SUPPORTING GREATER VANCOUVER SECONDARY SCHOOL STUDENTS’ MENTAL HEALTH THROUGH TIME OUTDOORS: A QUALITATIVE INVESTIGATION

by

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Abstract

There is strong evidence that spending time outdoors benefits mental health, including that of youth. Time spent outdoors is associated with lower levels of stress, anxiety, and depression. Secondary schools play a key role in supporting youths’ healthy development and are well positioned to promote initiatives that strengthen mental health, including facilitating opportunities for time spent outdoors. Yet, there remains a paucity of evidence to guide secondary schools in better supporting such initiatives. The purpose of this study is to understand the experiences of youth located in the Greater Vancouver Metropolitan District (GVMD), of British Columbia, Canada, who engage in or would like to engage in outdoor time at secondary schools as a mental health promotion strategy.

This qualitative study utilized semi-structured interviews and optional photovoice methods to gather data from youth who attend public schools in GVMD. Participants took photos or verbally identified and described areas in their school environment during either in-person or virtual interviews and explored how youth currently engage with their school’s outdoor spaces, identified facilitators and barriers for outdoor engagement, and provided recommendations to extend opportunities for time outdoors. Thematic analysis was used to generate themes grounded in participant’s lived experiences. A total of 15 youth (aged 16-17 years) from five different GVMD school districts participated in this study. Three main themes with multiple sub-themes were identified: 1) Importance of outdoor time for youth (e.g., health contributions), 2) Current outdoor time opportunities in secondary schools and factors affecting engagement in these opportunities (e.g., weather as a barrier for going outdoors), and 3) Ideas for secondary school
initiatives to increase time outdoors (e.g., space changes to the outdoor environment).

Representative participant quotes and/or photographs were highlighted to serve as exemplars for each theme.

Outdoor time provides several mental health benefits for youth. Investing in initiatives which promote positive mental health outcomes within secondary schools are a public health priority and hold the potential to support healthy trajectories throughout the life course. Schools offer a venue for promoting youth mental health and time outdoors is a promising strategy that could be better leveraged in this setting.
Lay Summary

BC youth currently use multiple strategies to support their well-being, including spending time outdoors. Secondary schools are a key setting to implement initiatives to support youth mental health, including increased time outdoors. There is a lack of research on how outdoor time in BC schools can support youth mental health.

I conducted interviews and an optional photography approach with fifteen secondary school students located in Greater Vancouver. This provided insight on three key themes: 1) Importance of outdoor time for youth, 2) Current outdoor time opportunities in secondary schools, and 3) Ideas for secondary school initiatives to increase time outdoors.

It is crucial to encourage initiatives that promote the well-being of BC youth. By understanding the experiences of youth and identifying opportunities to support outdoor time in schools, this research can inform the development of effective mental health promotion strategies.
Preface

This thesis contains the work conducted by the candidate, Hebah Hussaina, under the supervision of Dr. Mariana Brussoni with guidance from Dr. Emily Jenkins, Dr. Hasina Samji, and Dr. Christine Voss. This research was conducted with a subset of participants of the 2022/2023 Youth Development Instrument, conducted under the supervision of Dr. Hasina Samji and research staff at Simon Fraser University and affiliated institutions.

Sections of this thesis will be submitted for publication in peer reviewed journals.

This study was approved by the Research Ethics Board at the University of British Columbia and the Children’s and Women’s Health Centre of British Columbia (#H23-01851).
Table of Contents

Abstract........................................................................................................................................ iii
Lay Summary....................................................................................................................................... v
Preface................................................................................................................................................. vi
Table of Contents .............................................................................................................................. vii
List of Tables ......................................................................................................................................... xi
List of Figures ......................................................................................................................................... xii
List of Abbreviations .......................................................................................................................... xiv
Acknowledgements ............................................................................................................................ xv
Dedication ............................................................................................................................................... xvi
Chapter 1: Introduction ...................................................................................................................... 1

Chapter 2: Literature Review............................................................................................................. 2

2.1 Current Youth Mental Health Context in Canada................................................................. 2

2.2 Spending Time Outdoors as a Mental Health Support ............................................................. 2

2.3 Environments for Effective Health Promotion Strategies ...................................................... 4

2.4 Current Secondary School Initiatives that Encourage Spending Time Outdoors as a Mental Health Promotion Strategy ............................................................................................................. 6

2.4.1 Curriculum Breaks.................................................................................................................. 6

2.4.2 Nature-based Therapy.............................................................................................................. 8

2.4.3 Outdoor Learning..................................................................................................................... 9

2.5 Current Policy Landscape on Outdoor Time ............................................................................. 11

2.6 Research Purpose...................................................................................................................... 12
Chapter 3: Methods

3.1 Interpretative Framework & Positionality Statement ........................................ 13
3.2 Methodology ..................................................................................................... 14
3.3 Research Purpose Statement .......................................................................... 14
3.4 Research Questions ......................................................................................... 15
3.5 Setting ............................................................................................................ 15
3.6 Participant Recruitment .................................................................................... 16
  3.6.1 School District Information ........................................................................ 19
  3.6.2 Additional Inclusion Criteria ...................................................................... 19
3.7 Data Collection ................................................................................................ 20
  3.7.1 Screening and Consent ............................................................................... 20
  3.7.2 Photovoice ................................................................................................ 21
  3.7.3 Semi-Structured Interviews ....................................................................... 22
3.8 Data Analysis .................................................................................................. 22

Chapter 4: Results

4.1 Participant Demographics ............................................................................. 24
4.2 Thematic Analysis Results .............................................................................. 25
  4.2.1 Theme 1 - Importance of Outdoor Time for Youth ................................... 26
    4.2.1.1 Health ................................................................................................ 27
    4.2.1.2 Lifestyle .............................................................................................. 28
    4.2.1.3 Nature Appreciation .......................................................................... 29
    4.2.1.4 School-Wide Community & Spirit ....................................................... 31
    4.2.1.5 Alternative Definition ......................................................................... 32
4.2.2 Theme 2 - Current Outdoor Time Opportunities in Secondary Schools .......... 33
  4.2.2.1 Scheduled Breaks and Lunchtime ...................................................... 35
  4.2.2.2 During Curriculum and Teaching Hours ............................................ 52
  4.2.2.3 School Clubs ......................................................................................... 61
  4.2.2.4 After School ......................................................................................... 64
  4.2.2.5 School Events ....................................................................................... 64
  4.2.2.6 Active Transport to and from School .................................................. 65

4.2.3 Theme 3 - Ideas for Secondary School Initiatives to Increase Time Outdoors ...
  4.2.3.1 Space-specific Changes ....................................................................... 65
  4.2.3.2 Student-focused Engagement Opportunities ....................................... 71
  4.2.3.3 Higher-level Changes .......................................................................... 73
  4.2.3.4 Community Involvement ...................................................................... 74
  4.2.3.5 Equity, Diversity, and Inclusion Concepts to Consider ....................... 75

Chapter 5: Discussion .......................................................................................... 77
  5.1 Weather as a Significant Determinant of Outdoor Engagement ................ 77
  5.2 Physical Activity as an Opportunity for Outdoor Engagement .................. 78
  5.3 Socialization and Community-Building as an Opportunity for Outdoor Engagement. 79
  5.4 Nature Appreciation as an Opportunity for Outdoor Engagement ............ 81
  5.5 Factors Mediating Outdoor Time and the Socio-Ecological Model ............. 82
    5.5.1 Individual Factors .................................................................................. 82
    5.5.2 Teacher-specific Factors ....................................................................... 84
    5.5.3 School-wide Factors ............................................................................. 86
  5.6 Equity, Diversity, and Inclusion Considerations in Outdoor Engagement .... 87
List of Tables

Table 3.1: Kolb’s (2008) phases for their photovoice approach........................................... 14
Table 3.2: Breakdown of school district information..................................................................... 19
Table 4.1: Participant demographics (N=15).................................................................................. 25
Table 4.2: Main Themes, Sub-Themes, and Sub-Sub-Themes ......................................................... 26
List of Figures

Figure 2.1: SEM for health promotion (adapted from Golden & Earp, 2012) ........................... 5
Figure 3.1: Breakdown of recruitment sample from 2022/2023 YDI ................................. 18
Figure 4.1: Participant 03 (prompt 6: natural features)..................................................... 30
Figure 4.2: Participant 09 (prompt 3: comfortable outdoor areas) .................................... 31
Figure 4.3: Diagrammed relationship between all factors (sub-themes) and outdoor opportunities (sub-sub-themes)........................................................................................................ 34
Figure 4.4: Participant 09 (prompt 5: crowded outdoor spaces) .......................................... 37
Figure 4.5: Participant 03 (prompt 2: majority of time spent outdoors) ............................... 40
Figure 4.6: Participant 14 (prompt 7: spend time outdoors if they could) ......................... 41
Figure 4.7: Participant 08 (prompt 1: favorite outdoor space) ............................................ 43
Figure 4.8: Participant 10 (prompt 1: favorite outdoor space) ............................................ 44
Figure 4.9: Participant 02 (prompt 2: majority of time spent outdoors) .............................. 45
Figure 4.10: Participant 09 (prompt 8: outdoor space improvement) .................................. 46
Figure 4.11: Participant 10 (prompt 1: favorite outdoor space) .......................................... 47
Figure 4.12: Participant 06 (prompt 4: outdoor activity) ..................................................... 49
Figure 4.13: Participant 14 (prompt 1: favorite outdoor space) ............................................ 50
Figure 4.14: Participant 09 (prompt 6: natural features) ..................................................... 54
Figure 4.15: Participant 08 (prompt 3: comfortable outdoor areas) ..................................... 56
Figure 4.16: Participant 09 (prompt 7: spend time outdoors if they could) ....................... 58
Figure 4.17: Participant 02 (prompt 2: majority of time spent outdoors) ............................ 62
Figure 4.18: Participant 14 (prompt 8: outdoor space improvement) .................................. 63
Figure 4.19: Participant 02 (prompt 8: outdoor space improvement)........................................ 66
Figure 4.20: Participant 10 (prompt 8: outdoor space improvement)........................................ 67
Figure 4.21: Participant 09 (prompt 8: outdoor space improvement)........................................ 68
Figure 4.22: Participant 03 (left) and 10 (right) (prompt 8: outdoor space improvement)......... 69
Figure 4.23: Participant 11 (left) and 14 (right) (prompt 8: outdoor space improvement)........ 71
Figure 4.24: Participant 07 (prompt 8: outdoor space improvement)........................................ 72
Figure 4.25: Participant 02 (prompt 8: outdoor space improvement)........................................ 74
# List of Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BC</td>
<td>British Columbia</td>
</tr>
<tr>
<td>COVID-19</td>
<td>Coronavirus 2019</td>
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<tr>
<td>EDI</td>
<td>Equity, Diversity, and Inclusion</td>
</tr>
<tr>
<td>GVMD</td>
<td>Greater Vancouver Metropolitan District</td>
</tr>
<tr>
<td>I</td>
<td>Interview only</td>
</tr>
<tr>
<td>PI</td>
<td>Photovoice + Interview</td>
</tr>
<tr>
<td>PE</td>
<td>Physical Education</td>
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<tr>
<td>SAD</td>
<td>Seasonal Affective Disorder</td>
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<td>SD</td>
<td>School District</td>
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<tr>
<td>SEM</td>
<td>Socio-economic model</td>
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<tr>
<td>TA</td>
<td>Thematic Analysis</td>
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<tr>
<td>UK</td>
<td>United Kingdom</td>
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<td>YDI</td>
<td>Youth Development Instrument</td>
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</tbody>
</table>
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I acknowledge and am thankful for the funding I received from the University of British Columbia.
To my grandmothers.
Chapter 1: Introduction

The number of Canadian youth self-reporting positive mental health has steadily declined since 2015 (Statistics Canada, n.d.-a). Youth in British Columbia (BC) engage in various strategies to support their well-being, including spending time outdoors (Samji et al., 2023). The promotion of time outdoors as a mental health promotion strategy is well-supported in the literature (Bowler et al., 2010; Fong et al., 2018; Gascon et al., 2015).

Secondary schools may be the most equitable and productive environments to develop and implement outdoor engagement initiatives for mental health promotion since the majority of BC youth attend some form of secondary schooling (Statistics Canada, n.d.-b). Currently in the literature, there are three school-based opportunities presented to support outdoor time: 1) curriculum breaks, 2) nature-based therapy, and 3) outdoor learning. However, there remains a scarcity of evidence to guide schools in supporting increased time outdoors.

The purpose of this project is to explore the experiences of youth in the Greater Vancouver Metropolitan District (GVMD) who engage in or would like to engage in outdoor time within secondary school settings as a mental health promotion strategy. This includes understanding how outdoor time currently supports youth mental health in GVMD secondary schools, determining factors for engaging in time outdoors within secondary schools, and youths’ recommendations for increased time outdoors in secondary schools in support of mental health.
Chapter 2: Literature Review

2.1 Current Youth Mental Health Context in Canada

Youth mental health and well-being has been steadily declining over the last few decades. Between 2015 and 2021, the percentage of Canadian youth and young adults aged 15-29 years self-reporting positive mental health decreased by 13.4% (Statistics Canada, n.d.-a). The Coronavirus disease 2019 (COVID-19) pandemic and the measures implemented to control it have further exacerbated Canadian youths’ mental health challenges with significant deterioration in reporting of depression, anxiety, irritability, and attention (Cost et al., 2022). 14,596 youth in BC aged 12 to 17 years old self-reported their mental health experiences during COVID-19 through the 2022/2023 Youth Development Index (YDI) (Samji et al., 2023); 51% of youth rated their mental/emotional health as ‘poor’ or ‘fair’ (Samji et al., 2023). Additionally, 39% of youth who completed the YDI screened positive for generalized anxiety and 38% of youth screened positive for depression (Samji et al., 2023). Adolescence is a critical time period for development, and youth mental health and well-being is necessary to support their physical, emotional, and social growth (Dahl, 2003). It is imperative to identify and implement youth mental health promotion initiatives in order to support youth mental health.

2.2 Spending Time Outdoors as a Mental Health Support

Through the YDI, BC youth self-reported their coping strategies to support their mental and emotional well-being (Samji et al., 2023). ‘Spending time outdoors’ was identified by 62% of youth as a strategy they engaged in to promote their mental health (Samji et al., 2023). Outdoor time refers to the time an individual spends in the outdoor environment, which may include
engaging in walks, physical activity, outdoor play, or nature care and appreciation (Kondo et al., 2018; Lee et al., 2022).

There is robust scientific evidence that spending time outdoors benefits mental health. Multiple systematic reviews have outlined the link between time spent in outdoor environments and higher self-rated mental health, reduced anxiety and depressive symptoms, and lower levels of stress in adults (Bowler et al., 2010; Fong et al., 2018; Gascon et al., 2015). While limited, similar support for the promotion of spending time outdoors is associated with benefits to youth mental health. A 2018 population-based Canadian study identified that the role of engagement with natural environments was a protective factor against symptoms of poor mental health among students aged 11-15 years (Piccininni et al., 2018). Exposure to neighbourhood greenspaces for youth was associated with reduced aggressive behaviours and better overall mood and provided a buffering effect for perceived stress (Feda et al., 2014; Li et al., 2018; Younan et al., 2016). Additionally, experiences in the outdoors and in nature during childhood have been shown to have positive benefits in adulthood, including greater contact and connectedness to nature (Rosa et al., 2018) and pro-environmental beliefs (Broom, 2017).

In the literature, outdoor adventure programs for youth are a common way for researchers to investigate the relationship between the outdoors and youth mental health. Participants from a pilot outdoor adventure program conducted in a Germany school reported an increase in life satisfaction and mindfulness following intervention (Mutz & Müller, 2016). Further, given that screen time and sedentary behaviours are consistently increasing among youth (Paterson et al., 2021), another pilot outdoor adventure program in rural South Carolina, United States found that
for youth with markedly high levels of screen time, stress and life satisfaction were significantly improved through outdoor programming (Larson et al., 2018).

While there is a growing evidence base on the positive impacts of outdoor time on youth mental health, interest in this area has become even more prominent since the onset of the COVID-19 pandemic. A United States-based study assessing longitudinal youth mental health outcomes pre-pandemic and during the COVID-19 pandemic found that spending time in nature and the outdoors was associated with lower internalizing problems, including feelings of sadness and low self-esteem (Rosen et al., 2021).

2.3 Environments for Effective Health Promotion Strategies

As nurturing environments are integral to support positive mental health outcomes, it is imperative we consider systemic and contextual influences when understanding health promotion (Golden & Earp, 2012). A socio-ecological model (SEM) can be used to understand how different domains can affect health, and as a framework to guide public health promotion strategies. As highlighted by Figure 2.1, health is influenced by intrapersonal factors (e.g. knowledge, perception, attitudes), interpersonal relationships (e.g. family and peers’ knowledge, perception, attitudes), institutions (e.g. institutional culture and policies), communities (e.g. community services), and policy (Golden & Earp, 2012). Initiatives that aim to promote health behaviours need to take all factors into consideration to maximize their impact.
BC public, private, and independent secondary schools may be well-placed to promote equitable initiatives to support BC youths’ mental health, including increasing their time spent outdoors. During the 2020/2021 school year, 99% of BC youth attended a public, private, or independent secondary school (Statistics Canada, n.d.-b), marking the potential for these environments as venues to have widespread impact on youth mental health. Schools can be particularly important settings for promoting mental health among students who may not otherwise be able to access or receive support (O’Reilly et al., 2018). Secondary schools are well-placed environments to administer youth mental health promotion initiatives. Schools can provide unique resources for students to cope with stressors, and consequently support flourishing youth development (Clarke et al., 2015). The SEM can be applied to the secondary school environment, exploring the systemic and contextual influences that may exist to develop secondary school-based outdoor initiatives.
2.4 Current Secondary School Initiatives that Encourage Spending Time Outdoors as a Mental Health Promotion Strategy

To our knowledge, the literature includes three secondary school-based initiatives which promote spending time outdoors to support students’ mental health; 1) curriculum breaks, 2) nature-based therapy, and 3) outdoor learning.

2.4.1 Curriculum Breaks

Curriculum breaks can be conceptualized as any time period in the school day that is not dedicated to curriculum instruction, allowing for unstructured recreation (Baines & Blatchford, 2019). While curriculum breaks are universally incorporated into secondary schools, the administration of these (i.e., duration, placement within timetable) is not standardized as they are determined at the school district or individual school level (Province of British Columbia, n.d.-a). In secondary schools, curriculum breaks are often transition times for students between classes and last approximately 10 minutes. Lunch time, a type of curriculum break, allows for unstructured recreation, including time for a meal. Lunch time administration is also not standardized and can last 45 minutes to an hour. While curriculum breaks may offer opportunities for students to spend time outside, there is no current literature that explores students’ experiences during breaks and lunch times within the BC context. A longitudinal study conducted in the UK identified various trends in curriculum breaks within schools in 1995, 2006, and 2017 (Baines & Blatchford, 2019). The researchers identified that in 2017, a majority of the UK secondary schools have morning breaks of 15-20 minutes, with a lunch break between 35-45 minutes (for a total of 250-325 minutes per week). This was markedly reduced by 65 minutes per week since 1995 to create more time for curriculum and learning opportunities, despite
secondary students communicating the importance of longer breaks as an opportunity for nutrition and socialization. This study also reported that outdoor breaktime spaces for secondary students are of poor quality or poorly maintained (Baines & Blatchford, 2019). The low prioritization of breaktime and poor spaces act as barriers for the potential of curriculum breaks to facilitate outdoor time.

Administrative constraints within secondary schools may be one of the largest barriers to the implementation of a dedicated or lengthened curriculum breaks for students to spend time outside. In BC, secondary schools currently are mandated to provide a minimum of 952 hours of instruction in a designated school year (compared to 853 hours for kindergarten students, and 878 hours for elementary school students) (BC Laws, n.d.). Additionally, teachers are limited in their available working hours within secondary schools; as per the BC Public School Employers’ Association standards, teachers are tasked to work 45.5 hours/week (BC Public School Employers’ Association, n.d.). Given the minimum number of hours of instruction and secondary school teachers’ limits on the duration of the school day, accommodating dedicated curriculum breaks for outdoor time within secondary schools while maintaining start and end times of school days may be challenging.

A ‘recess’ is a specific type of curriculum break, often implemented in elementary schools across Canada as a break from instruction for children to specifically engage in outdoor, active play (McNamara et al., 2017). Multiple studies have highlighted the academic, cognitive, behavioural, emotional, and physical benefits of recess for children in schools (Hodges et al., 2022). Additionally, recess allows for a break for teachers (Hodges et al., 2022). In BC, recess in
elementary schools is administered at the school district or individual school level based on provincial guidelines of non-instructional hours (BC Laws, n.d.). Recess is currently not integrated in BC secondary schools. Barriers related to implementing a high-quality recess in primary schools generally include minimal training, planning, and supervision of staff, minimal equipment, lack of funding, and barren spaces (Hodges et al., 2022; McNamara, 2021). There is no available literature on the implementation of a recess within the secondary school context.

### 2.4.2 Nature-based Therapy

Integrated nature-based therapy within secondary schools involves school counsellors incorporating outdoor experiences in their school counselling program with students (Flom et al., 2011). School counsellors are embedded within secondary schools to support students’ academic, personal, social, and career domains and provide responsive services to students’ needs through offering comprehensive counselling services (Flom et al., 2011). Nature-based therapy has been utilized by some school counsellors as a valuable and effective mental health treatment approach in clinical settings (Gabrielsen et al., 2018; Harper et al., 2019). Within secondary school contexts, initiatives proposed by school counsellors include a ‘Walk and Talk’ approach, where students’ counselling occurs through taking a walk outdoors (Flom et al., 2011). Additionally, adventure-based counselling includes encouraging small groups to participate in team-building activities to support students’ physical, cognitive, emotional, and behavioral health (Flom et al., 2011). Information on the extent to which nature-based therapy is integrated in BC secondary school counselling programs, if at all, is not available.
2.4.3 Outdoor Learning

Outdoor learning involves organized curriculum that takes place outdoors through dedicated programs or courses (Asfeldt et al., 2022). Outdoor learning opportunities can take the form of outdoor education, such as multi-day camping trips, but can also involve education outdoors – engaging with and learning from the land immediately adjacent to the school during regular instruction time (Zeni et al., 2023). Outdoor learning initiatives in the literature assess a variety of outcomes, and report overall positive effects for students’ physical activity levels, social skills, and academic achievement (Becker et al., 2017). However, to our knowledge there is only one study that investigates the effects of an outdoor learning intervention on student mental health (Gustafsson et al., 2012). This study demonstrated a small improvement in mental health outcomes moderated significantly by gender in an elementary school population (Gustafsson et al., 2012). There are no studies that assess mental health outcomes within outdoor learning initiatives at a secondary school level. However, there is a rising body of advocacy that encourages measuring changes in mental health with outdoor learning programs, and consequently, outdoor learning school-based initiatives (Cohen et al., 2022).

Physical Education (PE) provides direct instruction within schools to develop students’ motor skills, knowledge, and physical fitness literacy (Centres for Disease Control and Prevention, n.d.). PE is an additional opportunity for students to spend time outside, supporting students’ physical health as well as mental health. Within the BC secondary school context, PE is only mandated up to Grade 10; for students in Grades 11 and 12, PE is an optional elective (Province of British Columbia, n.d.-b). While secondary school PE teachers are encouraged to utilize a
variety of outdoor spaces in their curriculum development, there are no standardized guidelines for outdoor time to be integrated in practice (BC Curriculum, n.d.).

In 2021 within Canadian schools, while outdoor learning courses were present at each grade level, there were more courses offered in secondary school grades (Asfeldt et al., 2022). Within BC, Outdoor Education 11 and Outdoor Education 12 are optional elective courses offered to Grade 11 and 12 students in some schools in lieu of PE, however, these course offerings are highly dependent on existing school resources and may not be accessible to all students (BC Curriculum, n.d.). Instead, students in Grades 11 and 12 are required to document and report a minimum of 150 minutes of moderate to vigorous physical activity per week as per graduation requirements (Province of British Columbia, n.d.-b). Initiatives that promote well-being nestled within PE curriculum may neglect students in Grade 11 and 12 who do not enroll in PE or alternative electives.

Outdoor learning initiatives may rely primarily on school and teacher advocacy, as opposed to province-wide policy or through a formal research project. As an example, a secondary school in School District #38 (Richmond) received a 2021 innovation grant to provide outdoor curriculum opportunities for students (personal communication, Andrea Phillpotts, February 22, 2023). The school community collaborated to modify the school’s outdoor spaces and create classroom resources for outdoor learning, assessment, and pedagogy (personal communication, Andrea Phillpotts, February 22, 2023). Currently, the school is assessing the impact of these modifications on secondary students’ well-being (personal communication, Andrea Phillpotts, February 22, 2023).
2.5 Current Policy Landscape on Outdoor Time

Currently, there are no formal policies set by BC government agencies regarding the amount of time youth in secondary schools should be spending outside. Physical and Health Education guidelines by the Ministry of Education and Child Care outline daily physical activity levels in BC schools for all grades, however, requirements for time outdoors specifically are not included within these guidelines (Province of British Columbia, n.d.-b). In comparison, licensed childcare facilities are mandated to ensure a minimum of 60 minutes per day of outdoor active play (Province of British Columbia, n.d.-c).

There are various advocacy groups that promote outdoor time for youth. While the 24-Hour Movement Guidelines recommend that Canadian youth trade indoor time for outdoor time to encourage lower levels of sedentary behaviour and higher physical activity levels, these have not been introduced into formal recommendations for secondary schools (Canadian Society for Exercise Physiology, n.d.). Additionally, the Environmental Educators Provincial Specialist Association of BC has provided several recommendations to the BC Ministry of Education and Child Care for connecting students to the outdoors through their position statement (endorsed by the BC Teachers’ Federation), including mandating a 60-minute minimum of daily instructional time outdoors (Environmental Educators Provincial Specialist Association, n.d.).

Despite support within the literature and advocates for outdoor time as a youth mental health promotion strategy, it is clear that a lack of policy within the BC Ministry of Education and Child Care is a barrier for encouraging outdoor time within secondary schools. Thus, initiatives
which promote time outside for BC secondary students must be initiated by champions at district or school levels.

2.6 Research Purpose

The above literature review highlights the importance of spending time outdoors as a mental health promotion strategy for youth and utilizing secondary schools as a potential environment for encouraging this strategy. While there are multiple strategies to increase outdoor time for youth in schools, there are no policies or guidance that encourages the broad implementation of these strategies in BC. It is important to consider the BC secondary school context and youth perspectives for potential strategies. This thesis seeks to fill that gap and understand youths’ experiences engaging in outdoor time within secondary school settings as a mental health promotion strategy.
Chapter 3: Methods

3.1 Interpretative Framework & Positionality Statement

For this research project, I utilized a social constructionist approach, which posits that reality and knowledge are constructed based on the interaction between humans and the social world they encounter (Gergen, 1973). A cornerstone of this paradigm is that knowledge is a product of exchanges between linguistic, historical, and cultural factors (Gergen & Gergen, 2003). This helps to contextualize research products within a given time frame and setting (Gergen & Gergen, 2003). My research focused on understanding youths’ experiences engaging in outdoor time for their mental health within the secondary school context and considered time-specific factors such as the COVID-19 pandemic when understanding participants’ experiences.

I identify as a second-generation South Asian female immigrant. I primarily grew up in Surrey, BC, where I attended both elementary and secondary school (graduating in 2016). Growing up, I was privileged to spend many hours playing in Surrey’s local parks and visiting the surrounding areas within BC. I also bring lived experience with mental health challenges, and currently engage in outdoor time as a mental health support strategy. My experiences have informed my research interests and my commitment to supporting healthy communities. Additionally, my research training is primarily mixed methods, with experience in both quantitative and qualitative methodologies in clinical and community-based settings.
3.2 Methodology

Photovoice methodology was utilized to guide the overall project direction. Photovoice is useful in eliciting participants’ perspectives on research questions and understanding their experiences, local context, and reflections (Wang & Burris, 1997). Photovoice utilizes visual imagery taken by the participant to share expertise and knowledge (Wang & Burris, 1997). Outlined in Table 3.1, Kolb defines their photovoice approach in which participants are involved in multiple phases, allowing for deep participatory engagement (Kolb, 2008).

<table>
<thead>
<tr>
<th>Phase</th>
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<td>1 – Opening</td>
<td>Participants consider general research prompts (related to the research questions) and reflect on potential photographs to address prompts</td>
</tr>
<tr>
<td>2 – Active Photography</td>
<td>Participants actively implement their reflections as they take photographs that are meaningful to them and the prompts</td>
</tr>
<tr>
<td>3 – Decoding</td>
<td>Participants describe the photographs and their meaning</td>
</tr>
<tr>
<td>4 – Scientific Interpretation</td>
<td>Researchers analyze the photographs and their associated meanings</td>
</tr>
</tbody>
</table>

Table 3.1: Kolb’s (2008) phases for their photovoice approach

In this study, Kolb’s photovoice approach was adapted and used to enhance youth descriptions (Kolb, 2008). The photographs were used to highlight participants’ representations and perspectives of how they engage with their outdoor spaces in secondary schools (as opposed to utilizing the photographs during data analysis).

3.3 Research Purpose Statement

The purpose of this research project was to understand the experiences of youth in the Greater Vancouver Metropolitan District (GVMD) who engage in or would like to engage in outdoor time within secondary schools as a mental health promotion strategy.
3.4 Research Questions

From the perspective of GVMD youth:

1) How does spending time outside in secondary schools currently support mental health?
2) What are facilitators and barriers for the provision of outdoor time in secondary schools?
3) What are recommended initiatives for increased time outdoors in secondary schools to support mental health?

3.5 Setting

The setting of this research study was the GVMD, which is a federation consisting of 21 municipalities, one electoral area, and one treaty First Nations land that coordinates and delivers regional services, such as waste management, housing, and regional planning (Metro Vancouver, n.d.). In 2021, the total population of the region was estimated at 2,642,825, with a land area of 2,878.93 km² and population density of 918.0/km² (Statistics Canada, n.d.-c; Statistics Canada, n.d.-d). GVMD is the densest and most populous regional district in BC (Statistics Canada, n.d.-d). This research project focused specifically on GVMD to contextualize youths’ experiences in a region with shared geographic characteristics. Furthermore, the GVMD shares responsibility for resources that may affect youths’ experiences, including regional planning (developing complete and healthy communities), air quality (integral for the time youth spend outside), and regional parks (availability of outdoor recreation for health and well-being) (Metro Vancouver, n.d.).


3.6 Participant Recruitment

Purposive sampling was used for this study. Participants were recruited from survey respondents of the 2022/2023 Youth Development Instrument (YDI) (Samji et al., 2023). The YDI is a self-report survey completed by Grade 11 students in BC (age 16-17 years old) that collects information on their socioemotional factors to inform policies and interventions to support BC youths’ well-being. Youth completing the YDI are additionally asked if they can be contacted for participation in follow-up studies.

The youth in this research project were in Grade 12 (completing the 2022/23 YDI as Grade 11 students) and started secondary school during the 2019/20 school year. The 2019/20 school year marks the start of the COVID-19 pandemic and the measures implemented to control it (March 2020). This contextualizes youths’ secondary school experiences within the pandemic. The following criteria and justification were used to contact potential study participants from the 2022/2023 YDI survey respondents:

1) Agreed to be contacted for future participation in follow-up studies;

2) Indicated that they engaged in 'spending time outdoors' as a coping strategy to support their mental health. Engaging with youth who are invested in spending outdoor time as a mental health promotion strategy allowed us to gain insight into how they may incorporate this into their time in school;

3) Attended secondary schools in urban areas, which were defined as schools which did not have a ‘0’ as the second character in the school’s postal code (Canada Post, n.d.; Samji et al., 2023). Youths’ experiences may differ based on geographic characteristics, such as the mental health supports available in urban versus rural schools; and,
4) Attended secondary schools located in the GVMD. The following GVMD school districts (SD) participated in the 2022/2023 YDI and were included in the recruitment process: SD39 (Vancouver School Board), SD40 (New Westminster), SD41 (Burnaby), SD42 (Maple Ridge & Pitt Meadows), SD43 (Coquitlam), and SD44 (North Vancouver).

Figure 3.1 outlines the breakdown of the recruitment sample from the 2022/2023 YDI.
Figure 3.1: Breakdown of recruitment sample from 2022/2023 YDI
3.6.1 School District Information

In the 2022/2023 school year, a total of 294,312 students attended a secondary school in BC (Statistics Canada, n.d.-b). Table 3.2 outlines information on the school districts involved in this project:

<table>
<thead>
<tr>
<th>School District # and Name</th>
<th>Total # of students attending a public secondary school (2022/2023)</th>
<th>Public Secondary Schools (alternative, independent, private schools not included)</th>
<th>Total # of eligible students contacted from YDI</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD39 – Vancouver</td>
<td>23,253</td>
<td>17</td>
<td>268</td>
</tr>
<tr>
<td>SD40 – New Westminster</td>
<td>3,081</td>
<td>1</td>
<td>72</td>
</tr>
<tr>
<td>SD41 – Burnaby</td>
<td>12,216</td>
<td>7</td>
<td>169</td>
</tr>
<tr>
<td>SD42 – Maple Ridge &amp; Pitt Meadows</td>
<td>6,561</td>
<td>6</td>
<td>118</td>
</tr>
<tr>
<td>SD43 – Coquitlam</td>
<td>15,119</td>
<td>9</td>
<td>268</td>
</tr>
<tr>
<td>SD44 – North Vancouver</td>
<td>7,369</td>
<td>6</td>
<td>112</td>
</tr>
<tr>
<td>TOTAL</td>
<td>67,599</td>
<td>46</td>
<td>1007</td>
</tr>
</tbody>
</table>

Table 3.2: Breakdown of school district information

3.6.2 Additional Inclusion Criteria

Additional inclusion criteria assessed during participant screening included:

1) Ability to speak and read English;

2) Availability for an in-person interview or access to a device and stable Internet connection for a virtual interview at the participants’ convenience; and,

3) Ability to take photos of their outdoor secondary school environment and upload them to a secure platform (with a mobile device).
3.7 Data Collection

Data were collected between September–November 2023. All survey data were captured and collected on REDCap, a secure, password-protected data collection platform (Harris et al., 2009). Ethics approval was granted through the University of British Columbia/BC Children’s and Women’s Health Centre of British Columbia Research Ethics Board in August 2023 (#H23-01851). Approvals from the following school districts were granted for this project: SD39 (Vancouver School Board), SD40 (New Westminster), SD41 (Burnaby), and SD43 (Coquitlam). SD42 (Maple Ridge & Pitt Meadows) and SD44 (North Vancouver) did not respond to our request for approval; students enrolled from these districts participated in an amended procedure (described below).

Participants received a $30 honorarium as a thank-you for their participation in the study. Information power, or ongoing assessment of the amount of information collected during the study, was used to guide the sample size (Malterud et al., 2016). This included concurrent data collection and data analysis to evaluate the dialogue with the participants and ensure a sufficient sample size for this study based on its’ content and quality.

3.7.1 Screening and Consent

Potential participants identified from the 2022/2023 YDI study respondents that were eligible to participate (N=1,007) were emailed the consent form, a general overview of the study, and a ‘Know Your Rights’ tool (Appendix A) aimed to empower youth in their participation in research studies. If potential participants were interested in the study, they contacted me. A screening call was arranged where potential participants were assessed for capacity to consent;
while the age of consent in BC is 18 years, youth in this study were permitted to consent if they demonstrated the capacity to understand the study procedures (as per UBC ethics policies). Ongoing consent was reiterated. Upon enrolment, participants were guided to complete a demographic form, including age, sex and gender, race, self-reported time spent outdoors throughout the week both in school and out of school, and self-reported level of mental health (Appendix B).

### 3.7.2 Photovoice

The photovoice approach was offered to students where school district approval was granted; SD39 (Vancouver School Board), SD40 (New Westminster), SD41 (Burnaby), and SD43 (Coquitlam). Participants were provided with photography prompts related to their outdoor school environment, such as where they spend the most time outdoors at their school (see Appendix C). Prompts were written using general language as to not restrict participants’ viewpoints and interpretations. For example, the phrasing “Take a photo or photos of any natural features on or near school (such as trees, streams, or hills) that you appreciate” was used (as opposed to “Take a picture of a tree in your school”). Participants took photos of specific settings using their personal devices (such as their cell phones) to demonstrate their reflections on the prompts. Participants were asked to take up to three photos per prompt, and were instructed to avoid taking photos of identifiable individuals or features. Once completed, they uploaded the photos to REDCap.
3.7.3 Semi-Structured Interviews

Following the photovoice approach, I conducted a semi-structured interview with the youth (see Appendix D). The interview guide was iteratively adapted throughout the research process based on emerging topics from the conversations. For each prompt, participants described the photo(s) they took and highlighted how each photo related to the prompt. Youth who belonged to a school district that did not grant approval, SD42 (Maple Ridge & Pitt Meadows) and SD44 (North Vancouver), or who declined the photovoice approach engaged in an amended interview process; youth reflected and described areas in their schools that related to the photography prompts (Appendix E). For example, for the prompt “Take a photo or photos of any natural features on or near school (such as trees, streams, or hills) that you appreciate”, participants engaging in the amended interview process were asked to describe any natural features on or near their school (such as trees, streams, or hills) that they appreciated. Post-interview field notes captured my reflections before and during the interview (Appendix F).

3.8 Data Analysis

Thematic analysis (TA) was used to analyze the data by identifying common patterns. An inductive approach was utilized during the TA process, following Braun and Clarke’s guide on performing TA (Braun & Clarke, 2006). This involved the following steps:

1) Familiarization of the data through reading and rereading the data and noting down initial ideas of possible codes. This step was done iteratively throughout the initial data collection process to adjust the interview guide as needed to explore emerging themes.
2) After all the data were collected, they were de-identified and transcribed verbatim. Each audio clip was reviewed twice; once to perform an initial transcription, and again for formatting and accuracy. Initial codes were derived by me and discussed and confirmed with Dr. Brussoni.

3) Coding was performed using Excel based on the previously identified codes.

4) Themes were identified from these codes and reviewed with Dr. Brussoni. They were defined and named by Dr. Brussoni and I. Representative participant quotes and photographs were chosen and highlighted to serve as exemplars for each theme.

5) A written report of the results was produced.
Chapter 4: Results

4.1 Participant Demographics

There were 15 participants in this study from five different GVMD school districts. These participants came from a wide range of backgrounds, representing a diversity of perspectives. Most participants self-identified as girls. Five participants identified as Western or Eastern European, with three participants identifying as Chinese. Most participants engaged in both the photovoice and semi-structured interviews. Table 4.1 outlines the participant demographics for this project (N=15):

<table>
<thead>
<tr>
<th></th>
<th>(n)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>9</td>
</tr>
<tr>
<td>Male</td>
<td>5</td>
</tr>
<tr>
<td>Preferred not to specify</td>
<td>1</td>
</tr>
<tr>
<td><strong>Gender</strong></td>
<td></td>
</tr>
<tr>
<td>Girl</td>
<td>10</td>
</tr>
<tr>
<td>Boy</td>
<td>4</td>
</tr>
<tr>
<td>Genderqueer/trans</td>
<td>1</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
</tr>
<tr>
<td>Western European</td>
<td>3</td>
</tr>
<tr>
<td>Chinese</td>
<td>3</td>
</tr>
<tr>
<td>Eastern European</td>
<td>2</td>
</tr>
<tr>
<td>Southeast Asian (e.g. Vietnamese, Cambodian, Laotian, Thai, etc.)</td>
<td>2</td>
</tr>
<tr>
<td>West Asian (e.g. Iranian, Afghan, etc.)</td>
<td>2</td>
</tr>
<tr>
<td>Black</td>
<td>1</td>
</tr>
<tr>
<td>Korean</td>
<td>1</td>
</tr>
<tr>
<td>Did not specify</td>
<td>1</td>
</tr>
<tr>
<td><strong>School District (SD)</strong></td>
<td></td>
</tr>
<tr>
<td>Vancouver (SD39)</td>
<td>5</td>
</tr>
<tr>
<td>Coquitlam (SD43)</td>
<td>4</td>
</tr>
<tr>
<td>Burnaby (SD41)</td>
<td>3</td>
</tr>
<tr>
<td>North Vancouver (SD44)</td>
<td>2</td>
</tr>
<tr>
<td>New Westminster (SD40)</td>
<td>1</td>
</tr>
<tr>
<td>Maple Ridge &amp; Pitt Meadows (SD42)</td>
<td>0</td>
</tr>
<tr>
<td><strong>Participation Type</strong></td>
<td></td>
</tr>
<tr>
<td>Photovoice with Interview</td>
<td>10</td>
</tr>
<tr>
<td>Only Interview</td>
<td>5</td>
</tr>
</tbody>
</table>
### Table 4.1: Participant demographics (N=15)

<table>
<thead>
<tr>
<th>Amount of Time Participants Spend Outdoors During School Per Day</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>None at all</td>
<td>4</td>
</tr>
<tr>
<td>About half an hour (30 minutes)</td>
<td>5</td>
</tr>
<tr>
<td>About 1 hour</td>
<td>4</td>
</tr>
<tr>
<td>About 2 hours</td>
<td>1</td>
</tr>
<tr>
<td>About 3 hours</td>
<td>1</td>
</tr>
</tbody>
</table>

4.2 **Thematic Analysis Results**

Data analysis across the interviews generated three main themes; 1) Importance of outdoor time for youth, 2) Current outdoor time opportunities in secondary schools, and 3) Ideas for secondary school initiatives to increase time outdoors. Each theme included multiple sub-themes. Main theme 2 was further focused into sub-sub-themes. These relationships have been outlined in Table 4.2.

Participant quotes are highlighted below to serve as examples for each main theme, sub-theme, and sub-sub-theme (when applicable) to retain the wording of the youth involved, with the anonymized participant ID (01-15), and their participation type (PI = photovoice + interview, I = interview only). The ‘…’ within participant quotes denote editing for removal of nonrelevant information or interviewer prompt. Photographs are also presented from participants that completed the photovoice + interview process; the figure caption includes the participant ID and the associated prompt number (which can be found in Appendix C). To note, there were no significant patterns related to sex and gender in the analyses. Additionally, to support participant confidentiality, the sex and gender of participants were not provided in the participant quotes.
<table>
<thead>
<tr>
<th>Main Theme</th>
<th>Sub-Theme</th>
<th>Sub-Sub-Theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Importance of outdoor time for youth</td>
<td>- Health</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Lifestyle</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Nature appreciation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- School-wide community &amp; spirit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Alternate definition</td>
<td></td>
</tr>
<tr>
<td>Current outdoor time opportunities in secondary schools</td>
<td>- Environmental factors</td>
<td>- Scheduled breaks and lunchtime</td>
</tr>
<tr>
<td></td>
<td>- School-wide factors</td>
<td>- During curriculum and teaching hours</td>
</tr>
<tr>
<td></td>
<td>- Teacher-specific factors</td>
<td>- School clubs</td>
</tr>
<tr>
<td></td>
<td>- Individual factors</td>
<td>- After school</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- School events</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Active transport to &amp; from school</td>
</tr>
<tr>
<td>Ideas for secondary school initiatives to increase time outdoors</td>
<td>- Space-specific changes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Student-focused engagement opportunities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Higher-level changes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Community involvement</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Equity, diversity, and inclusion concepts to consider</td>
<td></td>
</tr>
</tbody>
</table>

Table 4.2: Main Themes, Sub-Themes, and Sub-Sub-Themes

4.2.1 Theme 1 - Importance of Outdoor Time for Youth

Participants recognized and highlighted the importance of spending time outdoors for a variety of reasons. The reasons for this importance spanned several critical areas for youth development, including health and lifestyle benefits, nature appreciation, and forming a sense of community. A few participants also shared their own definition of outdoor time, and the importance of engaging in this time in their own way.
4.2.1.1 Health

All participants cited various health benefits that going outdoors offered them, which encompassed mental health, physical health, and spiritual health. In regards to the importance of outdoor time for mental health, one participant reflected:

“It's really important. It's very comforting. It's relaxing and kind of separates, you know, like, whatever's going on, and you can kind of separate that from going outside. And it's just very like calming and relaxing in a lot of ways.” (Participant 02, PI).

Another participant noted how outdoor time supports managing their anxiety specifically:

“I think it just like helps clear my head and, like, makes my anxiety feel a little less intense. Yeah, I think it really just kind of takes my mind off of things.” (Participant 09, PI).

While all participants spoke to how outdoor time positively affected their mental health, a couple of participants also mentioned how the weather negatively affected their mental health, manifesting as seasonal depression with changes in light levels and weather:

“I definitely noticed that I am not my best when it's, like, raining and cloudy out. I feel, like, seasonal depression is kind of like, a funny thing to think about, but it's definitely something that I've noticed I experience. Yeah, just the weather not being as nice definitely impacts how I feel. In the summer, I'm super happy and the sun is shining.” (Participant 08, PI).

Many participants specifically highlighted the importance of outdoor time for physical health, with one participant outlining how outdoor time can simultaneously support physical and mental health:
“I feel like I'm a stress walker- when I get stressed, I walk a lot. Which is good because you get your exercise in but at the same time, it's like... it's like, a good break from whatever I'm doing. And I also have a dog. So I also walk my dog. So it's like a two in one.” (Participant 13, I).

Finally, a few participants outlined how being outdoors allowed them to reflect and meditate, with a participant stating how they utilize the outdoors as an opportunity to be alone and reflect:

“So, like, spending time alone is really important because you can just you can sit down and think about your life, like, what you want to change, what you want to do alone. No one can interrupt you, like, to your thoughts and you can just sit down and think about what you're going to, like... what you're going to do, what you want to do.” (Participant 15, I).

4.2.1.2 Lifestyle

Participants also highlighted the importance of outdoor time in their past or current lifestyles. Many participants reflected on how going outdoors was an integral part of their childhood, often facilitated through their families. One participant spoke about the lasting impact of outdoor time sharing:

“Well, I like being outside. Like growing up, I've liked my family’s- they’re really outdoorsy and I spend a lot of time camping, a lot of time doing sports outside, like a really active family. And so it's kind of like a safe space where it's relaxing, it's nice, like being in nature. And yeah, I feel like it's good for my mental health. Yeah, you just feel better about being in nature. ” (Participant 10, PI).
Majority of participants noted how they utilized the outdoors to socialize, often with friends. In particular, a participant spoke about other socialization opportunities the outdoors has to offer:

“... walking creates opportunities for you. Like, as cringy as it sounds, I feel like with a dog, it's, like, so much easier. And I'd bring him to dog parks and I would meet, like, you know, other dog owners, which is super fun.” (Participant 13, I).

Finally, participants mentioned the outdoors as an opportunity to take a break, leave a crowded place, or be alone. As one participant mentioned:

“Some of, some of us sometimes go out to (a local park) to maybe have, like, an afternoon stroll. Actually no, my friend and I, my friend and another friend and I, we decide to go talk about politics. Hash it out, hash out about stuff... yeah, the state of the school. We are all in incognito essentially incognito at (the local park). I like that feeling.” (Participant 07, PI).

### 4.2.1.3 Nature Appreciation

Majority of participants spoke about the importance of environment-related factors of the outdoors. Specifically, participants noted their appreciation of the nature and fresh air the outdoors has to offer. One participant connected their valuing of nature and fresh air for their mental health:

“I think it's important to spend time outside because I've always valued like fresh air that definitely calms me down. When in times of stress, I would say, like, fresh air aspect and definitely now that it's fall, it's very beautiful to be outside.” (Participant 08, PI).
Another participant noted their appreciation of the air quality when outdoors:

“... I'm an international student. And the nature from my country is not, I feel like, it's not as, as open as Canada. There's like problems regarding the air. There's like these particles, they're called PM2.5 and it makes the air really hard to breathe in. So, the first time I came in Canada, I noticed the air quality was a lot better. I could find that when I took a breath of full air, it really, it felt really good.” (Participant 03, PI).

The same participant also provided a photo of their favorite place in school (Figure 4.1) and shared their appreciation for it:

“Yeah this, this is one of my favorites because the, the tree I feel like is quite special. I've never seen a maple tree in my life and seeing trees, like, we don't have fall in (home country), so when I came to Canada I was really looking forward to seeing the orange leaves. Didn't disappoint. I think it was a beautiful, I think it's it is a beautiful tree and all the leaves on the ground really make up for it.” (Participant 03, PI).

Figure 4.1: Participant 03 (prompt 6: natural features)
4.2.1.4 School-Wide Community & Spirit

A few participants highlighted how the outdoors helped facilitate a sense of collective community within the broader secondary school. One participant specifically referred to the school community they felt during breaktimes in their grade 9/10 years, when students at their school ate lunch outside due to the ongoing COVID-19 pandemic and shared a picture of this area (Figure 4.2):

“And I think it was just, like, the community felt a lot more like tighter in a way. I don't know how to explain it because everyone would go to the field, like, during COVID. But now (the students) have their own little groups and, like, it feels almost isolated. But like the field was, like, where everyone went for lunch and, like, basically the entire school was there. And so people would talk to you and, like, sit with you and... it was just like all one big group... I just felt more connected with everyone.” (Participant 09, PI).

Figure 4.2: Participant 09 (prompt 3: comfortable outdoor areas)
Few participants also mentioned how school events held outdoors help foster school spirit. One participant compared the atmosphere of school events inside and outdoors:

“I feel like indoors, not a lot of people can fit or it’s too loud, too condensed, I feel like. But if you go outside, I feel like there's more of, like, more cheering on. For example, it's like a relay race or something. The more people outside, the more like passionate they are in, like, cheering their teammates on.” (Participant 13, I).

4.2.1.5 Alternative Definition

A few participants had a different definition of “being outside”, considering anything outside of the house as part of their outdoor environment. Examples participants cited included malls, coffee shops, or other peoples’ homes. One participant noted how their mother encouraged them to go outside:

“So she wants me to go outside... she's just telling me you can go to Starbucks get a coffee and, like, take some time for myself. And sometimes she’s just, like saying, do you want to come with me like for (shopping at a mall) or like anywhere? Yeah, it's, like, a relative's house or, like, friends’.” (Participant 15, I).

These participants also noted how nature appreciation of the outdoors occurred through windows while being inside. Another participant noted the view from their school library as an opportunity to appreciate the outdoors:

“I think the overall, especially like from a library, we have our school, has like, it's all sorts of windows. So, it's like super open, you can see everything from outside and inside... I think the view is, like, gorgeous, because there's just, like, all these trees and you're surrounded by
all these trees. And then you're just like in the middle of the forest... and then we have some
cool views of the mountains. And then sometimes when the fog comes in, it's pretty cool.”
(Participant 04, I).

4.2.2 Theme 2 - Current Outdoor Time Opportunities in Secondary Schools

Participants identified various opportunities to spend time outdoors during school hours. Along
with these, participants outlined determining factors for spending time outdoors in their
secondary schools. Some factors were experienced as facilitators and some as barriers to outdoor
time and depended on the school context. In other words, what were facilitators for some
participants were experienced as barriers for others. These factors have been further organized
and are presented as school-wide factors, teacher-specific factors, individual factors, and an
environmental factor. The factors’ relationships (sub-themes) with outdoor opportunities (sub-
sub-themes) are demonstrated in Figure 4.3. The theme results are presented in terms of outdoor
opportunities (sub-sub-themes), with the relevant factors (sub-themes) expanded upon. Note that
weather (as an environmental factor) impacts all outdoor time opportunities and is reflected as
such.
Figure 4.3: Diagrammed relationship between all factors (sub-themes) and outdoor opportunities (sub-sub-themes)
4.2.2.1 Scheduled Breaks and Lunchtime

All participants cited that breaktimes during school were an opportunity to go outside, specifically lunchtimes. Participants would sit outdoors during lunchtime to eat, socialize, participate in physical activity, or spend time by themselves reflecting. A few participants attended schools in school districts where flexible instructional time was built into their school schedules; this time gave students the option to receive help from teachers, otherwise, they could spend their time however they wanted. All of these participants mentioned they would occasionally use this time to spend time outdoors, often socializing with their friends.

Spending time outdoors during lunchtime or another break was primarily shaped by the weather (environmental factor), school-wide factors, a teacher factor, and individual factors. All participants stated that the weather as an environmental factor was the biggest determinant for spending time outdoors, acting as both a facilitator and barrier depending on the weather conditions. Most participants stated that rain or cold weather was a barrier to going outside, while sunny weather facilitated outdoor time. One participant explained how the weather affected students, teachers, and administration in their school—students did not go outdoors during rainy weather but did go outside during sunny weather:

“Like, I mean now because it's nice out and we're not really, we haven't been getting a lot of rain, a good amount of people in my school do spend time outside. But when it gets cold and rainy I don't think teachers or the administration sees a reason to encourage people to go outside. And the kids don't really want to go outside, but like, when it's sunny out, there's not really many kids too encouraged to go outside because a lot of people are already there.”

(Participant 01, PI).
A few participants felt rain was a facilitator to going outdoors, with one participant stating that while playing sports in the rain may result in getting wet, muddy, or dirty, it was an active choice they made:

“...sometimes I would, like, go out in the rain, play sports, which is a dumb idea. But whenever I just, like, go out in the rain with friends in general, I... it's like, kind of fun. Just, like, I don't know. I don't know how, but it just seems, like, it's pretty fun, like, hanging out with your friends in the rain.” (Participant 14, PI).

Facility availability as a school-wide factor influenced participants’ decisions to spend time outdoors during lunchtimes. As one participant highlighted, the lack of picnic tables for sitting outdoors acted as a barrier due to overcrowding (Figure 4.4):

“...if it's too crowded. Like, I would love to spend time like the picnic tables, like, out at lunch, but they get really, really crowded and we only have, like, three of them...So it's really crowded and like, you know, a lot of students can't really spend their time there...”

(Participant 09, PI).
Another participant spoke of how they would play sports in areas that were not commonly designated for sports due to the lack of availability of other spaces:

“So right in front of my school, there was, like, this we kind of had, like, a little courtyard area that when it started getting to the hotter months of grade 11, we would go out there and we’d play volleyball with my friends… So we had… there was a volleyball area. Ironically, there was one but we chose… to not go down there. Usually all the little basketball boys would kind of take that one up… But usually they end up leaving their class earlier and we were, like, I don’t want to play with the teenage boys. So we would leave.” (Participant 05, I).
One participant noted how the availability of the soccer field was limited by students who were in PE:

“Yeah, but we do have a soccer field where a lot of students, actually – I don't think many students can play there because there’s usually PE students who get access to it but there are bleachers where students can sit and watch the games play out...so where I spend my time outdoors either usually equates to me going inside the school or going to the village.”

(Participant 03, PI).

While the majority of participants highlighted how limited availability of spaces acted as a barrier for students to spend time outside through overcrowding, the same participant hypothesized why overcrowding facilitates more time outdoors for students in their outdoor school foyer:

“I’m not sure why people flock to the foyer, but the more people outside, the more people will be enticed to go to the crowd. I think it’s some kind of maybe peer pressure. Like you usually see all your friends outside and you have a feeling like you want to go outside and talk with them too.” (Participant 03, PI).

A few participants highlighted how facility availability was mediated through school administration decisions, and pointed out how the addition or alteration of spaces impacted their outdoor time. These students highlighted how their schools actively added in spaces which facilitated outdoor time. One participant described their outdoor space:

“...our school, we just, I think it was last year we built a... like, a common space outside. And it was just, like, a circle with rocks as chairs. And I feel like that space was very, like, utilized
very well because it was like as a circle. So it felt like you're connected with your friends and peers.” (Participant 13, I).

Another participant described a photo of an outdoor space which was altered by the school (Figure 4.5):

“...There was this big tree by the back of our school... It's right behind a big building, and it's a huge tree that has a lot of shade so even if it's sunny outside it covers a lot of the sunlight. I usually spend time there with a couple people and it's really calming because it's just me and a couple people, and we just sit there and talk or talk about work, talk about school. And before there used to be no seats but I think recently they added like rocks, like really big rocks where you can sit on. I think that's because they noticed a lot of students were hanging around there.” (Participant 03, PI).

When asked about who made this decision, the participant highlighted how this may have been a collective decision:

“I think, I think it was just a school decision, maybe because a lot of teachers sometimes spend time there. Or they encourage students to spend time there. Many of the outdoor activities that they bring us outside to do so, they, it really happens near the big tree. Maybe, the... teachers or the, the higher-ups noticed that and they placed the rocks there.” (Participant 03, PI).
A few participants also highlighted how alterations to school spaces actively discouraged students from spending time outdoors. One participant shared how the terrain in their school (Figure 4.6) changed:

“... Well, back then before, like, the terrain got changed, everyone used to, like, hang out there. Like, the entire of my grade, we would hang out there to play soccer, volleyball, and just, like, tag or, like, anything or, like, talk. And there would be, like, big groups, like, surrounding everywhere. But since the terrain has changed, like, barely anyone goes there anymore. Especially me too... I don't know what they did, but the grass is, like, way more bumpier and unstable... they were trying to dig out like a lot of dirt from the, from the hills.” (Participant 14, PI).
Another participant shared how the addition of portable classrooms took up space that could be otherwise utilized for outdoor time:

“We have, like, portables on the front. It’s also, like, taking up our grass area. People would also eat... yeah, I forgot, but during the COVID people would also eat like in the front of the school but that's occupied by the portables right now...I think it's definitely kind of, like, frustrating because it kind of feels like we didn't think it through enough and sacrificing like space that could be used for, like, students.” (Participant 09, PI).

Of note, some participants spoke about the inclusion of portables within their outdoor school environment. One participant spoke about how this construction was inconveniencing the student body, without the school responding to students’ concerns (i.e. a lack of student voice):
“...especially building or constructing like a portable, like, classroom, like, in the beginning of the year, like, a lot of, like, people were, like, kind of mad because that was, like, blocking the entrance. Yeah. It was kind of annoying to, like, you have to, like, walk around the entire, like, construction site in order to, like, go into school...They just kept it to themselves. I mean, a few months later, they, like, I guess they, like, tear down, like, the fences for construction because, like, the terrain part of the portable was done. So, like, they just, like, took away the fences. So maybe that, but I think it's just the construction's thing. I think that wasn’t a student thing.” (Participant 14, PI).

Facility design also impacted students’ engagement with the outdoors. Primarily, students highlighted how spaces that were not designed to accommodate various weather conditions were a barrier for time outdoors. One participant noted that the availability and use of a bench, one of their favorite outdoor spaces, was mediated by weather (Figure 4.7):

“In this area that I took the picture, there's, I want to say, there used to be three other benches but one got taken down so I think there's now just two other ones in this area. But there's also picnic benches, a few picnic benches in another area of the school...None of them are covered...it's quite quiet when it's rainy, but yeah, it's super popular when the sun is out.” (Participant 08, PI).
This participant shared similar concerns about being unable to use one of their favorite outdoors spaces, park tables, during the rain (Figure 4.8):

“Well, it's, like, right outside of our school's, like, main entrance. So it's super close and there's, like, sitting arrangements and there's, like, something that if you wanna do work on, you can. And it's just, like, it's a pretty nice spot. Like, that's the go-to spot I'd say, like, if you wanna be outside on a nice day. So they get more busy. Like if it's a nice day during lunch or something, it's kind of hard to get the seat, but... (in the rain) it’s deserted and no one goes there. It's really only popular on nice days.” (Participant 10, PI).
One participant shared concerns over noise pollution in the only outdoor space they had available to them (Figure 4.9):

“So this is the kind of the few picnic tables that are outside... And there usually is a couple of people out when it's clear. But it's kind of open to like, it's not super far from the roads. You get a lot of road noise. Because the school is kind of right next to (a main road), which is one of the main streets... that's about as much as outdoor space that we have.” (Participant 02, PI).
A few participants highlighted how the facilities that were available for students to sit outdoors did not facilitate socialization:

“There are, I think, four (picnic tables) kind of, like, along the right side of the photo going towards the street, but people don’t spend as much time as, like, I would imagine people spend on picnic tables. I think they use the grass more instead of sitting at a table…I think maybe because there's like bigger groups that want to eat together and the tables don't really fit them, or maybe they just like the fact that there's like grass… maybe they don't want to be near, like, kind of gravelly dust.” (Participant 01, PI).

Another participant shared similar concerns with seating design, as well as location limitations with their seating area, which acted as a barrier for socialization outdoors (Figure 4.10):
“...that looks a bit more, like, depressing and it's not as inviting to, like, sit on, but they're meant to be, like, little things that you're just supposed to, like, sit on and have lunch...when it rains, you can't sit on it. I think it would be a lot better if it was a bit more, like, a circular shape. It's kind of just, like, a line. So if you're sitting with a bunch of people, you're sitting in a line and you can't, like, talk to everyone in a way...And it's also, like, kind of an awkward spot at the top of the hill.” (Participant 09, PI).

Figure 4.10: Participant 09 (prompt 8: outdoor space improvement)

A few participants mentioned facility accessibility concerns. These participants mentioned their seating areas in their schools’ outdoor environment were broken or infested with bugs, which limited the space students had available to sit. Participants also stated there were forests adjacent to their schools, and if they felt safer there, they would spend time in them. As highlighted by one participant:
“Yeah, I think maybe if we had like a less, sort of like, if we had a more public forest, I guess, in a way where more people were there, and it was more kind of secured, maybe we would have spent some of our lunchtime there.” (Participant 04, I).

A few students mentioned that other students smoking or vaping limited the availability of spaces they could spend outdoors. When asking one participant about their favorite spot in their school (Figure 4.11), they mentioned:

“... that's a nice spot because it's kind of, like, a little more, it's like shaded and it's... but that's a fairly common spot for the grade 10 boys that want to vape there. That's their new favorite spot, which is kind of annoying because it's a nice spot.” (Participant 10, PI).

Figure 4.11: Participant 10 (prompt 1: favorite outdoor space)
Some participants who specifically engaged in physical activity outdoors during school outlined how sports equipment could not be borrowed from teachers, limiting its’ availability and effectively discouraging students from playing sports outdoors. One participant described their workaround to this:

“"You wouldn't usually ask, but they wouldn't give a volleyball or basketball to you in lunch because they had, there was a thing that, like, a bunch of volleyballs went missing and they didn't get it back. So, like, they're just really suspicious or suspecting and they just don't want to give anything back. So, but my friends, well, my friends' friends, like, we hid, we hide the volleyballs and basketball in a bush... We would hide our like sport equipment in there. And then when it was lunch, we'd just like pull it out... We would play and then we just, like, throw it back in the bush after we're done.” (Participant 14, PI).

Another participant found an alternate source of equipment to play soccer on their field (Figure 4.12): “We actually borrow, I guess, soccer balls and other things from the community centre. We just need to give them like our school ID.” (Participant 06, PI).
An individual factor referenced by all participants was the influence of their friends. One participant showed a photograph of their basketball court as one of their favorite spaces in their school and where they engaged in physical activity with their friends during lunch (Figure 4.13):

“This is where sometimes in lunch... my friends are at to play, like, sports or whatever, like, basketball or volleyball. And sometimes, like, if I had nothing to do, I would, like, sometimes join in and then play volleyball with my friends there or basketball... Or, like, just talk or hang out... I mainly go there if my friends are there.” (Participant 14, PI).
Another participant noted how friends’ lack of interest in going to a park close to their school influenced their choice to go:

“... if you go to the park you can walk around there during your lunch... I used to do that a lot with a couple friends of mine, although they were grade 12 and they don't really - they already graduated, so I find that sometimes it's hard to find people who go to (park name).”

(Participant 03, PI).

All participants mentioned they would occasionally use lunchtime with their friends as an opportunity to walk, drive, or take the bus to fast food places, restaurants, coffee shops, or parks close to their school.
A few participants highlighted how their busy lifestyles acts as a barrier for spending time outdoors during breaks or lunchtime. One participant highlighted academics as a competing priority for outdoor time, hypothesizing that students spend this time preparing for their upcoming graduation plans:

“For me, I just, like, spend my time studying, studying, studying. I don't think I have, like, I feel like it's kind of cheating if I give myself time to, like, relax. So I feel like that spare and lunch is, like, my grinding moments.... I feel like everyone is busy in their own sense and they have to worry about—maybe they're most focused on academics because, you know, going to uni(versity) and a lot of stress for that.” (Participant 13, I).

Finally, a couple of participants mentioned that personal views also mediate the time they spend outdoors, which can act as either a barrier or facilitator depending on the prioritization they place on outdoor time. As an example, one participant attributed the prioritization of the internet and digital technology as a barrier for individuals to spend time outdoors:

“But the thing is what I find a lot with a lot of individuals now considering the fact that Internet has become such a big thing. Most people would rather just stay inside because they could just say ‘Oh I could just do jumping ropes in my home; I could just call people via Discord or Skype’... it's a very digital world. It has its perks, I understand that. But the thing is a lot of people are most likely just buying things off of Amazon instead of going outside with friends and maybe spending some quality time with each other.” (Participant 07, PI).

Another participant also highlighted how their community has facilitated outdoor time being a priority for themself and their family:
“Yeah. I feel like in my school a lot of the parents are very outdoorsy. So it’s definitely just like, the kids following suit up there... everyone basically is outdoorsy. So I just, like, my teachers they talk about their skiing trips sometimes and, like, a lot of our classmates are like very good at sports and stuff.” (Participant 12, I).

4.2.2.2 During Curriculum and Teaching Hours

Outdoor time integrated within the curriculum and teaching hours were experienced differently by all participants. While students’ experiences were mediated by the COVID-19 pandemic, many of them stated that PE was the main curriculum opportunity to go outside. As one participant noted, PE was an opportunity to take off their masks, which were mandated up to Grade 10 for many schools:

“(PE is) definitely a class that's a lot of the time outside, which was nice. Cause like during COVID, it was, like, you could take your mask off to like run and stuff. But during COVID when we were inside, that was definitely a struggle when you had to, like, play soccer with a mask on. You try to breathe and it goes in. Yeah, that was kind of annoying, but going outside was definitely a nice change.” (Participant 10, PI).

All participants completed PE up to Grade 10, as required by the curriculum; however, they expressed generally negative sentiments about participating in PE, not seeing it as a course they enjoyed.

Other outdoor curriculum opportunities included targeted learning modules connected directly to the outdoors. One participant provided an example:
“Maybe one part in biology where we went outside to find conifers and, like, other type of pine or, like, some type of ferns. That was, like, the unit that we were doing.” (Participant 07, PI).

Another participant cited a unit in their ‘Contemporary Indigenous Studies’ course and their reflections on how the curriculum connected to the outdoors while providing a photo of one of their learning sites (Figure 4.14):

“From what I remember, we did, like, a unit on, like, how we are, like, one with, like, the earth and nature and how there's- like, humans aren't better and you kind of have to spend more time around like nature to feel a bit more connected. We also did, like, a holistic health unit, which we talked about mental health and, like, you know, like, going outside. And she also, like, showed us different, like, plants and, like, berries and stuff that we could use for traditional medicine and stuff. So that was pretty cool.” (Participant 09, PI).
The same participant commented on the positive impact of learning outdoors and engagement with curriculum:

“... and I feel, like, less restricted in a way, like, inside a classroom. It feels very kind of, like, tense and, like, sometimes overwhelming. And so when we do spend, like, time outside of the class, I feel a lot more, like, free, a lot more, like, collaborative. And, like, I do notice that as well with, like, my peers, we feel a bit more... like, we enjoy ourselves a bit more in a way.”

(Participant 09, PI)
Some participants highlighted that they would be taken to their outdoor environment for a reason unrelated to curriculum, such as this participant:

“...my English teacher loves, like, bringing us out there (outdoors) and, like, discussing, like, in a circle about, like, an essay or, like, a TV that we watched and, like, analyzed. And I feel, like, being in the outdoor space, it just feels more calm and not like secluded in a classroom. Because in the classroom I just feel like there's so many distractions.” (Participant 13, I).

This was often mediated by other factors; the same participant shared how weather and personal views of students mediates their English teacher’s choice to go outside:

“Our teacher likes to do Wednesday, walking Wednesdays, where we would go around the entire school block and we would walk and have a discussion question where she would... we would, like, discuss with our partner and just walk around the entire school. But on rainy days, she prefers to do discussions indoors as a lot of people do kind of not like the cold and the wetness.” (Participant 13, I).

Finally, another participant spoke about how comfortable the outdoor space used for their English class was (Figure 4.15):

“Yeah, the time I can remember it was just an English class. It was nothing to do with any outdoor thing. It was just working on an assignment or a project... I definitely preferred to be out here. Especially because they brought us when it was nice weather and yeah just being out in the fresh air was nice... It didn't feel as formal as being in a desk and in a classroom.” (Participant 08, PI).
Participants felt curriculum opportunities were primarily mediated by teacher-specific factors. Specifically, a few participants felt that the type of class/curriculum content could be a facilitator or barrier to spending time outdoors. As one participant stated:

“The (reason) is because of the course. I feel like it's hard to teach a class... math or science outside. And I feel like more of, like, socials, like more discussion-based projects or lessons are easily done outside as only, like, you only need your, like, communication skill and your voice, right? But science and math, I feel like it's hard for students to visually understand and also, like, it's just I feel like not a good environment to learn math.” (Participant 13, I).
Additionally, a participant hypothesized that the inclusion of the flexible instructional time may limit teachers’ abilities to take students outdoors:

“...it shortens the in-person class time by about 20 minutes, like, twice a week. Now there's, like, more things that teachers have to go over and so there's less time kind of for, like, going on a walk or something.” (Participant 10, PI).

Another participant highlighted a similar sentiment, including resource availability (school-specific factor) as an additional consideration:

“I mean, I've taken a lot of courses in which it's just highly inconvenient to go outside. Again, bringing it back to chemistry. It's just, it's not feasible to bring all those chemicals and perform an experiment outside. So a lot of times, like, the materials just are inconvenient to bring outdoors. And really, like, the only time where we were able to do things for English classes, just take a book and read outside... Like, we don't have access to wi-fi. And since it's such a digital world that we live in now, that's also another thing.” (Participant 11, PI).

Resource availability specific to technology was often highlighted by participants as a barrier for learning outdoors:

“... I also think that the like technology aspect of, of teaching kind of affected them bringing us outside more because they needed like projectors and stuff like that to teach and they couldn't do that outside.” (Participant 01, PI).

A few participants highlighted that they had ‘outdoor classroom’ facilities, often described as an ‘amphitheatre’ or ‘theatre’, which were dedicated to outdoor learning. One participant who
shared a photo of their outdoor classroom described how the space was not conducive for their learning due to facility design (Figure 4.16):

“Yeah, that's our outdoor classroom. I wish that was a bit more, like, implemented in our, like, classrooms and stuff...Just because teachers don't, like, mention it. Like, no one really mentions it. And, like, if I didn't go to school since grade 8, I probably wouldn't even know it existed. I think the only problem with it is that it doesn't really have, like, an undercover area again. So, like, when it's raining, you can't really go. And also there's, like, these small little, like, ditches almost. So they fill up with water and so you can't really sit on them either...and also it's just, kind of, like, it looks a bit depressing in a way. There's, like, not there's no, like, plants. There's no, like, garden. It just looks very dull...I think we went once in Social Studies for presentations. Yeah, but we don't, like, actually sit. You would kind of stand, so I wouldn't really call it an outdoor classroom, but that's what it's called.” (Participant 09, PI).

Figure 4.16: Participant 09 (prompt 7: spend time outdoors if they could)
Majority of participants specifically pointed to teachers’ personal views mediating their time outdoors. Most participants described how only specific teachers encouraged outdoor time:

“Yeah I mean some teachers. It always depends on the teacher I believe that. But from my experience with a lot of teachers it's, like, we may go outside and might... may have, like, a five-minute break. And that's what's happening in social justice. I think my teacher she is very considerate towards most of the students...And she does give us a bit of leeway so we don't sit down and feel very squished I guess. So I do appreciate that and most of the teachers, if not all, are very considerate towards the students...” (Participant 07, PI).

Another participant highlighted how certain teachers generally advocated for outdoors and outdoor learning:

“Yeah, I feel like at my school, not specifically, like, teachers have given us some sort of, like, guidance in terms of that. They would tell us “Oh, like, spending outdoors is pretty good for you.” But I don't think they've ever really focused or given us a lesson or some sort of, like, advice or something, like, in terms of going outdoors...I feel like my school teachers, I don't know, they don't really advocate for that. But there are some specific ones that do care about, like, our kind of learning space and our environment...I feel like there are- there will be people who will advocate for more outdoor learning.” (Participant 13, I).

One participant hypothesized that teachers may discourage outdoor time due to a belief that work might not be done outdoors:

“...I think just honestly, I feel, like, teachers don't like the idea sometimes of going outside on walks because I often find that it takes a lot of convincing...to want to go outside because they
often don't think work will be done outside... from personal experiences like seeing what how
teachers react, like, they negatively react wanting to go on walks...Because they consider it
breaks.” (Participant 08, PI).

Finally, a participant stated that they felt specific teachers encouraged outdoor time, but it was
not a priority for administration.

“... my photography class we've been going outside a lot and my teacher in that class she
likes taking us on walks and stuff. So I think it's more up to the individual teachers, but not
really; they don't really encourage it like with the principal and stuff.” (Participant 01, PI).

Participants noted that the outdoors were used for breaks during instructional time. This could be
either teacher-led, where teachers took the class on a walk outdoors as a break, or student-
initiated, where students would ask teachers’ permission to go outside for a break. One
participant noted that their teachers would specifically take them out during COVID-19 for
walks: “...And yeah, after COVID, I'd say, yeah, like teachers would kind of take us on walks or,
like, make sure all the windows are open.” (Participant 10, PI). A few participants reported that
student-initiated requests to go outside as a break were dependent on the teacher. Some of these
participants noted that student-initiated requests were often met positively and facilitated time
outdoors:

“Usually, the teachers, I think they say if you need a break or anything, you can just tell them
and then you can go outside, get some food or just walk around... Depending on the grade,
though, I think you have control, you probably advise them more and stuff.” (Participant 06,
PI).
Conversely, the other participants noted that teachers actively limited students taking breaks outdoors:

“... with the taking breaks. It honestly- it became such a big problem with students, like, leaving class ... it was really frustrating. There would be, like, teachers... wandering the hallway and, like, they'd fully lose their minds at you if you were out of class even if you had, like, a reason. It was it was so frustrating but once I became friends with one of the teachers, it was fine.” (Participant 05, I).

This was further highlighted by another student, citing a lack of trust extending from one student’s behaviour:

“Well, if, like, the person, like, hasn't, like, repeatedly or constantly hasn't, like, come back within, like, a time limit between, like, I guess, five minutes or so, they wouldn't, like, trust them all.” (Participant 14, PI).

### 4.2.2.3 School Clubs

Extracurricular school clubs were an opportunity for students to spend time outdoors. Some participants cited that they knew of clubs that were focussed on caring for the environment. Majoriy of participants stated that their schools had a garden that was tended by students involved in a gardening club. One participant highlighted a club focussed on climate activism. A few participants were actively involved in these school clubs, with one in a gardening club and another in the climate activism club. While these clubs offered an opportunity for students to spend time outdoors, neither of these students were actively outdoors while participating in their
club, citing funding limitations. In particular, the student within the climate activism club described the goal of their club, while showing a photograph of their space (Figure 4.17):

“So it's a club around, you know, creating sustainability stuff. This area we're planning to redevelop as a green space... So as a group, we're trying to develop like native plants and stuff that can grow in this area because right now you can see it's kind of bare... We're currently applying for grants and helping to get some money so we can build a small little area there.” (Participant 02, PI).

![Figure 4.17: Participant 02 (prompt 2: majority of time spent outdoors)](image)

The other student who was part of the gardening club outlined similar reasons they were unable to spend time gardening (Figure 4.18):

“That's our garden. It's really small. And it's also, like, infested in weeds too. I wanted to, like, do gardening and I joined the gardening club, but I don't know why for, like, two months, we didn't get to do anything, like, around the garden. We just only did fundraisers. So I quit that club.” (Participant 14, PI).
The personal views of students also strongly mediated their participation in clubs. The participant in the climate activism club spoke about their role in the club, demonstrating the personal commitment to their goal:

“So we have a teacher who runs the club per se, but it's pretty much only student-led. The teacher kind of talks to the people for us. We're basically designing it all. We're planning it all. We're applying for the grants ourselves.” (Participant 02, PI).

Another participant who belonged to a school that did not have a gardening club highlighted how personal interests of students affect the club’s inception:

“Yes, I think if there was a group of students that was really passionate about it, they could find a teacher sponsor probably. I think it's more that there's like no group of students that's really passionate about.” (Participant 10, PI).
4.2.2.4 After School

Few participants spoke about spending time outdoors in their school environment after school. This would often be facilitated by their friends. One participant in particular spoke about the influence of their friends and school policy that would facilitate time outdoors after school:

“Yeah, after school, people also hang out outside. I usually hang out outside, I talk right outside the school foyer. A lot of people, a lot of students hang out outside the school and it makes it pretty packed. But not a lot of people sit inside the school, mainly because I think some of the teachers want the students to leave the school right after it ends. I noticed when I first came, I was sitting inside the school and they were asking me to, like, leave the vicinity and go outside. I'm not sure why, but maybe it contributes to how spending time outdoors helps the mental health of students.” (Participant 03, PI).

4.2.2.5 School Events

A few participants spoke about school events they had outdoors, which included carnivals, graduation events, and food truck festivals. One participant highlighted how this would often be mediated by personal interest:

“We just don't have that many, like, school events... Like, we had a pumpkin patch event for our Halloween, but not a lot of people, like, paid. We didn't- there wasn't enough people wanting to go. So it had to be cancelled.” (Participant 14, PI).

Additionally, some students mentioned the Terry Fox Run as a way that students engaged with the outdoors. The Terry Fox Run is an annual charity event where schools throughout Canada hold a run to commemorate activist Terry Fox and raise funds for cancer research (The Terry
A few participants also mentioned fire drills as policy-mandated time outdoors for the school community.

### 4.2.2.6 Active Transport to and from School

A couple of participants stated that they utilized active transport (walking or bicycling) to get to and from school from their home as an opportunity to spend time outdoors. Participants reported this was primarily mediated by weather and location of their school in relation to their house. As one participant stated: “I normally get dropped off or I drive there (school), and then on the way home I bus or walk when the weather is nice.” (Participant 08, PI).

### 4.2.3 Theme 3 - Ideas for Secondary School Initiatives to Increase Time Outdoors

Participants were asked to brainstorm multiple strategies to increase students’ time outdoors within their schools to support their mental health. Four types of initiatives arose from this discussion: space-specific changes to the outdoor environment, student-focused engagement opportunities, higher-level changes, and community involvement. A fifth theme arose related to equity, diversity, and inclusion (EDI) aspects to consider when implementing initiatives to support outdoor time.

#### 4.2.3.1 Space-specific Changes

All participants highlighted additions or alterations to their schools’ outdoor spaces to promote time outdoors. Majority of participants advocated for the inclusion of weather-appropriate spaces designed to allow comfort and socialization. One participant highlighted the importance of this given their city’s weather:
“...I feel like if our school had more undercover area that is comfortable, like, if they even have like a bench there or some sort of seating area, it would be so much better...I think, yeah, I feel like our school really lacks that kind of outdoor spaces because it's kind of like, oh, you do your own thing. Like you can, I don't know, set up something in the field or something, but I feel like they don't provide, like, a structure kind of area for us to hang out...So if we could have more undercover, because of course, (city name) is really rainy all the time, especially in the fall, winter times, it's, like, raining every day. But if there's more undercover and more seating, I think that would be so much better.” (Participant 13, I).

Few participants also mentioned the inclusion of greenery or greenspaces in their outdoor environments. As previously highlighted in section 4.2.2.3, Participant 02 stated they were actively working with their school club to integrate in greenery in their school environment. The participant provided a photo and described their plan for the space (Figure 4.19):

“So we probably do like some sort of path that goes around this area as well as just some trees and some ferns and stuff and other native species just to kind of provide a better environment for locals.” (Participant 02, PI).

Figure 4.19: Participant 02 (prompt 8: outdoor space improvement)
Participants would often highlight the importance of combining spaces for comfort and socialization with greenery. One participant shared the importance of creating a space for people to relax with a bench in combination with garden maintenance, providing a photo of their school’s outdoor garden (Figure 4.20):

“Yeah, well, I think if (the garden) was maintained and maybe, like, a bench was put in or something, then students can use it as like a nice spot to relax, like, during lunch or something, or even, like, relaxing, like, maintaining it. Like, that would probably be beneficial for a lot of people.” (Participant 10, PI).

Figure 4.20: Participant 10 (prompt 8: outdoor space improvement)
The participant who photographed their outdoor classroom in section 4.2.2.2 also described several ways to improve it, which included considerations for weather, comfort, and greenery (Figure 4.21):

“I would say probably just have, like, a flatter, like, surfaces on. So maybe do a bit more, like, paneling, like wooden panels maybe. And then, yeah, make it a bit more inviting to have something in the centre maybe have, like, plants around it, trees, like, maybe even, like, a community garden in the centre. Yeah. Or you should even, like, use that, like, space in the centre to, like, add, like, some kind of, like, desks or something or even, like, an undercover area. Because I don't know what, like, outdoor classrooms look like in other schools. This is the only, like, experience I've had in one. But I don't think they look like this.” (Participant 09, PI).
Additionally, a few participants suggested adding art. One participant explained how artwork from indoors could be brought to their outdoor foyer (Figure 4.22, left):

“...there are places where you can sit down inside of school- like, there is a little hallway where they painted the entire wall with a lot of nice artwork. I find that a lot of students tend to sit there sometimes... I feel like the walls (outdoors) are just a single color. Sometimes it becomes incredibly plain. Yeah that's- it's just white... it gets a little repetitive.” (Participant 03, PI).

![Figure 4.22: Participant 03 (left) and 10 (right) (prompt 8: outdoor space improvement)](image)

Finally, a couple of participants suggested the inclusion of more outdoor spaces for physical activity. Of these, a few participants suggested the inclusion of a ‘playground’ on the outdoor school grounds as an opportunity for students to participate in physical activity. One participant highlighted how the lack of playgrounds for youth have caused a decrease in physical activity, and how playgrounds can support this:
“…a playground should be in every school...Most people can't do a singular pull, pull-up, some can't even do a single push-up. The reason why is because ever since elementary school when you have the monkey bars, you use... you activate the muscles in your hand and then you're a lot more active...That's pretty important in staying healthy, staying fit, I mean- it's good, it's beneficial for us. But the thing is, if we neglect that even in high school you won't be healthy 100%... swinging bars (would be an addition to the playground) most likely...It's literally just putting the equipment over there so that people might work out, work in a little bit more stuff. Or maybe just make it like a little, like, tiny jungle yeah that kids play around...But of course much bigger…” (Participant 07, PI).

These participants also suggested altering spaces in their outdoor environment to support physical activity; Participant 11 suggested changing the unused space to a basketball court (Figure 4.23, left), while Participant 14 suggested setting up more tennis or volleyball courts, primarily to mimic indoor gym facilities to encourage students play sports outdoors instead (Figure 4.23, right).
4.2.3.2 Student-focused Engagement Opportunities

Multiple participants suggested outdoor promotion initiatives which focused on further engaging students during opportunities where they already spent time outdoors (i.e., discussed in section 4.2.2). A few participants highlighted the integration of the outdoors into the curriculum and other learning opportunities. One participant suggested their ‘Biology’ class as an option to spend time outdoors: “…I'm in biology right now and...when it’s, like, plants and animals, but when it is, yeah, there's definitely an opportunity for like outdoor learning.” (Participant 10, PI).

Another participant suggested gardening as an option to integrate into the curriculum:

“...I think it'll be interesting to have maybe more activities, like, outside, I guess something, like, gardening...because they could be part of like PE or something. I don't know, but I think we could do, like, more activities like those outside. Like, less than... compared to sports. Cause I think everyone plays sports and there's a lot... a lot of things about sports, but we can do things about like gardening or health or something outside...I think there's a lot of spaces
where they can help grow plants and things. Cause, like, before you enter the school
doorways, there's just, like, grass there. There's not many flowers or anything. So it can make
it more life and bright.” (Participant 06, PI).

A few participants suggested outdoor walks as a break during class hours would be particularly
beneficial for their mental health. Finally, some participants noted the opportunity to use the
outdoors for school-wide events. One participant photographed an area of their school to
potentially host an outdoor event used to increase morale (Figure 4.24):

“"There's just a huge gap of grass. I mean you could have some... you can have another tree
there. Maybe we can install a tree here specifically for Christmas time. I don't know, I mean I
just feel like we can use more of the terrain to our advantage by one increasing morale.
Especially the seasonal events happening...” (Participant 07, PI).

Figure 4.24: Participant 07 (prompt 8: outdoor space improvement)
4.2.3.3 Higher-level Changes

Some participants suggested initiatives that require administrative or policy changes. One participant suggested that there could be a re-distribution of funding, increasing the amount available for outdoor initiatives overall. A few participants also suggested that dedicated outdoor time within the school day could be implemented, such as through altering the school schedule duration. A participant that went to a school with flexible instructional time suggested this time could be used for outdoor time:

“Maybe having just, like, an actual fixed time to go outside. So we do have (flexible instructional time), which is, like, you can choose to stay inside to work and whatever. But maybe you could have, like, a recess time. I know that sounds kind silly for a secondary school... We do have a nutrition break and, like, lunch and stuff, but it's, like, optional if you want to go out.” (Participant 09, PI).

Some students also suggested mandatory participation in outdoor physical health activities, mostly through mandatory PE participation into grades 11 and 12:

“Yeah, I feel, like, at the end of the day, like, I remember, all 3 years of grade 8, 9 and 10, sometimes I would be like, I don't want to be forced to do this (during PE). Like, I'm so tired and stuff. But then I feel, like, it just kind of pays off in the best way possible for most of us... being pushed to sort of like, do all these activities that you might not like or not be used to outdoors.” (Participant 04, I).
4.2.3.4 Community Involvement

A couple of participants spoke about the importance of involving the broader school community in creating initiatives to support increased outdoor time; specifically, involving community members, families, and other role models. A few participants suggested hosting events with community members; one participant suggested planting in their school field as an opportunity to raise funds while creating a positive experience (Figure 4.25):

“Like for example, that one field trip I did where I planted a bunch of trees and stuff, like that was kind of a nice community experience because we all were like working together to create this perspective. So I think if you brought together a lot of like the local community as well, and you create an event sort of, and you even had a fundraiser before to create some money and in an event, you could like plant trees and stuff. I think if you just had the opportunity and like the option to, I think it probably wouldn't be like with us right now. But if they gave us the option to like actually plant stuff in this green area, you could actually do a lot with the community.” (Participant 02, PI).

Figure 4.25: Participant 02 (prompt 8: outdoor space improvement)
One participant highlighted an initiative underscoring the importance of family in encouraging outdoor time:

“But I mean, in terms of, like, outdoor activities...families are really, like, significant to keep the kid going....if you're with your family, who's, like, kind of, like, from day one, they're getting you, like, you know, kind of used to it. Like in an enjoyable way... a family bonding moment kind of sort of thing...I feel like definitely like time management and having some sort of like a day dedicated to this sort of like, like team bonding, like family bonding thing.”

(Participant 04, 1).

Finally, one participant suggested the influence of ‘role models’ or ‘social media influencers’ promoting physical health outdoors as a strategy to encourage students to spend time outdoors.

4.2.3.5 Equity, Diversity, and Inclusion Concepts to Consider

Three participants emphasized the importance of equitable, diverse, and inclusive considerations when implementing initiatives to support mental health through time outdoors. In particular, ensuring initiatives consider a diversity of perspectives and lifestyles was key. One participant highlighted how different backgrounds need to be considered when developing initiatives that work best for students’ lifestyles:

“I feel like often lots of kids may feel like they're not being supported enough since...lots of kids that are, like, immigrants or maybe, you know, just like from a different community. I feel like there's less representatives for them. And that could always be, like, something that every community, like, especially in Canada, because we have a lot of, like, diversity, that could always be something to improve on...because I feel like there's like so many different
lifestyles. Like, for example, when I'm in my own city (from home country) we don't have like a bunch of, like, forest, but...kind of, like, downtown Vancouver, that's like the normal part of our, you know, city. So it (initiatives to support outdoor time) doesn't always have to be like, mountains or like, I don't know, like the ocean or something. It's just what works best for your lifestyle.” (Participant 04, I).

Ensuring accessibility was also demonstrated in one of the participant’s suggestions of a playground as an initiative to support outdoor time:

“So if I feel like if we were to make a playground over here, we can technically have people who say ‘Oh maybe I want to get healthier but I can't necessarily afford the gym’.”

( Participant 07, PI).

Finally, another participant shared the importance of speaking with students directly to identify their needs to create tailored and individualized initiatives:

“... I think that one-on-one conversations with students, like, where it doesn't... where it feels like a safe space where there isn't, like, some sort of negative outcome to do with the conversation. I feel like that could be so beneficial to our school...I think that, like, it should be more catered to, like, what the individual student needs at that time. Like it should be a lot more of, like, one-on-one stuff with the student...I think that could be really beneficial to like the kids’ well-being, you know.” (Participant 05, I).
Chapter 5: Discussion

This study aimed to understand and highlight GVMD youths’ current experiences of engaging in outdoor time within their secondary schools as a mental health promotion strategy. Youth identified facilitators and barriers for provision of outdoor time, along with accompanying suggestions for areas of change. Three main themes emerged from the data analysis: 1) Importance of outdoor time for youth, 2) Current outdoor time opportunities in secondary schools, and 3) Ideas for secondary school initiatives to increase time outdoors. This research addresses the existing gap in knowledge regarding how outdoor time can support mental health among youth in secondary schools.

5.1 Weather as a Significant Determinant of Outdoor Engagement

Weather was identified as a significant environmental factor that affected participants’ decision to engage in outdoor time. For most participants, sunny weather facilitated outdoor engagement, rainy and cold weather was a barrier. In the literature where outdoor time is measured as physical activity, research indicates negative correlations between precipitation and cold temperatures with physical activity (Chan & Ryan, 2009; Ferguson et al., 2023). This emphasizes the need for outdoor spaces that allow for outdoor time during inclement weather within secondary schools, highlighted by all participants in the study. Given GVMD’s moderate, oceanic climate with variable levels of precipitation during majority of the school year (October – March), the prevalence of rain needs to be considered in supporting secondary students’ outdoor time (Environment Canada, n.d.). Participants’ main suggestions were undercover areas with opportunities for comfort and socialization by incorporating benches or picnic tables. Thermal comfort is often a consideration for landscape architects and urban designers in designing public
outdoor spaces. Environmental and technological modifications can be added to accommodate varying climates, including wind funneling/shelters, urban heaters, or shading (Shooshtarian et al., 2018). Secondary schools could lean on design elements from these experts and spaces when considering space modifications.

Additionally, a few participants recognized seasonal depression, otherwise known as seasonal affective disorder (SAD), due to a decrease of light levels and weather outdoors. SAD incorporates a seasonal pattern identifier applied to mood disorders (Roeklein & Rohan, 2005). Research indicates a positive correlation between prevalence of SAD and increasing latitude in North America (Mersch et al., 1999). Given GVMD’s relatively high latitude, with late sunrises and early sunsets and generally cloudy weather from November - February, the reduced light and weather leave the population prone to experiencing SAD (National Research Council Canada, n.d.; Environment Canada, n.d.). Spending time outdoors has been recommended to improve SAD symptoms (National Environmental Education Foundation, 2023). Facilities and interventions that support time outdoors while protecting from weather elements (e.g. decreased temperature, rain, wind) can be developed in schools.

5.2 Physical Activity as an Opportunity for Outdoor Engagement

Multiple participants highlighted the importance of physical activity during outdoor time, as well as its connection to mental health. This was supported by previous research done with youth in New Brunswick, Canada outlining how physical activity mediates the relationship between outdoor time and positive mental health (Bélanger et al., 2019). To facilitate physical activity in the outdoors, participants suggested the implementation of a ‘playground’, often reminiscing
back to their elementary school playground. For children, playgrounds offer the opportunity for children to play and be physically active (Broekhuizen et al., 2014). Aligned with this, participants recommended space additions for physical activity, such as an ‘outdoor gym’, which could also increase accessibility as it would not require paying gym fees. The use of outdoor gym equipment in a New South Wales park offered adults the opportunities for socialization while improving fitness and strength (Furber et al., 2014).

Some participants outlined mandatory participation in PE to facilitate outdoor physical activity. This would need to be administered in collaboration with the Ministry of Education and Child Care and school districts given their involvement in developing the Physical and Health Education standards (BC Curriculum, n.d.). It is notable that most participants shared generally negative sentiment surrounding their involvement in PE. This is supported by a systematic review of youth identifying barriers related to PE, including dislike of activities, inappropriate facilities, and disengaged teachers (Rees et al., 2006). If PE or mandatory physical activity is implemented, students and teachers need to be consulted to address identified barriers and ensure physical activity participation in the outdoors is an enjoyable and supportive experience for well-being.

5.3 Socialization and Community-Building as an Opportunity for Outdoor Engagement

Participants additionally highlighted how the outdoors enabled them to socialize with others. As supported by a qualitative study done with adolescents in Finland, outdoor activities offer the opportunity to partake in shared experiences with friends, strengthening social relationships (Puhakka & Hakoköngäs, 2023). This was especially prevalent during the height of the COVID-
19 pandemic, where the outdoors was utilized as a medium for socialization when restrictions were in place (Barron & Emmett, 2021). Participants conversely noted the outdoors offered privacy; one adolescent in the Finland study shared that walking with their friend in nature afforded seclusion when sharing confidences with each other (Puhakka & Hakoköngäs, 2023). As highlighted by a few participants, socialization in the outdoors facilitated a sense of community and school spirit. Previous research has demonstrated that when adolescents make social connections within their neighborhood, they form a sense of belonging and community which subsequently supports their well-being (Wales et al., 2022). Prioritizing human-centred spaces in urban planning could support community building (Gorgul et al., 2017; Peters, 2010).

To facilitate increased socialization and community-building, participants suggested hosting school-wide events outdoors. Holding events outdoors may offer an opportunity for secondary school students to form a sense of community and school spirit that was previously outlined. As the participant highlighted, school events held in their indoor space had limited capacity. Further, outdoor school events allowed for actions that could not take place as comfortably indoors, such as cheering and shouting, fostering a sense of passion and community spirit.

Participants also suggested involving the broader community when creating initiatives that support increased outdoor time. An example of a community initiative supporting outdoor time was conducted in Shenzhen, China; the ‘Community Child Myopia Prevention Project’ was a health promotion project aimed to engage families and community members in outdoor activities for child myopia prevention (Zhang et al., 2023). These outdoor activities included gardening, physical activity, and eye care knowledge (Zhang et al., 2023). Involving the families and
community members in this project allowed researchers to understand their perspectives to increase children’s participation rates in this project, and subsequently, increase children’s time outdoors (Zhang et al., 2023). These included parents’ safety concerns and prioritization of the outdoors, parents’ active support, and integration of outdoor time in children’s lives (Zhang et al., 2023). Implementing community outdoor initiatives in secondary school contexts may allow families to engage with others, provide support for further outdoor engagement opportunities, and as noted, foster a sense of community and belonging. However, given parental engagement decreases during secondary school, commonly attributed to adolescent autonomy (Jensen & Minke, 2017), it is important to understand how families can intentionally participate in these events in a meaningful way.

5.4 Nature Appreciation as an Opportunity for Outdoor Engagement

Outdoor time also offered the opportunity for participants to appreciate nature. There is limited research on youth nature appreciation. However, nature appreciation in middle-aged and older adults was found to be positively correlated to well-being constructs, such as life satisfaction (Craig et al., 2016). A research study conducted in England demonstrated that adults with greater appreciation for nature and more recreational time in nature were more likely to engage in pro-environmental behaviours (Alcock et al., 2020). Given that 71% of postal codes in GVMD have access to public greenspace (an area greater than one hectare at or within 300m of a defined centre of a postal code) (Jarvis et al., 2020), nature appreciation within GVMD may be possible. The addition of greenery and nature to outdoor spaces to support time outdoors was outlined by participants, including school gardens. During the COVID-19 pandemic, both indoor (e.g., houseplants) and outdoor (e.g., garden) greenery supported students’ mental health in two
Bulgarian universities (Dzhambov et al., 2021). The inclusion of nature within indoor settings could support individuals who experience barriers in accessing outdoor environments, such as immigrants. Research on school gardening initiatives primarily include children or adult participants, and demonstrate various positive well-being constructs, including achievement and satisfaction, as well as stress-reducing effects (Ohly et al., 2016). Secondary school-based initiatives to implement greenery or greenspaces need to consider GVMD’s weather patterns and ongoing maintenance costs.

5.5 Factors Mediating Outdoor Time and the Socio-Ecological Model

Theme 2 outlined participants’ determining factors for spending time outdoors in their secondary schools. As outlined by Figure 2.1, the complex interplay of factors mediated the outdoor opportunities which students engaged in. These factors were highlighted as four sub-themes: environmental, school-wide, teacher-specific, and individual, which can broadly be mapped onto the levels of the SEM, as outlined in Figure 2.1 (Golden & Earp, 2012): intrapersonal/interpersonal (individual factors), institutional (teacher-specific factors), and community (school-wide factors).

5.5.1 Individual Factors

Individual factors primarily included participants’ personal views on the integration of outdoor time during school, peer relationships, busy lifestyles, and location of their home relative to their schools. In particular, the influence of personal views was a recurrent theme. One participant noted the competing influence of digital technologies. The rise of digital technology has been linked to a decrease in nature-based outdoor time for adolescents in the literature (Anderson et
This is particularly highlighted during the first year of the pandemic, where a scoping review identified consistent increases in screen time (Madigan et al., 2022).

As previously stated, the outdoors offers youth the opportunity to socialize with their peers and is reflected as a factor when considering outdoor time during school. In a longitudinal study conducted in the United Kingdom, children and youth highlighted the importance of friendships and social connections and mentioned breaks as a primary opportunity to socialize with friends (Baines & Blatchford, 2019). This highlights the importance of how social connectedness needs to be facilitated during outdoor time at school.

Additionally, participants’ busy lifestyles were highlighted as a barrier for spending time outdoors. Increased amounts of homework, coupled with academic pressure and navigating university applications, meant they felt too time-crunched to prioritize outdoor time, and more broadly, their mental health.

Finally, the proximity of participants’ home to their school determined if they engaged in active transport (walking or biking) to and from school as another source of outdoor time. Active transport is positively associated with physical activity (Prince et al., 2022), with shorter perceived distances being most consistently associated with more adolescent active transport (Klos et al., 2023). General safety, overall infrastructure, aesthetics, and street connectivity have also been found in the literature to influence active transport (Klos et al., 2023). Encouraging and
supporting active transportation can contribute to students' physical health while enhancing their connection with the outdoor environment.

5.5.2 Teacher-specific Factors

Teacher-specific factors were mentioned in relation to outdoor engagement opportunities during curriculum and teaching hours. Teachers who actively encouraged outdoor breaks or incorporated outdoor learning opportunities were appreciated by participants, who noted a positive effect when they were learning in outdoor settings versus indoors. However, as participants hypothesized, the reluctance of some teachers to embrace outdoor time could result from various factors, including class type and timing, age and grade of the class, personal views of the teacher, and established trust.

The type of curriculum content may result in teachers feeling unsure regarding how to meaningfully engage in outdoor learning (van Dijk-Wesselius et al., 2020). Additionally, curriculum and time pressures (especially at an upper secondary school level) may result in teachers perceiving insufficient time to transition outdoors (Akoumianaki-Ioannidou et al., 2016; van Dijk-Wesselius et al., 2020). Participants in this study hypothesized that lower ages/grades had fewer curriculum and time pressures, potentially increasing flexibility to engage in outdoor opportunities.

It is established within the literature that teachers’ personal interests in outdoor engagement opportunities mediate students’ outdoor time. In one study, elementary/primary school teachers stated they are not familiar with how to meaningfully conduct outdoor learning within the scope
of the curriculum (van Dijk-Wesselius et al., 2020), and this can be dependent on personal interest, skill, preparedness, and willingness (Oberle et al., 2021; Patchen et al., 2024). Aligned with this, in the present research, one participant’s speculation that teachers discouraged outdoor time due to ‘work not being done outdoors’ may point to uncertainty in engaging with the outdoors (Oberle et al., 2021). Additionally, one participant touched briefly on school administration as a potential consideration for outdoor time. Research indicates that elementary teachers’ engagement with outdoor learning was strongly mediated by the principal’s support (Oberle et al., 2021), which could also be influencing teachers in secondary schools.

Finally, participants noted teachers’ lack of trust in students when they asked to take a break during class. Lack of trust was also evident during breaks and lunch with teachers not trusting students to return equipment, such as balls. Some participants found creative workarounds, but this did pose an additional barrier. Effectively, teachers’ trust in students can help support a positive learning environment (Platz, 2022), and outdoor time with more options for activities.

Participants offered suggestions to increase their time outdoors during pre-existing outdoor opportunities in their schools, such as integrating outdoor learning into the curriculum. As previously discussed, regular exposure to outdoor learning yields positive outcomes for students’ learning and social dimensions (Becker et al., 2017). It is also important to consider the conditions for equitable access to outdoor education and education outdoors for students with disabilities (Patchen et al., 2024), which can be extended broadly to support participants’ diverse needs. Previous research has highlighted the specific benefits of outdoor learning for students.
from diverse backgrounds and with various learning needs, including allowing opportunities to be creative and independent in relaxing outdoor environments (Schroth, 2023).

5.5.3 School-wide Factors

School-wide factors were primarily composed of facility-related issues, including availability, design, and accessibility in the present study. Overcrowded spaces, limited weather-appropriate seating, and lack of designated areas for specific activities (i.e., physical activity) were identified as barriers to outdoor engagement. Additionally, while two participants in the study expressed appreciation for newly added spaces that encouraged socialization in the outdoors, conversely, two participants outlined how alterations to the school outdoor environment acted as a barrier for them. Research in primary school contexts indicates that physical constraints act as a barrier for teachers to engage in outdoor learning, as schools may ignore or underutilize the existing spaces due to their poor design (Patchen et al., 2024; van Dijk-Wesselius et al., 2020). This was evident in one participant’s photo of their outdoor classroom; despite the availability of the space, it was only utilized once by the participant’s class, and not designed to accommodate inclement weather or learning capacities. This may extend to other outdoor spaces utilized during lunchtimes and breaks, which were not designed to accommodate inclement weather or peer socialization. In a qualitative study, youth in Melbourne, Australia highlighted that socialization at local parks could be encouraged through the presence of picnic areas, seating, and shade or shelter (Rivera et al., 2021). This highlights the role of school and facilities administration in decision-making processes for outdoor engagement, as well as the need for incorporating the perspectives of students in these processes.
Higher-level changes that participants suggested occurring at the school-wide level included allocating funds to outdoor initiatives or altering the school schedule to include dedicated outdoor time. These suggestions would require administrative or policy changes at the individual school, school district or Ministry of Education and Child Care level. School districts largely receive their funding from the Ministry of Education and Child Care, who in turn allocate operating budgets to individual schools with most of this funding dedicated to teaching and instruction. BC schools are often seen as under-funded (Hemingway, 2016), and outdoor engagement opportunities are typically seen as lower priority than academic achievement, despite research indicating the positive impact of the outdoors on students and academic achievement (Kweon et al., 2017). Opportunities do exist at the district, municipal, and provincial levels to apply for small grants to support outdoor engagement opportunities, such as school gardens. Changing the school schedule would require collaboration from the Ministry of Education and Child Care, school districts, BC Teacher’s Federation, school administration, and the BC Public School Employer’s Association. As highlighted in Chapter 2, requirements for minimum hours of instruction time and teachers’ working hour limits may restrict changes to the school schedule.

5.6 Equity, Diversity, and Inclusion Considerations in Outdoor Engagement

Finally, participants underscored the importance of considering equity, diversity, and inclusion when designing initiatives to support outdoor time. The diverse perspectives on definitions of outdoor time for participants in the study (i.e., any environment outside of their home, such as malls or coffee shops) highlighted the need to recognize diverse lifestyles and backgrounds to develop inclusive approaches that address the varied perspectives of youth. A few participants
spoke about their immigrant background, moving to Canada during secondary school, and comparing their outdoor engagement experience between countries. Previous research investigating the relationship between nature and immigrants’ well-being has highlighted restorative experiences and positive feelings experienced (Charles Rodriguez et al., 2023). Charles Rodriguez’s research also highlighted barriers encountered by immigrants to natural environments, which include financial barriers, accessibility, lack of knowledge, weather, and safety concerns (Charles Rodriguez et al., 2023). This highlights the importance of understanding how the outdoors may be inaccessible for certain populations and including their voices when creating outdoor engagement opportunities; this directly addresses the frustration participants felt with the lack of input they had in their outdoor environment. An outdoor recreation program engaging racially diversified youth implemented multiple considerations supporting intersectionality, including understanding participants’ intersectional identities (race, ethnicity, culture), employing cultural sensitivity when speaking to participants about their concerns and stresses prior to the program, and making sure the instructors reflected the cultural diversity of participants (Thomas & Thomas, 2021). Community-engaged participatory research as a methodology can be integrated in the development of outdoor engagement opportunities, with the prioritization of youth voices through creating specific capacities for engagement (Schmidt & Bobilya, 2022).

5.7 Strengths, Limitations, and Future Directions

This study utilized purposive sampling through the YDI; the students participating in this study were in grade 12, as they had completed the 2022/2023 YDI in their grade 11 year and were in grade 8 when the COVID-19 pandemic began. All students additionally indicated they engaged
in ‘spending time outdoors’ as a mental health support and attended secondary schools in areas classified as ‘urban’. This contextualized and specific experience allowed for deep engagement with each participant, understanding their perspectives and yielding rich, context-specific data. However, given that this study focusses on youth in the GVMD, the contacted population for this study represents only selected parts of GVMD that opted for participation in the YDI. For example, the Surrey School District, the largest and fastest growing public school district in BC (Surrey School District, n.d.), did not opt to participate in the YDI, and thus were not represented in the study. Further investigations could attempt to engage a greater range of districts to address this, and in turn, allow a further investigation into specific geographic variability within GVMD. Additionally, as mentioned, the students participating in this study were in grade 12. During the interviews, their entire secondary school experience was covered. However, these experiences may be very different than a student in grade 8 or 9 (at the beginning of secondary school), especially as the COVID-19 pandemic caused a major disruption to participants’ secondary school. Engaging with students at all grade levels could provide insight into age- and grade-specific supports. There also needs to be consideration of further inclusion of participants with intersectional identities, and how this may influence engagement in outdoor time.

Specific inclusion criteria further limited student representation in the project. This included only contacting students who specified that they engaged in ‘spending time outdoors’. Future research directions include understanding why students may not utilize the outdoors for mental health support, which would allow us to understand any barriers they may face or perspectives to take into consideration when considering further initiatives for outdoor engagement in schools.
Additionally, this project was limited to students attending ‘urban’ secondary schools, however, this was a broad definition, and further contextual differences may exist between schools that are in different urban areas, such as funding and resource availability. Taking these school-specific factors in account through engaging educators, administration staff, and members of the school community may provide a more holistic picture. Additionally, the inclusion for rural areas within the GVMD is imperative to gain a representative understanding of outdoor engagement. A 2015 study found that Canadian rural children aged 1-17 years old spent on average 0.7 more hours outdoors than urban counterparts (Matz et al., 2015). Overall, the results may not be generalizable to secondary schools in GVMD as a whole and must be interpreted considering the inclusion criteria.

The photovoice and semi-structured interviews approach was chosen for this study due to its flexibility as a qualitative methodology, and the autonomy it provides for participants. As highlighted in a systematic review of photovoice studies with Indigenous youth in Canada, the photovoice process provided participants with the authority to direct the content of the photos, and by association, the research itself (Anderson et al., 2023). Participants in this study were given general prompts to reflect on and subsequently take photos using their mobile devices. As the process of taking photos with mobile devices was familiar and comfortable to the participants, it may have facilitated them to engage creatively with the prompts. Likewise, other photovoice studies indicated that photovoice methodology was a ‘fun’ way to engage participants (Anderson et al., 2023). There were also limited technical challenges with the photovoice methodology, as participants were easily able to upload the photos to the REDCap survey platform. Ethical challenges were mitigated by ensuring participants did not take photos...
of identifiable features, as this was highlighted to participants throughout the research process and double checked. Due to varying school district permissions, not all participants were engaged in the photovoice approach. This may have created inconsistencies in the way participants reported their experiences, with some participants having photographs to reference while others had to recall spaces from memory. However, providing youth the autonomy to make their own choices on their study participation was of particular importance, and was reflected in the study process. Youth were able to consent for themselves if they wished to participate in the study, and in school districts that granted approval, participants were provided with the autonomy to choose how they wanted to participate and engage with the project. This study further contributes to the advocation of the autonomy of youth in making their own choices in research studies, and the ensuring the valuation of their voices.

5.8 Implications for Policy and Practice

This project contributes to the broader discourse on mental health support for youth through recognizing the role of outdoor time on the well-being of GVMD youth. These findings have practical implications for school administrators, educators, and policymakers, as the voices of the youth in this study provide a foundation for informed decision-making. The identified themes provide insights for developing initiatives to increase outdoor time in secondary schools. Theme 1 provides support for encouraging outdoor time within secondary schools according to youth by outlining various benefits. Theme 2 outlines the current context of outdoor time in secondary schools, and calls attention to how facilitators and barriers were experienced by youth. Finally, as highlighted by theme 3, youth identified potential avenues for change, including space-specific changes, student-focused engagement opportunities, higher-level institutional changes,
and community involvement, which need to incorporate equity, diversity, and inclusion considerations. For example, as previously stated, participants in this study highlighted their busy lifestyles due to academic pressure as a barrier for spending time outdoors, despite recognizing that outdoor time supported their mental health and alleviated the pressure. Dedicated funding towards weather-appropriate space creation and modification, such as undercover benches and tables with greenery and art, that allow for socialization could facilitate increased outdoor time in secondary schools. The results of this study could be utilized to call attention to increased prioritization for mental health literacy and tangible supports for youth within secondary schools.

This study also calls for the importance of valuing students’ voices in the development of these initiatives. Policymakers and educators can leverage these findings to create a framework for equitable outdoor strategies to enhance students' well-being in schools.
Chapter 6: Conclusion

There is currently an imperative and dire need to support youths’ well-being. This project contributes to understanding a dimension of mental health support through highlighting GVMD youths’ voices when engaging in outdoor time at their secondary schools. By understanding the diverse ways in which youth value and engage with the outdoors, educators, school administrators, and policymakers can develop interventions that cater to the diverse needs and preferences of students. Investing in initiatives which promote positive mental health outcomes within secondary schools are integral, as they ultimately support the healthy trajectories of youth.
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Appendices

Appendix A

Study Title: Supporting Secondary School Students’ Mental Health Through Time Outdoors: A Qualitative Investigation

Know Your Rights with Research

As a study participant it is important that you understand the full details of participating in a research study. The better you and the researcher understand each other and the details of the study, the more likely it is that you might have a positive research experience. Here are some things you should know before you participate in a research study.

You are allowed at any time to:

☐ Refuse a question. Whether it’s an interview question or one in a background questionnaire.

☐ Withdraw from the study. With most studies you can stop participating at any time during the study and all of your information will be withdrawn as well. Make sure you check with the researcher, because some studies have a limited withdrawal period.

☐ Speak with the researcher at any point during the study. Make sure you are able to speak with them before, during, and after the study, if you wish.

☐ Ask the researcher questions about anything in the study that you don’t understand or you are unsure of.

Has the researcher told you:

☐ The benefits and risks of the study? If not, ask.

☐ The purpose of the study? If you don’t understand it, ask questions.

☐ The study procedures and methods? (For example, how the study will be conducted, the length of time it will take to complete the study.) If you think they left something out, ask them questions.

☐ Where and how your information is going to be used? Make sure this is clear to you.

☐ That your participation is entirely voluntary? You do not have to participate if you don’t want to.

☐ That you have time to decide whether or not you want to participate? Make sure you have the time to think about participating.

☐ The details of the incentive/honorarium? (For example, how and when you will receive it.) Be sure you know beforehand when and how you will be recognized for your participation.

☐ That you have the right to remain anonymous? If they don’t give you the option of using a fake name or ID number, tell them you want to. Make sure that when you receive your honorarium your identity is still kept confidential.

☐ Who they work for and who is conducting the actual study? It’s important to know if the person distributing the study is the actual researcher conducting the study.

☐ Where you can contact them if you have further questions? If not, ask them for their contact information.
Research Vocabulary

Here are some common words that are often used by researchers that might help you better understand how a research study is being conducted.

Analyze: to examine something carefully and in detail so you can identify causes, key factors, or possible results of an event, behavior, issue, or experience.

Anonymity: the personal identity of a research participant is not known to the researchers.

Confidentiality: researchers do not share any of the information provided during the study with anyone, except those working on the research project who need to know. Researchers also don't share the identities of people they may have met, seen or spoken with, with anyone outside of the project.

Ethics: the principles that describe how a research project should be conducted. Universities, health authorities, and school districts typically have a strict set of guidelines that a researcher must follow to make sure research is done in ways that do not harm participants. Universities also have ethics boards that review a researcher's project and must approve it before the researcher can begin their study.

Findings: information (or data) that is discovered because of research.

Focus Group: a small group of people specially chosen to represent a wider population who are asked to talk about and share their opinions about a particular subject.

Honorarium: money or a gift in kind (for example, gift certificate) given to research participants as a way to compensate them for sharing their time, knowledge, and opinions with the researchers.

Informed Consent: when a person agrees to participate in a study after having been told about and understood the risks and benefits of participating.

Interview: a meeting where a researcher asks questions in order to find out a study participant's views or experiences. Sometimes, interviews are audio or video recorded. Other times, only written notes are taken. The researcher should tell you about how the interview will be conducted before you agree to participate.

Pseudonym: a false name used by a participant instead of their real name to keep their identity a secret.

Research:

Academic: research done for educational purposes that is completed by schools, universities, colleges, health authorities, or government agencies.

Market Research: the work of collecting information about what people buy and why.

Study Methods: the way that the study is being done. Common study methods include surveys, interviews and focus groups.

Survey: using questionnaires to investigate the opinions or behavior of a particular group of people.

Transcript: a written word-for-word copy of what was said during an interview.

Call Hebah Hussaina, Project Coordinator, at [redacted] or email: [redacted]

Dr. Mariana Brussoni, Principal Investigator, at [redacted] or email: [redacted]

Appendix B

Demographic Questionnaire

Please know that providing this information is voluntary and you do not have to answer any questions that you do not want to answer.

A. General background information

What month were you born in?:

- 1- January
- 2- February
- 3- March
- 4- April
- 5- May
- 6- June
- 7- July
- 8- August
- 9- September
- 10- October
- 11- November
- 12- December

What year were you born in?: ________________

Sex (your sex at birth):

- 1- Male
- 2- Female
- 3- Other, please specify... ________________
- 4- Prefer not to answer

Gender:

- 1- Male
- 2- Female
- 3- Non-binary person
- 4- Other, please specify... ________________
- 5- Prefer not to answer
What is your race/ethnicity?: (Please check the most appropriate answer)

○ 1- Arab
○ 2- Black
○ 3- Chinese
○ 4- Eastern European
○ 5- Filipino
○ 6- Indigenous First Nations, Métis, or Inuk (Inuit)
○ 7- Japanese
○ 8- Korean
○ 9- Latin American
○ 10- South Asian (e.g., East Indian, Pakistani, Sri Lankan, etc.)
○ 11- Southeast Asian (e.g., Vietnamese, Cambodian, Laotian, Thai, etc.)
○ 12- West Asian (e.g., Iranian, Afghan, etc.)
○ 13- Western European
○ 14- Other, please specify... _________________________
○ 15- Prefer not to answer

B. Outdoor Time in Schools

1. What are your regular school hours?: _________ to _________

2. How many hours a day do you usually spend outdoors DURING SCHOOL HOURS?

   1 □ None at all  2 □ About half an hour  3 □ About 1 hour
   4 □ About 2 hours  5 □ About 3 hours  6 □ About 4 hours
   7 □ About 5 hours  8 □ About 6 hours  9 □ About 7 or more hours

3. What activities do you do outdoors DURING SCHOOL HOURS? __________________________

4. How many hours a day do you usually spend outdoors OUTSIDE SCHOOL HOURS? (answer separately for weekdays versus weekends)

   Weekdays

   1 □ None at all  2 □ About half an hour  3 □ About 1 hour
   4 □ About 2 hours  5 □ About 3 hours  6 □ About 4 hours
   7 □ About 5 hours  8 □ About 6 hours  9 □ About 7 or more

   Weekend

   1 □ None at all  2 □ About half an hour  3 □ About 1 hour
   4 □ About 2 hours  5 □ About 3 hours  6 □ About 4 hours
   7 □ About 5 hours  8 □ About 6 hours  9 □ About 7 or more
5. What activities do you do outdoors OUTSIDE SCHOOL HOURS? 

6. How would you rate your overall level of mental health? Please circle the number that most accurately describes your level of health currently. On a scale of 1–5, where 1 is extremely poor and 5 is excellent.

<table>
<thead>
<tr>
<th>Extremely poor</th>
<th></th>
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<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
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Thank You!
Appendix C

Prompts for Participatory Photography Method

We would like to learn more about how you spend time outside in your school. Take photos using the following prompts. You may use the same photo for multiple prompts. **Remember to try not to get faces of people in your photos!**

Take a photo or photos of your favorite outdoor space(s) at school.

Take a photo or photos of places where you spend the most time outside during school hours (including breaks and lunch!).

Take a photo or photos of outdoor areas that you think are comfortable to spend time at.

Take a photo or photos of any outdoor activities that you like to do during school hours (including breaks and lunch!). Remember- try not to take photos of faces!

Take a photo or photos of outdoor places outside that are noisy or crowded during school hours (including breaks and lunch!).

Take a photo or photos of any natural features on or near school (such as trees, streams, or hills) that you appreciate.

Take a photo or photos of places in your school outdoor environment where you would like to spend time outside if you could.

Take a photo or photos of outdoor places that you think could be improved to better support mental health or well-being, such as with more art or plants.
Appendix D

Interview Guide for Youth Study Participants

Why is spending time outside important to you?
- PROMPT: How does spending time outside support your mental health?
- PROMPT: How does spending time outside at school make you feel?
- PROMPT: What are some of the benefits of spending time outside for you?

How often do you currently spend time outside during school hours?
- PROMPT: Is this enough time for you?
- PROMPT: How do you feel when you don’t have the opportunity to go outside during school hours?
- PROMPT: What affects your decision to go outside or not go outside on a certain day during school?

(In reference to photographs taken of outdoor areas):
- PROMPT: Referencing the photo prompts, tell me about the photographs. Why did you take a picture of those areas? What do they mean to you?
- PROMPT: Are there other places that are close by to your school that you would consider your school’s outdoor environment (i.e. recreation centre, coffee shop, fast food places)?

Does your school encourage you to go outside?
- PROMPT: If not, what do you think are the reasons why your school might not offer more opportunities for students to spend time outside?
- PROMPT: If so, what ways do they encourage you to go outside? Do you think a lot of students in the school take advantage of these opportunities?

How do you think schools could make it easier for students to spend more time outside during school hours?
- PROMPT: Are there any specific activities or environments outside of school that you would like to see incorporated into school time?
- PROMPT: In reference to the photos you have taken of the places where you would like to spend more time outside, can we do anything with those areas to increase your time outside?
- PROMPT: How do you think students, parents, and teachers could work together to support increased outdoor time in schools?

Were there any differences in your outside time during school when more COVID-19 protocols were in place?
- PROMPT: If so, what were the differences? (i.e. time, different types of activities)
Appendix E

Interview Guide for Youth Study Participants

Why is spending time outside important to you?
- PROMPT: How does spending time outside support your mental health?
- PROMPT: How does spending time outside at school make you feel?
- PROMPT: What are some of the benefits of spending time outside for you?

How often do you currently spend time outside during school hours?
- PROMPT: Is this enough time for you?
- PROMPT: How do you feel when you don’t have the opportunity to go outside during school hours?
- PROMPT: What affects your decision to go outside or not go outside on a certain day during school?

When thinking about your school’s outdoor environment, describe the following places. What do these places mean to you?:
- Your favorite outdoor space(s) at school.
- Where you spend the most time outside during school hours (including breaks and lunch).
- Outdoor areas that you think are comfortable to spend time at.
- Outdoor activities that you like to do during school hours (including breaks and lunch).
- Outdoor places outside that are noisy or crowded during school hours (including breaks and lunch).
- Any natural features on or near school (such as trees, streams, or hills) that you appreciate.
- Places in your school outdoor environment where you would like to spend time outside if you could.
- Outdoor places that you think could be improved to better support mental health or well-being, such as with more art or plants.
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- PROMPT: If so, what were the differences? (i.e. time, different types of activities)
### Supporting Youth Mental Health through Time Outside

#### Researcher Interview Field Note

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<th>Details</th>
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<td>Interview start time – end time</td>
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<td># of participants present</td>
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<td>General atmosphere / comfort level towards the end of the interview</td>
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<td>Did you get through all the questions? If not, what did you miss? Why did you miss it?</td>
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<td>Were there noteworthy comments or question from participants?</td>
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<tr>
<td>What is your general reflection / impression?</td>
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