Exploring Supports for Students' Complex Climate Emotions Through Interviews with Ontario Secondary Teachers

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Abstract

Young people are most vulnerable to the impacts of climate change and grapple with a range of challenging emotions regarding climate change. Climate change education aims to increase knowledge and engagement in climate action but to date, has given limited attention to the emotions brought on by experiencing, witnessing, learning about climate change, and/or the lack of government climate action or policies that will protect young people's futures. Attention to the affective domain of climate change education is particularly urgent, as the direct and indirect impacts of climate change, such as the 2023 Canadian wildfires, become more salient, and more teachers cover topics related to climate change. Through online interviews, this study explored Ontario secondary school teachers' (*n=6*) experiences and the strategies that they use when interacting with, responding to, and supporting students' complex climate emotions. Using qualitative thematic analysis, teacher participants report frequently interacting with students' complex climate emotions and feeling comfortable dealing with them, yet they also express a sense of isolation when addressing climate change among their colleagues. Despite this, they employ a variety of strategies to support students in navigating these emotions. Findings underscore the necessity for a collaborative effort and additional professional development to adequately support students' complex climate emotions. By synthesizing teacher strategies and existing literature, I introduce an adapted guide that provides practical guidance for educators addressing the emotional aspects of climate change in their teaching practices.

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Table of Contents

Chapter 1: Introduction

In this chapter, I provide the broad context and central research questions for this research. Then, I explore the significance of this study and outline the theoretical frameworks that guided the development and analysis of this project.

Context

Climate change, the long-term shifts in temperatures and weather patterns, is regarded as one of the biggest existential threats humanity has ever faced. As the frequency and severity of climate change's physical impacts escalate in the coming decades, so too will the associated social, economic, and mental health challenges (IPCC, 2022). Learning about climate change and climate injustices, experiencing and witnessing climate-related impacts, and governmental and corporate inaction are all negatively associated with individual mental health and well-being (Charlson et al., 2021; Cianconi et al., 2020; Galway & Field, 2023; Hickman et al., 2021; Taber & Taylor, 2009; Wang & Chen, 2022). This is particularly concerning for Canada, which ranks in the top 10 greenhouse gas emitting countries as of 2021 emissions data and is experiencing temperature increases at twice the global average (Environment and Climate Change Canada, 2022a, 2022b).

Young people are among the most vulnerable populations to the psychological and physical impacts of climate change due to their limited agency and compounding stressors (Burke et al., 2018; Clayton, 2020; Hickman et al., 2021; Mental Health Commission of Canada, 2023; Palinkas & Wong, 2020; World Health Organization, 2023). A recent representative survey by Galway & Field (2023) showed that young people aged 16-25 in Canada are experiencing a range of complex emotions, such as fear, sadness, frustration, anxiousness, and anger about climate change, their futures, and inadequate government responses (see also Hickman et al.,

2021 for an international perspective). While emotions themselves can be concerning, it is the

strategies young people use to cope with these emotions that are critical, as they are significant

determinants of their overall mental well-being and engagement in climate action (efforts taken

to combat climate change and its impacts, such as reducing personal greenhouse gas emissions or

engaging in collective efforts to improve climate policies) (Ojala, 2012a, 2013; Ojala &

Bengtsson, 2019). More than one-third of young people report that their climate emotions

negatively impact their daily lives, with 78% reporting that they negatively impact their overall

mental health (Galway & Field, 2023). This suggests that young people may not be constuctively

employing effective coping strategies to deal with the emotional dimensions of climate change.

Supporting young people to develop effective coping strategies for these complex climate

emotions through a broad range of supports and interventions is therefore a critical and urgent

issue (Charlson et al., 2021; Galway & Field, 2023; Ojala, 2012b; Vamvalis, 2023).

     Research suggests that there are differences in how educators approach the affective

dimension of Climate Change Education (CCE). Given that environments where young people

grapple with complex climate emotions and cultivate coping mechanisms often coincide with

spaces where they learn about climate change (Ojala, 2015; Taber & Taylor, 2009; Wang &

Chen, 2022), schools play a pivotal role. Within these settings, educators establish "emotion

norms" that shape the coping strategies their students develop and employ to manage their

complex climate emotions (Ojala, 2015; Pihkala, 2020b). Educators may not know how to

engage students in the affective dimension of CCE, since they vary in their views on the

importance of supporting, and knowledge of strategies to support, students' emotions in CCE

(Ojala, 2021). Teachers' perspectives and the strategies they employ can influence students'

mental well-being and engagement in climate action both positively and negatively (Ojala, 2021).

Likewise, educators themselves have been found to use and model a variety of adaptive (i.e., cognitive and behavioral techniques that mitigate the adverse impact of stressors when they occur {Holahan et al., 2004}) and maladaptive (i.e., cognitive and behavioral techniques that do not mitigate the adverse impact of stressors when they occur {Brown, 2016; Ojala, 2021; Ojala & Bengtsson, 2019}) coping strategies. For example, in Sweden, educators commonly use strategies such as distancing from, or avoiding, the problem of climate change, which has been associated with decreased engagement in climate actions (Ojala & Bengtsson, 2019). Alternatively, strategies that involve taking action to address the problem of climate change are also common among educators, and have been identified as effective CCE strategies (Monroe et al., 2017; Ojala, 2021). As a complex, large-scale problem, climate change cannot be addressed only through individual action. Heavily, or exclusively, using problem-focused coping strategies (i.e., engaging in actions to mitigate the impacts of climate change), have been shown to result in lower mental well-being in some young people, since this strategy does not eliminate or resolve the problem of climate change (Ojala, 2012a, 2013). A combination of coping strategies is therefore necessary to both engage young people in climate action and safeguard their mental well-being (Ojala, 2012a, 2013).

There is currently a gap in empirical research exploring how educators are managing the challenging task of supporting students to effectively deal with their complex climate emotions in Canada. With long-term implications for individual mental well-being and engagement in climate action, more research is needed to understand educators' experiences around their

students' complex climate emotions and to explore avenues for educators to more effectively support their students around this emerging challenge.

Research Questions

The purpose of this research is to explore how teachers engage students in the affective domain of CCE in the Ontario education system. Through interviews and discussion, the research also documents strategies for supporting young peoples' complex climate emotions that are deemed suitable and effective by teachers. The study was guided by the following main research question and sub-research question:

1. a) In what ways are secondary school teachers in Ontario responding to and supporting their students' complex climate emotions?

1. b) What do Ontario teachers think of Verlie et al.'s (2020) strategies for responding to their students' ecological emotions?

Significance of the Study

The importance of emotions in CCE has gained recognition in recent years; however, there are still significant gaps in knowledge and theory on this topic, especially in the Canadian context, where temperatures are rising at twice the global average and reports indicate that the country is not on track to meet its 2030 greenhouse gas emission targets (Office of the Auditor General of Canada, 2023). The current study addresses this critical knowledge gap by investigating how Ontario teachers are responding to, and supporting, students' complex climate emotions, a geographical context with no published empirical research on this topic to date. The results of this study contribute to discussions among educators and educational administrators in Ontario about ways teachers can effectively support young people's emotional resilience to climate change. Given the concerning prevalence of challenging climate emotions Canadian

young people are experiencing (Galway & Field, 2023; Schwartzberg et al., 2022) and the escalating impacts of climate change (IPCC, 2022), these insights are urgently needed to safeguard their mental well-being and engagement in climate action.

Researcher Positionality

I acknowledge that my personal experiences, perspectives, and beliefs have significantly shaped my thesis research. I am a white-presenting woman with Black and French grandparents, and at the time of submitting this thesis, I am still considered a youth. I attended Roman Catholic school from kindergarten through twelfth grade, though I do not currently identify with any major religion. I was born, raised, and now reside on the traditional territory of the Anishinaabeg, including the Ojibwe, Odawa, and Pottawatomi Nations. From a young age, I have been deeply empathetic and concerned with the world's injustices.

I hold an HBASc and BEd and worked professionally for five years following the completion of those degrees. For three years, I served as an elementary French immersion and core French teacher, focusing on environmental, project-based learning in my classrooms. After leaving formal education, I spent two years working with GreenLearning, an environmental education NGO, supporting the integration of climate change education into classrooms across Canada. During the two years I spent writing this thesis, I also worked as a research assistant on studies about the policy and practice of climate change education in Canada and interned with an NGO that helps independent schools develop and implement climate action plans. I deeply believe in the transformative power of education to achieve the tipping points necessary for steering society towards a more just and sustainable future.

My interest in researching the intersection of climate change, education, and mental health was sparked by an experience I had while presenting on clean energy technologies to a

group of environmentally-focused youth from Alberta. At the end of the presentation, a teenager asked, "Do you think everything is going to be okay?" Without hesitation, I responded, "Yes, of course. We have to have hope. Many people are working on and adopting new solutions daily. We can all do our part to create a better world." However, after the call, I felt deflated and began to cry. My upbeat response did not align with my true feelings or beliefs about climate change and our future. As someone who works in climate change education and promotes climate action full-time, I struggled with my own challenging eco-emotions. Why was I so afraid to be authentic with these young people who trusted me?

For the next several weeks, I searched for a better response to that question. I found many blogs, articles, and guides encouraging 'staying hopeful,' 'engaging in action,' and 'pointing to solutions.' Despite already doing these things, something still felt wrong. After much thought and research, I sought out Dr. Ellen Field for her expertise in climate change education and climate emotions. I believe educators have the skills to help children understand and cope with their basic emotions. However, based on my training and experiences, I do not believe the complexity of climate change and its associated emotions is within the existing skills of most formal educators to effectively support. I assume that teachers have a responsibility to integrate climate change education into all subject areas and that addressing the emotional dimension should be an integral component. As professionals who work closely with young people in an increasingly warming world, educators must be trained and prepared to support young people with the complexities of their emotions about climate change.

Based on my experiences, I resonated with many sentiments shared by the educators in this research. Exploring this topic was about filling a gap in the field and advancing my ability to respond to young people's emotions in my personal and professional life. This burgeoning area

of inquiry has seen much published since I first explored this question over three years ago, and I have learned immensely from it.

Conclusion

In this chapter, I explored the context of young peoples' complex climate emotions and CCE in Canada. I then outlined the purpose and research questions that guide this study: (1) In what ways are secondary school teachers in Ontario responding to and supporting their students' complex climate emotions? (2) What do Ontario teachers think of Verlie et al.'s (2020) strategies for responding to their students' ecological emotions? I concluded by outlining the highlighted the timeliness of this research and its significance to the broader mental health and engagement in climate action of young people in Canada.

Chapter 2: Literature Review

In this chapter, I present a synthesis of relevant literature on supporting students in the affective domain of CCE. This literature review is not a formal scoping review or systematic review of the literature. Recognizing the interdisciplinary nature of this subject, I searched for scholarly articles spanning various disciplines, including psychology, health, and education. I used targeted search terms such as "climate change education & emotions" and "eco-anxiety & teachers," on databases including ERIC (via ProQuest) and Lakehead's Omni Library. Alongside these searches, I set up a Google Scholar alert for new articles relating to the work of key researchers in this field for the duration of this research; between January 2023 and January 2024.

In this literature review, I first explore the concept of complex climate emotions and explore how they are being experienced by young people. Then, I examine types of coping strategies and how young people cope with their complex climate emotions. Next, I explore emerging literature around young peoples' experiences with complex climate emotions in the classroom and teachers' practices and strategies to support students with these emotions. Then, I conclude by outlining the current state of CCE and emotions in Canada.

Complex Climate Emotions and Young People

There is a growing awareness of the psychological impact of climate change that has fueled numerous investigations into how individuals feel about climate change and its consequential effects on their mental health and well-being (Galway & Field, 2023; Hickman et al., 2021; Mental Health Commission of Canada, 2023). The following sections of the literature review aim to summarize the scholarly definitions of climate emotions and explore the prevalence and varieties of emotions experienced by young people concerning climate change.

Semantics of Climate Change Emotions

To date, research on the affective dimensions of climate change has focused primarily on unpleasant or challenging emotions, such as fear, sadness, worry, frustration, and anger (Coffey et al., 2021). In both public discourse and interdisciplinary research, the term 'eco-anxiety' has gained prominence; however, there is no agreed upon definition of eco-anxiety and a wide array of definitions are used in existing literature. Pihkala (2020a) defines eco-anxiety as negative emotional reactions to the looming threat of climate change. Clayton et al. (2017) define eco-anxiety as "a chronic fear of environmental doom" (p. 68), while Albrecht (2012) characterizes it as "the generalized sense that the ecological foundations of existence are in the process of collapse" (p. 250). Eco-anxiety is not a diagnosable condition, but rather a broad term that encompasses the emotional response to experiencing, witnessing, or anticipating climate-related impacts, learning about climate change and climate injustices, and perceiving governmental and corporate inaction (Hickman, 2020).

There are a variety of terms that are related to eco-anxiety, including climate change anxiety, climate anxiety, and ecological stress (Coffey et al., 2021; Pihkala, 2020a). Cunsolo and Ellis (2018) introduced the term 'ecological grief' to encompass "grief associated with physical ecological losses (land, ecosystems and species), grief associated with disruptions to environmental knowledge and loss of identity, and grief associated with anticipated future ecological losses" (p. 276), while Albrecht (2005) coined the term 'solastalgia' to describe "the pain or sickness caused by the loss or lack of solace and the sense of isolation connected to the present state of one's home and territory" (p. 45). Each of these terms have nuanced meanings, however, collectively they underscore the ample evidence that suggests individuals are experiencing a spectrum of emotions, including afraid, sad, anxious, helpless, and powerless, in

response to the climate crisis (Coffey et al., 2021; Galway & Field, 2023; Hickman et al., 2021; Pihkala, 2020a).

Despite the widespread use of 'eco-anxiety' in public discourse and interdisciplinary research, an ongoing debate persists regarding the appropriateness of this term to encapsulate emotions concerning climate change. Critics, such as Kurth and Pihkala (2022), contend that the term 'eco-anxiety' is "overly simplistic" (p. 3), as it fails to acknowledge the nuanced range of emotions individuals experience concerning climate change. Though less prominent in the literature, individuals have also been found to encounter a spectrum of enjoyable emotions, including hope, optimism, and empowerment (Coffey et al., 2021; Schneider et al., 2021). These more enjoyable emotions are crucial drivers for meaningful engagement in climate mitigation and adaptation efforts, contradicting the notion that solely challenging emotions prompt action (Kurth & Pihkala, 2022; Pihkala, 2020a). Others, including Coppola and Pihkala (2023), have also criticized the term 'eco-anxiety' for its potential to pathologize emotions related to climate change. These emotional responses are regarded as appropriate and healthy reactions to the climate crisis and should not, therefore, be inherently classified as anxiety disorders (Clayton, 2020; Hickman, 2020; Pihkala, 2022). Despite its widespread usage to depict individuals' responses to the climate crisis, 'eco-anxiety' is evidently limited in its ability to accurately reflect the non-pathological complexity of emotions experienced around climate change.

In response to the scholarly criticisms and limitations of the term eco-anxiety, there is a recognized need for a more inclusive term that encompasses both enjoyable and challenging emotions without pathologizing them, and that can be applied to both individual and collective experiences. The term 'complex climate emotions' has been adopted to broadly describe the emotional responses to the climate crisis throughout this research (Galway & Beery, 2022;

Galway & Field, 2023; Pihkala 2002). To maintain the nuanced intentions of researchers when referencing specific studies, I've used their chosen terminology.

Complex Climate Emotions in Young People

An international survey conducted with 10,000 young people aged 16-25 from 10 countries revealed that more than half reported feelings of fear, sadness, anxiety, helplessness, powerlessness, guilt, and anger in response to climate change (Hickman et al., 2021). These challenging emotions are adversely affecting the daily lives of young people and contributing to pessimistic outlooks for their futures, including hesitancy to have children (Hickman et al., 2021). This survey's findings were replicated with 1,000 young people aged 16-25 in Canada, yielding similarly concerning results, with approximately 50% reporting that they believe that the future is doomed (Galway & Field, 2023). This survey also highlights that young people's complex climate emotions are associated with government betrayal and inaction (Galway & Field, 2023). Moreover, a survey conducted with more than 1,200 school-aged students in Canada similarly reported young people felt anxious, frustrated, and frightened about climate change (Schwartzberg et al., 2022). These quantitative survey findings are substantiated by in-depth interviews with young climate activists in Canada, who were found to grapple with overwhelming challenging emotions, such as anxiety and dread, around climate change (Vamvalis, 2023).

Despite the predominantly challenging feelings among young people regarding climate change, surveys conducted in Canada found that about one in five young individuals also report feeling optimistic about climate change and their futures (Galway & Field, 2023; Schwartzberg et al., 2022). Similarly, in Vamvalis' (2023) interviews, young people discovered a sense of hope and purpose in their lives through their involvement in climate activism.

This emerging research emphasizes the concerning, yet multifaceted and complex emotions young people in Canada are experiencing around climate change and underscores the urgent need for widespread action to address the root cause of this emerging crisis, governmental inaction (Galway & Field, 2023; Hickman et al., 2021; Schwartzberg et al., 2022; Vamvalis, 2023). It is important to note; however, that there is generally a burgeoning mental health crisis among young people in Canada, more than half of whom reported a decline in their mental well-being since the onset of the COVID-19 pandemic (Statistics Canada, 2020). While complex climate emotions should not be treated as pathological, for some, the intensely challenging emotions related to climate change can contribute to mental illness (Clayton, 2020). Complex climate emotions, while a significant concern for young people in Canada, is only one of the stressors impacting the overall mental health and well-being of young people.

Coping with Climate Change

Young people in Canada are displaying concerning rates of complex climate emotions. However, these feelings are considered appropriate and non-pathological responses to the climate crisis (Clayton, 2020; Galway & Field, 2023; Pihkala, 2020). With the anticipated rise in climate impacts, and delayed governmental and societal responses, these emotions are expected to persist and even intensify (IPCC, 2022; World Health Organization, 2023). While challenging emotions can have consequences for mental well-being, they are also seen as an adaptive behavioural response that can help people appropriately prepare for climate impacts (Clayton, 2020). For example, there is research suggesting that challenging emotions, such as worry, motivate people to engage in climate action, including supporting climate policies (Bouman et al., 2020). Furthermore, Kwauk & Casey (2021), name empathy and coping with emotions and uncertainty as necessary green life skills, which "include the specific, generic, and

transformative capacities needed to contribute to a socially-, economically-, and environmentally-just human society" (p. 5). What ultimately affects an individual's mental well-being and involvement in climate action is the coping strategies they employ to deal with their complex climate emotions (Ojala, 2012b, 2012a, 2013; Ojala & Bengtsson, 2019). Therefore, it is crucial to understand how young people cope with their complex climate emotions to more effectively support them in managing these emotions with the goal of safeguarding their mental well-being and promoting engagement in climate actions.

Types of Coping Strategies

According to Lazarus and Folkman (1984), coping refers to an individual's cognitive or behavioural efforts to manage a problem or stressful situation. Based on their revised *Cognitive Theory of Stress and Coping*, there are three strategies people use to cope with a challenge: problem-, emotion-, and meaning-focused coping (Folkman, 2008; Lazarus, 2006; Lazarus & Folkman, 1984). Problem-focused coping refers to a strategy where an individual aims to take direct action on the problem by, for example, learning more about the problem (Lazarus & Folkman, 1984). Emotion-focused coping refers to a strategy where an individual aims to regulate the challenging emotions evoked by the problem by, for example, not thinking about the problem (Lazarus, 2006, p. 129). Meaning-focused coping refers to a strategy where an individual aims to evoke enjoyable emotions by, for example, finding positive value in the challenge of a problem (Chawla, 2020; Folkman, 2008).

These coping strategies can be applied to how individuals cope with the severity and urgency of climate change. Forms of problem-focused coping may include researching information about climate change solutions or conserving energy at home (Chawla, 2020). Forms of emotion-focused coping include denial or deemphasizing the problem of climate change

(Chawla, 2020). Meaning-focused coping may include looking at the 'silver lining' of climate change (Chalwa, 2020), such as longer growing seasons in some regions. Research indicates that although each coping strategy can be effective in coping with a problem, its success depends on both the specific context of the problem and the individual implementing it (Folkman, 2008; Lazarus, 2006; Lazarus & Folkman, 1984).

Young People's Strategies for Coping with Complex Climate Emotions

Despite limited research in this area, studies exploring how young people cope with climate change show that children, teenagers and young adults employ similar strategies to cope with their complex climate emotions, such as deemphasizing the problem, taking action on the problem, and putting trust in other societal actors, such as scientists (Ojala, 2012b, 2012a, 2013; Ojala & Bengtsson, 2019). These studies concluded that how young people cope with their complex climate emotions is a significant determinant of their engagement in climate action and overall mental well-being (Ojala, 2012b, 2012a, 2013; Ojala & Bengtsson, 2019). While there are nuanced differences between age groups, the default strategies used by most young people heavily focus on problem- and emotion-focused coping strategies to manage their complex climate emotions. However, these strategies may not be the most effective for both maintaining mental well-being and engaging in climate action (Ojala, 2012b, 2012a, 2013; Ojala & Bengtsson, 2019). Therefore, there is a need to support young people in developing effective coping strategies that ensure that they feel emotionally-supported to engage in climate actions that recognize the volatility, uncertainty, and complexity of climate change and that moves their conception beyond individual resilience to systems transformation (Machado de Oliveira, 2021).

Some children in Sweden have been found to distance themselves from, deemphasizing, or avoiding the problem of climate change in order to cope with their complex climate emotions

(Ojala, 2012b, 2013). When used, these emotion-focused coping strategies are seen as a psychological defense to avoid confronting the tragedy of our world (Pihkala, 2017), which for some individuals can serve to maintain emotional well-being in the short term (Ojala, 2012b, 2013). This coping strategy is sometimes necessary for personal well-being, such as taking a break from tragic climate news (Chawla, 2020). Unfortunately, emotion-focused coping is associated with hope based on denial and a lack of engagement in climate action among children, which can persist into adulthood (Ojala, 2012b, 2013). These 'harmful delusions' may lead people to avoid making the necessary changes and choices needed to collectively adapt to and mitigate the impacts of climate change (Pihkala, 2017). Furthermore, challenging emotions are recognized as catalysts for driving action on climate change (Ogunbode et al., 2022), and therefore should not be avoided or suppressed.

Problem-focused coping, such as trying to influence family and friends to take action to address climate change (Chalwa, 2020), is another coping strategy children in Sweden have been found to use (Ojala, 2012a; 2012b; 2013; Trott, 2022), and is seen as a critical aspect of CCE (Monroe et al., 2017; Trott, 2024). While using this coping strategy is associated with a sense of efficacy and increased engagement in climate actions, the actions that young people report are most often individualized (Chawla, 2020; Ojala, 2012; Stevenson et al., 2016). There is evidence that engaging in problem-focused coping (or taking action on climate change) is positively associated with feelings of hope, which may buffer children's feelings of concern (Ojala, 2012b, 2012a, 2013; Ojala & Bengtsson, 2019; Trott, 2022). However, exclusively or heavily using this coping strategy is negatively associated with mental well-being among some young people (Ojala, 2012b, 2012a, 2013; Ojala & Bengtsson, 2019). This is because problem-focused coping strategies are most effective when a problem can be addressed through individual action in a

timely fashion (Folkman, 2008). Since the climate crisis is a problem that exceeds anyone's capacity to solve it through individual actions, and requires long-term, persistent engagement from the masses (Brown, 2016), only using problem-focused coping strategies can be negatively associated with the mental well-being of young people (Ojala, 2012b, 2012a, 2013; Ojala & Bengtsson, 2019). Interviews with young climate champions from Northern Ontario indicate that connecting with their community to engage in collective climate action can provide emotional support and inspire hope (Klassen & Galway, 2023). More research on the affective impact of individual action compared to collective action by children in Canada is needed to better understand the nuanced relationship between problem-focused coping and young peoples' mental well-being.

For problems like climate change, which can not be solved quickly or by an individual, "young people fare best when they employ meaning- focused coping strategies" (Chalwa, 2020, p. 47). Meaning-focused coping strategies, such as finding positive value in the problem of climate change (Chawla, 2020), have been found to buffer challenging climate emotions in some young people (Wullenkord & Ojala, 2023). Interviews with young climate champions from Northern Ontario revealed that they use a form of meaning-focused coping strategies to cope with their complex climate emotions by reframing their perspectives on the issues (Klassen & Galway, 2023). For example, viewing suffering due to climate impacts as a catalyst for resistance (Klassen & Galway, 2023). Therefore, it is important that young people are supported in developing a balance of problem- and meaning-focused coping strategies to both positively support their mental well-being and encourage their engagement in climate actions (Ojala, 2012b, 2012a, 2013; Ojala & Bengtsson, 2019). Effective coping strategies are seen as necessary

'green life skills' for young people to develop in order to contribute to a more just, sustainable future (Kwauk & Casey, 2021).

Although supports for students' complex climate emotions are emerging in Canada, they are primarily facilitated by non-profit organizations and may not be accessible to marginalized groups, who are already most vulnerable to climate impacts (Galway & Field, 2023). It is therefore important to leverage formal education institutions, which have wide reach and can make these supports more equitably accessible to young people in Canada, to address this emerging challenge.

Supporting Complex Climate Emotions in Education

Emotions surrounding climate change can stem from various sources, such as gaining a deeper understanding of its severity and urgency through CCE (Taber & Taylor, 2009; Wang & Chen, 2022). The way teachers respond to these emotions and the coping strategies they nurture in the classroom can profoundly shape young people's perceptions and actions regarding climate change (Ojala, 2012, 2013; Ojala & Bengtsson, 2019). Given that coping strategies are pivotal factors influencing both mental well-being and active engagement in climate action, education emerges as a critical instrument in safeguarding young people's mental health and fostering their participation in climate action (Ojala, 2012b, 2012a, 2013; Ojala & Bengtsson, 2019). Schools, as mandated institutions where young people spend a lot of time, are uniquely positioned to support young people in managing their concerning rates of complex climate emotions. It is therefore important to consider how teachers are responding to and supporting their students' complex climate emotions in formal education settings.

Young People's Complex Climate Emotions in Formal Education

While an emerging issue, some research provides insights into how young people are displaying and experiencing their complex climate emotions in schools. A study interviewing youth climate champions from Northern Ontario found that their challenging climate emotions are often triggered by collective inaction, systems of oppression, tangible reminders, and climate information and messaging (Klassen & Galway, 2023). Young people, especially teenagers, may not talk about or initiate conversations about climate change with other people (Baker et al., 2021; Klassen & Galway, 2023). In a survey, Galway and Field (2023) found that one-third of young people in Canada do not talk to others about climate change and another one-third feel ignored or dismissed when they talk about climate change. Research also indicates that some young people are not comfortable sharing about their complex climate emotions at school or with their teachers (Jones & Davison, 2021; Vamvalis, 2023). This may stem from young people feeling dismissed or ignored during conversations about climate change with adults (Galway & Field, 2023; Hickman, 2020). Furthermore, there is evidence to suggest that adults may be unaware of the prevalence or severity of complex climate emotions of the young people in their lives, since two-thirds of youth report their mental well-being as being worse than their parents perceive (Statistics Canada, 2020).

Many young people feel a sense of anger and betrayal towards older generations, who they feel have failed to care for the planet, which extends to adults, such as teachers, in education (Galway & Field, 2023; Hickman, 2020; Jones & Davidson, 2021). Young people have described negative formative affective encounters in CCE, some of which have left them feeling powerless, betrayed, afraid and apathetic (Jones & Davidson, 2021; Jones & Lucas, 2023). This has contributed to a generational divide around climate leadership and responsibility, where young

people feel betrayed and that they have not been given the opportunity and space to express or process their challenging emotions around climate change in schools (Jones & Davidson, 2021; Jones & Lucas, 2023; Vamvalis, 2023). Students' perceptions of how their teachers view and communicate about emotions can have an impact on whether they will feel hopeful about climate change (Ojala, 2015). Students who perceive their teachers to emphasize the worrying parts of climate change or not take their challenging emotions about climate change seriously were more likely to use hope based on denial of the severity of the problem to cope with their complex climate emotions (Ojala, 2015). Hope based on denial, while it can serve to avoid challenging emotions among young peoples' in the short term, is negatively associated with engaging in climate action because it deemphasises the need to address the problem (Ojala, 2012a). For example, believing that climate change will only negatively impact people in other geographical areas or who live in the future (Chawla, 2020).

Young peoples' experiences in CCE are important factors impacting their current and future well-being and behaviors (Hermans, 2016; Jones & Davison, 2021; Ojala, 2012a). While young people have reported primarily negative affective experiences in CCE to date, they are also calling for more climate change content to be taught in schools (Galway & Field, 2023; Jones & Davidson, 2021; Jones & Lucas, 2023; Schwartzberg et al., 2022; Vamvalis, 2023). To effectively address these demands and foster enriching experiences for young people in CCE, it is important to prioritize the integration of the affective domain into CCE frameworks and teaching practices. Addressing the affective dimension of CCE may support both educators and young peoples to build emotional stamina, which would allow them to manage their complex climate emotions with greater ease and endurance (Stein et al., 2023). That is, holding the weight

of challenging climate emotions without feeling overwhelmed or immobilized as quickly (Stein et al., 2023).

Teachers' Strategies for Addressing Young People's Complex Climate Emotions

Existing frameworks, such as Social Emotional Learning (SEL), exist to support teachers in integreating emotions into classroom learning. As Zins and Elias (2007) describe, "social emotional learning is the capacity to recognize and manage emotions, solve problems effectively, and establish positive relationships with others" (p. 234). As a challenge that does not have clear recognizable emotions and cannot be solved directly by any group or individual, climate change may fall outside of the scope of SEL, therefore it was not the focus of this research.

In this emerging field, empirical research investigating strategies employed by K-12 teachers to specifically address young people's complex climate emotions is limited. Despite this scarcity of research, two studies, at the time of this research, Ojala (2021) and Verlie et al. (2020), exist that have explored teachers' strategies to respond to and support their students' emotions related to climate change. Furthermore, one book chapter, Brown (2016), explores teaching practices and strategies for emotionally supporting elementary-aged children around climate change, such as applying the Spiral of the Work that Reconnects. Several researchers (Baker et al., 2021; Beasy et al., 2023; Galway & Field, Jones & Lucas, 2023 Karsgaard & Davidson, 2023; Trott, 2024) also explore themes that inform teacher strategies on this topic.

To understand teachers' beliefs about the role of emotions in CCE, Ojala (2021) conducted interviews with 16 Swedish high-school teachers, which revealed several themes characterizing educators' strategies in response to students' complex climate emotions, including avoidance, action-based and reappraisal-based coaching, strategies to approach challenging emotions, and flexibility and adjustment-based coaching. A common approach used among

teachers emphasized individual actions to address climate change (Ojala, 2021), a problem-focused coping strategy, such as eating less meat (Stevenson et al., 2016). While engaging young people in actions designed to directly address climate change is positively correlated with feelings of hope, focusing on individual actions to address climate change is associated with low mental well-being, due to the scale and complexity of the climate crisis (Ojala, 2012b, 2012a, 2013; Ojala & Bengtsson, 2019). This strategy should therefore be used in combination with meaning-focused strategies, which can act as a buffer for challenging emotions when coping with complex climate emotions (Wullenkord & Ojala, 2023).

Another common approach was avoiding challenging emotional reactions, encompassing the suppression of both educators' and students' challenging emotions and substituting them with enjoyable emotions (Ojala, 2021). This can lead to young people feeling as though teachers do not take their emotions and concerns seriously (Ojala, 2015). Given that young people often feel dismissed when they talk about climate change and want adults to be honest about the reality of the climate crisis with them, this approach does not effectively support young peoples' complex climate emotions (Galway & Field, 2023; Hickman, 2020). Furthermore, challenging emotions in young people, including worry, have been positively correlated with engagement in climate action, indicating that these emotions should be embraced, not avoided (Ogunbode et al., 2022; Ojala, 2012a, 2013).

Reappraisal-based strategies, which included promoting trust in societal actors or looking at positive trends, was also common among teachers and have been correlated to feelings of hope and increased mental well-being (Ogunbode et al., 2022; Ojala, 2012a, 2013). Less common themes included educators approaching challenging emotions therapeutically or flexibly adjusting their strategies based on the specific situation and student involved. This can show

young people that teachers take their emotions seriously, leading to feelings of trust and can decrease feelings of hope based on denial (Ojala, 2015). Although Ojala's (2021) study size limits generalizable results, it provides a typology of practices, both effective and ineffective strategies, that teachers may employ to address their students' complex climate emotions.

Verlie et al. (2020) surveyed 32 environmental educators in Australia, identifying four main themes in their strategies for supporting students' ecological distress. These themes included engaging students in the complexities of climate change through deep reflections, discussions, and debates; validating students' ecological distress by acknowledging and normalizing it; supporting students by fostering a sense of community and ensuring they felt cared for; and empowering students by connecting them with groups or opportunities for direct engagement in climate action. Scholars suggest that teachers who support young peoples' complex climate emotions through acknowledgement, validation, reappraisal and active listening, contribute to an environment that fosters enjoyable emotions, such as hope, and engagement in climate action among students (Baker et al., 2021; Jones & Lucas, 2023; Ojala, 2022). Addressing the affective domain of CCE through empirically supported strategies is therefore crucial for enhancing young people's well-being and promoting engagement in climate action.

The literature emphasizes the importance of conversations with young people, where adults acknowledge and address young people's feelings of powerlessness and betrayal about climate change by provide them with opportunities to exercise their citizen agency and engage in collective action (Galway & Field, 2023; Jones & Lucas, 2023; Karsgaard & Davidson, 2023; Trott, 2024; Verlie et al., 2020). Initiating ongoing and intentional conversations with young people around climate change and their complex climate emotions can serve as sustaining forces,

helping them build emotional resilience and motivating transformative action (Jones & Lucas, 2023). Furthermore, Brown (2016) highlights that adults' silence on climate change can convey fatalism or indifference, which may breed cynicism. It is important that teachers create open and safe spaces for young people to have these conversations and foster the development of supportive communities where young people are free to cultivate hope and address their complex climate emotions among like-minded people (Jones & Davison, 2021; Jones & Lucas, 2023; Karsgaard & Davidson, 2023). In these spaces children should be invited to share their feelings and adults should give them their full attention, listening deeply without intervention (Brown, 2016). Fostering these communities also cultivates a sense of belonging for young people, combating feelings of isolation, which supports them in managing their complex climate emotions (Beasy et al., 2023; Jones & Lucas, 2023; Karsgaard & Davidson, 2023).

Young peoples' experiences in CCE can extend beyond the classroom, impacting their current and future well-being and behaviors (Hermans, 2016; Jones & Davison, 2021; Ojala, 2012a). With many young people frequently perceiving their experiences in CCE as disempowering and disappointing, leading to feelings of abandonment, betrayal, and distrust in adults (Baker et al., 2021; Jones & Davison, 2021; Jones & Lucas, 2023; Ojala, 2015; Trott, 2024; Verlie, 2020), it is crucial to explore and understand teachers' strategies and take steps to improve teachers' practice in this area. Some professional associations and non-profit organizations have undertaken this task, publishing guides for educators and school contexts. For example, the Climate Psychology Alliance of North America (2024) published an Educator's Guide to Climate Emotions and Earth Rangers (2024) published an Eco Anxiety to Eco-Action: Educator Guide (2023).

Teachers' Challenges Attending to Young People's Climate Emotions

As an emerging and complex topic, navigating the affective domain of CCE poses numerous challenges for teachers (Beasy et al., 2023; Verlie et al., 2020). For instance, teachers have reported experiencing their own challenging emotions related to climate change (Field et al., 2024; Schwartzberg et al., 2022) and have identified navigating their complex climate emotions alongside those of their students as one of the main challenges in discussing climate change in their classrooms (Baker et al., 2021). Teachers lack the training of mental-health professionals, such as therapists or counselors, and may not feel equipped with the skills to address the emotional aspects of CCE (Beasy et al., 2023). This is emphasized by the two-thirds of Canadian educators who report lacking the knowledge and skills even just to teach about climate change (Schwartzberg et al., 2022). Young people have also expressed that teachers with specialized training, such as guidance counselors, are for academic and post-secondary transition support, rather than addressing issues of climate despair (Vamvalis, 2023). This underscores the need for diverse stakeholders and guest speakers other than teachers to help support young people with understanding and managing their complex climate emotions within schools (Beasy et al., 2023; Karsgaard & Davidson, 2023).

Teachers' lack of training in this area is further echoed by Ojala's findings (2021), which revealed that some teachers have a disapproving view of emotions, perceived as irrational and as something that does not belong in the CCE classroom. This perspective reflects an outdated view of emotions that is not grounded in modern empirical research. Teachers should validate and normalize these emotions as reasonable responses to the climate crisis (Galway & Field, 2023; Jones & Lucas, 2023). Furthermore, recognizing the benefits challenging emotions can have on critical thinking and engagement in climate action, it is important that teachers accept emotions

as part of learning about CCE, embracing them as a necessary and beneficial part of learning (Ojala, 2021).

Teachers, who have been found to struggle in coping with their own complex climate emotions (Field et al., 2024; Hermans, 2016; Schwartzberg et al., 2022), express concerns that honesty about their emotions could amplify their students' complex climate emotions (Baker et al., 2021). This is a valid concern given that teachers' challenging emotions can influence how young people feel and engage in climate action (Ojala, 2015, 2021). However, Brown (2016) encourages teachers to recognize and honor their own feelings around climate change. Therefore, efforts to support students' emotional well-being should extend to include emotional support for teachers (Baker et al., 2023; Ojala, 2022; Vamvalis, 2023). This necessitates increased support for teachers, which educators and students have advocated for in Canada (Galway & Field, 2023; Schwartzberg et al., 2022; Vamvalis, 2023).

Despite young people's demand for honesty and bravery from adults (Hickman, 2020), teachers are concerned with developmentally appropriate ways to address CCE with their students (Jones & Davison, 2021). One of their main challenges is being truthful about the urgent reality of the climate crisis while simultaneously fostering hope in their students (Beasy et al., 2023). This is an emerging challenge for Canadian teachers, where a survey of Canadian educators found that while time spent dedicated to climate change topics remains low, 65% of educators report teaching about climate change in 2022, compared to 43% in 2019 (Schwartzberg et al., 2022). Since learning about climate change often leads to the development of challenging emotions surrounding the issue (Taber & Taylor, 2009; Wang & Chen, 2022), it is reasonable to anticipate that teachers will increasingly encounter students' complex climate emotions in the classroom. Teachers need more professional development to equip them with the

tools and strategies required to navigate the affective domain of CCE with their students (Baker et al., 2021; Galway & Field, 2023; Klassen & Galway, 2023; Ojala, 2021; Vamvalis, 2023; Verlie et al., 2020).

The State Of CCE in Canada

Despite urgent, global calls to increase the quantity and quality of CCE, education-related policy in Canada has been slow to respond (Field et al., 2023; Field & Howlett, 2023). A survey of Canadian educators found that despite increases in the number of educators dedicating time to climate change topics, more than one-third of educators are still not covering climate change content at all (Field et al., 2019; Schwartzberg et al., 2022). The survey results also revealed that while most Canadian educators want to include more climate change content in their teaching, they need more professional development to do so effectively, since only 34% reported they have adequate knowledge and skills to deliver CCE content to their students (Schwartzberg et al., 2022). Furthermore, a systematic review of justice in CCE found that some teachers' hesitation and discomfort is rooted not only in their lack of knowledge, but also around concerns about teaching politically controversial topics (Trott, et al., 2023).

Canadian educators also face many barriers when attempting to increase the quantity or quality of their CCE, such as limited classroom time, lack of curriculum priority and lack of resources (Field et al., 2019; Schwartzberg et al., 2022). While 60% of young people in Canada advocate for a greater emphasis on the social and emotional dimensions of climate change within the formal education system (Galway & Field, 2023; Schwartzberg et al., 2022), only 18% of participating educators in Canada reported teaching students strategies to cope with their complex climate emotions when they teach about climate change (Schwartzberg et al., 2022). This may be due to the time constraints on learning (Beasy et al., 2023), uncertainty of teachers

on how to discuss students' climate emotions, and the lack of climate-related curriculum, which is inconsistent and uneven across Canada's federated system, where decisions such as funding and curriculum are decided by provincial Ministries of Education (Field et al., 2023; Tasket, 2019). Furthermore, a review of climate policy at the school board level in Canada revealed that only 4 of 380 school boards have definitive climate action plans (Field & Howlett, 2023). This affirms young peoples' feelings of betrayal, emphasizing the gross inaction on climate change in the institutions where they spend most of their days, school. The lack of climate change content and priority in education risks intensifying students' complex climate emotions (Jones & Davidson, 2021).

As revealed by Ojala (2021), not all teachers are using strategies that effectively promote both student well-being and engagement in climate action. Moreover, with nearly two-thirds of educators and students in Canada expressing a belief that CCE should prioritize addressing students' complex climate emotions and an increase in time devoted to CCE (Schwartzberg et al., 2022), there is a pressing need for insights to comprehend and assess the strategies employed by teachers in Canada to support their students in coping with these complex climate emotions. Despite the desire from Canadians, especially young people, to offer diverse mental health support for complex climate emotions within the formal education system (Galway & Field, 2023; Schwartzberg et al., 2022), there are many challenges to overcome to address this issue effectively.

Conclusion

In this chapter I described how experiencing, witnessing, and anticipating climate-related impacts, learning about climate change and climate injustices, and governmental and corporate inaction are all negatively associated with individual mental health and well-being. Next, I

outlined how young people in Canada and around the world are experiencing concerning rates of challenging emotions around climate change, which are negatively impacting their daily lives and outlooks on their futures. I discussed how schools are in a unique position to support young people in managing their complex climate emotions, to protect their mental well-being and engage in climate action. I concluded by examining preliminary international research, which illuminated how teachers are addressing their students' complex climate emotions, revealing diverse approaches that are both effective and potentially detrimental.

Chapter 3: Methodology

In this chapter, I describe how this research study, which interviewed six in-service teachers in fall 2023, was designed and implemented. First, I reiterate the research questions that guide this study and outline the theoretical perspective that frame this research. Next, I outline the interview method undertaken for this study. Following this, I provide an overview of the data collection and describe the pilot study that validated the tools used in this research. study's participants. Finally, I outline the analysis process and explore some of the limitations of this research study.

Research Questions

The study was guided by the following main research question and sub-research question:

1. a) In what ways are secondary school teachers in Ontario responding to and supporting their students' complex climate emotions?

1. b) What do Ontario teachers think of Verlie et al.'s (2020) strategies for responding to their students' ecological emotions?

Theoretical Perspective

This research is approached through an interpretivist-constructivist perspective. This perspective recognizes the importance of context and that reality is socially constructed (Thanh & Thanh, 2015). Furthermore, this approach allows researchers to view the world through the perceptions and experiences of the participants and acknowledges that multiple realities exist based on these experiences (Burnett & Lingam, 2012). An interpretivist-constructivist perspective for this study is particularly suitable given its emphasis on understanding the subjective experiences and socially constructed realities of the affective dimensions of CCE within the context of Ontario secondary classrooms. An interpretivist-constructivist approach has

been used in other qualitative research in education, for example, it was used by Seherrie and Mawela (2023) to investigate how teachers used a cooperative learning strategy to enhance student performance.

This research is also informed by critical pedagogy and the concept of the 'pedagogy of discomfort' (Boler, 1999). Boler's theoretical concept of the 'pedagogy of discomfort' contends that discomfort is an essential part of learning and that students should be encouraged to confront uncomfortable ideas and experiences. This theory focuses on how teachers can support and guide students in engaging with difficult emotions, such as fear and anger, when learning about complex societal issues such as climate change. A pedagogy of discomfort is grounded in the assumption that engaging with these discomforting feelings is essential for transformational learning. Boler (1999) also argues that confronting uncomfortable emotions should not be traumatizing and that creating a safe and supportive learning environment is crucial for students to engage with discomfort constructively.

Interviews in Educational Research

Interviews are a widely used qualitative research method in education, offering researchers a means to explore complex phenomena, understand perspectives, and gather rich, contextual data (Gubrium & Holstein, 2002). This section of Chapter 3 will outline the suitability of interviews as an approach for this research study by exploring the considerations for conducting interviews, strengths and limitations of interviews in education and the alignment of interviews with this study's theoretical underpinnings and aims.

Aimed at understanding the ways teachers are navigating the affective dimensions in CCE, this research study was approached through a interpretivist-constructivist (Merriam & Tisdell, 2016; Thanh & Thanh, 2015). As an appropriate method in interpretivist-constructivist

research, interviews were used to uncover the subject lived experience of educators' engagement with and support of young peoples' complex climate emotions (Merriam & Tisdell, 2016). The 55-75 minute in-depth interviews allowed me to achieve the purpose of a interpretivist-constructivist study, which is to understand the reality teachers face engaging with and supporting students with their complex climate emotions in Ontario secondary schools.

Gubrium and Holstein (2002) highlight interviews as the predominant qualitative tool employed by researchers in education. They are particularly suitable for studies aimed at enhancing our comprehension of the social context of learning from the participants' standpoint (Gubrium & Holstein, 2002). Due to the emerging nature of this area of inquiry, there exists scant data to support the formulation of a comprehensive questionnaire or survey, underscoring the imperative for interviews (Rowley, 2012).

While there are many types of interviews, such as focus group interviews and ethnographic interviews, the most commonly used format is individual, semi-structured interviews (Gubrium & Holstein, 2002; Rowley, 2012). An interview protocol should be developed to guide the interview process and should contain between 6-12 open-ended questions (Creswell & Creswell, 2017; Rowley, 2012). Furthermore, the interview questions should be piloted with a member of the interview group the study targets and adjusted for clarity (Rowley, 2012). Thesis research projects using an individual interview approach should aim for 6-8 interviews of around one hour in length (Rowley, 2012).

Interviews are a common approach due to their many advantages. For example, they are useful when participants cannot be directly observed, participants can provide historical information, and they allow the researcher to adapt questions, controlling the line of questioning (Creswell & Creswell, 2017). Interviews also have numerous limitations, including time and

resource intensiveness of setting up and conducting individual interviews, the interviewer's

presence may bias responses, and individual interviews are not statistically representative,

limiting the generalizability of findings (Creswell & Creswell, 2017; Gubrium & Holstein,

2002).

In conclusion, interviews are a valuable research tool to explore perspectives,

experiences, and issues within educational contexts. Despite their limitations, as a suitable

method of data collection for interpretivist-constructivist research, interviews with individuals to

understand their subjective experiences with students' complex climate emotions was an

appropriate research approach to answer this study's research questions (Merriam & Tisdell,

2016).

Data Collection

A snowball sampling (Merriam & Tisdell, 2016) approach was used to recruit

participants for interviews between August and October 2023. Email invitations (Appendix A)

were circulated among participants from the Climate Change Summit in May 2022 at Lakehead

University Orillia and through the Simcoe County District School Board by an environmental

coordinator. The information was also shared through my personal social media channels on

Instagram, Facebook, and LinkedIn and circulated through Dr. Ellen Field's social media

channels. This research study was approved by the Lakehead University Research Ethics Board.

To ensure a purposeful sample of participants that had experience with the phenomenon of

students' complex climate emotions and were in-service secondary school teachers, a screening

questionnaire (Appendix C) was developed to ensure participants chosen aligned with the goals

of this research study. All of the teachers who responded to the screening questionnaire met the

criteria for the study. I conducted interviews with six participants online via Zoom between October and December 2023. Each interview lasted between 50 and 75 minutes.

To allow for flexibility in a study in an emerging field, a semi-structured interview protocol (Appendix D) was adopted. Participants were asked questions about their current experiences, strategies and practices around the emotional dimension of CCE. As a way to start the conversation, teachers were asked to situate themselves along two different axes: 1) comfort level of engaging students' climate emotions and 2) frequency of interactions with these climate emotions (see Figure 2). This was the first question of the semi-structured interview protocol (Appendix D).

Figure 2

Tool: Participants' Comfort Levels and Frequency of Interactions with Students' Complex Climate Emotions
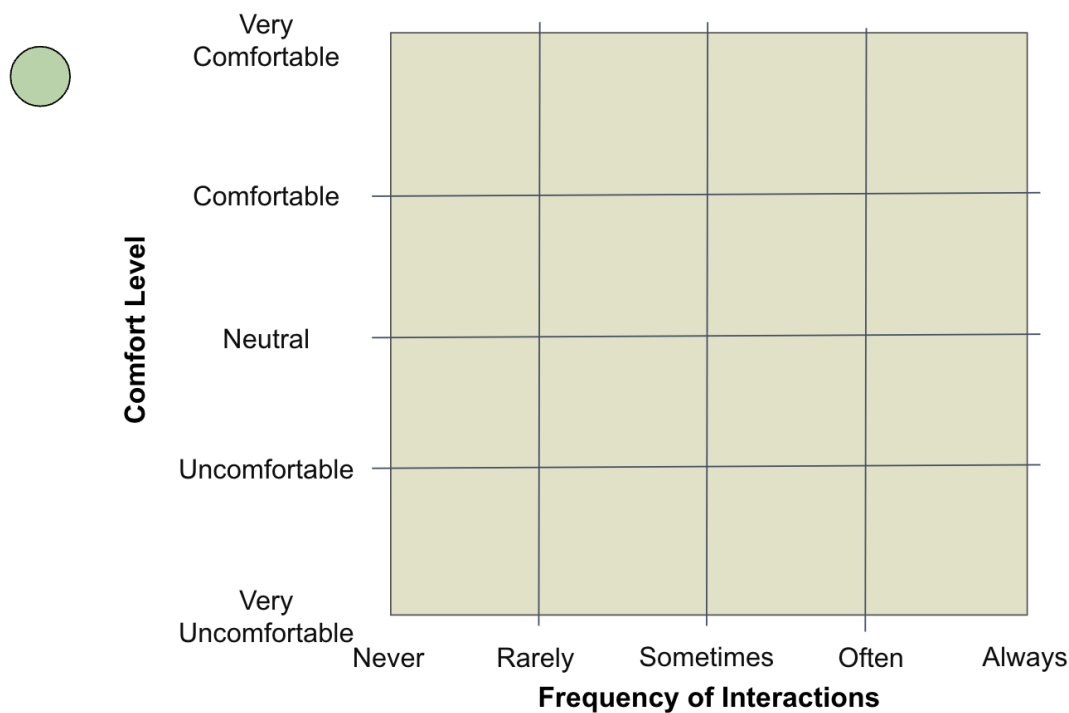
Note: The green circle will be moved by teacher participants to self-position themselves on the x and y axes as they reflect on their classroom experience during the interview.

After discussing their own teaching practices through responding to the semi-structured interview questions (Appendix D), participants were then asked to reflect on Verlie et al.'s (2020) themes of educator strategies for responding to students' ecological emotions. At the time this study was designed in November 2022, to my knowledge there only existed two empirical studies exploring teachers' strategies for responding to and supporting students' complex climate emotions: (1) Ojala (2021) and (2) Verlie et al. (2020). Ojala's (2021) study with Swedish high school teachers sought to understand how teachers handle/coach the emotional reactions of their students when teaching about climate change. Her emergent themes include a spectrum of strategies ranging from themes Ojala (2021) has analyzed as potentially problematic, such as suppressing negative emotions, to themes aligned with empirical evidence, such as a flexible approach based on the context. On the contrary, Verlie et al.'s (2020) study with Australian climate change educators sought to document only promising practices that aligned with emerging literature around supporting complex climate emotions. Their emerging themes identified and documented promising strategies that aligned with empirical evidence of how educators support students to effectively cope with their complex climate emotions. Verlie et al. (2020) was therefore chosen as a reflection tool for this study as it aligned with the purposeful sample of climate change educators from this research and explored promising practices around supporting students' complex climate emotions.

Pilot Study

The semi-structured interview protocol was piloted in March 2023 as part of an assignment for a Qualitative Research in Education course I took. The pilot study was approved by Lakehead University's Research Ethics Board and engaged four educators, three in Ontario and one in British Columbia in one focus group interview via Zoom. A focus group interview

was chosen for the methods of the pilot study as it aligned with the original intentions of this research, which was to take a participatory action research (PAR) approach using a focus group method. Due to the challenges in recruiting enough participants for a PAR study, the design of this thesis research was amended, in consultation with my supervisor, to employ individual interviews instead. Based on feedback and responses from the pilot study, the questions in the semi-structured interview protocol were refined and amended for clarity and accuracy prior to being used in the interviews for this research. The pilot study also served to improve my skills facilitating interviews and analyzing data, which were applied during this research.

Participants

The participants were all in-service secondary school teachers in Ontario. The list below outlines a basic profile of each participant, as described by them at the start of their interviews. In the informed consent forms (Appendix B), participants could select to be named or for a pseudonym to be used. Five of the six participants chose to be named.

Anne Falla: A female with over 20 years of teaching experience, Anne instructs students in Grades 9 to 12, on subjects including Sciences, Chemistry, and a specialized Climate Change Course.

Mark Gaynik: A male with 20 years of teaching experience, Mark teaches Grades 11 and 12, on subjects including Social Sciences and a multi-credit outdoor environmental leadership program.

Paul Hackl: A male with 30 years of teaching experience, Paul teaches Grades 9 to 12, on subjects including Outdoor Education, Geography, World Issues, and serves as his secondary school's Geography Department Head.

Trevor Neale: A male with over 20 years of experience, Trevor teaches Grades 11 and 12, on subjects including Forensic Science, Biology, and Environmental Science.

Liz Greflund: A female with more than 10 years of experience, Liz teaches Grades 10 to 12, on subjects including Science, Chemistry, Mathematics, and Green Industries (Technology).

Gloria (pseudonym): A female with 14 years of teaching experience in French settings. Gloria has a background as an elementary teacher and currently teaches Grades 9 and 10 Sciences.

Data Analysis

For ease of transcription, as suggested by Creswell et al. (2007), with permission from the participants, I recorded the interviews on Zoom. Once I downloaded the audio transcription from Zoom, I read through them, comparing them to the recorded audio files to correct errors in the transcription before uploading them to the coding software Dedoose for analysis.

As an important step in reflexivity, before analyzing the transcripts in Dedoose, I reflected on and acknowledged my preconceptions about this topic (Ahmed, 2024), which have been formed through my engagement with and support for students' complex climate emotions as a formal and nonformal educator over the past 8 years. Then I read and re-read the transcripts to develop a familiarization with the entire dataset (Terry, 2017). Following thematic qualitative analysis approaches, I applied a deductive coding technique to categorize the data within Dedoose (Terry, 2017). A deductive approach uses prior research and what is already known about the phenomenon to develop coding themes (Braun & Clarke, 2022). In anticipation that certain existing theories or findings will be present in the data, a deductive approach also uses

the literature review, interview questions, and research aims to develop codes (Azungah, 2018). The deductive coding analysis was done in two steps.

In the first step, I used words and short phrases to refer to each interview question and tag participant responses to each question accordingly (Terry, 2017). These words and short phrases became the codes (see codebook in Appendix E) used to analyze and compare answers to the same questions across each of the participants. I then looked at the tagged transcripts for each code, making notes of what I noticed across the participants. I then used sub-codes to capture the meanings and ideas expressed by the participants within each code. The sub-codes were then reviewed, refined, and revised to develop the codebook in Appendix E.

In the second step, I followed the same process from the first step, using Verlie et al.'s (2020) themes for educator strategies for responding to students' ecological emotions as codes. In addition to the four codes engage, validate, support, and empower (Verlie et al., 2020), I included an "Adjustments" code, which was used to capture reflections on what was missing in Verlie et al.'s (2020) themes, according to teacher participants. I then used the sub-codes to organize the participants' reflections and practical examples of each code.

After completing the first and second step of the coding process, having developed a deep understanding of the dataset, I began to thematically cluster codes to create themes. Three primary themes emerged: the emotional dimension of CCE in some Ontario secondary school classrooms, strategies for supporting students' complex climate emotions, and reflections on Verlie et al.'s (2020) educator strategies for responding to students' ecological emotions. The codes were organized under each of the relevant themes and interpreted through the sub-codes.

Following my analysis of the themes, I engaged in peer debriefing (Ahmed, 2024) with Dr. Ellen Field, seeking her feedback and validating my interpretations of the sub-codes in

relation to the dataset. Where I have quoted participants in this work, I have made minor edits for ease of reading.

Limitations

There are limitations to this study in terms of participants and research design. First, the sample size was small (*n=6*) and through the interviews, it became clear that all of the participants were predominantly teaching in the sciences and highly motivated to support their students in the affective domain of CCE. This highlights that this is a small, biased sample, therefore findings are not representative nor can they be generalized to Ontario secondary school teachers as a whole. This limits the study's applicability to teachers in other subjects areas, geographic locations, grades, and motivation levels around the emotional dimensions of climate change.

Second, the findings of this study are based on teachers' self-reported experiences and strategies. Since I did not observe their classrooms or gather data from their students, their reports on the effectiveness of these practices "may not accurately reflect teachers' actual classroom behaviors, perhaps due to social desirability bias or limited insight and self-reflection" (Debnam et al., 2015, p. 535). However, the commonalities of their experiences were captured through common sub-codes, which aligned with other empirical research in this area. These sub-codes informed a guide that may be useful to other highly motivated Ontario secondary teachers seeking to support their students' challenging emotions around climate change.

Finally, member checks are an integral part of trustworthiness in qualitative research as they increase the likelihood that participants' experiences and ideas are accurately represented (Ahmed, 2024). Due to the difficulty in arranging meetings with teacher participants, as outlined in the audit trail, and the deadline for this research project, member checks were not completed.

This reduces trustworthiness since I did not provide participants an opportunity to validate or correct the final interpretations (Ahmed, 2024).

Conclusion

In this chapter, I began by reiterating the research questions and the theoretical perspective guiding this research. I then explored the interview method in education and the process of data collection. I provided a brief profile of each of the participants and explained the deductive analysis used in this study. I concluded by acknowledging the limitations of this study, which include the small, biased sample size and the self-reported data.

Chapter 4: Findings and Discussion

This chapter is organized into three main themes that emerged during the coding process: 1) the emotional dimension of CCE in some Ontario secondary school classrooms, 2) strategies for supporting students' complex climate emotions, and 3) reflections on Verlie et al.'s (2020) themes of educator strategies for responding to students' ecological emotions. The codes are used as subheadings to explore the meaning that emerged from the development and interpretation of the sub-codes. In the following sections, I discuss the results of participants' self-reported experiences within the context of current literature. When referencing interview data, I have developed the following definitions to quantify adjectives or determiners: a "couple of participants" indicates 2 participants, "a few" or "some participants" indicates 3 or 4 participants, and "most participants" indicates 4 or 5 participants.

The Emotional Dimension of CCE in Some Ontario Secondary Classrooms

This section of Chapter 4 provides insights into the educational landscape of CCE in the classrooms of the six Ontario secondary teachers interviewed. First, I outline the participants' comfort levels addressing their students' complex climate emotions and the frequency with which they interact with these emotions in their teaching practices. Next, I discuss students' comfort levels discussing or sharing their complex climate emotions in educational settings and the triggers for these emotions as perceived by the participants. Then, I discuss the participants' opinions and beliefs about who should be responsible for supporting young peoples' complex climate emotions. Finally, I outline the challenges and needs participants discussed relating to supporting young peoples' complex climate emotions in schools.

Teachers' Comfort Levels and Frequency of Interactions

Figure 1 illustrates the participants' self-reported frequency of interacting with students'

complex climate emotions and their comfort levels dealing with these interactions. Used

Figure 1

Participants' Comfort Levels and Frequency of Interactions with Students' Complex

Climate Emotions
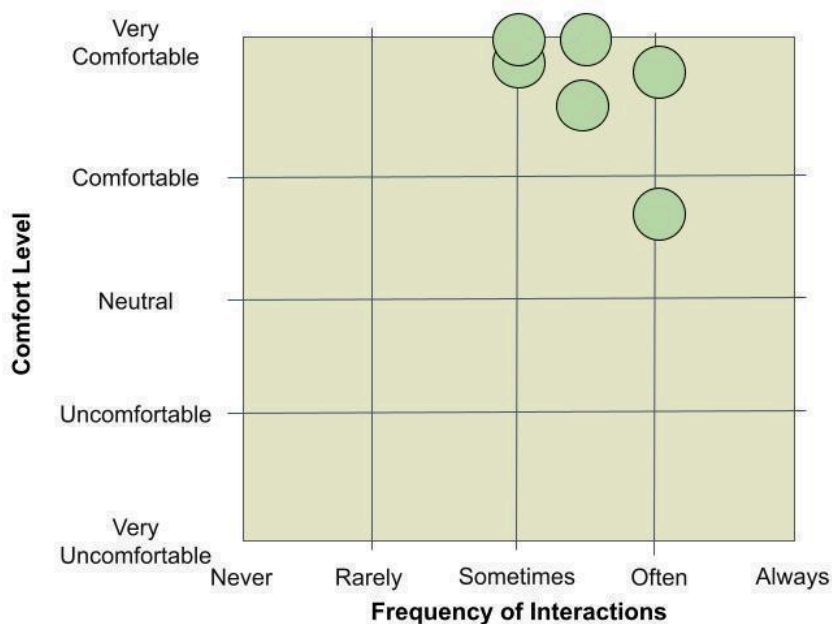
Note: Each green circle represents a teacher participant's self-positioned reflection on their classroom experience.

as a tool for self-reflection on their experiences and comfort, participants identified themselves

on the chart before discussing the factors that contributed to their self-reported position. The

majority of participants identified themselves as comfortable to very comfortable responding to

and supporting their students' emotions around climate change. Liz, the participant with the least

years of experience as a teacher, was slightly less than comfortable. When addressing the broader

mental health crises affecting youth, Liz admitted feeling unqualified to offer adequate support:

I find that there are so many crises for high school age students. Kids asking to go to

social workers because they're feeling suicidal. Like God, how many? You know, you're

feeling unqualified as it is…but that is the flavor of [being] an educator right now, is

feeling quite unqualified to deal with the things that you're dealing with.

Later, when discussing the emotional support for students dealing with the topic of

climate change, Liz remarked: "I find that incredibly challenging." Based on my observations

from the interviews, all participants are highly motivated to support their students' complex

climate emotions. With an average of about 20 years in the teaching profession, the participants

each indicated they have been covering topics related to climate change for most of their

teaching careers. This group of participants is unique and does not align with the findings of

Beasy et al. (2023), which suggest teachers, who typically lack training as therapists or

counselors, may feel uncomfortable addressing the emotional aspects of CCE. Through their

keen interest to volunteer their time to participate in an interview and their motivation and

passion for teaching climate change and supporting their students' complex climate emotions, I

observed that the participants of this study are highly motivated in this area. Given this, the high

comfort level dealing with students' complex climate emotions found in these participants is not

generalizable to Ontario secondary educators. This information is critical to framing and

understanding the context of how teachers develop a sense of comfort around the emotional

dimensions of CCE.

The participants attributed their degree of comfort to a variety of factors, including family

life, university experiences, and professional development opportunities. Several highlighted

their degree of comfort in this area comes from extensive experience as teachers. As Trevor

explains:

When you start off as a young teacher you're told 'You must do this, this and this and this, and you must be like this, and your classroom must be like this, and you can't smile until Thanksgiving, etc.' and so many things go into that. A young teacher is so focused on the teaching, they don't focus on the kid, and I think when you get to be older, and I was like that too, initially. I mean, I was not the teacher now at 23 years that I was in my first 3 or 4 years. I think you just start to learn that empathy comes in and it just floods in, and then you start to realize kids are the same every single year. It's the same issues but it's a different student.

This may align with Liz's self-reported comfort level, as she is the least experienced of the participants and the least comfortable addressing students' emotions in this area. A few of the participants considered if their degree of comfort in this area was something innate in them as individuals, since it was not observed as a skill in their colleagues. Trevor said:

I think it's just something that you either have it or you don't as a teacher. I don't know if that's true or not, but I know some teachers who students won't go to, and they come to you and talk to you.

Mark described a similar sentiment, saying: "You know, their comfort level of speaking with me is something that I have probably more than most teachers do."

There were no clear themes emerging among participants' speculations of where or how they developed their high level of comfort engaging with students' complex climate emotions. For example, Paul developed his comfort level from experiences and mentors throughout his post-secondary education, whereas Trevor and Mark both believed their comfort levels stemmed from their years of experience, developed and refined over the course of their teaching careers. Anne noted that she "listens to every podcast and reads every article that comes [her] way,"

which has allowed her to develop her own understanding and skills in this area. This suggests that some teachers may rely on their own professional and personal experiences rather than empirical evidence to develop strategies to support students. This aligns with Ojala's (2021) findings that teachers' emotional philosophies and responses in the classroom were not founded on empirical evidence, but rather on personal beliefs. This is an area for future research to investigate and identify processes that teachers use to develop and evaluate the strategies they devise for addressing students' complex climate emotions. It underscores the need for enhanced support to pre-service and early career teachers in this area.

Liz pointed out the scarcity of professional development opportunities in this field. Gloria and Mark reported having taken proactive steps, such as attending conferences or obtaining a master's degree, at their own expense and on their own time. Further research is warranted to explore whether institutional professional development options are available to secondary school teachers in Ontario around the affective domain of CCE and the impacts of these opportunities on teachers' comfort levels and effectiveness supporting their students' complex climate emotions.

As shown in Figure 1, all of the participants interact with students' complex climate emotions 'sometimes' to 'often' in their practice, indicating that at least some young people are experiencing and displaying high rates of complex climate emotions in schools. This is in line with the findings from Galway and Field (2023), that most young people in Canada are experiencing challenging emotions related to climate change. Most of the participants describe the frequency of these interactions to be dependent on the context and type of courses they are teaching. Participants noted that they do not frequently engage with students' complex climate emotions in mandatory courses that cover climate change, such as Grade 10 Science. They more

frequently interact with their students' complex climate emotions in environmental electives or clubs, where students have chosen to be there out of interest, and where teachers are covering more climate-focused content. Mark explained it like this:

> I'd say it depends on, you know, the semester for me. But if I'm doing environmental stuff, I'll say more on the 'often' side…whereas a non-kind of environmental semester, I would say maybe a little under sometimes. So, it's kind of ranged in there. It depends on which sort of group I'm talking to.

Anne, who has had a similar experience, described it like this:

> My environmental club students, and there are about 35 of them, would be 100%. So, their worry and their awareness are extreme. So, I feel there's a weird distribution where there are kids at one end of the spectrum, who know little to nothing about climate change, and there are kids at the other end of the spectrum who are deeply, deeply feeling it.

> Liz identified that it is the climate change content of the courses she teaches that elicits

emotional responses from students: "I find it comes out when you're teaching it directly." Survey results from 2019 and 2022, indicate that there was a 22% increase in the number of teachers in Canada addressing topics related to climate change (Schwartzberg et al., 2022). As more educators devote time to addressing topics related to climate change in the classroom, it is reasonable to anticipate a corresponding rise in interactions involving students' emotions regarding this topic, since learning about climate change often leads to the development of challenging emotions surrounding the issue (Taber & Taylor, 2009; Wang & Chen, 2022). As Boler's (1999) pedagogy of discomfort highlights, students should be encouraged to engage with challenging emotions when learning about complex societal issues, such as climate change. This

further underscores the necessity of dedicating resources, including time and funding, towards equipping teachers with the skills to effectively address their students' complex climate emotion within CCE frameworks.

Teachers' Perceived Comfort Levels and Emotional Triggers of their Students

Participants reported that their students have different comfort levels when expressing their complex climate emotions in school. Some participants found their students were very comfortable sharing in class; for example, Trevor said: "They are, and they're very honest about it, too." In contrast, other participants found students were reluctant to share their emotions in class. Liz describes how she uses an anonymous online survey to gauge her students' complex climate emotions, since they are not comfortable in class: "They're way more free online and anonymously. They'll just let it rip. But putting up your hand in the middle of a class? [interview participant shook head indicating 'no']"

While individual personality differences likely contribute to students' willingness to participate, students were generally perceived to feel more comfortable sharing about their climate emotions in specific contexts. These contexts included situations where climate change topics were part of regular and ongoing classroom conversations, where students spent more time together (for example, in multi-credit courses), or where they were among like-minded individuals, such as taking an environmental elective or engaging in an environmental club. They felt less comfortable in a typical high school class, with varied interests. The context-specific nature of students' perceived comfort levels in sharing about their complex climate emotions aligns with prior research (Jones & Davison, 2021; Vamvalis, 2023). Moreover, this finding identifies potential factors, such as longer class times, ongoing discussions, and explicit invitations around emotions, that could be integrated within CCE frameworks to enhance young

people's comfort levels in discussing and seeking support for their complex climate emotions within formal education settings. Since many young people report negative experiences in CCE and teachers may not accurately perceive their students' emotions on the topic, quantitative research is needed on Ontario teachers' perceptions of students' complex climate emotions, compared to the prevalence of climate emotions found among young people (Jones & Davidson, 2021; Jones & Lucas, 2023; Statistics Canada, 2020; Trott, 2024; Vamvalis, 2023).

Participants described a variety of strategies used to gauge their students' emotions around climate change, including anonymous online surveys, integrating affective questions within an assignment, and engaging students in discussions. In anticipation of the interview for this research, Mark polled his students on their stress levels around climate change and was surprised by the responses. He describes it like this:

I did ask the kids if you give me a show on your hand, 1: climate change causes me no stress, and I don't need to know more, to 5: a lot of stress. I'd say the average is about a 3. So that's, as a large class, not something we talk about regularly. But it was the right opportunity today, so I asked that. Lots of 3s that went up…I would argue that a class that's choosing to take an environmental focus, choosing to engage in the outdoors, they would be a little bit more on, I'd guess, at the 4 side of things just because they like the environment, they want to do something about it… You know, a couple of students who aren't that engaged in anything was like, 'Yeah, 1,' go back to whatever they were doing. But others that I didn't realize their sort of connection to the environment were like 4 or 5. So it was good to see that from people and again, it's not a regular conversation, so I didn't know that in any other way. So yeah, it was, you know, a little bit of a surprise.

Debnam et al.'s (2015) finding that teachers' self-reported practices may not be accurately aligned with the reality of students. This would not be a surprise given that young people are reluctant to talk to others about their complex climate emotions (Galway & Field, 2023; Klassen & Galway, 2023). Furthermore, a Canadian survey found that two-thirds of youth reported their mental well-being worse than their parents reported (Statistics Canada, 2020). This warrants more research with young people of secondary school age in Canada to better understand their perspectives, which can then be compared to teachers' interpretations to improve professional development on CCE.

Most of the participants acknowledged that climate change is only one of many sources of distress for their students, and often not the top stressor. For example, Liz shared:

I find that in their lives there's so much going on that I don't know if it's climate at the top of their head if they're left to their own devices. I mean, obviously it's there, it's like deep down and fundamentally there, but that first problem that is going through their heads, I'm not sure. I've never encountered that to be climate.

Several participants discussed the impact of technology and social media on students' well-being as the primary source of mental health challenges in their students, as well as a number of other contributing factors, such as physical and social changes of teenagers, challenging home lives, school stress and world conflicts. Anne highlights:

I mean, there are emotional needs in classrooms, and I'm not sure that climate change is the number one trigger for their emotions. I think if you could make everyone leave their cell phones at their lockers, that would help a lot. I think the number one trigger for emotional instability in teenagers is social media or too much time gaming.

The participants' interpretation that climate change is one of many stressors for young people, but not one of the primary stressors, could be interpreted in several ways. Given the results of Galway and Field's (2023) survey on emotions around climate change, we know that young people are experiencing a high prevalence of challenging emotions around the topic. Together with the insight that young people are reluctant to even talk about climate change with other people and feel dismissed or ignored when they do (Galway & Field, 2023), this could indicate that teachers are not able to accurately perceive the intensity or prevalence of their students' complex climate emotions. This observation resonates with the inaccurate viewpoints among adults regarding the mental health of youth in their lives, as evidenced by survey results indicating that two-thirds of youth assessed their mental well-being less optimistic than their parents did (Statistics Canada, 2020). Alternatively, these findings could underscore the escalating mental health crisis among young people in Canada. Over half of young people report a deterioration in their mental well-being since the onset of the COVID-19 pandemic (Statistics Canada, 2020), and a recent survey found that mental health and well-being was a top challenge for Ontario schools (People for Education, 2023). More research is needed to understand the sources and prioritization of challenging emotions among young people in Canada.

All participants felt they could predict the activities or events around climate change that would trigger students' emotions, which primarily included personally relevant or impactful events, unjust narratives, and information that shocked or surprised students. Several participants emphasized the distress students expressed during the 2023 wildfire season in Canada. Paul summarizes his experience like this:

Of course, last spring with the forest fires and the fact that you could smell smoke in the school even though you're in a big city, and you're smelling the woods on fire was very

disconcerting. And I would say, under those circumstances, the kids were pretty upset.
There was a lot of 'I can't believe this is happening', 'I can't believe that the fires are so
bad that I can smell them here', 'I can't believe that we can't do anything about this', 'It's
so frustrating'.

This finding aligns with Klassen and Galway (2023), which found that tangible reminders, such
as observing or experiencing extreme weather events or the sight of litter, are triggers for young
people's challenging emotions. As extreme weather events, such as wildfires, are anticipated to
become more frequent in a warming climate, these triggers will also become more common,
leading to heightened emotional reactions from students (World Health Organization, 2023). This
underscores the growing importance of increased attention and professional development on how
educators can effectively respond to and support students' emotional well-being and resilience,
particularly in areas of Canada where people are more likely to directly experience or witness
extreme weather events.

In another instance, Trevor describes preparing himself when he does an eye-opening
activity about atmospheric CO2 levels with his students:

I actually have all the data sets from Mount Aloha. So, the carbon dioxide counts of May
and October. So, we do a big graphing activity to look at trends from 1900 right to
present day, so that they can physically see how the levels are changing. And when they
see that graph that's kind of an eye-opening event. So, then we'll have the conversation
of why, and that gets into human activity, and then that gets them angry. So, I'm always
prepared for that conversation.

This emphasizes the crucial role of teachers in exercising care and consideration when presenting
students with distressing information about climate change, ensuring they are prepared to

respond to students' challenging emotions in ways that are appropriate and supportive. More research with young people on their triggers for complex climate emotions in educational settings is warranted to better inform teachers' practice in this area.

Other participants emphasized that unless emotions were explicitly invited by the teacher, students would not share about them. For example, Liz said: "It comes up often because we ask for it. We talk about it. And if you don't talk about it, it won't come up." Gloria shared this viewpoint, saying, "I bring it up very intentionally because it's a shit show if nobody does." Encouraging conversations about challenging emotions is crucial for mitigating feelings of isolation (Jones & Lucas, 2023). Initiating conversations with students is important for educators, given that one-third of young people refrain from discussing climate change with others (Galway & Field, 2023). Taking the lead in these discussions can help bridge communication gaps and foster a more supportive environment. This should be a core component of CCE frameworks (Jones & Lucas, 2023), since a safe and supportive learning environment is crucial for students to cope effectively with their challenging emotions according to Boler's (1999) pedagogy of discomfort.

Responsibilities for Supporting Students' Complex Climate Emotions

Many participants found it challenging to attribute the responsibility for supporting students' complex climate emotions to a single stakeholder or group. A collaborative approach was emphasized by some educators, with Paul stating,

> It lies everywhere and everybody's responsible for making it work. It's simply too big for
> one group to be given that task. And it's also too organic. It's one of those things where
> you can't designate a task like that. Say, this group has to do this, and this group has to do

that because it's something that everybody can do, and everybody brings a strength to it

and a weakness.

Similarly, Trevor stressed the importance of a joint effort, allowing students to choose from a

variety of supports. He said,

I think a major role has to fall on us. It's just you have to find that that line of being, that

compassionate caring adult and not going any further than trying to parent that student,

though, because they have parents, I don't want to be their parent, but I want them to

know that at any point, if they need somebody to speak to, whether it's me or the

guidance office, or they go to a peer, whatever it is, they should never be forcing this

upon themselves. I think too often now we're so isolated as human beings that the young

people don't realize that there's a whole network out there. And so you have to find that

comfort, whether it's one person, find one person to be comfortable with and talk to. And

that's really important.

Several participants argue that teachers, due to their position with students and their

training, bear a crucial responsibility in supporting students. Gloria strongly believes education

should play a major role, expressing: "I don't know if we have the luxury of that question

anymore. You know, the public school system is the only lever left we have to reach out to

everyone like we're in such a dire situation". Trevor also recognizes the significant role teachers

play, stating: "A major responsibility is on the teacher. I don't think it's our only one, but I don't

think that we should not be involved at all." Mark highlights that teachers are responsible, to

some extent, to triage students' emotional needs: "Teachers are often the front line—we see and

recognize whether we can deal with it or not". Paul underscores the responsibility of teachers due

to their position, stating: "it's also appropriately located because you, as a teacher, you have the

background education to know how to collect that information and how to present it appropriately." It's evident participants agree they have some responsibility in their duty to care for the well-being of their students; however, this responsibility, from the participants' perspectives, should be shared by all stakeholders in a young person's life.

Half of the participants expressed reservations about the preparedness and acceptance of most teachers for the responsibility of addressing students' complex climate emotions. Anne shared the sentiment that many teachers are already inundated with too many competing priorities and may be feeling ill-equipped and burdened with this task, stating, "Teachers would need a lot of help to ask them to support kids emotionally." Liz and Mark echoed this concern, with Liz highlighting the lack of tools and confidence among teachers to provide emotional support. Mark described his concerns like this:

Like many things, you know, if you've got a teacher that's connected and educated, and, you know, supported and knows their stuff, that's a good thing. But you can have the opposite response, like a climate change denier. They just, you know, conspiracy whatever and push back. That's gonna have a whole different response. So, I think there's personal dynamics that might come into play. So maybe not having all the chips in the same basket of only educators or only students or administration. I think it should come from those that are maybe more engaged on the subject than those that are less. Yeah, there's caution there to just go with educators. I think we're responsible for teaching. But I don't think that has to just come from us...I would caution that it just falls on teachers because there could be equal and opposite responses there, depending on who that is.

Participants acknowledged the complexity of attributing the responsibility for supporting students' complex climate emotions to a single group in a young person's life, emphasizing the

necessity of a collaborative approach that includes educators. This aligns with Galway and Field's (2023) findings, indicating young people's desire for diverse mental health supports within the education system. Similarly, it resonates with Canadians' acknowledgment of the importance of addressing climate anxiety in education (Schwartzberg et al., 2022) and Boler's (1999) pedagogy of discomfort, which contends that students should be encouraged to confront uncomfortable emotions as an essential part of learning.

While participants acknowledged the crucial role of teachers, reservations were expressed about their preparedness, echoing Beasy et al.'s (2023) emphasis on educators not being trained as therapists or counselors. Mark's reflections also echo Beasy et al.'s (2023) concern that the responsibility solely on educators "has the potential to perpetuate inequitable opportunities for students" (p. 9). This also aligns with Baker et al.'s (2021) findings, which highlight that teachers are primarily struggling to provide appropriate emotional support when addressing climate change. The caution voiced by participants resonates with the diverse perspectives revealed in the literature, emphasizing the need for engagement and support for students from diverse stakeholders within the educational context, such as nurses, counselors, parents, or allied health care providers. Unfortunately, some Ontario principals report that even when funding is available, there are no mental health workers available in their communities (People for Education, 2023). Climate psychologists and non-profit organizations have made significant contributions in this area; for example, the Climate Psychology Alliance of North America (2024) published an Educator's Guide to Climate Emotions. Resources and training should therefore continue to be developed and implemented for teachers as well as other adults in young people's lives to spread the responsibility and account for the lack of mental health support available in some Ontario communities.

Challenges and Needs

Participants highlighted several challenges in supporting their students' complex climate emotions, including time constraints within the school structure, limited professional development opportunities, and a sensitive political climate. Over half of the participants expressed frustration with colleagues' inadequate collaboration and preparedness in addressing climate-related issues, resulting in feelings of isolation. This frustration manifests in the additional workload some teachers willingly shoulder, feeling burdened by the responsibility of addressing climate change without sufficient peer support. Anne describes their loneliness like this: "You'll hear my own frustration because I'm looking around my school staff, and I think it's myself and one other who are really taking the climate issue seriously." Gloria and Liz echoed similar sentiments, emphasizing the limited training and support for teachers in addressing climate issues, creating a sense of isolation and hindering collective efforts. Liz explains it like this:

> You feel alone sometimes….I ran a green bin program at our school 'cause we only have
> garbage and recycling. So, I was like taking people's green bins and like the amount of
> granola bar wrappers I took out of staff compost was way more than student compost.

These findings align with survey results that found two-thirds of Canadian educators lack confidence in their knowledge and skills to teach climate change (Schwartzberg et al., 2022). This gap in capabilities is evidently taking an emotional and labour toll on the teachers who willingly invest their time in integrating climate change into their practice or supporting students' climate initiatives.

Results from a survey of Ontario schools shows that teachers are already experiencing burnout, which is leading to increased mental health issues (People for Education, 2023). More

research is needed to explore the emotional and time burden of teachers integrating CCE into their practices and to inform the development of institutional structures to better support these teachers. Furthermore, it should not only be highly motivated and interested teachers addressing integrating CCE into the classroom, indicating professional development in this area should not be opt-in, but administered to all educators, alleviating the burden some teachers are carrying in isolation.

Some participants emphasized the advantages of collaborating with colleagues, finding validation and emotional support from their peers as they champion climate-related initiatives at their schools. Gloria highlighted the motivational and emotional benefits of collaboration, stating:

> There is also for me the motivation. At my high school I'm the one pulling everything for everyone. So, when I meet other people who are championing that at their school, it's kind of validating….So yeah, going to these conferences and seeing this academic who has research confirming basically everything I'm experiencing, I've found really kind of cathartic.

Similarly, Paul emphasized the positive impact of collaboration on teaching practices, noting: "No matter what you're doing in your course, you need other teachers to commiserate with, but also to help you develop new materials, but also to look at your old materials and improve them". As highlighted by Baker et al. (2021) and Vamvalis (2023), initiatives aimed at enhancing students' emotional well-being should extend to include emotional support for teachers. Based on the feedback in these interviews, educational institutions should prioritize and facilitate more accessible opportunities for interdepartmental and inter-school collaborations, ensuring teachers

have the resources and avenues to receive the support they need to continue supporting their students' complex climate emotions.

Participants also emphasized the importance of paid professional development opportunities, specifically experiential and collaborative ones, regarding climate change. Many participants expressed the need for *any* form of professional development related to climate change, with Liz noting, "Climate change is far from the menu in terms of professional development [opportunities]". Gloria echoes this, stating: "98% of my training I did on my own time and with my own money. I take sick days to go to conferences. This has really not gone through at the systemic level yet." This finding aligns with the consistent appeals from both young people and educators in Canada, emphasizing the need for increased professional development and support in the realm of CCE (Galway & Field, 2023; Schwartzberg et al., 2022; Vamvalis, 2023). These should be offered as compensated and collaborative opportunities to all educators.

The institutional constraints that limit how teachers engage their students around climate change resonate with the challenges articulated by educators in Beasy et al.'s (2023) study. The time constraints based on the semester system and curriculum expectations, leading to the presentation of information in a distanced or passive manner, pose the risk of intensifying students' challenging emotions surrounding the topic (Jones & Davison, 2021). Given that 6 out of 10 young people and Canadians advocate for a greater emphasis on the social and emotional dimensions of climate change within the formal education system (Galway & Field, 2023; Schwartzberg et al., 2022), this underscores the need for a reformation of the current institutional structure of secondary schools in a way that empowers teachers to address the complex and interdisciplinary task of CCE more effectively.

Some participants also discussed the necessity for an improved and mandatory curriculum focusing on climate change. Gloria highlighted the lack of explicit expectations, relying on teachers' initiative, stating:

> The parts of the curricula that are explicit in the fact that we need to train our students to impact positive change, they're all away from teachers eyes, right, like the policy framework, no one knows about its existence. No one knows. No one reads the forward where, you know, environmental education has been implemented. So, for one thing, we need to get away from the whole environmental education lingual. It needs to be really explicit that it's climate action in every curricula with actionable items.

Anne echoed these sentiments, emphasizing the potential impact of providing teachers with improved resources for climate-related education, saying: "I'm the only one who does justice to the climate unit. And I think that's just where people's comfort zones are. But if they had something really great that they could go to, I think they would." These sentiments mirror the inconsistency and uneven coverage of CCE in the curriculum, echoing the broader calls for substantive content improvements to provincial curricula (Field et al., 2023). Furthermore, by increasing climate change content in the curriculum, more teachers are likely to integrate CCE into their practices, thereby answering the demands from young people to teach more about climate change in schools (Galway & Field, 2023).

One participant strongly expressed that the current provincial government and their relationship to education is a significant barrier to delivering quality CCE that supports students' emotional needs, through statements such as: "I would say first we need a change of government". In a federated education system like Canada's, where the provincial government holds authority over educational aspects such as spending and curriculum decisions, education is

inherently political (Tasker, 2019). While other participants did not explicitly identify the provincial government as a challenge, in my perspective, participants' advocacy for curriculum reform and increased funding for professional development indirectly acknowledges the government's pivotal role in shaping educational content and priorities. This highlights the nuanced interplay between political structures and educational practices, wherein the government's decisions profoundly influence the educational landscape and teachers' ability to address pressing issues such as climate change.

Strategies for Supporting Students' Complex Climate Emotions

Most participants acknowledged that while climate change is a concern, it is not the sole or primary mental health issue among secondary students today. Students contend with complex challenges such as difficult home situations, the pervasive influence of technology and social media as well as inherent struggles of adolescence. Rather than treating support for students' complex climate emotions as a distinct aspect of their teaching practices, participants generally integrated this support and general mental health support within their regular CCE teaching practices. The following section outlines overarching patterns and four sub-codes that emerged from the interviews around the strategies participants use to support their students' complex climate emotions, prior to being introduced to Verlie et al.'s (2020) themes. These four sub-codes, which are presented in order of emphasis by educators in the interviews, include: 1) building caring communities and connection, 2) action and instilling a sense of agency, 3) empathy and validation, and 4) inviting emotions and keeping the conversation going.

Building Community and Connection

The predominant sub-codes that emerged from the dataset were around building community and fostering relationships, with students, within the student body, and beyond the

school's boundaries. Building a sense of community and connection was described in the interviews as a pivotal component of supporting students, which included ensuring they felt cared for, addressing feelings of isolation, and actively engaging them in meaningful action. As Mark stated, "Relationship is key."

Participants discussed various initiatives to foster community, connecting students with extracurricular programs, such as school eco-clubs, environmental clubs, and hiking clubs. Anne emphasized the importance of community in dealing with climate anxiety, stating, "I've learned from the kids that the best way to deal with climate anxiety and the complex emotions is to have a community…And I think this feeling of community is really what makes them resilient". She actively engages students in the school's environmental club, which organizes weekly Community Walks for Climate on Fridays and other events like a town Earth Day Concert, involving the broader community. Participants also consistently emphasized the importance of connecting students with external resources, such as guest speakers and peers from other schools, echoing Gloria's perspective that "what is very powerful is really the connection with something out of school."

Similarly, the participants discussed the importance of having a community of other professionals to support them in supporting their students to cope with their emotions. Mark highlighted that "teachers are often first line—we see and recognize whether we can deal with [students' emotions] or not." However, in instances where participants lack the necessary tools to support students' emotional distress, educators such as Trevor and Liz have noted their recourse to referring students to social workers or guidance counselors for additional support. While this approach enables teachers to assess then support student well-being through community collaboration, only 9% of Ontario schools report regular access to mental health/addiction

specialists or nurses, with 46% reporting they have no access at all. This aligns with feedback from youth interviewed by Vamvalis (2023), who underscore the inequities of these mental health supports across Ontario secondary schools. Furthermore, Vamvalis' (2023) findings note from students' perspectives, guidance counselors primarily focus on academic and post-secondary pathways, rather than addressing issues of climate despair, revealing potential gaps in the support system for students grappling with such emotional challenges. Research on student perception of mental health supports in Ontario secondary schools is needed to address gaps in knowledge as well as support and ensure equitable access for all students.

Participants underscored the importance of fostering community through initiatives like engaging students in extracurricular activities or bringing in guest speakers, aligning with the literature emphasizing the value of engaging experts and positive role models in cultivating hope with students (Beasy et al., 2023; Karsgaard & Davidson, 2023). Additionally, participants' emphasis on the role of building community echoes findings that feelings of belonging within supportive groups are vital for cultivating hope and developing coping strategies to effectively manage challenging emotions (Boler, 1999; Jones & Lucas, 2023; Karsgaard & Davidson, 2023; Klassen & Galway, 2023).

Participants also actively sought to foster a sense of community within their individual classes. Liz stated: "Building community is a big thing of what I'm trying to do in my courses." Paul begins his courses with a field trip to explore unconventional parts of the city, fostering shared experiences outside the traditional classroom setting, thereby nurturing bonds and relationships among students. In the interviews, participants emphasized the importance of dedicated time and intentional space for students to share experiences outside the traditional classroom setting in order to nurture relationships and develop connections.

Acknowledging the importance of time in fostering relationships and community, Trevor made the deliberate choice to exclude tests from some of his courses, stating, "I don't want [students] to think they have to worry about studying and memorizing, so we have time to have conversations." Mark and Paul underscored the significance of time in cultivating relationships and community within the constraints of secondary courses, which are limited by short daily rotation times and semester structures. Paul discussed the adverse effects of transitioning from year-long courses to semesters at his school, impacting his ability to develop meaningful relationships with and among students. Highlighting his privilege in delivering a multi-credit course, Mark emphasized, "when students feel like they're connected into a program like ours, like they've got more time and they can be themselves, and feel comfortable to share."

Emerging from these interviews was a strong and consistent desire for all of the participants to prioritize fostering relationships and building community with and among their students as a means of supporting them with their general and climate-specific mental well-being and their engagement in climate action. This is a form of meaning-focused coping, where students are putting trust in others to take action and developing value in the face of the climate crisis through positive community connections. Several participants also highlighted the importance of cultivating students' relationship with the natural world by taking them outside and engaging with nature. These findings emphasize that fostering relationships need to be an integral part of CCE frameworks and opportunities to build community should be embedded into the institutional practices of secondary schools in Ontario.

Action and Instilling a Sense of Agency

During the interviews, participants consistently underscored the importance of fostering agency among students and engaging them in tangible actions to address the climate crisis.

Trevor utilizes audits, such as plastic use at grocery stores or household chemicals, as opportunities to instill a sense of agency in students. He encourages his students to identify areas where they currently have control through these audits and discusses how this control will increase as the students age. He states: "I try to have them think about options that they have. And if they can learn that they do have some control over their actions, that really kind of helps with that stress level and comfort level." Similarly, Mark stresses the importance of redirecting students who are experiencing challenging emotions around climate change to recognize their agency and take actionable steps to address the problem. For example, when a student brought forward Kenya's new national tree planting holiday on "Good News for Change Friday", Mark's students were frustrated that Canada did not have something similar. Mark responded by reminding students that they don't need to wait for a national holiday to plant trees and opened a discussion around how they might go about planting trees at their school. Mark sums up this strategy by saying "[students say] it's frustrating, we can't seem to do anything as young people. And so you just give them options."

Liz highlights that you must go beyond acknowledging student agency and actively support them as an ally in realizing and exercising it. Similarly, Anne emphasizes her role as a teacher is to be an ally by enabling students to exercise their agency, stating, "[Students] are the innovators, and they come up with the ideas, and I'm just here to say yes to everything they want to do and find a way to make it happen and support them." For instance, Anne supports students in fundraising endeavors, such as selling tree seedlings to local community members, where the funds raised allow students to host events and carry out actions they're passionate about. The availability of funding for student-driven initiatives would allow teachers to more effectively support their students' ideas, thereby enabling them to exercise their agency around climate

change issues. Inquiry-based pedagogies is an existing approach that may allow for this choice and student agency.

This sub-code, taking action and instilling a sense of agency in students, aligns with Trott (2022), who highlights that children taking action can be an effective coping strategy, supporting them in managing the psychological impact of climate change. Additionally, the participants' approach resonates with Karsgaard and Davidson (2023), underlining the students' strong sense of citizen agency and the desire for climate education to facilitate democratic participation. The findings also reflect the imperative highlighted by Galway and Field (2023) for decision-makers to acknowledge and address young people's feelings of powerlessness, betrayal, and the need for diverse, safe spaces to voice their experiences and priorities in climate action. A key component of student empowerment and CCE frameworks should promote collective climate action, provide choice, and foster their sense of agency. Recognizing the negative impact that this strategy can have as form of problem-focused coping, teachers should be cautious not to exclusively promote action and instill a sense of agency in students to address climate change to support students' complex climate emotions. As a complex, global challenge that can not be addressed through an individual's actions, this strategy should be promoted by teachers in conjunction with meaning-focused coping strategies.

Empathy and Validation

A common sub-code that was tagged throughout the interviews was participants showing students empathy and validating their emotions around climate change and in other challenging areas of young people's lives. Several participants emphasized the importance of empathy as a foundational practice when responding to and supporting students' complex climate emotions. Mark, for instance, said,

If I notice you know [students] are distraught, you know, in any context, taking them

aside and saying, 'Hey, what's going on? Tell me what you're thinking' and try to give

them a sense of understanding and empathy. I think that's a big approach. No one wants

to open up and talk if they're just feeling like there's a brick wall there. And so you just

try to be a listening ear and just validate their experience like to say, you know, I hear ya,

like this really sucks, you know, I get it.

Paul echoes this sentiment, stating: "There's one word that is universal and that's empathy and I

use this to connect to situations all the time, and just saying, you have to have empathy for the

people." By accepting and empathizing with students' emotions, teachers may be encouraging

young people not to avoid these emotions or use other emotion-focused coping strategies, which

could negatively impact their overall mental well-being or engagement in climate action (Ojala,

2012).

Similarly, most participants discussed the importance of validating students' emotions

and relating to their experiences as an important step to offering them support. Paul went even

further, highlighting that validating students' emotions can also be about making them

understand their experiences are relative. He said,

Just reminding kids that these are relative experiences. Your complaint about one thing is

somebody else's lifeline. 'I can't get Wi-fi with this phone'. And jeez, 'Where am I going

to get my next meal?' is the other end of that spectrum. And so reminding kids that just

because we're there doesn't mean we're not affected. We're still affected.

Participants consistently emphasized the importance of empathy in addressing students'

complex climate emotions, aligning with the identified need for better understanding between

generations and the importance of validating and normalizing individuals' feelings in climate

change discussions (Galway & Field, 2023; Jones & Lucas, 2023). Furthermore, it is important that teachers model empathy, as Kwauk and Casey (2021) deem it a necessary 'green life skill' for students to develop to contribute to a more sustainable and just world. The participants' focus on creating a safe and supportive environment (Boler, 1999) through active listening and empathy reflects the literature's recognition of empathy as a crucial element in fostering meaningful conversations about climate change (Jones & Lucas, 2023) and should be an integral part of teacher practices when delivering CCE in schools.

Inviting Emotions and Keeping the Conversation Going

Explicitly inviting emotions into the classroom and engaging students in regular, ongoing conversations around climate change was the final sub-code of participants' strategies that emerged from the interviews. Several participants discussed that students do not bring up their complex climate emotions unless explicitly invited to do so, which resonates with research indicating that young people, especially teenagers, may not initiate conversations about climate change or talk about climate change with other people at all (Baker et al., 2021; Galway & Field, 2023). This underscores the importance of educators taking the lead in creating a supportive environment for discussions about climate change by explicitly inviting these emotions into the classroom and taking, as Ojala (2021) terms it, an approving view of emotions in the classroom. Likewise, Boler's (1999) pedagogy of discomfort supports the idea that challenging emotions are an essential part of learning and should be encouraged in the classroom.

Two of the participants felt they inherently fostered a safe and inviting space for emotions about all topics in their classrooms. For example, Trevor said: "I'm very much an open door policy, and I'll let the students say to me and talk to me about anything they want to." Similarly, Anne states: "The kids who come to my class with concerns about climate change know that this

is a safe space to talk about that." The other educators said explicit invitations are necessary for students to share their complex climate emotions with them. For example, Liz sent an online survey where students could anonymously share their feelings, and Mark asked their students to show how stressed they were feeling about climate change on a scale of 1-5 by raising their hands in class. This highlights the importance of participants intentionally creating safe spaces for students' emotions, with the majority of the participants indicating in their interviews that explicitly inviting students to share about their emotions in class is necessary to fully understand and engage them in the emotional dimension of climate change. Participants employed varying strategies to invite emotions into their classrooms, a finding that aligns with the literature's emphasis on the need for the education system to create open and safe spaces for young people to discuss climate change and express their emotions about it (Jones & Davison, 2021; Jones & Lucas, 2023).

Throughout the interviews, participants consistently observed that students are most at ease sharing their complex climate emotions when it becomes a continuous and integrated part of the classroom conversation, rather than being confined to standalone units or isolated topics. The preference for weekly integration over traditional topic units emerged as a commonly tagged sub-code among educators. For instance, in grade 10 science, Anne incorporates a climate change lab every Friday, ensuring it remains a consistent topic throughout the entire term. Trevor adopts "Positive Documentary Fridays", featuring hopeful solutions around climate change and ongoing discourse throughout the semester. Similarly, Mark, with "Good News for Change Fridays", encourages students to seek out and share positive stories for discussion each week. This approach supports the notion that ongoing and intentional conversations about climate change can serve as sustaining forces, helping students build emotional resilience and motivating

transformative action (Jones & Lucas, 2023). Based on these findings, educators could be encouraged to move away from teaching climate change as a siloed unit, instead approaching CCE as an interwoven and ongoing topic throughout courses. Additional support for teachers would be needed to integrate and assess outcomes related to climate change using this approach, given that 66% of teachers in Canada do not feel confident in their knowledge and skills to deliver CCE content to their students (Schwartzberg et al., 2022).

Reflections on Verlie et al.'s (2020) Themes of Educator Strategies for Responding to Students' Ecological Emotions

During the interviews, participants were introduced to, and asked to provide reflections on, Verlie et al.'s (2020) themes of educator strategies for responding to students' ecological emotions, which include the following: engage, validate, support, and empower. Verlie et al.'s (2020) themes were derived from survey responses of 30 environmental educators in Australia. In this research study, I presented a brief description of each of Verlie et al.'s (2020) themes and participants were asked to comment on their reflections on the theme presented. These guided questions are found in the semi-structured interview protocol (Appendix D); they ask teachers questions such as, "are these strategies something you would feel comfortable trying or have tried with your students?" The four Verlie et al. (2020) themes were used as codes during the analysis process and an additional code "Adjustments" was added to capture recommended changes to Verlie et al.'s (2020) existing themes.

Overall, participants in this study agreed with and resonated with the Verlie et al.'s (2020) themes, exemplified by this quote by Gloria: "I love it. I think it's great. I think it captures a lot of what's needed." This section of the Findings and Discussion explores teacher's reflections on and applications of Verlie et al.'s (2020) themes. The findings presented in the following section do

not reflect the strategies participants discussed prior to being introduced to Verlie et al.'s (2020) themes.

Engage

The first theme from Verlie et al. (2020) is *engage*. This involves employing strategies such as deep reflection, critical thinking, and active discussion to engage students with the complexities of climate change and their emotional responses to it, allowing them to explore and understand the issues deeply.

In the interviews, participants shared diverse strategies to engage students. Active discussions were a predominant strategy, conducted both in-person and digitally through online posts. These discussions were often initiated by classroom activities or experiences. For example, during the industries unit on primary resources, Paul initiated a conversation about the tensions between necessary raw materials and the drawbacks of extractive practices. Subsequently, students were tasked with researching and creating posters proposing practical solutions to reduce the need for raw material extraction, which were then displayed in the hallway as discussion points. Similarly, Anne's approach involved active discussions prompted by the physical classroom environment, which is adorned with environmental posters, and climate change-focused lab experiences, such as creating biodegradable plastics.

One participant sets explicit boundaries around potentially contentious topics. Paul discussed how he lets students know that some topics are off limits until they have been appropriately primed for the discussion, which he will facilitate. For example, the 2022 Russian invasion of Ukraine. With his students, he states, "nobody's allowed to touch this because it's too sensitive, and I will take care of it with you." Similarly, he does not tolerate inappropriate

commentary that trivializes issues around climate change; however, he emphasizes that he also will not embarrass students if they make an ignorant remark.

Primarily through discussions, participants agreed that engaging students around the emotional dimension of climate change is important. Participants used a variety of prompts to encourage conversations with and among students and created a safe space with boundaries and guidance for their students to actively engage in these conversations. This strategy, as highlighted by Verlie et al. (2020) has many benefits, including mitigating feelings of isolation, bridging communication gaps between generations and fostering a supportive space for students' emotions (Jones & Lucas, 2023). This further aligns with Boler's (1999) pedagogy of discomfort, which highlights that engaging with challenging emotions is an essential part of transformational learning.

Validate

The second theme from Verlie et al. (2020) is *validate*. This entails creating a supportive environment where teachers acknowledge and normalize students' emotional experiences, fostering open discussions and sharing vulnerabilities to reduce the sense of isolation that can accompany challenging climate emotions.

All the participants stressed the significance of validating students' emotions, emphasizing that validation should precede any engagement with the complexities of climate change and exploring their emotional responses to it. For instance, Anne expressed, "I mean, you can't engage students in critical thinking and projects until you've validated their feelings." Paul echoes this, saying,

Validating first and saying, 'I'm as concerned as you guys'; this is problematic for all

these reasons. And so you should be concerned and, at the same time, don't dwell on it

because dwelling on it won't do anything; you have to act.

The participants' reflection on this theme emphasizes that validation should be the first response to students' complex climate emotions, before they can be engaged in exploring these emotions or empowered to take action.

Participants described a wide range of strategies to validate their students' emotions. For example, Trevor describes the following activity,

I create a false town in Ontario, and I may give it a nice name like Cedar Hill, or

something that sounds nice and something that they would want to live in. And then, I

say, 'At the local farm, like a lot of our farms are doing, the farmer is old, and he's selling

off his property since his kids don't want to take it on, so he's selling it to a big company,

and that company's decided to bring in an incinerator and put it right on the hill in the

center of town. And so then I give them roles, but I pick the roles. So, one of them could

be a climate activist, somebody could be a single father trying to support two children at

home. I try to give them positions that would be for and against it, so they can debate.

But they have to debate it in the role of the individual I give them and then we have that

conversation, and we flip it. So everybody then gets to take on a different role. I think it

validates their emotions, because in some cases they don't want to be the factory worker

who is coming into town because this is bringing a job for him and he's been unemployed

for so many months.

By providing diverse roles and encouraging students to debate from those perspectives, Trevor emphasizes that each individual's actions and feelings are valid, fostering empathy and

understanding for various viewpoints. This approach not only validates students' emotions but also fosters critical thinking and highlights the validity of an individual's feelings based on diverse perspectives.

In another instance, Mark works from the beginning of the semester to break down the traditional hierarchy between teachers and students, which allows them to be vulnerable and connect with students on a different level. He describes this strategy saying,

> I will, very early on say, 'I might be the role of the teacher, but I'm learning right along with you, and so I don't expect to know all the answers' and that kind of just, for most, anyway, puts the playing field down more on their level. And just being vulnerable. That's with any relationship you can start to work together and feel comfortable sharing those things.

Likewise, Anne's emphasis on the visibility of their actions, including climate change posters, in-class activities, and support for extracurriculars, underscores the importance of educators being perceived as allies by their students. By actively engaging in initiatives related to climate change, Anne creates an environment where students feel acknowledged and supported. She says: "I think that [students] feel that I'm aware of their vulnerabilities and that I'm sensitive to them because I think they recognize me as a like-minded person when it comes to issues of climate." This highlights the notion that educators' actions and attitudes play a crucial role in building connections with students around climate-related concerns.

Participants varied in their approaches to sharing personal emotions and vulnerabilities with students. On one side of the spectrum, Anne affirmed, "I wouldn't say that I explicitly share my emotions. But I definitely share my biases….I wouldn't stand up here and necessarily cry." On the other end of the spectrum, Liz shared, "there's this one [video] clip that I would use in

grade 10 science and I would cry and so they would see that." While Liz recognizes the value of expressing genuine emotions, she expressed, "I don't want to cry in front of my class but I did', noting that, 'it'd be worse to be blank faced" in the interest of combating feelings of loneliness among students. Gloria fell in between, stating, "I think we even make a case of doing that, actually, of trying to express [our emotions] with words and showing that we are taking action. We have strategies to deal with our emotions, that's all part of modeling." These varying approaches highlight the nuanced ways educators navigate emotional disclosure while maintaining a supportive classroom environment. A couple of participants discussed that they do not show their true emotions in the classroom, which could be a result of concerns that their emotions will amplify their students' complex climate emotions, as found by Baker et al. (2021).

Despite their varying comfort levels with personal vulnerability in the classroom, all of the participants discussed the importance of being honest, authentic and real with their students. This aligns with young people's consistent demand for honesty and bravery from adults (Hickman, 2020). Based on these reflections, it seems that validating students' emotions is an important first step towards appropriately responding to and supporting young peoples' complex climate emotions. The extent a teacher is vulnerable with their students can vary depending on the comfort level of the individual teachers; however, the participants are in agreement that it's important that teachers are honest and authentic with students, making it explicit that they understand and empathize with the students' emotions.

Support

The third theme from Verlie et al. (2020) is *support*. This theme includes teachers offering emotional support by ensuring students feel cared for, building caring communities

among peers, and helping students identify coping mechanisms that work for them personally, all while cultivating a welcoming and supportive classroom environment.

Participants shared diverse strategies for supporting students' complex climate emotions, such as forest walks or nature time, connecting students to environmental clubs within the school, and providing general mental health support through discussions. Participants consistently emphasized the importance of creating caring communities where students can find support among like-minded individuals and actively engage in meaningful actions. This emphasis underscores the significance of fostering a sense of community to address students' complex climate emotions, a prominently tagged sub-code in participants' strategies for supporting students' emotions around climate change.

Though supporting their students was an integral part of the CCE practice of teacher participants, they viewed all aspects of Verlie et al.'s (2020) framework, such as validating and empowering students, as part of the overall support framework. They emphasized caring communities and relationships as the key means to support students, as integrated and interwoven with other strategies mentioned.

Empower

The fourth theme from Verlie et al. (2020) is *empower*. This involves empowering students by exploring alternatives to the status quo, connecting them with activist groups, showcasing role models, providing opportunities for collective environmental action, and taking meaningful steps toward addressing climate change.

Empowering students through tangible actions and engagement with role models emerged as a consistently tagged sub-code in the participants' discussions. Extracurricular activities, particularly school clubs, were highlighted as avenues for students to actively engage

in addressing climate change. The participants emphasized the importance of showcasing diverse perspectives and providing role models, with Anne inviting guest speakers and involving students in the selection process. Mark echoed this sentiment, stating: "Just bringing in other people as well so it's not just one voice. I'll try to have different organizations, or different university connections so that it's not just my bias." Additionally, Anne and Mark empowered students by positioning them as leaders, garnering media coverage for their initiatives and applying for awards and honours. The recognition of students' leadership roles and their potential to become future role models played a crucial part in empowering them around climate change. A strategy of problem-focused coping, empowering students to take action on climate change is an important component of coping with complex climate emotions, supporting their mental well-being and encourage their engagement in climate action,

Some participants emphasized the necessity for Verlie et al.'s (2020) themes to explicitly highlight empowering students as leaders, granting them agency over actions and initiatives, and recognizing and celebrating their successes. A few participants underlined the importance of emphasizing agency as a necessary component of the Verlie et al.'s (2020) themes, advocating for a guided inquiry model where students explore problems and find solutions independently. Engaging young people in actions to address climate change was widely regarded as a key strategy for supporting their complex climate emotions among the participants. Through their reflections on Verlie et al.'s (2020) themes, core components of empowering students around climate change need to include instilling a sense of agency in students and providing them opportunities to build leadership skills and capacity.

Conclusion

In this chapter, we explored the themes, codes, and sub-codes that emerged from interviews with participants around students' complex climate emotions. We explored the emotional dimension of CCE in some Ontario secondary classrooms, examined emergent sub-codes around the strategies employed by participants to support students' emotions regarding climate change and explored participants' reflections on Verlie et al.'s (2020) themes of educator strategies for addressing students' ecological emotions. By contextualizing the research findings within relevant literature, the findings and analysis in this chapter contribute to the ongoing discourse in this burgeoning field.

Chapter 5: A Synthesis of Findings

An Adapted Guide to Support Students' Complex Climate Emotions Through Teaching Practices

This chapter offers an adapted guide for teachers to support their students to develop coping strategies to effectively manage their complex climate emotions. The guide emerged from a synthesis of three key elements: the initial strategies for supporting their students' complex climate emotions that participants described in their interviews, the participants' reflections on Verlie et al.'s (2020) themes on educator strategies for responding to students' ecological emotions, and an analysis of these two elements within the context of existing literature. Drawing on these elements of the research study and underpinned by the theoretical assumptions of the pedagogy of discomfort (Boler, 1999), the aim of this guide is to provide a clear and actionable guide for Ontario secondary educators addressing the emotional dimensions of climate change in their teaching practices.

Accept and Invite Emotions into the Classroom

One of the emerging sub-codes from the participants' interviews was to invite emotions into the classroom and make the conversations about climate change ongoing throughout the term. Some participants perceived that their students were not comfortable bringing up their emotions around climate change and several noted that if they do not bring it up, students will not talk about it. In the interviews, participants discussed employing various strategies to encourage emotional expression in the classroom. For example, some participants conducted online, anonymous surveys or in-class polls to assess students' emotions or stress levels related to climate change. Other participants discuss incorporating an emotional dimension into classroom assignments and activities. Furthermore, several participants shared their strategy to avoid siloed

units about climate change, opting instead for ongoing coverage and conversations. For example, it was popular among several participants to integrate activities on Fridays, such as a good news story for change, hopeful climate-documentaries, or climate-related lab.

Likewise, when reflecting on Verlie et al.'s (2020) theme of *engage*, participants emphasized strategies which sparked conversations about climate change with and among students or set explicit boundaries around contentious conversations. For example, climate-specific activities or climate-related posters around the classroom or hallway or making it clear that inappropriate commentary that trivializes issues around climate change will not be tolerated.

Existing research indicates that some young people do not talk about climate change at all (Galway & Field, 2023) and some are not comfortable talking about their climate emotions at school or with teachers (Jones & Davison, 2021; Vamvalis, 2023). This strategy of accepting and encouraging emotions in the classroom resonates strongly with existing literature, which underscores the importance of creating open and safe spaces within the education system for young people to discuss climate change and express their emotions about it (Boler, 1999; Jones & Davison, 2021). Ongoing and intentional conversations about climate change can serve as sustaining forces, aiding students in building emotional resilience and inspiring transformative action (Jones & Davison, 2021; Jones & Lucas, 2023). Young people, who often feel disregarded or invalidated when discussing climate change (Galway & Field, 2023), can feel more comfortable when teachers take the lead in facilitating these discussions and foster a supportive environment.

Validate, Then Explore Emotions

Validating students' complex climate emotions is a sub-code that all participants placed

importance on in the interviews. The participants discussed the importance of listening to students, showing empathy and understanding, and first and foremost validating their emotions. In the interviews, they discussed various methods they employ, such as relating to and echoing students' emotions around climate change and offering a listening ear.

Likewise, when reflecting on Verlie et al.'s (2020) theme of validate, participants emphasized that validating students' emotions must be the first response, before they are engaged in exploring the complexities of their climate emotions. They discussed presenting fictional scenarios for exploring different perspectives and emotions safely, which aimed to demonstrate the relativity and validity of emotions. Participants also talked about establishing themselves as supportive allies by dismantling traditional hierarchies and demonstrating personal vulnerability with students. Their comfort levels with vulnerability varied, ranging from simply expressing their opinions on a topic to even showing emotions such as crying in front of students.

Validating and exploring emotions strongly aligns with existing literature, which has identified the need for better understanding between generations and the importance of validating and normalizing individuals' feelings in climate change discussions (Galway & Field, 2023; Jones & Lucas, 2023). This strategy responds to the demands from young people for adults to be honest and brave around climate change (Hickman, 2020). Exploring these emotions with young people is also supported by Boler's (1999) pedagogy of discomfort, which is grounded in the assumption that engaging with challenging emotions in educational settings should be encouraged as an essential part of learning.

Foster Community and Connections

A prominently tagged sub-code reiterated by participants throughout their interviews was to support their students' complex climate emotions through building community and connection with others. This included building relationships between participants and students, peer-peer relationships among students, and supporting students in making connections and building community with individuals, groups and classes beyond their classroom. They discussed strategies, such as connecting students to school clubs, supporting them in engaging their broader town in events and activities, inviting guest speaker, connecting with other classes nationally and globally through specialty programs, referring them to school counselors, and providing opportunities for students to bond through time and shared experiences outside of the formal classroom walls. Likewise, when reflecting on Verlie et al.'s (2020) themes of *support* and *empower*, participants emphasized strategies related to building community and connection as central to their practices in this area. For example, connecting them to school clubs or offering them general mental health through caring conversations, and showing students diverse perspectives by inviting guest speakers into the classroom.

This strategy strongly aligns with existing literature, which emphasizes that engaging students with speakers and role models, and building community cultivates a sense of belonging, combating feelings of isolation, and cultivates hope, key components of coping effectively with challenging and complex climate emotions (Beasy et al., 2023; Jones & Lucas, 2023; Karsgaard & Davidson, 2023). As a highly emphasized strategy across participant interviews, reflected in Verlie et al.'s (2020) theme of support, and aligned with the literature, this is a key strategy for supporting students to manage their complex climate emotions.

Empower Through Agency

      The final prominent sub-code to emerge from the participants was to support their students to cope with their complex climate emotions effectively by taking action and instilling in students a sense of agency. They discussed engaging students in tangible and visible actions and guiding them through activities and discussion that allow students to see the control they have in their lives. The participants emphasized that they must go beyond acknowledging student agency and actively support them in realizing and exercising their agency. During the interviews, participants provided concrete examples of these strategies, including conducting audits of groceries and cosmetics, encouraging students to write letters to corporations, pointing out students' agency during discussions, and facilitating the realization of student ideas through fundraising and support.

      Likewise, when reflecting on Verlie et al.'s (2020) theme *empower*, participants emphasized strategies related to fostering students' sense of agency, and several noted that Verlie et al.'s (2020) themes lacked a focus on student leadership. For example, participants discussed the practice of nurturing student leadership by establishing clubs and initiatives based on students' preferences, thereby granting them autonomy to explore topics and actions of personal interest. They emphasized their role as allies in supporting students to take tangible actions and celebrated their successes within the community by garnering media attention or award recognition.

      This strategy strongly aligns with existing literature, which emphasizes students' desire for citizen agency, spaces to voice their priorities in climate action, and opportunities to take collective action (Galway & Field, 2023; Jones & Lucas, 2023; Karsgaard & Davidson, 2023). Empowering students to take action by fostering their sense of agency and providing them with

opportunities to choose actions aligned with their passions are crucial strategies for supporting

students in managing their complex climate emotions. This approach not only contributes to

mitigating and adapting to the impacts of climate change but also helps students develop a

greater sense of agency in addressing environmental challenges. This problem-focused coping

strategy is enabled by confronting challenging emotions, which is essential for the

transformational learning process (Boler, 1999), and should be done in combination with other

strategies with a meaning-focused approach in order to buffer the negative impacts on mental

well-being only engaging in problem-focused coping may contribute to.

As an actionable guide for in-service teachers addressing the emotional dimension of

climate change in their teaching practices, I have converted this guide into a one-page PDF for

knowledge mobilization (see Figure 2).

Figure 2

Supporting Students' Emotions in Climate Change Education Infographic

Supporting Students' Emotions in Climate Change Education

This framework was developed from Ontario secondary teachers' interview responses[1] about their classroom experiences around students' climate emotions and their reflections on existing strategies for responding to students' ecological emotions[2]. It provides a practical, empirically-supported guide for educators navigating their students' emotional responses to climate change in formal education settings. Under each component of the framework is a brief description, sample strategies, and an excerpt of an activity that has been recommended and implemented by in-service teachers. This framework is a flexible guide to be adapted within your specific educational context and for individual needs.

1. Accept & Invite Emotions

Given young people's reluctance to discuss climate change[3] and recognizing the benefits of emotions in the classroom,[4] teachers should initiate the conversation and **establish open and safe environments** where youth are invited to express their feelings about climate change.[5]

- Avoid units; make the conversation ongoing
- Conduct online (anonymous) or in class polls
- Create explicit boundaries on contentious topics
- Stimulate and guide discussions

Humour as an entry point: Post a quote from Donal Trump: "Wow, 25 degrees below zero, record cold and snow spell. Global warming anyone?" Ask students how they feel reading quotes like this followed by a discussion about critical media literacy and misinformation.

2. Validate Then Explore

Be authentic[5] showing empathy towards students' emotions and fostering better inter-generational understanding[7]. **Validating students' emotions as normal, non-pathological responses to the climate crisis[3, 6] should be the first response,** then explore and develop an understanding of their emotions.

- Break down hierarchies; position yourself as an ally
- Integrate emotions into activities & assignments
- Make your opinions known through posters/ discussions
- Model vulnerability and coping strategies

Fictional scenario: An incinerator is being considered for the town. Students assume roles (e.g. climate activist, unemployed parent...), debate the decision, switch roles, and debate again. Highlighting the validity of everyone's feelings and the relativity of perspectives.

3. Foster Community & Connection

Community and relationships are vital for combating isolation, fostering hope, and finding solidarity with like-minded individuals[7]. Engage with diverse perspectives, role models, and professional supports; **remember, you don't have to carry this burden alone.**

- Connect beyond your school (e.g. guest speakers)
- Spend time outside connecting to nature
- Create shared experiences among students
- Refer to a club, counsellor, or community group

Starting off on the right foot: Begin the semester with a brief field trip to walk around an unconventional area of the city or a naturalized area, fostering shared experiences and nurturing relationships among students beyond the traditional classroom walls.

4. Empower Through Agency

Acknowledge student agency and actively support them in realizing and exercising it. Prioritize collective, authentic actions and support students in developing their skills for democratic participation[7].

- Explore what young people **can** influence or control
- Provide leadership opportunities
- Celebrate with the community & local media
- Make actions tangible & offer choice

Change advocates: Conduct an audit at a grocery store, then have students write a letter to the owner highlighting what they're doing well and ways they want them to improve and how. Highlighting students' consumer power and building their skills for civic engagement.

Footnotes:
[1] Howlett, S. (2024). Exploring Supports for Students' Complex Climate Emotions Through Interviews with Ontario Secondary Teachers. *Lakehead Learning Commons.* [2] Verlie, B., Clark, E., Jarrett, T., & Supriyono, E. (2020). Educators' experiences and strategies for responding to ecological distress. Australian Journal of Environmental Education, 37(2), 132–146. https://doi.org/10.1017/aee.2020.34 [3] Galway, L. P., & Field, E. (2023). Climate emotions and anxiety among young people in Canada: A national survey and call to action. The Journal of Climate Change and Health, 9 (2023), 1–8. https://doi.org/10.1016/j.joclim.2023.100204 [4] Ojala, M. (2021). Safe spaces or a pedagogy of discomfort? Senior high-school teachers' meta-emotion philosophies and climate change education. The Journal of Environmental Education, 52(1), 40–52. https://doi.org/10.1080/00958964.2020.1845589 [5] Jones, C. A., & Davison, A. (2021). Disempowering emotions: The role of educational experiences in social responses to climate change. Geoforum, 118, 190–200. https://doi.org/10.1016/j.geoforum.2020.11.006 [6] Hickman, C., Marks, E., Pihkala, P., Clayton, S., Lewandowski, R. E., Mayall, E. E., Wray, B., Mellor, C., & van Susteren, L. (2021). Climate anxiety in children and young people and their beliefs about government responses to climate change: A global survey. The Lancet Planetary Health, 5(12), e863–e873. https://doi.org/10.1016/S2542-5196(21)00278-3 [7] Jones, C. A., & Lucas, C. (2023). 'Listen to me!': Young people's experiences of talking about emotional impacts of climate change. Global Environmental Change, 83, 102744. https://doi.org/10.1016/j.gloenvcha.2023.102744

Note: The infographic summarizes the 4 guiding sub-codes for teachers to support students'

complex climate emotions. To view the infographic full screen or download it, please visit:

https://www.canva.com/design/DAF8DNzem6U/-ZE32RAIXwtQOCQzdm_8kg/view?utm_cont

ent=DAF8DNzem6U&utm_campaign=designshare&utm_medium=link&utm_source=editor

Conclusion

This chapter has presented an adapted guide to support secondary educators in navigating

and supporting their students' complex climate emotions. The guide has been developed through

a synthesis of various components, including the initial strategies recounted by participants in

their interviews, participants' reflections on Verli et al.'s (2020) themes, and an analysis of

existing literature. The adapted guide, which has been converted into a shareable infographic,

offers a comprehensive and actionable guide for educators seeking to address the emotional

dimensions of climate change in their teaching practices. The findings reflected in this guide

resonate with existing resources, such as the Climate Psychology Alliance of North America's

(2024) An Educator's Guide to Climate Emotions. Aligned with the interpretivist-constructivist

approach of this study, the present guide reflects the subjective experiences of teachers in the

specific context of Ontario secondary classrooms.

Chapter 6: Conclusion

Young people in Canada are experiencing a concerning rate of challenging climate emotions (Galway & Field, 2022). Coping with complex climate emotions effectively, as a necessary skill needed to contribute to a just and sustainable world (Kwauk & Casey, 2021), can safeguard young peoples' mental well-being and engage them in climate actions (Ojala, 2012b, 2012a, 2013; Ojala & Bengtsson, 2019). Schools, where young people spend most of their time, serve as crucial environments where they not only learn about climate change, which can lead to the development of challenging emotions (Taber & Taylor, 2009; Wang & Chen, 2022), but also where they cultivate coping mechanisms (Ojala, 2015). Teachers, who influence young peoples' emotions, coping strategies, and engagement in climate in climate action (Ojala, 2015, 2021), are increasingly covering climate change topics in Canadian schools (Schwartzberg et al., 2022). Unfortunately, young people consistently report disempowering and disappointing experiences in CCE (Baker et al., 2021; Jones & Davison, 2021; Jones & Lucas, 2023; Ojala, 2015; Trott, 2024; Verlie, 2020). As an emerging issue and area of inquiry, there exists a gap in empirical research exploring how educators are managing the challenging task of engaging in the affective dimension of CCE in Ontario.

This research study answers the main research question and sub-research question: 1. a) In what ways are secondary school teachers in Ontario responding to and supporting their students' complex climate emotions, and 1. b) What empirically supported strategies can teachers employ to support their students to navigate and cope with their complex climate emotions? In order to answer these questions, this thesis began by contextualizing the affective domain of CCE in Canada and exploring the significance of this research study. This was followed by a review of published literature on complex climate emotions young people are

experiencing and how they are managing them, how teachers are responding and attending to their students' complex climate emotions, and the context of CCE in Canada. After this, the interview methodology was presented. Finally, I discussed the findings of the interviews synthesized within the context of existing literature and presented an adapted guide for secondary teachers to support their students' complex climate emotions in the classroom.

The findings of this research study demonstrates that some secondary educators who teach about climate change in Ontario are frequently interacting with students' complex climate emotions and are comfortable dealing with them. However, it seems that these teachers are engaging with students because of their own personal motivation, enthusiasm, and commitment rather than based on support or policy from school boards or the Ministry of Education. More professional development and training is needed for pre- and in-service teachers to address students' complex climate emotions based on empirical best practices. These participants feel lonely among their colleagues in their pursuit to teach about climate change issues while also supporting their students' emotions around the topic. In addition to dealing with their own climate emotions and feelings of isolation, participants are facing a number of challenges in delivering CCE with effective emotional support, such as lack of curriculum priority, scant professional development opportunities, and inadequate time. While teachers are on the frontline engaging with students regularly around climate change, it is not appropriate to solely burden them with the responsibility of supporting students' complex climate emotions. Rather, a collaborative approach involving a diverse array of stakeholders, including peers and counselors, should be implemented to provide comprehensive support to students in navigating these challenging emotions. These findings offer insights into a burgeoning challenge within the

education sector, contributing a new perspective from within the Ontario context to existing literature.

To answer the first research question, some Ontario secondary school teachers are using a variety of strategies to support their students' complex climate emotions, including building community and personal connections, supporting tangible actions and instilling a sense of agency in students, showing empathy towards students and validating their emotions, and inviting students' emotions into the classroom with ongoing discussions.

Answering the second research question, the teachers' self-reported strategies to support students' complex climate emotions and the participants' reflections on Verlie et al.'s (2020) themes on educator strategies for responding to students' ecological emotions were analyzed and then synthesized within the context of existing literature. The conclusion of this research study presents an adapted guide for teachers to support students' complex climate emotions, which includes four key sub-codes: accept and invite emotions into the classroom, validate, then explore complex climate emotions, foster a sense of community and connection, and empower students through agency.

This research contributes to the emerging area of inquiry on young peoples' and teachers' experiences around complex climate emotions in the classroom. It highlights strategies used by dedicated and knowledgeable teachers and has resulted in revising Verlie et al.'s (2020) themes into a guide for other teachers to use and reflect on their practices. My hope is that other educators across all grade levels and subjects will consider how their practices attend to the climate crisis and the well being of the young people in their classrooms.

Future Research

As a burgeoning area of inquiry, there were many questions that arose throughout the literature review and results of this research study that require further research. The main areas of future research in the emotional dimensions of CCE should focus on confirming existing literature in this field, developing a deeper understanding of the experiences and needs of key stakeholders—primarily teachers and students, and exploring effective strategies to support students in coping with and managing their complex climate emotions in educational settings.

First, as an emerging issue and area of inquiry, both qualitative and quantitative research is needed to substantiate the existing research around young peoples' and teachers' experiences around complex climate emotions in Ontario classrooms. This includes studies in diverse geographic areas (i.e., rural and urban populations), subjects and grade levels, and socioeconomic contexts. Through empirical research, we can develop a deeper understanding of the challenges and opportunities surrounding the emotional dimensions of CCE in Ontario classrooms. This can serve as a basis to inform future educational practices and policies that promote mental well-being and engagement in climate action.

Second, there is a need to explore how all teachers, from diverse contexts with varying levels of motivation around climate change, are engaging with, supporting and managing this emerging, complex, and challenging task with young people. Likewise, further research into the experiences, perspectives and needs of young people around the emotional dimensions of climate change in schools is needed. This research will inform and support the development of critical resources and supports including professional development for teachers and school-based funding for student mental health and well-being.

Finally, research using methods such as observation and triangulation to explore and assess strategies and approaches to supporting young people to develop effective coping strategies for managing their complex climate emotions are needed. This is true particularly in relation to what is effective and appropriate for a formal school setting, since publicly funded institutions have an unparalleled, wide reach of young people. Presently, many empirical studies, including the present study, have relied on the self-reported perspectives and experiences of teachers, which have been criticized as not accurately aligned with the reality of students (Debman et al., 2015). Beyond understanding the problem, a solutions-oriented approach to research in these areas is needed to address the problem and safeguard the mental well-being of our most vulnerable populations. More Canadian educators are addressing topics related to climate change, yet this context remains understudied and necessitates further inquiry.

The present study has contributed preliminary insights into the emotional dimensions of CCE in Ontario; however, as a particularly urgent and growing concern, more empirical research in this area is needed.

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Appendices

Appendix A: Recruitment Email

Dear potential participant,

My name is Sidney Howlett, I am a graduate student at Lakehead University currently conducting a research project supervised by Dr. Ellen Field titled, Exploring Supports For Students' Complex Climate Emotions In Ontario Schools, which focuses on the ways in which teachers in Ontario are responding and attending young people's emotions about climate change. This project has ethical approval from the Lakehead Research Ethics Board.

Currently, I am recruiting 6-10 Ontario high school teachers to collaborate on this research project. Participants would be expected to attend one online interview via Zoom during fall 2023. During the interviews, participants will be asked questions about their current experiences, strategies and practices responding and attending to their students' complex emotions about climate change. The purpose of this research project is to understand the ways Ontario secondary school teachers are responding to students' emotions about climate change. With teachers, this research aims to develop supports and strategies to address this challenge in schools.

Attached is an information letter and informed consent form. Please read the information letter to get a better understanding of the project and if you are interested, please complete this screening questionnaire: https://forms.gle/SQatR7RHeZuKv9q16.

If you know any other Ontario high school teachers who might be interested in improving their teaching practice in this area, please pass along this invitation to them.

If you have any questions, please do not hesitate to reach out to me.

Thank you,

Sidney Howlett

Attachment:

Exploring Strategies To Support Students' Complex Climate Emotions In Ontario Schools

Ontario high school teachers are invited to participate in an action research project to co-develop strategies to address climate anxiety in their classrooms.

This project has ethical approval from the Lakehead University Research Ethics Board.

Focus Group Interview #1
Wednesday, October 4, 2023
6-7:30pm via Zoom

For more information and to register:
https://forms.gle/hef VU89ubAhY6rXFA

Participate in two virtual focus group interviews where we will draw on Lakehead's research expertise in climate anxiety and emotional coping to co-develop strategies, such as a lesson plan, to better address this challenge in schools.

Questions? Email Sidney Howlett at swhowlet@lakeheadu.ca

Appendix B: Educator Letter of Information and Consent

Title: Exploring Support For Students' Complex Climate Emotions In Ontario Schools

Dear potential participant,

You are invited to take part in a study focused on educators' strategies and ideas for attending to young peoples' complex climate emotions in Ontario schools. Taking part in this study is voluntary. Before you decide whether or not you would like to take part in this study, please read this letter carefully to understand what is involved. After you have read the letter, please ask any questions you may have.

WHAT'S THE PURPOSE OF THIS STUDY?

The purpose of this research project is to understand the ways Ontario secondary school teachers are responding to students' emotions about climate change. With teachers, this research aims to develop supports and strategies to address this challenge in schools.

WHAT INFORMATION WILL BE COLLECTED?

During the interview, participants will be asked questions about their current experiences, strategies and practices around the emotional dimension of climate change education.

WHAT IS REQUESTED OF ME AS A PARTICIPANT?

Participation in this research is voluntary. The expectations for participants during each stage of the research include:

Actively participate in a 45-minute interview via Zoom . During this interview, participants will discuss their experiences and strategies for responding and attending to young people's complex climate emotions at school.

WHAT ARE MY RIGHTS AS A PARTICIPANT?

As a research participant, your rights include:

- the right to not participate; you are free to withdraw at any time before the thesis is submitted without prejudice to pre-existing entitlements

- continued and meaningful opportunities for deciding to continue or withdraw from participation

- removal of your statements if you choose to withdraw from participation, until the submission of the thesis

- Privacy and confidentiality

RISKS AND BENEFITS

In this study, the interview questions may foster negative emotions from participants. The questions have not been crafted to elicit immediate emotional responses; however, given the nature of witnessing and supporting the mental health of young people, respondents may have emotional responses.

This research project has been designed with the aim of advancing best practices of climate change education and educators' ability to effectively respond to young people's complex emotions about climate change. By participating in this project, teachers will have the opportunity to network and discuss teaching strategies that attend to complex climate emotions with other teachers and with a graduate student, who is following what research indicates as best practice. This is a participatory action research project which creates space for participants to have input in the direction of the action to support and improve their teaching practice.

HOW WILL MY CONFIDENTIALITY BE MAINTAINED?

Confidentiality as a participant in this research will be guaranteed, as far as possible.

- Through the informed consent form, you can decide whether your name is kept confidential or to have your name cited in the research project.

- If you choose for your name to remain confidential, a pseudonym will be used across all files including field notes and interview transcripts.

- All information, where requested, will be kept confidential and will only be accessible by the researchers.

- The interview will be recorded by Zoom, a US company, which is subject to the USA Patriot Act and CLOUD Act. These laws allow government authorities to access the records of host services and internet service providers. By choosing to participate, you understand that your participation in this study may become known to US federal agencies.

WHAT WILL MY DATA BE USED FOR?

The results of this research will be published as a Master of Education thesis in Lakehead University's Knowledge Commons.

WHERE WILL MY DATA BE STORED?

The data will be securely stored for a minimum of 7 years in a password-protected file folder on the researcher's computer. The researcher will also keep a backup file of the data on an external hard drive, also in a password-protected file folder.

HOW CAN I RECEIVE A COPY OF THE RESEARCH RESULTS?

Participants who would like to be informed when findings are published can write their email in the informed consent or email swhowlet@lakeheadu.ca for updates on the research progress.

WHAT IF I WANT TO WITHDRAW FROM THE STUDY?

At any point, up until the thesis is submitted, you can withdraw from the study. During the interview, at any point you can exit without penalty. If you want to withdraw from the study, then your statements from the interview and all collected data pertaining to you will be deleted and excluded from the analysis. Any identifiable information related to you will be anonymized to ensure your confidentiality. Your decision to withdraw will be respected, and your data will not be used.

RESEARCHER CONTACT INFORMATION:

Sidney Howlett, Master of Education Candidate

swhowlet@lakeheadu.ca

Dr. Ellen Field, Assistant Professor, Faculty of Education

efield@lakeheadu.ca

RESEARCH ETHICS BOARD REVIEW AND APPROVAL:

This research study has been reviewed and approved by the Lakehead University Research

Ethics Board. If you have any questions related to the ethics of the research and would like to

speak to someone outside of the research team, please contact Sue Wright at the Research Ethics

Board at 807-343-8283 or research@lakeheadu.ca.

MY CONSENT:

I agree to the following:

- I have read and understand the information contained in the Information Letter

- I agree to participate

- I understand the risks and benefits of the study

- That I am a volunteer and can withdraw from the study at any time, and may choose not
  to answer any question.

- That the data will be securely stored with the researcher for a period of 7 years following
  the completion of the research project

- I understand that the research findings will be made available to me upon request

- My name will remain confidential unless I want my contribution acknowledged and have
  indicated such below.

- By consenting to participate in this project, I confirm that any information I encounter will be kept confidential.

- I understand that there are risks of contracting COVID-19 during in-person

- research.

- All of my questions have been answered

By consenting to participate, I have not waived any rights to legal recourse in the event of research-related harm.

If I want my name acknowledged in research **files**, and not a pseudonym, I consent and have indicated in boxes.	Yes	No

If I want my name acknowledged in research **publications**, and not a pseudonym, I consent and have indicated in boxes.	Yes	No

_____

Name   Signature   Date

Please provide your email, if you would like to be sent a copy of the research results:

Appendix C: Screening Questionnaire

Basic information

1. First name.

2. Last name.

3. What is the best email to contact you at?

Questions 4-5 will be used to determine your eligibility for this study.

4. Are you currently a teacher in a publicly funded Ontario high school?

    a. Yes

    b. No

5. Are you interested in using empirical research to co-develop effective strategies for

   teachers to better attend to their students' complex climate emotions in education?

    a. Yes

    b. No

    c. I'm not sure

Questions 6-9 will be used to select a diverse sample of participants from eligible individuals.

6. Please identify your gender.

    a. Female

    b. Male

    c. Nonbinary

    d. I prefer not to answer

    e. I do not identify with any of the above options

7. What race would you identify yourself as? Check all that apply.

a. Asian

b. Black

c. European/White

d. Hispanic

e. Indigenous (please specify) _____

f. Pacific Islander

g. Don't know

h. Prefer not to answer

8. How many years of teaching experience do you have?

a. 0-9

b. 10-19

c. 20-29

d. 30+

Scheduling

9. Are you available to attend a focus group session in person at Lakehead University,

Orillia at 500 University Avenue, Orillia at these dates or times? Please select all that you

can attend.

a. Option A

b. Option B

c. Option C

d. Option D

Thank you. Sidney Howlett (swhowlet@lakeheadu.ca) will contact you by email with more information in the next few days.

Appendix D: Semi-Structured Interview Protocol

Begin by introducing myself and the context of this study. Establish guidelines for a safe and collaborative environment.

Interview protocol

Bolded questions are deemed a priority to ask. Unbolded questions are optional dependent on the responses from participants.

The first part of the interview time should be approximately 60 minutes.

Let's begin by introducing ourselves and share what grade(s) and subject(s) you teach.

1. **How often do student's emotions about climate change come up in your teaching practice and how comfortable do you currently feel responding to these emotions?** Why do you/ do you not feel comfortable attending to these emotions?

2. **Do you think students are comfortable sharing their emotions about climate change in class?** If yes, what prompts them to share about their emotions? If not, why do you think they aren't comfortable sharing in class?

3. **Can you describe how you currently approach students who are displaying signs of complex climate emotions?** What impact do you think this has on students? Where did you develop or learn this strategy?

4. Recognizing that there is a need to respond to students' growing mental health concerns around climate change, **do you think that this support should come from educators or other resources within schools, such as peer-to-peer support or school counselors?** In your opinion, what are the key challenges or supports for educators attending to students' complex climate emotions in schools?

   Preface by defining: engage, validate, support, empower (Verlie et al., 2020)

5. **Given the many things teachers are already asked to juggle, what do you think about implementing strategies to intentionally engage, validate, support, and empower students' complex climate emotions in your teaching practice?** Are these strategies something you would feel comfortable trying or have tried with your students? From your perspective, are these strategies appropriate for the classroom? What challenges do you foresee in trying out these strategies? Do you currently use any other strategies around students' climate emotions?

Appendix E: Codebook Step 1

Code	Sub-Code	Exemplary Quote
Frequency of interactions with students' emotions	Often	"It's like a huge concern, it comes up all the time"
	Sometimes	"I would say sometimes"
	It depends	"It depends on you know the semester for me."
Comfortability with students' emotions	Very comfortable	"I'm very comfortable dealing with it, because I've learned from the kids"
	Unqualified	"That is the flavor of being an educator right now, is feeling quite unqualified to deal with the things that you're dealing with."
Teachers' Perceived Comfort Levels of their Students	Comfortable	"They are, and they're very honest about it, too."
	Uncomfortable	"putting up your hand in the middle of a class? [interview participant shook head indicating 'no]'"
	In certain contexts	"they're way more free online and anonymously"
Teachers' Perceived Emotional Triggers of their Students	Personal experiences with climate impacts	"Last spring with the forest fires and the fact that you could smell smoke in the school even though you're in a big city, and you're smelling the woods on fire was very disconcerting. And I would say, under those circumstances, the kids were pretty upset."
	Teacher-instigated	"It comes up often because we ask for it. We talk about it. And if you don't talk about it,

		it won't come up."
	Shocking information	"I actually have all the data sets from Mount Aloha…And when they see that graph that's kind of an eye opening event."
Strategies	Connection	"Relationship is key."
	Community	"I've learned from the kids that the best way to deal with climate anxiety and the complex emotions is to have a community…And I think it's this feeling of community is really what makes them resilient"
	Action	"[Students} are the innovators, and they come up with the ideas, and I'm just here to say yes to everything they want to do and find a way to make it happen and support them."
	Agency	"I try to have them think about options that they have. And if they can learn that they do have some control over their actions, that really kind of helps with that stress level and comfort level."
	Empathy	"There's one word that is universal and that's empathy and I use this to connect to situations all the time, and just saying, you have to have empathy for the people."
	Validation	"just try to be a listening ear and just validate their experience like to say, you know, I hear ya like this really sucks, you know, I get

		it."
	Inviting emotions	"I'm very much an open door policy, and I'll let the students say to me and talk to me about anything they want to."
	Ongoing discussions	"We do a 'good news for change' every Friday"
Responsibility for stupporting students' complex climate emotions	On teachers	"that's a big responsibility for a teacher. But it's also appropriately located because you, as a teacher. You have the background education to know how to how to collect that information, how to present it appropriately how do you make it easy to understand for your students."
	Not put on teachers	"Only a few people in the school are going to feel like they're confident enough to take that on."
	Shared responsibility	"It lies everywhere and and everybody's responsible for for making it work. It's it's simply too big for one group to be given that task."
Challenges & needs	Professional Development/ Curriculum	"98% of my training I did on my own time, you know, and with my own money"
	Political climate	"it's hard because politics is something you don't want to address in school, we have very conservative area where where I'm teaching. So I know that their parents are probably supporters of that that government style, but they can get angry about it"
	School structure/time	"We've been a full year

		school since I started here, and we've only recently become a semester school and I don't get to know my students well enough as I used to."
	Lack of peer support	"You'll hear my own frustration because I'm looking around my school staff, and I think it's myself and one other who are really taking the climate issue seriously."
	Needs	"It needs to be really explicit that it's 'climate action' in every curricula with actionable items."

Appendix F: Codebook Step 2

Code	Sub-Code	Exemplary Quote
Engage	Reflection	"I love it. I think it's great. I think it captures a lot of what's needed."
	Example	"I have students write a journal. So it's their own journal that they take with them on all the different trips"
Validate	Reflection	"I mean, you can't engage students in critical thinking and projects until you validated their feelings."
	Vulnerability	"I wouldn't stand up here and necessarily cry."
	Example	"saying I'm as concerned as you guys about this, this is problematic for all these reasons."
Support	Example	"having success stories and having that kind of on the ready of 'look at this, look at this, look at this'"
Empower	Reflection	"action…It's so ferociously empowering."
	Example	"having leadership opportunities. And eco schools is something I've been involved with for years, just as a club, and you know, have a couple of leaders take on some different initiatives in the school"
Adjustments	Reflection	"Agency is a big part of that and maybe missing

		from this list."