Turner & Clifton, 2009).

The results of this study are intended to help CESSPs explore how similar programs are engaging with and responding to the TRC Calls to Action, Indigenous epistemologies, and climate change. Furthermore, this study will act as a guide for other post-secondary institutions to explore methods they can employ to decolonize university spaces. The results are presented to aid Indigenous peoples in Canada to continue to be resilient, to break down the settler colonial structures post-secondary institutions have been built upon, and promote self-determination. The findings also are important for Canadian society as a whole, with providing ways in which individuals can decolonize themselves and the society they live in.

## Conclusion

The history of settler colonialism and the impacts on Indigenous peoples are still deeply imbedded in society and institutions. The Canadian government has systematically attempted to erase Indigenous peoples from their territories to gain access to land and resources (TRC, 2015a). Using legal documents such as, the Royal Proclamation of 1763 which was used to claim territory and the use of treaties and the 1876 Indian Act which was used to entitle the federal government legal control over Indigenous peoples, and mandate residential schools which were used to assimilate and erase Indigenous peoples from Canada (TRC 2015a). These mechanisms are still present in current settler society and can be seen in all levels of education due to the large education gap between Indigenous peoples and Canadian society (Auditor General of Canada, 2011). Post-secondary institutions have been called on by the Truth and Reconciliation Commission to try to close that gap and decolonize their institutions by the 2015 TRC Calls to Action.

The IPCC released a report outlining the impacts climate change will have on humans and the physical environment if global warming increases by 1.5-degrees Celsius (2018). This report discussed how marginalized communities will be disproportionately impacted by climate change due to economic, social, and cultural factors (IPCC, 2018). Climate change is an important topic which is covered in many CESSPs, but the research conducted for this study found that these courses are not engaging with how IWK can be integrated with Western science to better understand climate change, mitigation, and adaption techniques that can be applied at all levels of government.

This research outlines how some post-secondary institutions are responding to the TRC Calls to Action, and engaging with Indigenous epistemologies and climate change. The impact of

the TRC final report can be seen with most universities having released an official response and making significant changes to employ, recruit, and create space for Indigenous peoples on campuses. However, these calls have had less impact at the department levels – particularly in CESSPs response to the TRC are not being implemented in a timely fashion as indicated by this study. There have been some changes in CESSPs discussed in this study that are moving towards reconciliation, such as thoroughly engaging with Indigenous knowledge holders and scholars to create and deliver course curriculum and include experiential learning in CESSPs. The aim of this research project is to aid CESSPs in evaluating their programs and curricula in regard to engagement around Indigenous epistemologies, TRC Calls to Action, and climate change. These findings are also intended to advance departments in the reconciliation process, as mandated in the Truth and Reconciliation Commission’s 94 Calls to Action.

## References

- Auditor General of Canada. (2011). 2011 June status report of the Auditor General of Canada: Chapter 4 – Programs for First Nations on reserves. Retrieved from [http://www.oagbvq.gc.ca/ internet/English/parl\\_oag\\_201106\\_04\\_e\\_35372.html#hd5e](http://www.oagbvq.gc.ca/ internet/English/parl_oag_201106_04_e_35372.html#hd5e)
- Bartlett, C., Marshall, M., and Marshall, A. (2012). Two-Eyed Seeing and other lessons learned within a co-learning journey of bringing together Indigenous and mainstream knowledges and ways of knowing. *Journal of Environmental Studies and Science* 2(4), 331-340.
- Battiste M. (2019). Decolonizing education: nourishing the learning spirit. UBC Press.
- Battiste, M., Bell, L., and Findlay, L.M. (2002). Decolonizing education in Canadian universities: An interdisciplinary, international, Indigenous research project. *Canadian Journal of Native Education*, 26(2), 82-95.
- Battiste, M., Henderson, J.Y. (2009). Naturalizing Indigenous knowledge in Eurocentric education. *Canadian Journal of Native Education*, 32(1), 5-18.
- Calderon, D. (2014). Speaking back to Manifest Destines: a land education-based approach to critical curriculum inquiry. *Environmental Education Research*, 20(1), 24-36.
- Canada. Royal Commission on Aboriginal Peoples. (1994). *The High Arctic Relocation: A Report on the 1953-55 Relocation*. Ottawa: The Commission.
- Canada. Royal Commission on Aboriginal Peoples. (1996). *Report of the Royal Commission on Aboriginal Peoples*. Ottawa: The Commission.
- Castleden, H., Daley, K., Sloan Morgan, V., and Sylvestre, P. (2013). Settlers unsettled: using field schools and digital stories to transform geographies of ignorance about Indigenous peoples in Canada. *Journal of Geography in Higher Education* 37(4). DOI: [10.1080/03098265.2013.796352](https://doi.org/10.1080/03098265.2013.796352)

- Datta, R.K. (2018). Rethinking environmental science education from Indigenous knowledge perspectives: an experience with a Dene First Nation community. *Environmental Education Research*, 24(1), 50-66.
- DiCicco-Cloom, B., and Crabtree, B.F. (2006). The qualitative research interview. *Medical Publication*, 40(4), 314-321. DOI: <https://doi.org/10.1111/j.1365-2929.2006.02418.x>
- Draper, C. (2016). Re-conceptualizing Indigenous student success in response to the TRC's Calls to Action. in Falkenberg, T. (Ed.), *Philosophical Inquiry in Education: Engaging with the TRC Calls to Action* (23-34). University of Manitoba.
- Edwards, D., and Hewitson, K. (2008). Indigenous epistemologies in tertiary education. *The Australian Journal of Indigenous Education*, 37, 96-102.  
DOI: <https://doi.org/10.1375/S1326011100000429>
- Ford, J.D., and Smit, B. (2004). A Framework for assessing the vulnerability of communities in the Canadian Arctic to risks associated with climate change. *Arctic*, 57(4), 389-400.
- Ford, J.D., and Pearce, T. (2012). Climate change vulnerability and adaptation research focusing on the Inuit subsistence sector in Canada: Directions for future research. *The Canadian Geographer*, 56(2), 275-287.
- Hay, I. (2000). Organizing and analysis qualitative data. *Qualitative Research Methods in Human Geography*, 18, 374-393.
- Henderson, J., Long, D., Berger, P., Russell, C., and Drewes, A. (2017). Expanding the foundation: Climate change and opportunities for educational research. *Educational Studies*, 53(4), 412-425. DOI: <https://doi.org/10.1080/00131946.2017.1335640>.
- Hsieh, H.F., and Shannon, S.E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research*, 15(9), 1277-1288. DOI: [10.1177/1049732305276687](https://doi.org/10.1177/1049732305276687)

- IPCC. (2018). Summary for Policymakers. In Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (Ed.), *Global Warming of 1.5°. World Meteorological Organization* (1-32). Geneva, Switzerland.
- Kerr, J.(2014). Western epistemic dominance and colonial structures: Considerations for thought and practices in programs of teacher education. *Decolonization: Indigeneity Education & Society*, 3(3), 83-104.
- Kimmerer, R.W. (2002) Weaving traditional ecological knowledge into biological education: A call to action. *Bioscience*, 52(5), 432-438.
- Kubik, W., Bourassa, C., and Hampton, M. (2009). Stolen sisters, second class citizens, poor health: The Legacy of colonization in Canada. *Humanity & Society*, 33(1-2).
- Laidler, G.J. (2006). Inuit and scientific perspectives on the relationship between sea ice and climate change: The ideal complement? *Climate Change*, 78(407).
- Logan, T. (2015). Settler colonialism in Canada and the Métis. *Journal of Genocide Research*, 17(4), 433-452.
- Louie, D., W., Pratt, Y., P., Hanson, A. J., and Ottmann, J. (2017). Applying Indigenizing principles of decolonizing methodologies in university classrooms. *Canadian Journal of Higher Education*, 47(3), 16-33.
- MacKay, B.B., and Firmin, M.W. (2008). The historical development of private education in Canada. *Educational Research & Perspectives*, 35, 57-72.

- Mitchell, T.L., Thomas, D., and Smith, J.A. (2018). Unsettling the settler: Principles of a decolonial approach to creating safe(r) spaces in post-secondary education. *American Journal of Community Psychology*, 62, 350-363.
- Oliver, S.L., and Hyun, E. (2011). Comprehensive curriculum reform in higher education: Collaborative engagement of faculty and administrators. *Journal of Case Studies in Education*, 2.
- Ottmann, (2017). Canada's Indigenous peoples' access to post-secondary education: The spirit of the 'New Buffalo'. In Frawley, J., Larkin, S., and Smith, J.A. (Ed.), *Indigenous Pathways, Transitions and Participation in Higher Education: from Policy to Practice*, 95-117. DOI 10.1007/978-981-10-4062-7\_7.
- Pearce, T.D., Ford, J.D., Willox, A.C., and Smit, B. (2015). Inuit traditional ecological knowledge (TEK), subsistence hunting and adaptation to climate change in the Canadian Arctic. *Arctic*, 68(2), 233-245.
- Pearce, T.D., Ford, J.D., Laidler, G.J., Smit, B., Duerden, F., Allarut, M., Andrachuk, M., Baryluk, S., Dialla, A., Elee, P., Goose, A., Ikummaq, T., Joamie, E., Kataoyak, F., Loring, E., Meakin, S., Nickels, S., Shappa, K., Shirley, J., and Wandel, J. (2009). Community collaboration and climate change research in the Canadian Arctic. *Polar Research*, 28(1), 10-27. DOI: [10.1111/j.1751-8369.2008.00094.x](https://doi.org/10.1111/j.1751-8369.2008.00094.x).
- Riedlinger, D. (2001). *Community-based assessments of change: Contributions of traditional knowledge to understanding climate change in the Canadian Arctic* (Dissertation University of Manitoba, Winnipeg, Manitoba, Canada.). Retrieved from <https://search.proquest.com/docview/304743206/?pq-origsite=primo>

- Saldaña, J. (2009). *The coding manual for qualitative researchers*. Los Angeles: SAGE Publications.
- Schaepli, L. (2018). *Exposing the colonial mind: Epistemologies of ignorance and education in Ontario* (Dissertation Queen's University, Kingston, Ontario, Canada). Retrieved from [https://www.jstor.org/stable/43871322?seq=4#metadata\\_info\\_tab\\_contents](https://www.jstor.org/stable/43871322?seq=4#metadata_info_tab_contents)
- Simpson, L. (2011). Theorizing resurgence from within Nishnaabeg thought. In *Dancing on our Turtle's back stories of Nishnaabeg re-creation, resurgence and a new emergence*, 31-47. Arbeiter Ring Publishing.
- Smith, L.T. (2012). *Decolonizing methodologies: research and Indigenous peoples*. Zed Books Ltd.
- Truth and Reconciliation Commission of Canada. (2015a). *Final report of the Truth and Reconciliation Commission of Canada: History Part 1*. Winnipeg: Truth and Reconciliation Commission of Canada.
- Truth and Reconciliation Commission of Canada. (2015b). *Final report of the Truth and Reconciliation Commission of Canada: Calls to Action*. Winnipeg: Truth and Reconciliation Commission of Canada.
- Truth and Reconciliation Commission of Canada. (2015c). *Final report of the Truth and Reconciliation Commission of Canada: What We Have Learned*. Winnipeg: Truth and Reconciliation Commission of Canada.
- Truth and Reconciliation Commission of Canada. (2016a). *Final report of the Truth and Reconciliation Commission of Canada: The Métis Experience*. Winnipeg: Truth and Reconciliation Commission of Canada.

- Truth and Reconciliation Commission of Canada. (2016b). *Final report of the Truth and Reconciliation Commission of Canada: Reconciliation*. Winnipeg: Truth and Reconciliation Commission of Canada.
- Tuck, E., and Yang, W.K. (2012). Decolonization is not a metaphor. *Decolonization: Indigeneity, Education & Society*, 1(1), 1-40.
- Tuck, E., McKenzie, M., and McCoy K. (2014). Land education: Indigenous, post-colonial, and decolonizing perspectives on place and environmental education research. *Environmental Education Research*, 20(1), 1-23. DOI: 10.1080/13504622.2013.877708.
- Turner N.J., and Clifton, H. (2009). “It’s so different today”: Climate change and Indigenous lifeways in British Columbia, Canada. *Global Environmental Change*, 19, 180-190.  
DOI: [10.1016/j.gloenvcha.2009.01.005](https://doi.org/10.1016/j.gloenvcha.2009.01.005)
- United Nations. (2007). *United Nations Declaration on the Rights of Indigenous Peoples* (PDF). Retrieved from [https://www.un.org/development/desa/Indigenouspeoples/wp-content/uploads/sites/19/2018/11/UNDRIP\\_E\\_web.pdf](https://www.un.org/development/desa/Indigenouspeoples/wp-content/uploads/sites/19/2018/11/UNDRIP_E_web.pdf)
- Wolfe, P. (2006). Settler colonialism and the elimination of the native. *Journal of Genocide Research*, 8(4), 387-409.

## Summary of Findings

- CESSPs are responding to the TRC Calls to Action in a variety of ways. Common forms of engagement with IWK by CESSPs is having curriculum developed by Indigenous knowledge holders, having elective courses on IWK, including IWK in existing mandatory courses, and using experiential or land-based learning.
- Responses to the TRC are occurring largely at the university level with many participants highlighting the ways in which their universities are responding, such as by hiring Indigenous faculty and creating spaces on campus for Indigenous students.
- Response to TRC Calls to Action has not been fully incorporated within CESSPs as all participants highlighted that their departments are not doing enough.
- This research found that there is a gap present in CESSP curriculum that discusses climate change with Indigenous epistemologies.
- CESSPs should begin to engage with the TRC Calls to Action further, and decolonize the academy to further their universities and departments in reconciliation.
- Some Department Heads were performing ‘settler moves to innocence’ by indicating that their departments are not responding enough to the TRC Calls to Action, that Indigenous faculty are not present in the departments, or that their ignorance of IWK is preventing them from engaging.
- The aim of this research project is to aid CESSPs in evaluating their programs and curricula in regard to engagement around Indigenous epistemologies, TRC Calls to Action, and climate change.
- These findings are also intended to advance departments in the reconciliation process, as mandated in the Truth and Reconciliation Commission’s 94 Calls to Action.

## Appendixes

### Appendix 1

#### INTERVIEW GUIDE

**Project Title:** Exploring Canadian Undergraduate Environment Science/Studies Programs' Engagement with the TRC Calls to Action, Indigenous Epistemologies and Climate Change.

**Principal Investigator/Undergraduate Researcher:** Alexa Mantifel, School of Environmental Studies, *Queen's University*

**Research Supervisor:** Dr. Heather Castleden, Canada Research Chair in Reconciling Relations for Health, Environments, and Communities; School of Environmental Studies, *Queen's University*

#### Preamble

You've received the consent form and letter of information, (go over).

I am going to turn the recording device on now, and just to get verbal consent, do you consent to participate?

Before we get started, I just want to remind you about your rights as a participant. Participation is completely voluntary. You do not have to answer any questions you do not want to. There are no right or wrong answers, I am just interested in hearing about your experience. If there are things you don't want to talk about that's okay. We can move on. If you want to say something that you don't want recorded, just say so, and we can stop the recorder. Even after you have completed the interview, you have **one week** to decide whether you want what you said to be used and we will respect that decision.

If we do not hear from you within one week of the interview, we will move forward with the understanding that you consent to the ongoing research process. Should you choose to withdraw, we will delete all audio and written material pertaining to your interview.

The interview should take between 30-40 minutes and can be stopped by you at any time for any reason. This would also withdraw you from the study.

(answer any questions)

To start I am going to ask you questions in three general categories, first about the program and your department. Then we will move onto questions about the TRC calls to action, and how [University Name] is responding. Finally, we will move onto question about how your program engages with Indigenous ways of knowing in topics of environmental racism and climate change.

### Opening Questions

1. Tell me a little bit about your program?
  - a. What type of students do you attract?
  - b. What types of specializations are offered?
  - c. What faculty are you a part of?
  - d. Can you tell me about the history of the department?
  - e. What Environmental focusses are specifically offered in this department?

### TRC Calls to Action

Since the TRC Calls to Action report was released in 2015 there has been a surge in Universities responding to the TRC calls, one call in particular number 62 about Indigenizing the curriculum.

2. How familiar are you with Truth and Reconciliation Commission Final report? How familiar are you with the Calls to Action released in 2015?
  - a. If not, I can try to summarize the report for you and read calls 62-65 which pertain to this study.
3. I see [University Name] has/has not released a response to the TRC calls to action.
  - a. If has, have you read over it, if no, is there any particular reason you didn't engage with the report? If yes, what do you think about the response
4. Is your department responding to the TRC Calls to Action in any other way? Please explain or provide examples.

### Indigenous Epistemologies

5. I'm interested in understanding the extent to which your program, and other U15 programs are engaging with Indigenous ways of knowing. When I say Indigenous Ways of knowing what does that mean to you?
6. Does the ESS program offer any courses that engage with Indigenous ways of knowing?
  - a. Are they required or elective courses?
  - b. Can you describe it/them? Or do you have any information about them?
    - i. Are there platforms available to explore Indigenous ways of knowing in courses, such as Indigenous authors or Indigenous speakers? Can you provide examples?
  - c. To what extent do you think Indigenous ways of knowing matter in Environmental Studies/Sciences programs? (Ask them to explain their answer)
  - d. Would you say your program/Department is doing enough, too much, or not enough in this area?
7. Do you have any faculty members in your program who self-identify as Indigenous, whether First Nations, Metis, or Inuit? If no, what's your next targeted hire?

### Climate Change

In 2018 the Intergovernmental panel on Climate Change released a report outlining the impacts of climate change on the global scale.

8. To what extent is climate change embedded the Environment Science/Studies program?
  - a. Is it discussed related to the ways in which its impacts will disproportionate effects marginalized people? For example, women, children, people living in poverty?
9. Is climate change mitigation part of your curriculum?
10. So just circling back to the previous set of questions around Indigenous ways of knowing. Are Indigenous ways of knowing appearing in those conversations around climate change mitigation?
  - i. If so, how are they and in which courses?
  - ii. If not, do you think they should be why or why not?

### **Closing Statement**

I'm just wrapping up now and this might be a funny question, but I'm interested in...

11. When I approached you to participate in this study, why did you agree to participate?
12. Do you have any questions for me or any additional thoughts you'd like to share before we wrap up the interview?

This concludes out interview. Please keep this Letter of Information and please let me or my supervisor know if you have any concerns. Thank you for your time.

I will now turn off the recording device.

## Appendix 2

Code	Description	Quote
Climate Change Curriculum	How are participants broadly speaking about how climate change is incorporated in curriculum	“climate change is very well imbedded in our programs all our faculty members are very well cognizant of the issues associated with climate change, many of them have a climate change impacts or climate change adaptation or mitigation as specific components of their research programs. And all of that would then go into the teaching of the courses”
Climate Change Disproportional Effects	If climate change is discussed in course curriculum around the equity lens	“So, we talk about um in particular in the arctic of the Canadian perspective but then we also look at um cities and the impact it’ll have on many highly populated cities around the world, plenty of which come from lower socioeconomic settings.”
IWK in Climate Change	If IWK are discussed in course curriculum around climate change	“you know I don’t know. Um there’s no specific course on that Indigenous perspectives on climate change or something like that.”
Familiarity with TRC	How much a participant understands the Truth and Reconciliation Commission Calls to Action Report	“I’m familiar with the TRC. Um, I’m not, and I know that there were these calls to action, but I’m not familiar with the what they are, like each one or let alone being able to say oh 62 is this kind of or this.”
Extent of TRC Implementation	The participants opinion on how their department is responding to the TRC Calls to Action report	“I would say were not doing enough, I would say were trying and were working in that direction”
Importance of IWK in ESS	The participants opinion on if and why Indigenous ways of knowing are important in ESS programs.	“it’s hugely important, I think it’s absolutely critical for our students to have an

		understanding of um, traditional ways of knowing, um they have to understand you know, the complex relationship between colonists and Indigenous peoples in North America and what we can learn from that history and what we can learn that's relevant to managing our landscapes and what our obligations are moving forwards"
Unexpected	Anything participants say that the research did not expect would be said	"...just feeling that I didn't have enough knowledge myself, and I felt inadequate and I didn't want to do something that was inappropriate or insensitive. So, I was hesitant and then I just decided I need to bite the bullet and do something."
What IWK Means	The participants view on Indigenous Ways of Knowing, and their description of it.	"Um, so it sums the way that our Indigenous cultures in Canada...so the ways they think about the world around them and interact with it."
Faculty Level	Faculty level responses to TRC	"Um Indigenous faculty, Indigenous students, Indigenous programming is only just starting to break out of the silos"
New Hires	If there have been any indication of new hires occurring in their department	"We wish we could. That's an objective we have for sure and have support up at the highest level at the university, you know, I feel fairly confident if I ask you know an excellent Indigenous scholar that I had a chance of attracting I almost certainly would be successful in getting you know a position for that person if I went to the provost office."
Specializations	Specializations offered at university	"so a specialization in geography"

Struggles or Barriers	Any struggles or difficulties participant indicates they or academia have	“One of the challenges we face as faculty is its very hard to find first person narrative. Where it comes directly from communities as opposed to having it filtered by somebody outside the community especially non-Indigenous researchers, filtering information from communities.”
Personal Struggle	A struggle the participant has that is personal	“I think, you know, since we don’t you know, our faculty members aren’t experts in this area um, given none of them are Indigenous or have that lived experience so they really feel quite intimidated and inadequate when you say okay you got to indigenize your curriculum.”
Institutional Struggle	A barrier or struggle the participant faces that are due to the institution	“Um, the problem is you know, finding people that are... We don’t get you know tons of self-identifying people applying for our positions unfortunately so that’s something we need to address.”