The classroom in open air

Outdoor environmental learning in Vancouver parks

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Central to this project has been the participation of the many educators within the VSB who took time so generously within a particularly busy month of the school year to respond to our survey. Their thoughtful responses to our questions demonstrated the passionate commitment that teachers bring to their work. Without their feedback, the study would not have been possible. To the extent that this report offers helpful recommendations for actions going forward, it is thanks to the educators who described their experiences with outdoor environmental learning in parks to us. To them goes our immense appreciation.

Contents

Figures and tables

Figures

Tables

Executive summary

In recent years, concern has escalated over the recognition that children and youth have been spending less time outdoors, losing their sense of connection to nature.

Under the Access to Nature goal of the Greenest City Action Plan, as well as the Healthy City Strategy, the City of Vancouver and the Vancouver Board of Parks and Recreation have developed frameworks for encouraging residents to become more physically active, spend more time outside and engage with the City's ecosystems. Meanwhile, the B.C. Ministry of Education has published guidelines for the province's schools that weave outdoor environmental learning into subjects taught across the K–12 curriculum.

While the Park Board is aware that schools have been accessing Vancouver's parks to meet the ministry's curricular objectives, very little information has been available to date on the extent of these school trips, what activities occur in parks or which resources are most needed by educators. Likewise, we have had very little knowledge relating to educators' perceptions of the barriers that may stand in the way of outdoor environmental learning. Hearing the perspectives of Vancouver's educators has the potential to help the Park Board and its community partners develop supports that enable positive experiences for classes. In the long run, understanding school uses can also help inform the Park Board's stewardship over its lands, particularly natural areas that are ecologically sensitive under high impact.

Conducted over the spring and summer of 2018 for the Park Board's Planning and Research Department, this project is the first of its kind to investigate how K–12 educators within the Vancouver School Board (VSB) use the City's parks and what actions the Park Board and its community partners could take to support their efforts. Our study has examined which schools and grade levels use the parks, which parks are used most often (including natural areas), which subjects are taught in parks and what kinds of activities occur. We have also collected detailed feedback from participants on their satisfaction with their experiences, their assessments of park safety, barriers to outdoor environmental learning, and what resources educators desire.

Based on an online survey developed at the Park Board by Greenest City Scholar Naomi W. Reichstein and distributed via VSB channels to all educators working within public schools, the study generated complete responses from 76 participants working at 47 different schools and programs, followed by semi-structured telephone interviews with 4 of the participants. Our findings indicate that teachers across Vancouver are conducting outdoor environmental learning in parks, with a majority (72%) of survey participants working at Eastside schools. Of the parks under the Park Board's jurisdiction, Trout Lake, Stanley Park and Jericho

Beach Park are the most commonly accessed for outdoor environmental learning. Among natural areas, Stanley Park, Jericho Beach Park and Renfrew Ravine Park receive high school use relative to other parks (both natural and recreational) managed by the Park Board. We find that secondary school teachers who use parks in education teach a variety of subjects, most commonly STEM courses, but also humanities and physical education. From data collected, our analysis suggests that outdoor environmental learning in school contexts may spike in the early primary years (K–1) and Grade 10 while dipping in the middle years of Grades 4, 7 and 9; however, further research is needed to support this conclusion. Classes most often visit parks in group sizes of 10–29, with nature walks, species identification, unstructured play and fitness activities featuring prominently as activity choices.

Overall, participants expressed positive views on outdoor environmental learning and on parks as sites for this type of education. The majority described themselves as "satisfied" or above with their experiences in Vancouver's parks. Convenience and closeness of parks to schools were the factors most commonly identified by participants as the reasons underlying their satisfaction; conversely, distance was identified as a barrier. While a strong majority considered the parks as "safe" or "very safe," participants also identified a variety of safety concerns, most notably the difficulties of supervising large groups in public spaces.

A robust finding from the study is that educators wish for a stronger knowledge base from which to deliver outdoor environmental learning. They identified lesson plans, professional development and maps as the resources they most desired.

The rich feedback from participants leads us to a variety of actionable recommendations for the Park Board, its community partners and/or other agencies. Educators emphasized that they would welcome more diversified and plentiful professional development opportunities including workshops, suggested lesson plans tied to the ministry's prescribed learning outcomes (PLOs), leadership in ecological spaces by trained experts and a variety of materials available online, such as mapping tools and facts on the natural features, species and potential hazards of each park.

Comments from participants also underscored infrastructural concerns relating to safety and maintenance. Stepped-up dog bylaw enforcement; addressing conflicts between school use and homelessness in parks; cleanup of hazardous litter; and the provision of safe, accessible, well-maintained washrooms all came up as important conditions for educators to feel comfortable bringing large groups of young people into these valued shared spaces.

Introduction

In recent years, the rise of environmental awareness has brought increased public recognition of the pressing ecological challenges posed by climate change and threats to species survival. Despite this rise in general knowledge, however, ample evidence suggests that children and youth are both becoming more sedentary and spending less time outdoors, losing a sense of connection to nature.

Outdoor environmental learning, frequently also known as outdoor education, is a means of fostering ecological knowledge that encourages students both to know more and to *care* more about their natural surroundings. This area of learning has its origin both in the wish to increase environmental awareness and in the desire to engage children with nature. Richard Louv, author of the influential book *Last Child in the Woods* (2008), has coined the term "nature-deficit disorder" to refer to "the psychological, physical and cognitive costs of human alienation from nature, particularly for children in their vulnerable developing years" (2009).

Within this context, the B.C. Ministry of Education has published new guidelines for the province's schools that encourage engagement with the outdoors in subjects across the K–12 curriculum.

The Vancouver Board of Parks and Recreation is aware that schools have been accessing Vancouver's parks to meet the ministry's curricular objectives. To date, however, very little information has been available documenting the extent of these school trips to our urban parks, the kinds of learning activities conducted or the resources desired by educators. Likewise, we have had very little information relating to educators' perceptions of the barriers that may stand in the way of outdoor environmental learning.

Hearing the perspectives of Vancouver's educators on their use of urban parks is of keen interest to the Park Board. The more we know about how educators perceive and use parks, the resources they currently access and the challenges they encounter in applying this type of education, the better the Park Board and its community partners can develop supports to make these experiences easier and more rewarding for educators and their students. Understanding the extent and nature of use can also help the Park Board develop practices to ensure stewardship of the lands within its jurisdiction, particularly natural areas that are ecologically sensitive under high impact.

During the spring and summer of 2018, the Planning and Research Department of the Park Board appointed Greenest City Scholar Naomi W. Reichstein to design, conduct and report on a study surveying educators working within the Vancouver School Board (VSB), which holds jurisdiction

over all the City's public schools. The purpose of this study – the first of its kind targeted to VSB teachers – has been to hear how K–12 educators use City parks presently and what could be done to support their efforts further. The study has been based principally upon an opt-in online survey developed at the Park Board and distributed chiefly via VSB channels to all educators working within the public school system.

In this report

In this report, we present the study's background, first by establishing a working definition for outdoor environmental learning. We situate the study both within the educational context set by the Province of B.C. and within the municipal context of the goals and strategies of the City of Vancouver and the Vancouver Park Board. We then summarize a literature review, including a sampling of how other North American cities leverage parks to help school systems meet curricular needs. We wrap up the background by articulating what we know to date about school park use in Vancouver, drawing attention to knowledge gaps up to the point of our own study.

Launching into a discussion of the study itself, we review our research approach and methods and look at the study's challenges and limitations. We present and analyze our findings, exploring what the survey reveals about teachers' use of parks, their experiences and their feedback.

Our survey questions and our findings focus on:

Who uses the parks

Distribution of use by school, geographic location, school type (elementary, secondary and other), K–12 grade level, and subject areas taught by secondary school educators

Which parks are used

Reported uses of both natural areas and recreational parks

How parks are used

Class activities and subject areas, frequency of use, class sizes, supports received

Participants' feedback

Levels of satisfaction with outdoor environmental learning in parks, perceptions of safety, assessments of barriers and the kinds of resources educators would like to have

We conclude this report with recommendations by which the Park Board, its community partners and/or other agencies have the opportunity to enhance uptake of outdoor environmental learning in Vancouver's parks and support educators in reducing barriers to make these experiences as enjoyable and rewarding as possible.

Background

Scope and definition: What we mean by “outdoor environmental learning”

Both in determining the scope of the study and in conducting background research, we discovered considerable fluidity in the definitions surrounding environmental learning. As others have noted, no universally agreed-upon term encompasses this educational field (Government of Canada, 2002, p. 1; Caner, 2009, pp. 2– 4; Chen et al., 2018, pp. 5–6 ; Sandhu et al., 2018, pp. 2–3). Teachers and researchers use various words to refer to the field in evolving, often overlapping ways. For this reason, we conducted our background research with search terms including “outdoor education,” “outdoor learning,” “nature play,” “environmental education,” “environmental learning” and “sustainability education.” As these terms are used in different ways across contexts, we applied them all to capture as much relevant material as possible.

Often these terms have commonalities in meaning without being completely interchangeable. For example, “outdoor education” shares an environmental slant with the other terms, but for some people, it can also include structured outdoor sports such as ropes courses and training in camping skills. “Sustainability education,” meanwhile, encompasses not only outdoor activities but also *indoor* programming on waste management, low-energy use etc. “Nature play” refers both to unstructured play within a natural setting and a certain type of naturalized playground serving as an amenity (Linden & Barbarasch, 2012, p. 5). Moreover, as a concept, “nature play” overlaps with both “outdoor learning” and “outdoor education” in its emphasis on access to nature, but it often has more the implication of unstructured engagement with a space.

For our own project, we have chosen the expression “outdoor environmental learning.” We use this term because our research focuses on education that both concerns natural processes and *itself* takes place in outdoor settings. Activities of interest can include science experiments, nature walks, species identification, urban forestry and restoration, biodiversity and ecology, use of natural materials, cultural learning, outdoor sites or materials used in art projects, literature or creative writing concerning the outdoors and so on.

Locationally, we are specifically interested in outdoor environmental learning that takes place in parks under the jurisdiction of the Vancouver Park Board, so that recommendations can be actionable under Park Board programming. At the same time, we recognize that many educators, like residents in general, may not always necessarily know the jurisdictional status of every park site (namely, municipal versus regional parks). This potential for confusion posed a methodological challenge for our survey design, discussed later in this report.

We intended to exclude from this research activities falling outside the scope of outdoor environmental learning in Vancouver's parks. Activities we attempted to omit included sports, activities in schoolyards such as gardening or food-growing, and education either delivered indoors (e.g., lectures on coyotes) or relating to the indoors (e.g., energy conservation or recycling within schools). Recognizing that the boundaries among some of these learning activities had the potential to seem blurry to survey participants, we made every effort to frame questions so as to make our research focus as clear as possible. That said, a number of participants reported using Vancouver's parks for multiple purposes, including recreation and fitness as well as outdoor environmental learning. We include this feedback in our report, as it is beyond the scope of our study to disaggregate the data completely.

Educational context

To articulate its high-level goals for this field of learning, the B.C. Ministry of Education has published *Environmental Learning and Experience: An Interdisciplinary Guide for Teachers*. This guide outlines overarching principles for delivery of environmental learning across curricular subject areas. The guide embraces the **experiential learning cycle** as an appropriate principle for weaving environmental learning into the curriculum. By this model, students move from ***direct experience*** of the environment through ***critical reflection on their own experiences as compared to those of others***, to ***conceptualization*** of ideas and ***negotiation*** over differences of opinion and evaluation of their own ideas as compared to those of others (B.C. Ministry of Education [BC.Ed.], 2007, p. 9).

The Ministry prescribes the C.A.R.E. model for designing environmental learning. C.A.R.E. is a mnemonic encompassing four aspects of environmental knowledge (BC.Ed., 2007, pp. 11–15):

C (Complexity)

Nature's systems are interrelated in complex ways. Human-created systems and their interactions with natural systems are complex as well.

A (Aesthetics)

Environmental learning includes appreciation of nature's beauty and fosters students' capacity for aesthetic awareness.

R (Responsibility)

Students become mindful of the environmental consequences of human choices and explore long-range solutions.

E (Ethics)

Students develop values and critical thinking that enable responsible decision-making about environmental concerns.

To offer practical guidance on implementing environmental learning across subjects and grade levels, the ministry has published a separate document called *The Environmental Learning & Experience Curriculum Maps: Environment & Sustainability Across BC's K–12 Curricula.* This guide links B.C.'s K–12 curriculum to the C.A.R.E. model grade by grade, showing teachers how they can weave environmental learning into classroom subjects, which the ministry calls Integrated Research Packages (IRPs). The guide links each IRP to a prescribed learning outcome (PLO) relating to sustainability and the environment. For example, for the Grade 1 IRP in Social Studies, the guide includes PLOs where students "identify characteristics of different environments" and "demonstrate responsible behaviour in caring for their immediate and school environments" (BC.Ed., 2008/2009, p. 16). Another example: for Grade 7 Mathematics, the guide suggests setting real-world applications within the context of sustainability and environmental issues (BC.Ed., 2008/2009, p. 28). While the curriculum maps link IRPs to environmental and sustainability PLOs, they leave decision-making on particular activities to teachers' discretion.

For specific activities, a guide called *Get Outdoors!* that recommends projects has been published by WildBC, an environmental education program of the Habitat Conservation Trust Foundation (Staniforth). Published under the logos of the Province of B.C., BC Parks, WildBC, Parks Canada, Metro Vancouver and the B.C. Ministry of Education, the guide offers advice on stewardship and how to overcome common barriers to outdoor environmental learning. It focuses on protected areas (namely provincial, national and regional parks), although a number of the suggested activities could transfer to municipal parks as well, and they link to ministry learning goals.

Alignment with City and Park Board policy and strategy

This project supports key policies and strategies in place at the City of Vancouver and the Park Board relating to the environment, education, human health and social wellbeing.

Greenest City 2020 Action Plan: Access to Nature

This research supports the "Access to Nature" goal, one of 10 overarching objectives set out in the Greenest City Action Plan (GCAP). This goal holds that improving access to green spaces such as parks, community gardens and greenways can help build community and improve residents' health. Targets for 2020 include ensuring that every Vancouverite lives within a 5-minute walk of a park, greenway or other green space and planting 150,000 new trees (City of Vancouver [COV] GCAP, 2015, p. 33).

Healthy City Strategy (2015)

This project supports both the "Active Living and Getting Outside" and the "Environments to Thrive In" goals of the Healthy City Strategy. The Active Living and Getting Outside goal connects with the Access to Nature goal of the GCAP while aiming to increase residents' physical activity. This project is also consistent with objectives within the Healthy City Strategy that relate to drawing on public space to enhance social inclusion and enhance civic involvement, particularly "Cultivating Connections" and "Being and Feeling Safe and Included."

Park Board Strategic Framework (2012)

The project supports a variety of key components in the Park Board Strategic Framework, which serves as a guiding document outlining the Park Board's mission, vision, directions, goals and objectives. In particular, the research supports the "Green Education & Advocacy," "Enhanced Participation & Active Living" and "Active Community Participation" objectives.

Rewilding Vancouver from Sustaining to Flourishing: An Environmental Education & Stewardship Action Plan, Vancouver Park Board (2014)

The guiding document of the Park Board and the City for linking environmental education with stewardship sets priorities on creating opportunities for people to have rich experiences with nature in the City's wild spaces while protecting and enhancing these spaces; bringing nature into residents' daily experiences by integrating it back into public spaces and places; and outlining a leadership role for the Park Board in serving natural spaces and the people engaged with nature.

Biodiversity Strategy, Vancouver Park Board (2016)

Presenting a goal, a target, objectives and actions for supporting biodiversity in parks and on public and private lands across the City of Vancouver, the Park Board's Biodiversity Strategy creates a basis for protection and restoration of natural habitats such as forests, wetlands and shorelines. Our project supports the Biodiversity Strategy by addressing students' appreciation of the varied species in our urban landscape.

Urban Forest Strategy (2014, in revision 2018)

Premised on the principle that every tree is a part of the urban forest, the Urban Forest Strategy sets a goal for the City of Vancouver of planting 150,000 trees by 2020. Our project supports the strategy by encouraging students' knowledge of tree species and conservation.

Vancouver Bird Strategy (2015)

The project supports two goals of the Vancouver Bird Strategy: enhancing access to nature (part of the overall GCAP) and enhancing awareness of the importance and needs of birds.

Literature review and background research

As background to designing the study, the Greenest City Scholar conducted a literature review and online research on the benefits of outdoor environmental learning and how the education field uses parks to meet learning objectives. The research encompassed various subtopics:

- Benefits of outdoor environmental education
  - Physical and mental health
  - Global citizenship and prosocial behaviour
  - Environmental awareness
- Nature play areas
  - Design
  - Ecological impact
- Park-based educational programs: Cases
- Outdoor environmental learning in B.C. and Vancouver: What we know

The online search covered articles from mainstream news and more specialized blogs; documents published by local governments, park boards, public agencies and nonprofits; and academic literature. For cases showing how park authorities collaborate with schools to provide programming, the Scholar sought models from cities comparable to Vancouver in climate or in the scale of their parklands. This report includes examples of programs from Seattle, the San Francisco Bay Area and New York City.

Physical and mental health benefits

Ample literature demonstrates consistently that outdoor play, particularly in natural environments, offers benefits ranging widely across the physical and mental health spectrum.

Outdoor play in natural or naturalized spaces correlates with increased physical activity, offering the potential to reduce obesity in childhood; it also allows for more diverse forms of play (Herrington & Brussoni, 2015, p. 477). Natural elements incorporated into school playgrounds have been shown to boost development of fundamental motor skills, in particular locomotor and stability skills (Lim et al., 2017, p. 1279).

Access to nature is important for mental health as well. In the first study to examine the effects of natural risky play environments on children's health and wellbeing (p. 148), Brussoni et al. (2017) revealed that enhancing childcare outdoor play environments with natural affordances was associated with reduced depressed affect and reduced antisocial behaviour, as well as increases in play with natural materials, independent play and prosocial behaviour (p. 139). A study by Chawla et al. (2014) of green schoolyards in Maryland and Colorado showed that engagement with natural areas could help students reduce stress and promote "protective factors for resilience" by enhancing their supportive relationships and sense of their own competence (p. 1). This study took place in contexts including a wooded area for recess at an elementary school (ages 6–12), an outdoor classroom for older elementary school students (ages 9–13) and gardening programs for high-school students (ages 14–18) (Chawla et al., 2014, p. 1).

Time spent outdoors associates with attentional benefits. A Norwegian study following 562 preschoolers for four years showed a positive correlation between outdoor hours and attention scores and an inverse (that is, negative) correlation between outdoor hours and symptoms of inattention or hyperactivity (Ulset et al., 2017, p. 69).

A prominent theme in the field of child development has to do with the value of risky play. Today's social norms are widely regarded as risk-averse, especially where it comes to children's engagement with public space. A substantial body of literature points to the need for play that hinges on children's love of danger, challenging them to build confidence by embracing challenge and excitement. Forest school, a form of play-based outdoor classroom that originated in Europe and became adapted in North America into outdoor programming, can promote risky play. Forest schools, Harper (2017) has argued, offer children the opportunity to explore the experience of risk with minimal actual danger (p. 320).

As an alternative to the "risky play" framework, Gurholt and Sanderud (2016) have proposed the idea of "curious play," whereby children are "designers" of their own life-worlds, using play, movement and other activities to create meaningful conceptions of the landscapes around them (p. 321). In their study, imaginative curiosity and engagement with nature appeared to be more primary motivators than attraction to risk and danger (Gurholt and Sanderud, 2016, p. 325).

Global citizenship and prosocial behaviour

Outdoor experience is associated with the values of global citizenship and working collaboratively toward a better future. As Haas and Ashman (2014) observe in their study conducted in Tasmania, Australia, global education in general "is informed by progressive worldviews such as transformative learning and ecopedagogy, a view advocating for all living and non-living elements of the planetary ecosphere" (p. 22). Haas and Ashman (2014) situate their discussion within the context of experiential nature play, which is "open ended and child-initiated, with children setting the agenda and choosing the materials" (p. 22).

Interestingly, evidence suggests that global responsibility and citizenship also align with prosocial behaviour at the personal level. In Haas and Ashman's (2014) study, nature play in kindergarten was associated with an increase in teamwork, mutual support and interaction; strengthened child–child, child–adult and child–environment relationships; and enhanced physical, attentional and classroom capabilities and more peaceful attitudes (p. 26). A Vancouver-based study linked the experience of a high-school camping trip to perceptions by students that outdoor education enhanced social inclusion and leadership, particularly within the context of working together as a team to achieve results (McKeown, 2014, pp. 24–25).

Environmental awareness

A clearly documented benefit of outdoor environmental learning is the knowledge of sustainability, conservation and ecology that arises from it. Studies show that students need direct contact with nature to appreciate ecological realities. Research with Year 6 and 7 students (approximately 10–11 years old) in Adelaide, Australia suggested that students had to experience wild nature in order to develop a realistic sense of where animal and plant species were located in the environment (Francis, Paige & Lloyd, 2013, p. 20). Students' levels of concern about contemporary ecological challenges were also linked to their own experiences with natural contexts (Francis, Paige & Lloyd, 2013, p. 26).

In a study conducted in Sweden, Beery and Jørgensen (2018) have linked nature play with rich sensory experience and the enhancement of appreciation of biodiversity in environmental education. They argue specifically that the childhood experience of collecting natural objects has a role to play in helping children gain understanding of biodiversity (p. 13).

Nature play areas

An increasingly popular approach to encouraging children's engagement with the outdoors is the designation of "nature play areas," often in the form of playgrounds constructed with natural materials in urban or suburban areas. As Adam Bienenstock, designer of Vancouver's first natural playground (at Grandview Elementary School) has described, such playgrounds typically feature five elements: rolling topography, boulders, logs, pathways and large trees and shrubs (McGinn, 2017). Alternatively, a nature play area can be a recreational space set off and designed within a protected parkland that allows families to obtain a sense of the park's ecology within a short amount of time (Hughes, 2016, p. 35).

A significant portion of the literature on nature play areas focuses on the links between design and the psychology of imaginative, adventurous play. Relative to traditional playgrounds, nature play areas are less prescriptively designed with regard to how children engage with space. Herrington and Brussoni (2015) argue that natural play spaces are "among the most versatile venues for strengthening the link between children's health and development and play" (p. 478) and that such spaces support play in diverse forms, including risk-taking (p. 480). These spaces draw on the "seven Cs" approach to playground design that promotes diverse play (Herrington & Lesmeister, 2006; Herrington, Lesmeister, Nicholls et al., 2007). The seven Cs are not specific design features but rather qualities of a play area: character, context, connectivity, change, chance, clarity and challenge (Herrington & Brussoni, 2015, pp. 479–480). Brussoni et al. (2017) have shown that introducing the seven Cs to play areas correlates with a variety of psychological benefits including prosocial behaviour among young children.

A small but emerging body of literature points to the significant environmental impact of children's activity on designated play spaces within protected areas. This literature is helpful for municipal parks as well because it offers implications for stewardship of ecologically sensitive places that school groups visit often. An exploratory study by Browning, Marion and Gregoire (2013) of three play areas in Virginia, Illinois and North Carolina (p. 105) indicated significant impacts on soil and groundcover, trees and shrubs (p. 109), with measurable environmental damage occurring 33% of the time that children played in these areas (p. 104). Impacts on vegetation were more severe than impacts on soil or from litter (Browning, Marion & Gregoire, 2013, p. 111). The study found that boys and smaller group sizes were associated with impact most frequently (Browning, Marion & Gregoire, 2013, p. 110). Emphasizing the need to balance ecological costs against the benefits of nature play, the authors recommend strategies including impact-resistant sites, improvements to site resistance, low-impact practices and adaptive management (Browning, Marion & Gregoire, 2013, p. 104).

In recognition of the rising prevalence of nature play areas in a variety of urban, suburban and protected area contexts, guidelines have emerged from the U.S. on their creation and management. In 2014, the Natural Learning Initiative (NLI) and the National Wildlife Federation co-published national guidelines (Moore, 2014). This guide covers the siting, design, risk management and impact (including ecological) of nature play areas in a wide range of settings from school grounds and zoos to state and federal lands, with recommendations and case studies. While the guide emphasizes the value of nature play areas in fulfilling "educational missions focused on conservation, health, stewardship, and multidisciplinary learning" (Moore, 2014, p. vii), it focuses on links among playscape design, children's developmental needs and different types of educational sites rather than on the curricula of particular school systems (Moore, 2014, pp. 24–29, 35–51, 57–65). Geared to the U.S. context, it discusses the roles of city, county and regional parks in the siting and stewardship of nature play areas (Moore, 2014, p. 55).

Closer to home within the Cascadia region, the Tualatin Hills Park & Recreation District, Oregon's largest special park district (THPRD), located in the Beaverton area, has published its own guidelines on nature play areas. These guidelines include recommendations on siting and management, with information on natural resource concerns affecting wildlife and erosion (Linden & Barbarasch, 2012, pp. 6–9). While the document briefly recommends outreach to schools as potential partners (Linden & Barbarasch, 2012, p. 19), it focuses more on play than on educational activities initiated by teachers.

This literature on the environmental impact on nature play areas situated within parks is helpful to municipal park boards, as it can help inform stewardship decisions for high-use areas.

Park-based educational programs: Cases

While plenty of information exists on programs available to educators and on recommended activities, there is a significant data gap continent-wide where it comes to understanding how teachers actually engage with public parks and the roles played by parks in enabling these activities. One challenge to our online search was the breadth of interpretation given to what the word "park" means. Online information included federal lands (both Canadian and U.S.), provincial and state parks, regional and county parks, and municipal parks. Since information on teachers' uses was scarce to begin with, it was difficult to tease out information on municipal parks from other types in relation to outdoor environmental learning.

The following cases offer examples of partnerships where municipal, regional or national park authorities collaborate with schools to foster outdoor environmental learning linked to K–12 systems and curricula.

Green Seattle Partnership (GSP)

An urban parks initiative that involves area students in stewardship, GSP is a collaboration among the City of Seattle, Forterra as a corporate partner and a variety of community groups, nonprofits, businesses, schools and volunteers. GSP supports ecological restoration and outdoor learning while concurrently promoting social equity. Data reported from January 2014 to May 2015 included these highlights (Yadrick, 2015):

- GSP worked with 35 Seattle public and private schools in 31 parks
- Students worked 11,009 hours on weed removal and forest planting and maintenance (amounting to 15% of GSP volunteer hours)
- GSP helped sponsor 56 public education / training events for students and adult continuing education (2014)

Among its programs, GSP has an Urban Forestry Project (UFP) in which K–12 students train on stewardship and restoration projects. Teachers can use the UFP toward curriculum requirements in subjects including STEM, history or social studies. For 2014–2015, the GSP reported the following UFP metrics, among others (Yadrick, 2015):

Engagement

- 68 events involving 8 parks, 9 schools, 18 teachers and 1,329 students

Learning

- 85% of teachers said that UFP helped their students increase their understanding of the city's forest ecology and become likelier to volunteer to restore the forest in future
- 92% of teachers said that UFP helped their students learn tangible skills in restoring the city's forest

Equity

- 79% of students in UFP were people of colour

San Mateo Outdoor Education, California

In the Bay Area, this program operated collaboratively by the San Mateo County Office of Education, local schools and the San Francisco YMCA Camp at Jones Gulch offers environmental education. Each year, 5,500 5th and 6th grade students bring their own sleeping bags to heated cabins in the redwood forest of the Santa Cruz Mountains. Both the academic program and the camp have certification as Resident Outdoor Science Schools (ROSS) from California Outdoor School Administrators (COSA). The curriculum explores the ecological concepts of adaptation,

change, communities/ecosystem, cycles, diversity, energy and interdependence. The program has operated for over 49 years (San Mateo County Office of Education).

San Francisco Bay Area National Parks Science and Learning

The national parks in the Bay Area and their partners provide assets to support educators in teaching students about science, land management and resources. Assets include educational modules, curricula, educational materials, online games, lesson plans and more (San Francisco Bay Area National Parks Science and Learning). For example, the Point Reyes National Seashore offers a free curriculum guide series for middle-school students called Creating Coastal Stewardship through Science, offering hands-on learning experiences that encourage students to develop capacity for observing natural processes. Specific topics include ule elk, California quail, Pacific gray whales, northern elephant seals and the San Andreas Fault. Activities link to the California and National Science Standards (National Park Service).

Urban Park Rangers Natural Classroom, New York

NYC Parks, the parks authority of North America's largest city, offers K–8 teachers a 1.5-hour classroom taught by the city's park rangers, exploring the urban natural environment and its ecosystems. Thirteen customizable programs are tailored to meet Department of Education standards. Topics range from climate change and water quality to species-focused subjects on birds, fish, insects and more. Natural Classroom offers programming on cultural heritage as well, with sessions on historic architecture and Native American history (New York City).

The Vancouver Park Board itself works with a variety of community partners to deliver outdoor programming to students, among them:

Stanley Park Ecology Society (SPES)

An independent nonprofit, SPES serves as a key partner in educating thousands of people through schools and public programs, as well as leading volunteer initiatives relating to habitat restoration and wildlife monitoring. SPES leads school field trips including park-based trips, classroom-based programs, overnight camping in Stanley Park and the Coyotes 101 program. These hands-on school trips link to the B.C. Ministry of Education science and social studies curricula and meet the framework set out in the ministry's *Environmental Learning and Experience* guide (SPES).

Everett Crowley Forest Restoration and Outdoor Learning Project

In one of the City's largest natural areas, the Park Board has collaborated with the Everett Crowley Park Committee, CityStudio Vancouver and SFU Semester in Dialogue to build an outdoor learning space at the park. The space is open to all, including school groups (COV Everett Crowley).

Outdoor environmental learning in B.C. and Vancouver: What we know

Backing up into history

A retrospective to the era when the City of Vancouver was working to obtain land for parks and schools reveals that the City envisioned a two-way relationship between them. The City deliberately designated parkland near or adjacent to schools to give students access to playfields and other amenities that would supplement limited schoolyard space. In turn, the City fully expected and planned for the neighbourhoods to share the schoolyards for community use, a policy that remains in place to this day.

In October 1946, the Vancouver Town Planning Commission (which became the present-day Vancouver City Planning Commission in 1972) published a report on the relationship between parks and recreation and Vancouver schools. In this document, the City advocated not only for the provision of an "ample play area" adjoining each school but for the acquisition of an "additional area" around the school grounds to serve adult recreational needs (Vancouver Town Planning Commission [VTPC], 1946, p. 8). The City considered schoolyards and parks as serving both complementary and mutually supportive functions: "Because of the close relationship between school and park facilities, it is only logical that they be studied as a unit" (VTPC, 1946, p. 8). With regard to neighbourhood parks, the document advises that "The neighborhood parks should be more intensively used than any other type of area, especially if they are combined with elementary school grounds," and that they "should contain play facilities for the children" along with sports amenities (VTPC, 1946, p. 13). Thus the City anticipated that the schools would use the parks, even as planners also advocated for enlargement of school grounds where possible.

Indeed, the City regarded the overlap between park and school lands as a goal. The report comments, "There are now a few instances of combined school grounds and neighborhood parks. The majority of these are in the western part of the city. The city already realizes the advantages of such combinations, and the policy should be expanded in the future" (VTPC, 1946, p. 20). The report refers to numerous negotiations between the Park Board and the School Board (as the VSB was then called) to create school–park adjacencies, many of which remain today. Examples include Connaught Park and Kitsilano Secondary School (VTPC, 1946, p. 35), Templeton Park and Templeton Secondary (VTPC, 1946, p. 40), Trafalgar Park and Trafalgar Elementary

(VTPC, 1946, p. 42), Montgomery Park and Sir William Osler Elementary (VTPC, 1946, p. 42), Killarney Park and Killarney Secondary (VTPC, 1946, p. 41) and others.

Returning to the present

Despite Vancouver's deliberate siting of schools near parks in the past, and despite the B.C. education ministry's present-day curricular encouragement of outdoor activity, a significant shortage of information subsists on how schools in Vancouver (and B.C.) actually use parks in everyday practice, especially for outdoor environmental learning.

Data on field uses for sports and recreation

The Park Board possesses some data on the VSB's use of fields for outdoor sports and recreation. Field rentals are recorded on ActiveNet, an online application used by the Park Board to register community members in events and programs held at parks and community centres. Where it comes to park field uses by schools for outdoor sports and other recreational activities, the Park Board has an agreement in place with the VSB that schools may access any Park Board grass facility during school operating hours up to 5:00 pm without a permit. Because of this agreement, usage information on ActiveNet is limited. For larger-scale events such as sports days, track meets, soccer tournaments and cross-country races, the Park Board requests that schools obtain permits, as these types of activities have more impact on park fields, given the larger numbers of participants. According to Park Board sources, nearly every VSB elementary school hosts a sports day in May or June that consists of a series of relay-race types of stations. These events occur either in VSB facilities or on Park Board fields. To arrange these events, the Park Board connects with the VSB athletics coordinator rather than with individual schools. Teachers, school administrators and other stakeholders such as the Vancouver Police Department also take out various individual permits to run events in partnership with the VSB.

Data on uses for outdoor environmental learning

Where it comes to knowing how VSB schools use parks for outdoor environmental learning, the data gap is even wider. Very little research has addressed children's access to parks within school contexts locally, provincially or even nationally, and the information that does exist is fairly piecemeal. As of 2005, Sanderson noted the "lack of a recent comprehensive survey of B.C. outdoor education" (p. 8), and McKeown (2014) has pointed out the shortage of knowledge adapted to the Canadian context on the impact of outdoor education upon participants (p. 11).

Studies to date on the B.C. and Vancouver context

Two B.C.-wide studies linking teacher activities to outdoor learning occurred in the preceding decade, focusing on the state of outdoor learning in the province at that time. Sanderson's (2005) study of Grade 4–7 classroom teachers from mostly public schools across B.C. (pp. 19–21) explored the factors – described as "bridges" and "barriers" – that respectively enabled or hindered outdoor learning (p. 2). The study aimed to guide policy and professional development within the education system to strengthen bridges and reduce barriers to outdoor learning (Sanderson, 2005, p. 2). Of the 120 participants, 73 were from the GVRD and 39 from Vancouver (Sanderson, 2005, pp. 19, 25, 26). The strongest bridges identified were as follows (Sanderson, 2005, p. 56):

1. Social gains
2. Mental health gains
3. Physical health gains
4. Student interest
5. Academic interest

Meanwhile the strongest barriers were:

1. Legal liability
2. School funding
3. Students' costs
4. Student safety concerns
5. Curriculum time restraints

In 2009, Caner's study of outdoor learning in 59 out of 60 public school systems across B.C. provided a status report that documented activities and programs conducted in each district and identified inadequate funding, legal liability and lack of time during the school day as common barriers (p. ii). Of the 250 study participants, 12 were from Vancouver (6 teachers and 6 administrators) (Caner, 2009, pp. 120–121).

A recent study focusing on five elementary school districts across B.C. reported a low number of natural elements in schoolyards relative to built components (Lim, 2017, p. 1279). Meanwhile, McKeown's (2014) Vancouver-based exploratory study of one group of students from a private high school on a camping trip linked outdoor learning with youths' perceptions of social benefits (friendship, team-building and leadership), development of practical outdoor skills and increased knowledge of environmentalism and conservation (pp. 25–26).

Thus to our knowledge, until this time no comprehensive study has ever focused on the use of Vancouver's urban parks by public school teachers, and very little research on this topic extending to the rest of B.C. has occurred at all within the present decade.

Studies conducted by the Park Board

The Park Board itself has initiated research on the relationship between environmental learning and the amenities under its jurisdiction.

Place-based environmental education (PBEE) and fieldhouses

In 2014, Greenest City Scholar Rachel Roy conducted research on the potential to use fieldhouses owned by the Park Board as sites for place-based environmental education (PBEE). Fieldhouses are buildings located adjacent to playfields or other amenities in parks. In general, place-based education is an approach that promotes the view of local communities as primary resources for project-based and experiential learning emphasizing real-world applications and enhanced sense of place. When combined with environmental learning, place-based education focuses on reconnecting people to nature and ecosystems.

In her study, Roy examined the potential of fieldhouses to serve PBEE, recommending next steps toward implementation, pilot project(s) and budgeting. Detailing the inventory of fieldhouses on Park Board lands, Roy (2014) looked at models for their potential to serve PBEE (pp. 22–25). She also identified potential partners for delivering PBEE within the context of the B.C. curriculum, including environmental organizations, CityStudio, community centre associations, Faculty of Education programs at UBC and SFU, the VSB, First Nations and others (Roy, 2014, pp. 18–19). While the study did not focus on assessing the level of PBEE park use by teachers, Roy (2014) observed more emphasis on early childhood education than on high-school programming among environmental organizations delivering PBEE in the area at the time (p. 18).

Community centres

The City's community centres have provided a different subject for Park Board study. In 2018, students in PLAN 425, Urban Planning and Concepts, at the School of Community and Regional Planning (SCARP) at the University of British Columbia performed a study through the CityStudio program on the Park Board's behalf to investigate the state of environmental education (called EE in the study) offered by community centres. Though under the Park Board's jurisdiction, the community centres are managed by autonomous nonprofit neighbourhood-based associations, so that programming can differ markedly from centre to centre. The purpose of the project was to assess the state of EE offered by the centres and the challenges faced by the centres in delivering this type of programming, to enable the Park Board to provide appropriate support.

From the five reports arising from this research, several predominant themes emerged. One was that the centres varied widely in their level of proximity to green spaces accessed in the course of EE, whether these were parks, beaches or grounds of their own. Demand for EE programs varied across neighbourhoods and centres, with some communities showing strong commitment to sustainability and others more interested in academic and/or arts programming. Another major theme was the desire of centres to increase partnerships with external groups for delivering EE.

The community centre project did not focus on teachers, but the feedback collected sheds some light on the relationship between schools and community centres in relation to EE. While most schools have very limited or no involvement with EE at the centres at present, some study participants at the centres identified schools as potential partners in delivering cost-effective environmental programming and recommended greater collaboration between centres and schools. In one case, Renfrew Park Community Centre identified Nootka Elementary School as being already one of three "major partners" in delivering EE (Athans et al., 2018, p. 15). Another helpful recommendation was the possibility of extending EE programming at community centres from preschool groups to school-age children and youth, though specific roles envisioned for schools were unspecified (Brennan et al., 2018, p. 10; Hulme et al., 2018, p. 6).

Research approach and methods

Survey design

The Greenest City Scholar designed the online survey on the City of Vancouver's SurveyGizmo platform in collaboration with the Planning and Research Department of the Park Board. The survey was made available to all educators working within the VSB system.

Content and review

The survey was opt-in and contained a variety of questions relating to the schools, grade level(s) and subjects taught by participants; which parks participants used in their teaching; what types of activities they typically led in parks, with how many students and with what types of supports; and what further resources they needed to support their work. The survey also asked participants to rate their levels of satisfaction with their experiences in parks and their assessment of park safety for outdoor environmental learning. While many of the answers were multiple-choice (e.g., checkboxes or radio buttons), others had textboxes allowing participants to answer in their own words. Many of the multiple-choice questions also had an "Other" field allowing write-in responses. (For a complete text of the survey, see Appendix A.)

In designing the survey and planning its distribution, we sought feedback on the questions from the VSB's Sustainability Coordinator, to align the content with practices and terminologies familiar to VSB educators. The purpose of this was to optimize recognition and uptake and ensure the validity of data collected. In addition to vetting the survey, the VSB showed it to the Vancouver Elementary School Teachers' Association (VESTA) for review before it went live online.

Distribution and timing

Distribution of the survey link occurred chiefly through VSB channels. We provided the link to the VSB with the draft of a brief announcement for publication in an electronic newsletter that the VSB emails out to all educators every two weeks. The survey link appeared with its announcement in two of these newsletters during the 2018 school year: the first on June 5, the second on June 18. Because of low response to the June 5 probe (before all responses had come in from the June 18 probe), on June 20 the VSB Sustainability Coordinator also sent a direct email to all principals and vice-principals (administrators) calling attention to the survey and inviting participation within their schools. Additionally, at the Park Board we shared the link directly with a small number of educators (3) within our own network, inviting them to participate and/or forward the link by email to other educators. Following the combination of the June 18 VSB newsletter and the VSB's June 20 administrator outreach, response rates improved substantially.

The last day of school was Friday, June 29. We left the survey open over the Canada Day weekend to give educators a chance to participate who had been too busy to do so during the closing weeks of school. The survey closed at 11:59 PM on Monday, July 2.

Semi-structured interviews

During the week of June 25–29, the Greenest City Scholar conducted 4 semi-structured follow-up interviews by phone with a selection of teachers who had expressed willingness on the survey to speak further about their experiences. Of the 4 interviews, 2 were with elementary school teachers and 2 with secondary school teachers. The interviews did not contain substantively new questions beyond the online survey. Rather, the purpose was to delve for detail on selected answers that participants had given online.

Challenges and limitations

Time constraints

Together, the spring–summer timing and the limited number of hours available for the work were the most significant constraints on the study's execution. Under the Greenest City Scholar Program, all work needed to occur between the Scholar's spring start date and the August 10 project deadline. This timing posed risks for the study because educators are typically busy in

June with year-end activities, and in secondary schools they are not even always physically present every day after classes end partway through June. Anticipating this, the Scholar commenced her work at the Park Board early (April 17) to allow as much leeway as possible. The time needed to design the study and ensure review by the VSB and VESTA meant that actual distribution occurred in June. Attracting responses during this time of year was thus uncertain.

Despite the June timing, response from teachers was strong. Surprisingly, response rates were highest during the final two weeks of school. The eagerness to participate even during this hectic time of year was a testament to the passionately positive feelings within the educational community about this area of learning.

In fact, the high response rate itself created time constraints. The Scholar needed to allocate and manage the limited hours remaining to analyze a much larger dataset than anticipated, especially given that the bulk of the responses came in during the end-stage of the school year.

An unexpectedly high proportion of the participants who completed the survey (24 out of 76, or 31.6%) indicated willingness to participate in follow-up interviews. Ideally, the Scholar would have liked to interview a greater number of educators, but the year-end timing, the high volume of responses to analyze and the upcoming project deadline limited the opportunities to do so. Also, the strong overall response rate to the online survey, generating rich substantive feedback directly on SurveyGizmo, meant less need for interviews than would have existed had the response rate been lower. We therefore capped the interviews at 4 and completed them by June 29 to ensure adequate time for analysis and reporting.

Notably, a number of potential interview subjects were willing in principle to have these interviews with the Scholar during their vacations. Although we completed all interviews by school's close, the willingness of participants to engage during off-hours was evidence of their support of this topic. Given that the Scholar's own time constraints made it infeasible to extend the interviews into July, in a future phase of research it would be valuable to re-establish contact with those participants who expressed willingness to interview.

Selection bias

Various types of selection bias were present in this study.

Self-selection bias: Opt-in survey

While the June 5 and 18 newsletters went to all VSB educators on an equal footing, self-selection bias was operative as in any opt-in survey. Not only did teachers have the choice of whether to participate or not, but by VSB request, the introductory text on the online survey stated explicitly

that the survey was optional. Moreover, for educators who did participate, a number of the questions within the survey were optional, as shown on the form (Appendix A).

Additional outreaches

The VSB's follow-up outreach to principals/vice-principals (administrators) and the more limited outreach to educators within our own network both had the potential to create selection biases.

Outreach to principals/vice-principals (administrators)

The VSB's outreach to administrators appeared to trigger a strong inflow of responses, but the great majority of these came from teachers rather than from the administrators themselves. This suggests that some administrators had recirculated the link within their schools, as we had indeed hoped they would do. Thus some selection bias may have arisen from this source of outreach in that relatively high response rates may have been concentrated within certain schools where administrators had recirculated the link. There did not, however, appear to be a high level of survey response from administrators themselves.

Outreach to educators within our own networks

Outreach by Planning and Research occurred when the Greenest City Scholar reached out to educators within her own network. This generated several new responses but not so many as to create biases in the results, given the high overall survey response rate.

Implications of selection bias

Together, the selection biases have implications for data generalizability. Most significantly, responses were heavily skewed toward educators who already felt enthusiastic about parks and outdoor environmental learning. As one participant wrote, "LOVE outdoor and indoor place-based learning experiences plus all the groundwork pre-teaching." And another: "We recognize and appreciate the efforts you are making to make park space accessible and usable for student and school. Thanks!" We can presume that teachers who preferred not to engage in outdoor environmental learning activities or felt it unsafe to do so were less inclined to participate in the survey to begin with.

Responding to the survey

The City of Vancouver's survey instrument, SurveyGizmo, defaults to protecting against duplicate responses from any given device. The purpose is to prevent more than one response per participant, as the software identifies a participant by device. One limitation introduced by this setting is that the protection kicks in even if a participant does not complete a survey. Thus if a participant gets cut off accidentally, the survey disallows further attempts from the same device.

Out of a total of 110 attempted responses, we received 76 complete and 34 partial responses, for a completion rate of 69.1%. Of the partial responses, we cannot know how many participants abandoned the survey deliberately versus how many got cut off and were unable to complete it despite wishing to. It came to our attention that at least two participants had been cut off accidentally; we can reasonably assume that there were others. The fact that the total number of attempts was significantly higher than the number of completions indicates an even stronger degree of interest in this topic than is reflected in the net number of finishes. For purposes of data quality, the reporting in this paper will reflect data drawn from complete responses only.

Our findings show a very high positive correlation (.93) between participation in the survey and the use of parks for outdoor environmental learning. (That is, 93% of the 76 participants who completed the survey reported using parks in outdoor environmental learning at least once per school year.) For this reason, we premise this report on the idea that participation in the survey was itself substantially indicative of use of parks for outdoor environmental learning.

That said, the converse was not necessarily the case. While responsiveness to the survey was a strong indicator of park use, *lack* of responsiveness did not necessarily indicate either non-use of parks or lack of interest in outdoor environmental learning. Shortage of time at a busy period in the school year and/or lack of awareness of the survey may have contributed to the fact that some educators did not take the survey.

Moreover, schools located in catchments with easy proximity or convenient transit connections to parks may be substantially likelier to use parks in learning activities than schools with more remote or difficult access. Educators from schools with straightforward access may have been correspondingly likelier to take the time to participate in the survey. While differentiating among the schools' levels of park access is beyond the scope of this study, distribution of access remains an important equity consideration where it comes to allocation of park space and a recommended area for further research.

Thus the data we collected about park use, activities and attitudes toward outdoor environmental learning reflect the positive commitment to nature, parks and the outdoors among educators who chose to respond to our survey. We cannot necessarily assume such responses to have represented the attitudes of Vancouver educators as a whole or form conclusions about feelings toward parks by educators who did not take the survey.

Parks included in scope

In designing the survey and interpreting its results, we faced the methodological challenge of deciding which parks to encompass within its scope. We recognized there are a number of parks that lie outside the Park Board's jurisdiction but that many residents regard in practice as

belonging within Vancouver's environment and that many educators access for outdoor environmental learning. Of these, the most powerful example is Pacific Spirit Regional Park, which we chose to include in the survey because of its known wide use by educators.

Indeed, Pacific Spirit was the park that survey participants most commonly reported using. This creates challenges for interpreting the survey results and recommending actions, because some educators may use Pacific Spirit in ways that they do not necessarily use City parks, given that Pacific Spirit is a forest.

Since the purpose of this project is to formulate recommendations applicable to lands under the Park Board's jurisdiction, we needed a way to distinguish survey feedback that applied only to Pacific Spirit from feedback that *also* applied to City parks. In coding and analyzing the answers, the Greenest City Scholar made best efforts where pertinent to isolate answers coming from participants who *only* reported using Pacific Spirit (or other non-Park Board lands) from answers from participants who used at least one Park Board park or did not use parks at all. In the Findings section of this report, we articulate these distinctions where relevant.

For the subset of participants who reported using *both* Pacific Spirit and City parks, the raw data alone cannot tell us which activities, feedback and ideas apply only to Pacific Spirit and which ones apply to City parks also. For the present study, therefore, we acknowledge that feedback relating to Pacific Spirit is a confound on some of the questions. To tease out the Pacific Spirit answers at a more refined level, one would need to conduct follow-up interviews with participants who reported using both types of park. This could be an area for further research.

Additional considerations in data analysis

Natural areas

The Park Board has a special interest in locations defined as "natural areas." These parks with ecologically sensitive areas come up for particular stewardship considerations when subject to impact from frequent group use. Natural areas included in this survey are:

- Everett Crowley Park
- Jericho Beach Park
- Musqueam Park
- Pacific Spirit Regional Park (Metro Vancouver jurisdiction)
- Renfrew Ravine Park
- Stanley Park

As Planning and Research desired information on the kinds of activities conducted in natural areas, the Scholar coded and sorted data coming from participants who reported using at least one these areas. We present our findings and analysis later in this report.

School data

To shed light on patterns of use across the school system, we sought to distinguish feedback coming from different categories of schools. To enable such analysis, we coded all schools into three categories:

- Elementary schools
- Secondary schools
- Other program types

Within the context of the survey questions, we asked all participants which grade levels and/or program types they taught. Additionally, we gave secondary school participants the option of telling us in their own words which subjects they taught. We also assigned locational codes to schools so that we could analyze the geographic distribution of responses.

Analyzed together, this information enables us to chart the levels of use across school category, grade, secondary school subject and geography, as shown in the Findings section in this report.

In the interest of recommending appropriate supports for educators, it would be useful to analyze the data further to find correlations between school categories/subjects and what kinds of activities educators conduct or what resources they need. For example, the activities and needs of a Grade 2 class going out for unstructured play would clearly differ from those of a Biology 11 class sampling pond water. Though such analysis is beyond the scope of the present phase of research, it could be an area for future study drawing on our existing data.

John Hendry Park / Trout Lake Park

We listed this park on the survey both under its formal name of John Hendry Park and under its more familiar name of Trout Lake, to ensure recognition. In their answers, some participants checked off both names. Before analysis, the Scholar merged the data manually for this park to eliminate double-counting. In this report, we refer to the park as Trout Lake.

Findings

Participant samples

As previously mentioned, in order to analyze survey data we needed a way to distinguish responses that applied to spaces under the Park Board's jurisdiction from those which only applied to parks outside of it (e.g., Pacific Spirit Regional Park, other parks at UBC / University Endowment Lands [UEL] or parks outside of Vancouver altogether). For this reason, we created datasets from two different samples of participants.

The larger dataset includes all 76 participants who completed the survey, including those who only reported using parks falling outside the Park Board's jurisdiction. From this total of 76, we winnowed down a smaller set of 65 who either reported using one or more Park Board parks or reported using no parks at all. Since it is this feedback that is most relevant to future action by the Park Board, we base the majority of our reported findings, as well as our recommendations, on data drawn from these 65 participants.

One limitation is that a number of the participants who reported using Park Board facilities *also* reported using Pacific Spirit or other parks outside Vancouver. Thus, for example, if educators listed "nature walks" among their activities and reported using both Pacific Spirit and Stanley Park, we cannot know for certain in which park the nature walks occurred.

What we learned from the survey

A wide variety of schools are involved in outdoor environmental learning

The 76 participants who completed the survey came from a total of 47 different schools or programs out of 132 across the City (that is, from 35.6% of the district's schools and programs), with some participants working at more than one. Figure 1 shows the schools with the highest numbers of participants reporting (3+ reports per school). This graph reflects high survey participation by schools proximal to Pacific Spirit Regional Park. (For the complete list of schools and participant response numbers, see Appendix B.)

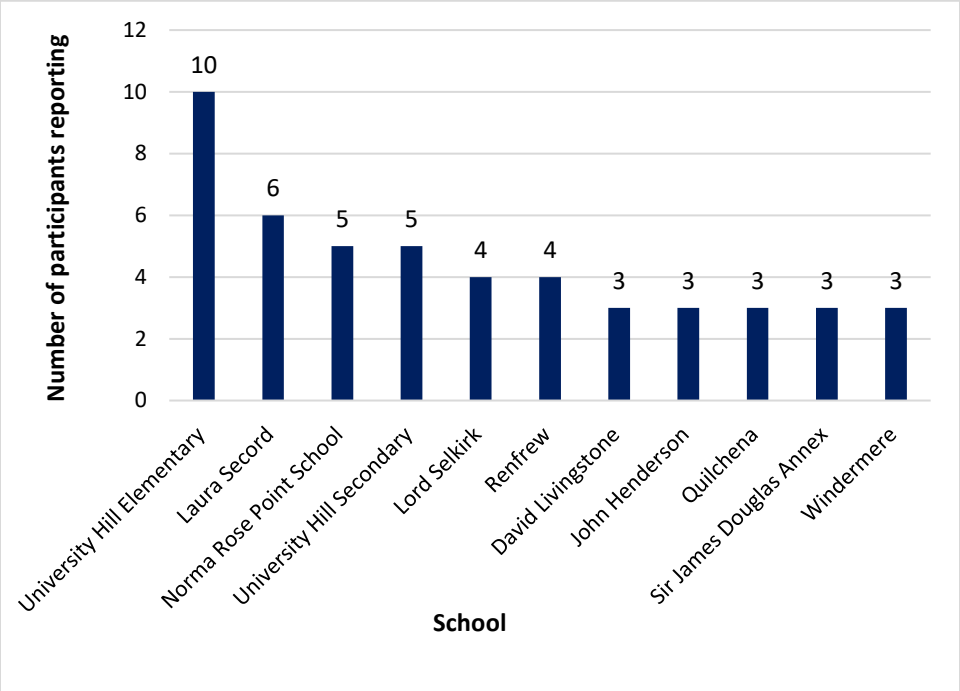

Figure 1. Schools with 3+ participants reporting (out of 76 participants)

Once we factor out responses reporting use of parks exclusively outside the Park Board's jurisdiction, three schools on the Eastside (Laura Secord, Lord Selkirk and Renfrew) emerge as the schools with the highest numbers of reports, as shown in Figure 2 (on the following page). The schools clustered around Pacific Spirit still show high response rates, though less than in Figure 1. This demonstrates that while these schools use the regional park heavily for outdoor environmental learning, they also use parks under the Park Board's jurisdiction.

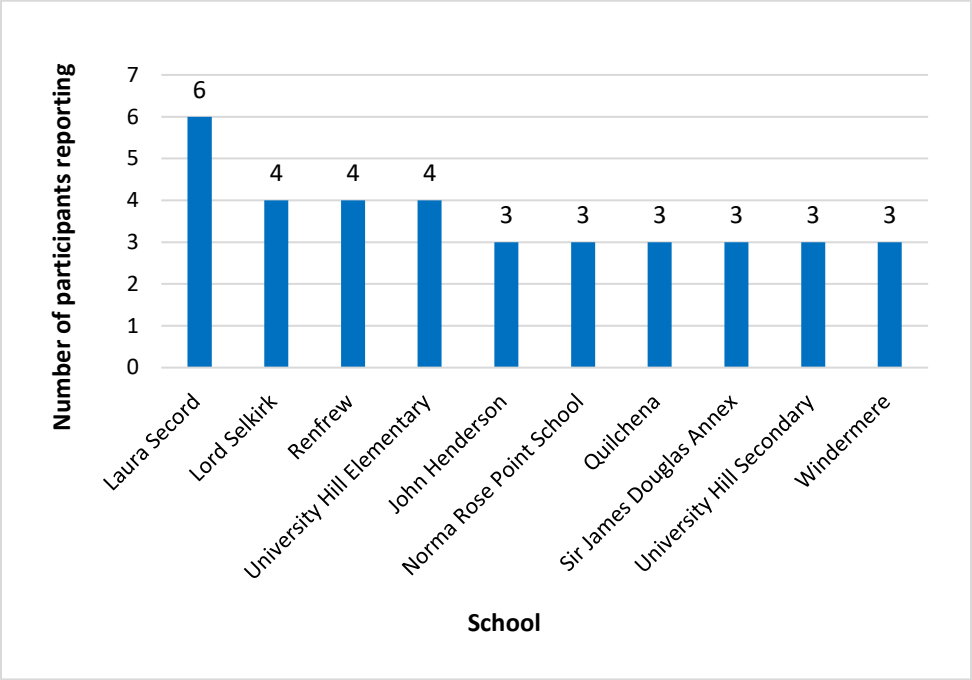

Figure 2. Schools with 3+ participants reporting (out of 65 participants)

Eastside schools produced the most responses

In the interest of ensuring equitable access to park space across the City for education, it is of interest to know the geographic distribution of participants' schools.

To that end, the Scholar coded and sorted all responses into five geographic categories: "Eastside," "Westside," "Downtown / West End," "UBC / UEL" and "Other or N/A." (For purposes of this report, Downtown Eastside schools are included in "Eastside," while "Other or N/A" covers district programs occurring in more than one place.)

Despite the high concentration of responses within certain schools on the Westside or at UBC / UEL as shown in Figures 1 and 2 above, the greatest number of responses in the absolute came from Eastside schools. Out of all 76 participants, 72% worked on the Eastside (see Table 1, on the following page).

Table 1. Participant responses by area (out of 76 participants)

Area	Responses	Percentage of 76 participants
Eastside	55	72%
UBC / UEL	20	26%
Westside	11	14%
Downtown / West End	3	4%
Other or N/A	2	3%

Once we factor out responses that reported using only non-Park Board facilities, the weighting of responses toward the Eastside is even more pronounced, with 83% of responses coming from participants working on the Eastside (see Table 2).

Table 2. Participant responses by area (out of 65 participants)

Area	Responses	Percentage of 65 participants
Eastside	54	83%
Westside	11	17%
UBC / UEL	10	15%
Downtown / West End	3	5%
Other or N/A	2	3%

These geographic findings indicate that teachers are conducting outdoor environmental learning across Vancouver. In this connection, it would be desirable to know how proximity to parks plays into frequency of park use. As data cited later in this report will show, educator satisfaction correlates sharply with the perception that parks are easy or convenient to get to, while distance is perceived as a barrier. The Park Board could use the data already generated by our study to explore correlations between park proximity and frequency of use. While beyond the scope of the current report, such analysis would be very helpful for future research supporting both park and transit infrastructure enabling equitable access.

Outdoor environmental learning may spike in K–1 and Grade 10 but dip in Grades 4, 7 and 9

A key goal of this research is to find ways of supporting teachers in leading outdoor environmental learning in parks. Knowing which educators participate, what they teach and at which grade levels can influence decisions about which resources to develop. For purposes of tailoring supports to specific groups of teachers and students, we analyzed our datasets for representation of elementary versus secondary schools, distribution of grade levels and programs, and (for secondary schools) subjects taught.

Tables 3 and 4 show the distribution of elementary and secondary school participants in the study. ("Elem/Sec" indicates that a participant works at both types. "Other" indicates a category other than elementary or secondary.) Table 3 includes all study participants (76 participants), while Table 4 (65 participants) factors out responses where educators reported using only parks outside the Park Board's jurisdiction. The high percentages of elementary schools in both tables makes sense, as there are many more of them than secondary schools.

Table 3. Responses by school type (out of 76 participants)

School type	Responses	Percentage of 76 responses
Elementary	66	87%
Secondary	23	30%
Elem/Sec	1	1%
Other	1	1%

Table 4. Responses by school type (out of 65 participants)

School type	Responses	Percentage of 76 responses
Elementary	57	88%
Secondary	21	32%
Elem/Sec	1	2%
Other	1	2%

From here, we charted participant responses by grade level to see whether we could discover which grades were doing more outdoor environmental learning and which ones were doing less. To do so, we extracted and sorted data from K–12 teachers, selecting participants who self-identified on the survey as "Teacher: Kindergarten" through "Teacher: G12." We then charted the numbers of responses for these teachers by grade. The highest numbers of survey responses came from participants working with students in the youngest primary years (K–1). From there, a dip in responses occurred through later primary and intermediate grades, particularly in Grades 4, 7 and 9. Response rates strengthened again in secondary school starting in Grade 10. Thus the response rates map as a U-curve over the K–12 grade range (see Figure 3, on the following page).

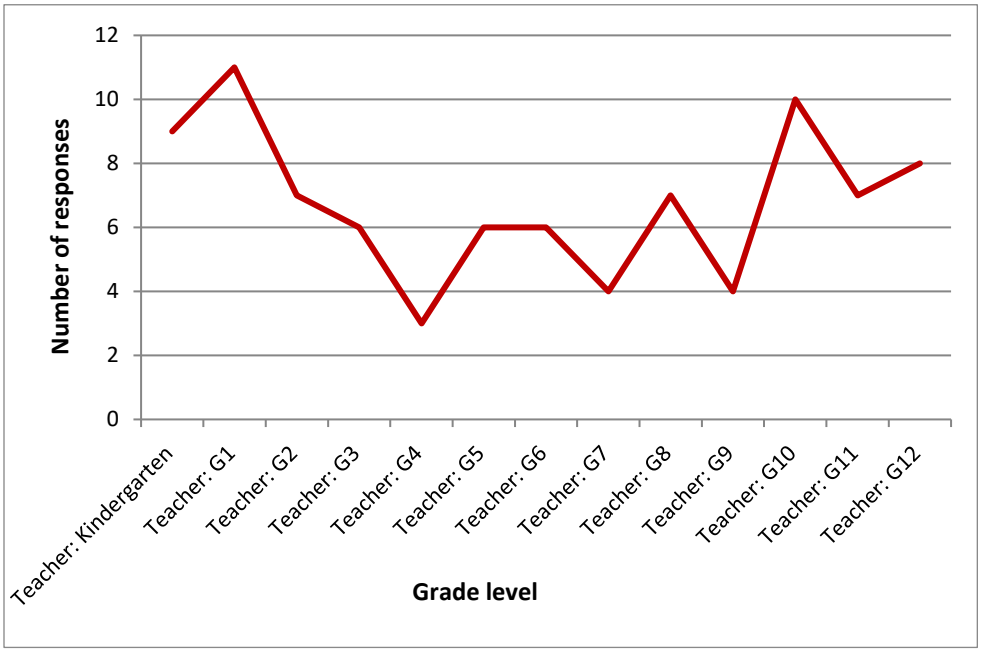

Figure 3. Survey responses by grade (out of 76 participants)

The U-curve shown in Figure 3 suggests the possibility that outdoor environmental learning may experience a drop in frequency in the late primary through intermediate years. To probe whether this was in fact the case, and also to reduce the skew toward Pacific Spirit, we turned to the 65-participant sample that factored out responses reporting only non-Park Board use. From this 65-participant set, we excluded responses from educators who reported never using parks at all. The resulting analysis, taken from the remaining 60 reports and charted on Figure 4 (on the following page), shows that mildly higher numbers of K–1, Grade 8 and Grade 10 educators reported using parks relative to other grades. It also shows lower numbers of Grade 4, 7 and 9 educators using parks.

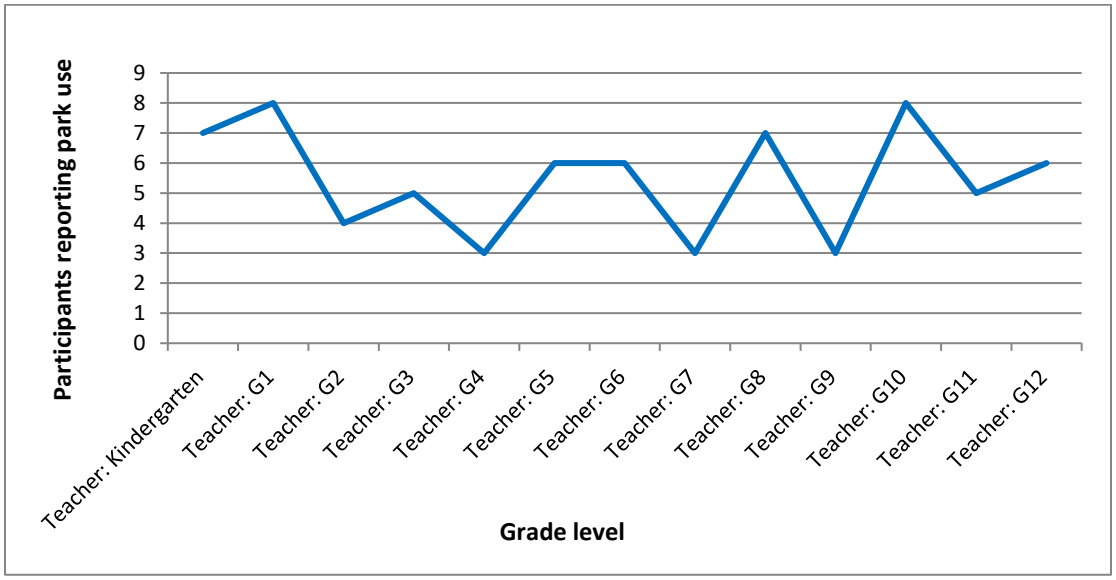

Figure 4. Park use by K–12 grade (out of 60 participants)

Considered together, Figures 3 and 4 illustrate the strong role of Pacific Spirit in outdoor environmental learning particularly for early primary learners within the schools adjacent to the regional park.

Further, Figure 4 suggests the possibility that outdoor environmental learning may be happening less during certain middle years relative to early primary (K–1) and Grade 10. While we have insufficient data to conclude this firmly or to assume generalizability across the district, we can certainly focus creativity on developing program content to get Grade 2–9 students outdoors, as they are at risk for spending time inside in sedentary pursuits, disengaged from nature.

Secondary school teachers use parks to teach a variety of subjects

Knowing which subjects educators teach outdoors can inform how to tailor supports to meet their curricular needs. The survey invited, though did not require, secondary school educators to identify the subjects they taught (e.g., English, biology, social studies, PE). Participants who identified subjects did so using their own terminologies, and some reported teaching more than one. The 76 complete surveys produced 30 school subject responses. Once we factor out responses pertaining only to parks outside the Park Board's jurisdiction, we received 26 school subject responses within the 65-participant dataset.

To spot patterns in academic activity, we sorted school subjects as reported by participants, then grouped them into larger field clusters. For example, we grouped science, technology and mathematics under STEM. Table 5 identifies the subjects and their fields, with responses from the two datasets (i.e., all 76 participants who completed the survey versus 65 participants after we factor out responses from those reporting only use of non-Park Board facilities).

Table 5. Secondary school subjects taught by participants

School subjects reported by participants	Field cluster	Responses out of 76 participants	Responses out of 65 participants
PE / Physical & Health Ed	PE / Physical & Health Ed	5	3
English	Humanities	4	3
Science (general)	STEM	4	4
Biology	STEM	3	3
Mathematics	STEM	3	3
Social Studies	Humanities	3	2
Academics, core (general)	Academics, core (general)	1	1
Chemistry	STEM	1	1
District Learning Services	District Learning Services	1	1
Ecology	STEM	1	1
Mini-school Coordinator	Mini-school Coordinator	1	1
Program Manager	Program Manager	1	1
Tech	STEM	1	1
Youth and Family Worker (SSB)	Youth and Family Worker (SSB)	1	1

To reveal the most commonly reported field clusters, we re-sorted the data by cluster. As Table 6 shows (on the following page), STEM courses were the most commonly reported cluster, followed by Humanities and PE / Physical & Health Education. This distribution reflects the centrality of ecological subjects to the natural sciences.

Table 6. Secondary school fields taught by participants

Field	Out of 76 participants		Out of 65 participants	
	Responses	**Percentage of school subject responses**	**Responses**	**Percentage of school subject responses**
STEM	13	43%	13	50%
Humanities	7	23%	5	19%
PE / Physical and Health Ed	5	17%	3	12%
Academics, core	1	3%	1	4%
District Learning Services	1	3%	1	4%
Mini-school Coordinator	1	3%	1	4%
Program Manager	1	3%	1	4%
Youth and Family Worker (SSB)	1	3%	1	4%
Total school subject responses	**30**		**26**	

There are limitations to drawing conclusions from this information. For one thing, with participants who reported teaching more than one subject, we would need deeper analysis including interviews to tease apart the subjects taught outdoors versus indoors. Informally, however, a look through the activities that participants identify as conducting in parks shows a high incidence of activities such as nature walks and species identification, as we shall see later in this report. It stands to reason that these should be particularly associated with STEM fields relating to environmental science such as biology and ecology.

Most survey participants use parks 1–4 times or 15+ times per year

Our survey asked participants how often they used parks for outdoor environmental learning. As mentioned earlier, there was a very high correlation between participation in outdoor environmental learning and participation in the survey. Only 5 participants (present in both datasets) reported never using parks at all. Among the 76 participants, 71 (or 93%) reported using parks at least once a year. When we factor out responses from those who reported only using non-Park Board facilities, 60 out of the remaining 65 participants (92%) reported using parks at least once a year.

Drawn from the 65-participant dataset, Figure 5 shows the frequencies with which participants reported using parks over the course of a school year. Interestingly, of the 92% of participants who use parks, most tend to do so either a relatively modest number of times (1–4 yearly) or very often (15+).

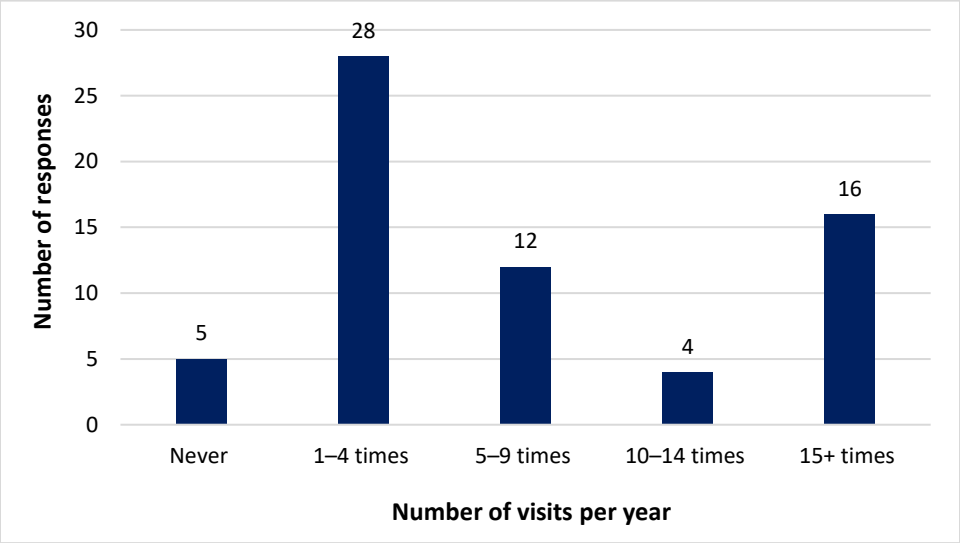

Figure 5. Frequency of park use for outdoor environmental learning (out of 65 participants)

When participants answered that they never used parks, the survey prompted them to explain why (optionally). We received four answers to this question:

- "Unsure about how to incorporate the park space into my curriculum and limited ability to schedule field trips"
- "Not sure where to begin. What I would find at each park re flora and fauna"
- "Resource teachers only teach small groups of students who are at risk in their learning, so they usually only go on outings with their whole class"
- "None that are close enough or have the things I need"

These answers support the findings, presented later in this report, that teachers desire more professional development relating to outdoor environmental learning and that they perceive park distance, when present, as a barrier.

Participants use a wide variety of parks across the city

To work with partners on creating educator supports and develop park stewardship models, the Park Board needs to know which parks educators use.

To analyze park choice, we drew on the 65-participant dataset that factored out responses indicating use of non-Park Board facilities only. From the 65-participant sample, Figure 6 shows the 10 parks with the most participants reporting use. Each of these parks had 5+ participants reporting use. (Appendix C contains complete results for the 65 participants.) By a significant margin, Trout Lake emerges as the City park most commonly reported as being accessed for outdoor environmental education, with Stanley Park and Jericho Beach Park following.

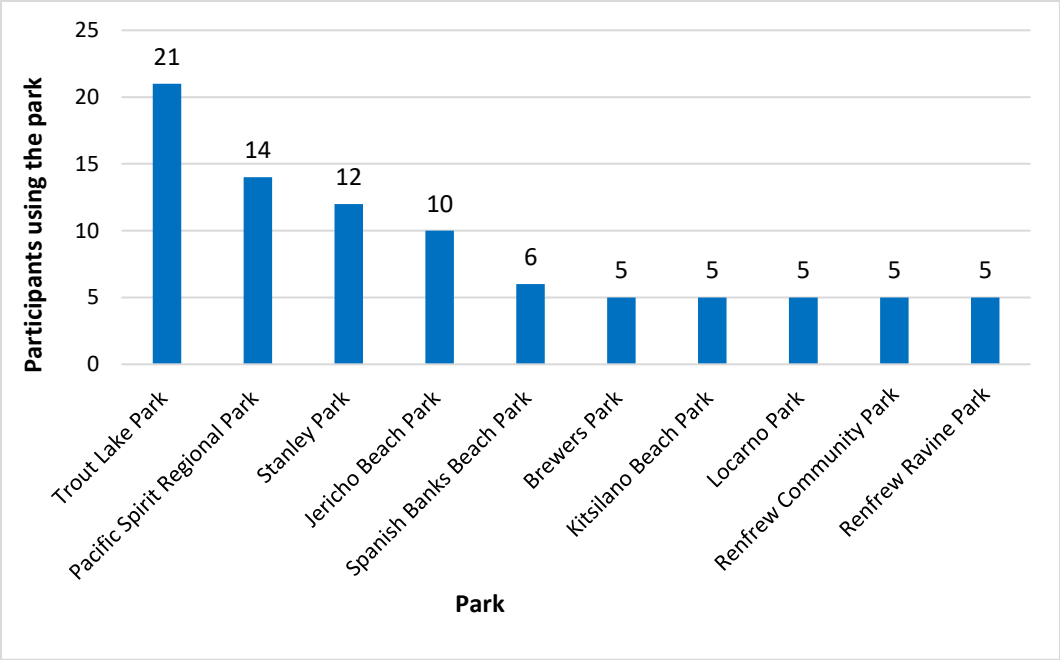

Figure 6. Parks used most frequently for outdoor environmental learning (out of 65 participants)

Another way to consider park use distribution is to look at the proportions of survey participants reporting access to the various parks. To do this, we have taken the use reports from the 65-participant pool and calculated these as percentages of the 76 total responses. Table 7 displays the same high-use parks as Figure 6, showing participants reporting use in proportion to all participants. From this we learn, for example, that 28% of all participants who completed our survey use Trout Lake, while 16% use Stanley Park. We also see that 18% of all participants use Pacific Spirit *in addition to* at least one park under the Park Board's jurisdiction.

Table 7. Percentages of participants accessing high-use parks

Park	Participants reporting use (out of 65 participants)	Percentage of participants (out of 76 participants)
Trout Lake Park	21	28%
Pacific Spirit Regional Park	14	18%
Stanley Park	12	16%
Jericho Beach Park	10	13%
Spanish Banks Beach Park	6	8%
Brewers Park	5	7%
Kitsilano Beach Park	5	7%
Locarno Park	5	7%
Renfrew Community Park	5	7%
Renfrew Ravine Park	5	7%

Participants show high use of most natural areas

The Park Board has a particular interest in understanding school use of the City's natural areas. These areas are sensitive to impact from high use, thus presenting both challenges and educational opportunities for stewardship. To estimate the proportion of school use going toward natural areas, we extracted participant data for these areas, then calculated the data as proportions of the 76-participant total (see Table 8).

Table 8. Percentages of participants accessing natural areas

Natural area	Participants reporting use (out of 65 participants)	Percentage of participants (out of 76 participants)
Pacific Spirit Regional Park	14	18%
Stanley Park	12	16%
Jericho Beach Park	10	13%
Renfrew Ravine Park	5	7%
Everett Crowley Park	1	1%
Musqueam Park	0	0%

From this we infer that 3 out of 6 of the natural areas under the Park Board's jurisdiction (Stanley Park, Jericho Beach Park and Renfrew Ravine Park) receive high school use relative to Vancouver's parks in general. This information is helpful because it demonstrates the need both for special stewardship targeted to these sensitive areas and for place-specific learning opportunities or restoration possibilities for students around these unique ecosystems.

Group size is most often 10–29

The survey asked participants who reported using parks how large a group including students, staff and volunteers typically attends. Sixty (60) participants reported using at least one park under the Park Board's jurisdiction. Of these, 65% reported attending with groups of 10–29 (equating to 1–2 classes), while 18% typically attend with 30–49 (2–3 classes) (see Figure 7).

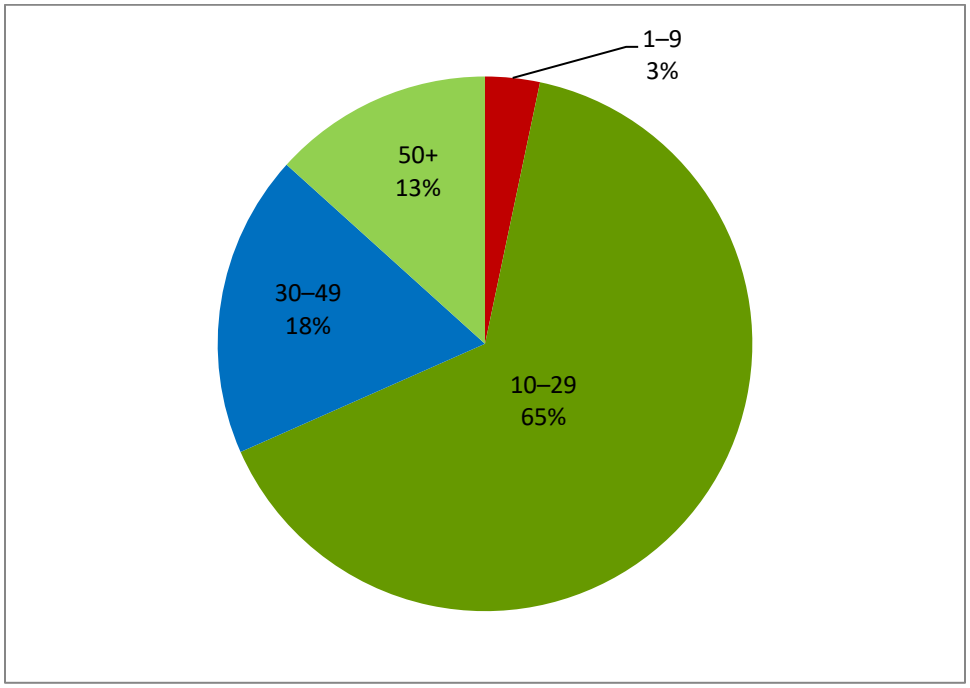

Figure 7. Group sizes using Vancouver parks (out of 60 participants)

These findings have implications for stewardship of the lands accessed. While the great majority of groups (83%) fall under the 50-person threshold requiring a permit, the fact that these groups typically involve 1–3 classrooms of students nonetheless calls for attention to impact upon soil, pathways, flora and fauna.

Stewardship considerations are an area for further research and recommendations. School groups themselves could become more involved and invested in caretaking activities. For example, in a phone interview, an educator who reported use of Trout Lake Park specifically expressed a wish to know more about the possibilities and parameters around stewardship, voicing interest in planting and in tagging plants.

Participants lead a wide variety of nature-related activities

To understand the supports educators need, we have to know what kinds of outdoor activities they conduct. To that end, the survey asked participants about their activities, with a textbox allowing them to respond in their own words.

Out of the 65-participant sample, 60 responded to this question, often naming multiple activities. An informal review of feedback suggests that the following activities are particularly common, with "nature walks" cited most often:

- Nature walks and exploration
- Species identification and tracking (birds, trees, native plants)
- Unstructured play and social time
- Sports, fitness and games

Some participants also mentioned engaging with:

- First Nations history, knowledge and ceremony
- Beach activities and cleanup
- Science experiments
- Math lessons referring to natural features
- Ecosystem study (e.g., stream erosion management, cloud viewing, seasonal change and long-term science observations)
- Orienteering: mapping skills and compass use
- Team-building
- Outdoor survival
- Place-based learning
- Visual arts and photography including with natural materials
- Mind-body activities (mindfulness exercises)

In interviews, participants elaborated on a variety of creative curricular uses. For example, a secondary-school educator described teaching math at Trout Lake by having students practice metric unit conversions and estimate area from irregularly shaped natural features including trees and the lake.

During the interviews, some participants distinguished between activities conducted out of town from those done within Vancouver's parks. For example, one educator described using City parks for primarily fitness activities such as running and cycling, while accessing the North Shore for more ecologically focused choices such as hikes and nature walks. Another contrasted estimating

water area at Trout Lake with placing sticks in the running stream of Burnaby's Central Park to calculate rate of water flow.

Though beyond the scope of this report, a more detailed analysis of participants' activity responses could provide a fruitful basis of further research. It would be particularly useful to ascertain which activities are most common at which grade levels, to inform age-appropriate lesson design and professional development.

Most participants lead activities on their own or with school staff / volunteers

The Park Board sought to know what kinds of supports educators currently receive. Among the 60 participants who reported using at least one park under the Park Board's jurisdiction, the great majority (83%) reported leading activities either on their own (46%) or with help from school staff or volunteers such as parents (37%). (Participants were able to check off multiple answers to this question, as the choices can vary with the trips.) This feedback suggests an opportunity to increase interactions with park community partners, currently reported by 13% of participants. Since supervising groups outdoors presents special challenges and hazards, educators who find it difficult to manage outdoor environmental learning might be able to do so more often, or with greater diversity of activities, if they had more hands on deck.

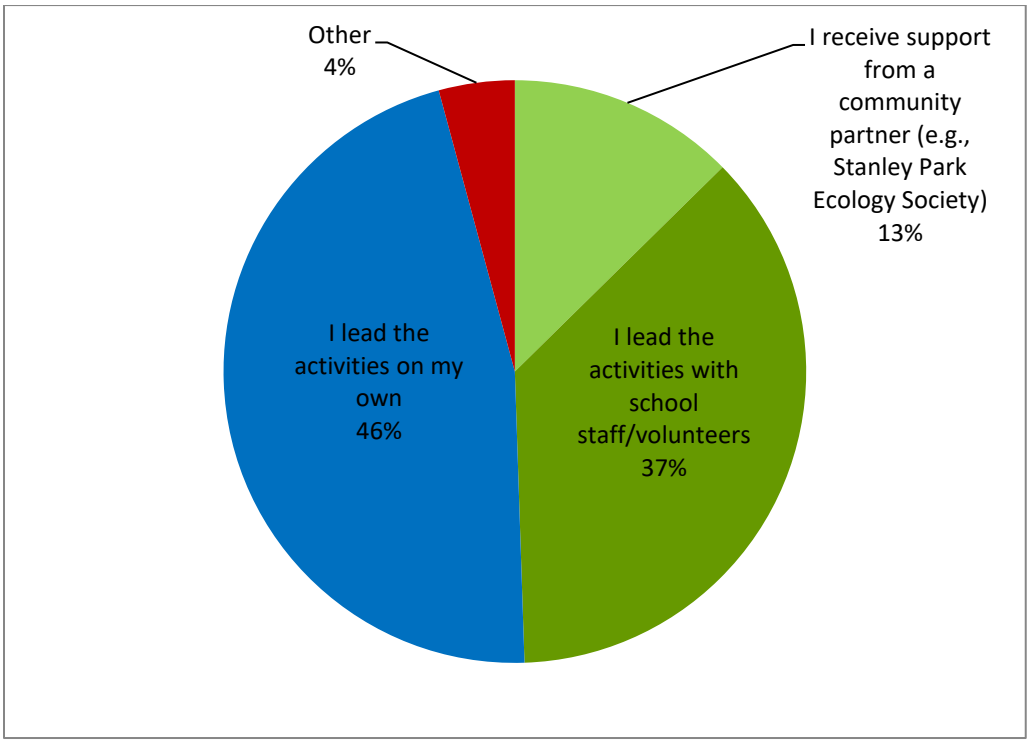

Figure 8. Supports received during outdoor environmental learning trips (out of 60 participants)

Participants express satisfaction with their experience in Vancouver's parks

The survey asked educators to rate their satisfaction with their experiences conducting outdoor environmental learning in Vancouver's parks. This question was required of all participants who reported using parks but was skipped for those who reported never using parks at all.

Our analysis draws on the 60 participants who reported using at least one park within the Park Board's jurisdiction per year. Of these, 95% described themselves as "somewhat satisfied" or above (that is, satisfaction level "4" or higher), while 67% were "satisfied" or above ("5" or higher). These findings appear in Tables 9 and 10.

Table 9. Levels of satisfaction reported by participants

Satisfaction level	Responses	Percentage of satisfaction responses
1 – Very dissatisfied	0	0%
2 – Dissatisfied	0	0%
3 – Somewhat dissatisfied	3	5%
4 – Somewhat satisfied	16	27%
5 – Satisfied	31	52%
6 – Very satisfied	10	17%

Table 10. Percentages of participants "somewhat satisfied" or above

Satisfaction level	Responses	Percentage of satisfaction responses (out of 60 participants using Park Board parks)
4 – "Somewhat satisfied" or above	57	95%
5 – "Satisfied" or above	41	68%
6 – "Very satisfied"	10	17%

Clearly, these reported levels of satisfaction are encouraging. In keeping with self-selection bias, educators who have been satisfied with their experiences in the past are much likelier to continue engaging in these types of activities to begin with and to have participated in our survey. Thus these results show that educators who use parks feel favourably about doing so but do not shed light on the perspectives of educators who are unable to use parks or choose not to.

When prompted by the survey to explain their levels of satisfaction, participants responded as shown in Tables 11 and 12, including responses entered manually under "Other."

Table 11. Reasons for being "somewhat satisfied" or above (4–6)

Reason for 4–6 ranking	Responses	Percentage of participants (out of 60 participants using Park Board parks)
Location was convenient/close	51	85%
Students enjoyed learning outside	48	80%
Students responded positively to natural environment	45	75%
Students enjoyed learning in physically active way	45	75%
Students enjoyed mixing learning with some recreational time	41	68%
Environment felt safe	38	63%
Students enjoyed learning in a hands-on, applied way	37	62%
Trip offered significant benefits for time/cost	34	57%
Environment felt welcoming	31	52%
Other: Easy washroom facilities	1	2%
Other: Safety – needles, condoms	1	2%

Table 12. Reasons for being "somewhat dissatisfied" or lower (1–3)

Reason for 1–3 ranking	Responses	Percentage of participants (out of 60 participants using Park Board parks)
Location was too distant	1	2%
Students didn't respond positively to environment	1	2%
Environment didn't feel safe	1	2%
Environment didn't feel welcoming	1	2%
Other: Too many bus changes, public transit difficult with unruly students	1	2%
Other: "Not a lot of diversity"	1	2%

As these results demonstrate, convenience and closeness (proximity) formed the number 1 factor underlying feelings of satisfaction arising from outdoor environmental learning. As displayed in Table 11, a very robust correlation (.85) subsisted between the perception that City parks were easy to get to and the choice to use parks in learning activities. Conversely, distance or difficult transit connections were associated with reduced satisfaction (rankings of 1–3). Infrastructurally, these results support the Park Board's efforts to assure equitable access to park space citywide.

It is noteworthy that after convenience and closeness, positive responses from students to the experience of being and learning outside factored strongly in educators' own feelings of satisfaction. In other words, when students were satisfied, teachers were as well. This finding is useful because it points to the need to attend closely to designing activities that students will enjoy and respond to. It also suggests a student behavioural component. When students reacted well to the experiences, educators did too (and conversely, unruly behaviour was associated with lower educator satisfaction). In written feedback, several participants articulated the challenges of delivering this type of learning without sufficient qualified help.

Participants want more lesson plans, professional development and maps

The Park Board is eager to know what kinds of resources educators need. Participants who indicated that they used parks in outdoor environmental learning were prompted by the survey to indicate on a checklist which further resources they would find helpful. They were free to check off as many resources as they wanted and/or to write ideas in by hand under "Other."

This question generated a very strong, clear message. Of the 60 participants who reported using at least one park under the Park Board's jurisdiction, the largest subsets (55%–73%) expressed desire for more information relating to environmental content itself: suggested lesson plans, professional development and maps. Of these resources, suggested lesson plans were the most desired (73%). It is interesting that desire for safety information and training ranked markedly lower (15%–20%). Only one person within this sample indicated no need for further resources. (See Figure 9 on the following page.)

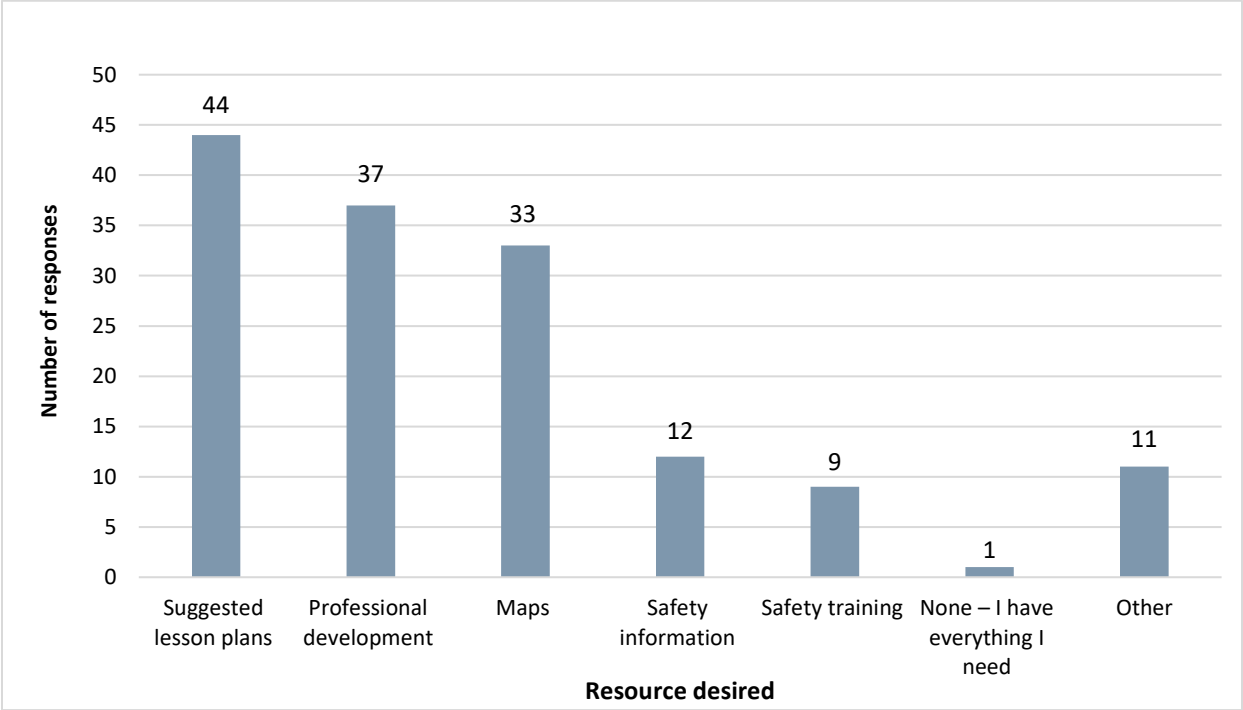

Figure 9. Resource supports desired (out of 60 participants using Vancouver parks)

Suggestions entered by hand under "Other" include:

- Boards explaining different plants and species found in the park
- Information on park rules and guidelines (areas classes are allowed in, procedures)
- Park/Nature expert to help teach students about park ecology and perhaps history
- Transportation
- Wifi
- Bilingual storyboards (English/French; information posted as at Garden City Park, Richmond)
- Better access to wild spaces, funding for transportation
- Nature-based, simple ideas that can take place in any park
- Organized activities/lessons
- More covered (not walled) outdoor places, pavilions

To discover underlying patterns indicating educators' needs, we sorted all desired resources (including those listed under "Other") into five larger themes: environmental education and park knowledge/ecology; safety information/training; park rules and procedures; infrastructure (transportation, wifi and covered spaces); and no further resources needed. We coded each response into one of these larger themes. For results, see Table 13.

Table 13. Resource themes desired by participants

Resource theme	Responses	Percentage of total (146) resource responses
Environmental learning knowledge: suggested lesson plans, professional development, maps, park knowledge, ecology	120	82%
Safety info/training	21	14%
Park rules and procedures	1	1%
Infrastructure: Transportation, wifi, covered spaces	3	2%
No further resources needed	1	1%

The implication is clear: the great majority of participants who report using Vancouver's parks wish for greater expertise and educational content in delivering outdoor environmental learning, especially through lesson plans, professional development and maps. As one participant expressed it in our phone interview, having more location-specific information about the natural assets available in City parks might make it more viable to go there for outdoor environmental learning rather than seeking experiences in parks out of town.

With regard to professional development, a participant who expressed a keen interest in workshops reported in an interview that the existing workshops available to teachers often filled up too quickly for enrolment. This suggests a gap in service that the Park Board could collaborate with the VSB and/or community partners to address.

With regard to the lower interest expressed in safety resources, self-selection bias no doubt played a role, as participants already felt relatively confident bringing students to parks. In other words, participants felt that it was reasonably safe to deliver outdoor learning but wished for more knowledge, training and options. That being said, participants did articulate a number of safety concerns and recommendations relating to parks. In the following section, we explore participants' answers to our questions about safety in greater depth.

Participants feel that outdoor environmental learning is safe, while identifying concerns

To see what resources, if any, need to go to enhancing the safety of outdoor environmental learning, we asked participants to rank how safe they felt it was to deliver this type of learning in parks. When we omit responses that only apply to parks outside the Park Board's jurisdiction, the remaining dataset of 65 reveals the strong pattern that educators feel that doing so is at least "4 – Somewhat safe," with the majority of participants (57%) rating it "5 – Safe" (see Figure 10).

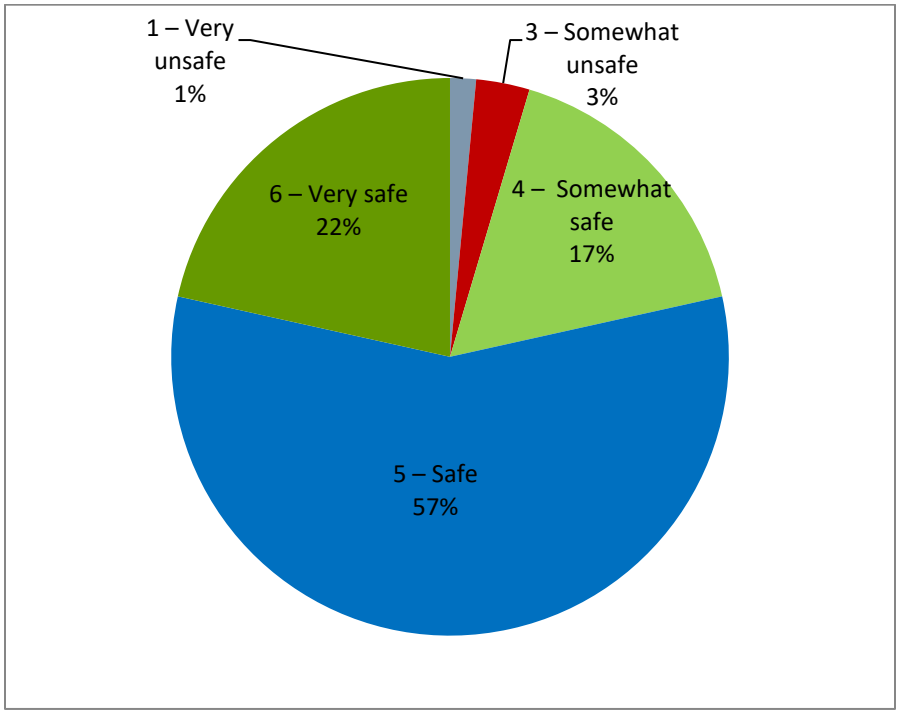

Figure 10. Assessments of safety of outdoor environmental learning in parks (out of 65 participants)

(Note: Within this 65-participant sample, no participants chose option "2 – Unsafe.")

Within this dataset, 95% of participants considered it "4 – Somewhat safe" or above to deliver outdoor environmental learning in parks, while 78% considered it "5 – Safe" or above:

Table 14. Participants rating parks "somewhat safe" or above (4–6)

Perceptions of safety	Responses	Percentage of participants (out of 65)
4 – "Somewhat safe" or above	62	95%
5 – "Safe" or above	51	78%
6 – "Very safe"	14	22%

Despite this generally positive assessment, 32% of the 65-participant dataset cited safety concerns among the barriers to delivering outdoor environmental learning in parks. Participants identified various safety-related constraints that limit what is feasible to do with large groups or that restrict the frequency of park use. (We discuss other identified barriers later in this report.)

A strong underlying theme across the responses had to do with the need for adequate supervision, whether from the school system or through other trained leadership. One participant captured this perspective in a written remark that "In general, Vancouver parks are wonderful and provide great opportunities for experiential learning. Teaching outdoors is difficult with large groups, so most of the difficulty arises from having 30 children to supervise." One expressed the wish while in a forest "to have a trained leader to lead sessions both for knowledge and safety reasons." Another wrote, "I tend to go on field trips to parks which are led by trained personnel who know their thing." A number of participants spoke of the challenges to protecting or keeping track of students in open spaces, especially ones that are crowded, have bushy areas where students explore or contain natural hazards such as slippery beach rocks or thinly iced-over ponds. Participants spoke of needing more qualified staff to assist students who have special needs or who have trouble self-regulating.

In various sections of the survey, participants alluded to constraints coming from within the school system, in part from procedural burdens having to do with risk management. One teacher cited the requirements for permission forms and parent volunteers. Beaches and swimming in particular came up, with several participants mentioning liability and/or the need for adequate supervision and lifeguards. One participant reported that classes at his or her school used to go to Third Beach in Stanley Park but no longer did so because the school system had identified beach-going as high-risk.

A significant number of participants raised concerns about social encounters that can conflict with school use. The presence of people sleeping in park brush (mentioned at Trout Lake, for example) poses a conflict for educators when students want to explore natural features. Several participants mentioned dogs as an prominent hazard for school groups; one wrote, "Dogs are a huge issue at Trout Lake, even in the on-leash areas. There are no bylaw officers enforcing the law." Another wrote, "It all depends on what people are using the parks at the same time as our class. Some are smoking and/or drinking. Some have their dogs off leash." Littering with condoms and needles in the grassy and concrete areas also came up as a concern. One participant commented that bathroom access was not always safe or clean.

The safety feedback described here is drawn from the 65-participant pool that excludes data based solely on parks outside the Park Board's jurisdiction. At the same time, we should keep in mind that a number of participants who use Park Board facilities also use Pacific Spirit, and therefore some of the comments we received could apply to either or both.

Participants experience a diversity of barriers to outdoor environmental learning

Asked in the survey to identify the barriers to outdoor environmental learning, participants could check off as many choices as they wished and/or enter their own under "Other."

As displayed in Table 15, results indicate a smooth distribution over a diversity of barriers. The greatest number of responses cited "distance from school." This finding neatly confirms the result, cited earlier, that convenience and closeness form the factor most associated with educator satisfaction. Again, this points to the infrastructural need to keep developing park spaces and transit connections that enhance equitable access.

For the Park Board, the relatively high weights of 34% and 31% assigned to "lack of lesson plans / activity ideas" and "lack of environmental knowledge/training," respectively, are also helpful results. They support the finding that teachers need more of an informational basis from which to deliver nature-related content. As already noted, 32% identified safety as a barrier.

Table 15. Barriers to outdoor environmental learning in parks (out of 65 participants)

Barrier	Responses	Percentage of 65 participants
Distance from school	27	42%
Not enough adults to help out with trip	22	34%
Lack of lesson plans / activity ideas	22	34%
Safety concerns	21	32%
Lack of environmental knowledge/training	20	31%
Cost to families	19	29%
Lack of transportation	16	25%
Too time-consuming or complex to arrange	15	23%
Liability	14	22%
Cost to school	11	17%
Regular curriculum taking up all the lesson time	9	14%
Other	9	14%
No barriers	8	12%

Significantly, among the 9 responses hand-entered under “Other,” 4 related to washrooms: lack of cleanliness or accessibility or lack of facilities altogether. A couple of participants mentioned lack of infrastructure such as picnic tables or shelter during the rain, while one mentioned too many off-leash dogs at Trout Lake.

A number of participants commented on the impact of field trip costs, calling for more provincial funding for activities and transportation to alleviate the burden on parents. In an interview, one participant remarked on how working in a low-income area meant that parent fees were “one of the number 1 reasons” impeding outdoor environmental learning at his or her school.

Conclusion and recommendations

Our study of how Vancouver School Board (VSB) teachers use parks in outdoor environmental learning leads to the following recommendations for the Park Board, its community partners and other agencies. While a number of these recommendations lie outside the purview of Planning and Research and even outside that of the Park Board itself, we include them as valuable feedback arising from educators’ reflections upon their experiences.

Environmental expertise and information

Where it comes to actionable recommendations for the Park Board, the strongest takeaway from this study is the desire among participants for more knowledge and training relating to the ecological features of the landscape and how they as educators can deliver programming on their own or with expert guidance. This desire for expertise was a very consistent finding across the different questions in our survey and points to a number of steps that the Park Board can take either on its own or in collaboration with community partners.

Professional development made more plentiful and varied

A clear outcome of this study has been the desire of educators to receive more professional development relating to outdoor environmental learning. We received feedback that demand is insufficiently met because existing workshops fill up very quickly. This suggests a need for more sessions to meet demand. The Park Board can collaborate with community partners to develop both a greater quantity of sessions and a greater diversity of topics with clear ties to grade levels and the ministry’s prescribed learning outcomes (PLOs).

Participants expressed interest in a variety of topics for professional development and activities, for example:

- Flora and fauna
- Historical and cultural background
- Orienteering
- Tidal pools

Participants also indicated interest in professional development on safety-related topics, such as:

- Crossing streets safely when there are not enough volunteers with the group
- Plants to avoid and what they look like (e.g., poison ivy and poison oak)
- First-aid training (which teachers do not receive unless they pay for it themselves)
- What to do when encountering syringes on the ground

Online resources: Lesson plans, maps and other materials

As the desire for lesson plans was one of the strongest areas of consensus among study participants, the Park Board and its partners could explore developing an online portal bringing together resources for school trips, such as maps, lesson plans and safety information.

Drawing on participants' ideas, we suggest a number of possible directions for online materials:

- Lesson plans supporting the most commonly reported activities, particularly nature walks, species identification and unstructured play (e.g., natural treasure hunts, scavenger hunts for native and invasive species)
- Lesson plans explicitly tied to grades and to the ministry's prescribed learning outcomes (PLOs), linked to maps so that educators will know where and how to apply them
- Place-specific lesson plans, especially for natural areas or other parks of ecological or cultural significance
- Topic-focused lesson plans (e.g., emphasizing species or processes) that can transfer to any park, particularly parks near schools
- Special attention to lesson plans to engage grades that may currently be underserved by outdoor environmental learning (e.g., Grades 4, 7, 9)
- Rainy-day park ideas
- Widened scope of ideas for using parks (e.g., leading activities such as yoga in parks)
- Videos and apps conveying the background of the area and its species
- Online FAQ or "Did you know?" section for each park, including special features and safety issues such as ravines, water, dropoffs in grade, traffic and unknown hazards

- Maps (topographic as applicable) containing information on assets of different parks, the species living in different spaces, safety concerns, alerts about age appropriateness and washroom information
- GIS-based tool with maps of grounds showing natural features (e.g., lakes) and their measurements, allowing students to compare their estimates against reality
- Historical perspectives, as offered by staff at the Richmond parks department
- Online schools guide to help educators train students in how to keep natural areas safe and how to *stay* safe in natural areas

Leadership by trained staff with expertise

Participants expressed appreciation of experts with the capacity to offer trained ecological guidance. They called for more knowledgeable personnel to guide groups, explain natural phenomena and assure safe interactions with the environment. The Park Board could work with knowledge holders from community partners and Indigenous communities to convey perspectives and/or practical outdoor skills beyond what school staff can provide.

Learning focused on Indigenous culture and history

Within the context of Vancouver's designation as a City of Reconciliation, the Park Board can work with Indigenous communities on developing content relating to Indigenous cultural perspectives on the environment. Study participants have included educators who either already initiate activities in parks relating to Indigenous culture and history or would like to do so. In one participant's words, online materials could contain "more connections with how Indigenous peoples used the area, the history of the park [and] what it looked like before European development." Another participant expressed a wish for better access to grants to engage Indigenous guides to share knowledge about plants and ecosystems.

Information targeted to late primary through intermediate grades

The finding that delivery of outdoor environmental learning may dip in certain middle years (Grades 4, 7 and 9) relative to spikes in K–1 and Grade 10 points to the desirability of developing special topics directed to the middle period. While we would need more surveying to confirm the generalizability of this effect, we can reasonably hypothesize that students are at risk during the middle years for developing indoor-oriented habits. Thus it seems particularly important to boost supports for access to nature and physical activity during this formative time in their lives.

Bilingual information

Bilingual lesson plans, storyboards and signs could enhance visits by French immersion classes.

Opportunities for stewardship and volunteerism

Some study participants expressed an interest in activities that would involve students in stewardship and volunteerism connected with parks. For example, a secondary school educator expressed a wish in interview to know the parameters around taking students on the grounds to tag plants and/or engage in planting. The Park Board and community partners could introduce stewardship activities tied to prescribed learning outcomes (PLOs), similar to what Seattle has done with the Green Seattle Partnership (GSP), described earlier in this report.

Dedicated class time in natural learning areas

Where sections in parks are learning areas, classes might respond well to the option of reserving them, to experience tranquility without overcrowding. As one participant put it, "We love coming into the forest and especially using the learning areas. We would love to set up … times when our school could use these (and leaving times for others), to avoid conflict with other groups."

Relationship-building

As identified by some participants, the opportunity exists to enhance collaboration and closer interaction between parks and teachers. Schools could receive a parks liaison who could be the person of first contact should teachers need information or support relating to outdoor environmental learning in parks.

Safety, maintenance and infrastructure

Dog bylaw enforcement

Stricter enforcement of leash bylaws and expectations around keeping good control over dogs (whether on or off leash) is a very important factor in the ability of educators to bring students to parks safely. While Trout Lake came up specifically as a place needing behavioural change from owners and their dogs, participants mentioned off-leash problems in parks in general.

Homelessness in parks

Participants expressed sensitivity to the predicament of homeless people sleeping in parks. They identified sleeping in the brush, particularly at Trout Lake Park, as a barrier to students' ability to explore natural features, as educators are unwilling to create disturbance for homeless people or to jeopardize the safety of their students. The Park Board could look at ways to generate and implement ideas around fair shared use of these spaces to enable student access while minimizing displacement of people who lack alternatives.

Cleanup of hazardous items

Regular checks of park grounds for needles and condoms might help some educators feel safer bringing students onto these lands. Participants specifically cited Trout Lake Park and Renfrew Ravine Park as needing attention in this regard.

Bathroom cleanliness and safety

Several participants mentioned shortage of clean, safe, accessible washrooms as a barrier to outdoor environmental learning. Review of the allocation of these facilities and their regular maintenance is important for assuring that educators feel comfortable bringing groups to parks.

Accessibility and special needs

Participants working with special-needs students cited the need to reduce mobility barriers for the physically or visually challenged, the need for easier access to mobility devices for all schools, the need for more trained support for special-needs students who have difficulty self-regulating or keeping safe, and the wish for more information on park access for challenged learners.

Lifeguards

The Park Board could explore introducing a lifeguard presence to sections of beach that have environmental or recreational interest but where the absence of a lifeguard presently discourages school groups. One possibility, as suggested by a survey participant, might be to offer school groups the option of having an extra lifeguard available during school trips. Another participant called for more trained leaders where water activities come into play.

Funding for public transit and public education

Participants identified a number of structural constraints having to do with limitations on public transit and funding for public education. While these lie outside the jurisdiction of the Park Board, we acknowledge them for referral to the appropriate agencies, because they have a direct impact on the ability of educators to deliver high-quality outdoor programming.

A strong finding from our study was the feeling that distance, inconvenience and inadequate transit links have a stifling effect on the ability to access parks for educational purposes. Easier transit connections could help schools increase their park visits, and transportation subsidies were suggested as a way of enabling classes to travel to, from and around parks. Participants called for stronger funding for public education that would enable such travel subsidies, reduce field trip costs for families and bring in more trained adult support workers to lessen the reliance and burden upon parent volunteers.

One of the 2020 targets of the Greenest City Action Plan under the Access to Nature goal is to ensure that every Vancouverite lives within a 5-minute walk of a park, greenway or other green space. Given this target, our findings support the recommendation to provide subsidies enabling schools to use parks. Within the Park Board's mandate, our findings also support efforts to acquire land for parks in areas that are currently undersupplied with green areas.

Areas for future research

Further semi-structured interviews with study participants

Many more participants in this study expressed willingness to participate in semi-structured interviews than the existing time constraints allowed us to contact. Interviews are valuable because they enable exploration of participants' experiences, ideas and feedback in greater nuance than is possible in an outline format. For a further phase of research, it would be helpful to re-establish contact with these potential interview participants to hear perspectives across grade levels, educator roles and neighbourhoods. In addition to providing greater detail on outdoor environmental learning activities conducted by educators, interviews would enable researchers to tease out feedback on Vancouver parks from feedback on Pacific Spirit (which was a confound in the present study).

Software considerations

As discussed, in the present research, some participants were unable to complete our survey because they got cut off and lost access while working on it. To the extent feasible, we recommend development of a setting on SurveyGizmo for future surveys enabling participants who get cut off to re-enter and complete a survey if they wish to do so.

Activity analysis by school category, grade level and park

Further research could mine the data collected in this project to analyze correlations among school category (elementary or secondary), subject taught (e.g., biology, social studies) and park activity led. This would enable curriculum designers to tailor recommended lesson plans and professional development more closely to the particular activities that different age groups are inclined toward. For instance (hypothetically), if we ascertain that Biology 11 courses often engage in species identification, then we can develop lesson plans appropriate to prescribed learning outcomes (PLOs) for that course and grade.

Locational analysis based on data already collected could shed light on whether certain types of activity tend to cluster around specific parks. This would help inform training relating either to parks with demonstrated high demand *or* to places where there may be gaps in activity, in the interest of boosting outdoor environmental learning across the district.

Stewardship

The Park Board can use data collected in this survey to make inferences about the types of impact from school use that occur in different parks and plan for mitigations. For example, nature walks and species identification may occur more frequently in some parks, while more fitness-related activities may tend to cluster in others. Such an analysis could help the Park Board target appropriate stewardship strategies to specific lands. It could also inform professional development in stewardship to help educators both safeguard park ecology on trips and pass the knowledge on to their students to foster their investment and pride in their surroundings.

Engaging intermediate years

The suggestion that outdoor environmental learning may experience drops in late primary and intermediate grades needs confirmation. A possible first step could be outreach to educators specializing in these grades to hear their perceptions about what they need for teaching these age groups. The researcher could start with the data already generated by this study, by isolating the responses from grades with low reporting activity, examining the feedback from participants in these grades who did report and following up with them via interview to learn about existing barriers and how to overcome them.

Private and independent schools, preschools, community partners and students

The scope of this study was limited to K–12 grades within the VSB public school system, but other programs deliver outdoor environmental learning in the parks as well and would offer important feedback on this topic. Future research could encompass private and independent schools, as well as preschools (including outdoor preschools). It would also be valuable to include conversations with community partners that lead education in parks, such as SPES and the Vancouver Park Rangers (Junior Ranger Program). Ultimately, further research should embrace the voices of students themselves, to hear their feedback on the types of programs they have found most meaningful and memorable.

Equitable access

Our study shows that educators' satisfaction with their experiences in parks correlates strongly with proximity to schools and/or ease of transit connections. Further mining the data generated by our study could help establish specific correlations between park proximity and frequency of use. Drawing on the data already existing, we could map out spatial relationships between particular schools and the parks they use, to ascertain the strength of proximity as a factor in determining whether or not students receive outdoor environmental learning. This is an exciting topic for prospective research relating to infrastructure as it points to issues of equitable access in the provision of park space across the school district.

This study has been a first step toward filling the significant gap in knowledge regarding how K–12 educators use Vancouver's parks to meet curricular objectives in outdoor environmental learning. Having heard the reflections of a wide variety of experienced professionals working in education, the Park Board can now collaborate with community partners to develop supports to enable even more positive experiences for educators and their students. This work also points to the opportunity to design models of park stewardship to optimize both ecological protection and human enjoyment of these precious public lands.

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Appendices

Appendix A. Outdoor Environmental Learning Survey (online)

(Note: Questions requiring answers were marked with an asterisk [*].)

Page 1: Experiences with outdoor environmental learning in Vancouver

The B.C. Ministry of Education has introduced new guidelines for K–12 education incorporating environmental learning into a wide range of school programming. As part of meeting these new standards, teachers are building more outdoor activities involving nature into classroom content.

The Vancouver Board of Parks and Recreation would like to know more about how K–12 teachers in the Vancouver School Board are using parks to meet outdoor environmental learning objectives. We want to hear about your outdoor environmental learning experiences so that we can support teachers' activities while also working toward improving access to nature for students. Your answers will help us understand how teachers use parks for outdoor environmental learning.

In this survey, the word "parks" means Vancouver municipal parks, Vancouver beaches and Pacific Spirit Regional Park.

"Outdoor environmental learning" means learning about the environment in ways that involve nature and physically being outside (e.g., science experiments, nature walks, species identification, unstructured play, etc.).

The Park Board recognizes that there is an opportunity to incorporate a diversity of perspectives on environmental stewardship. We are in the process of building relationships and trust with people from cultures that may be able to provide these perspectives. In the meantime, we recommend that educators seek other information on cultural relationships with the environment.

The survey is optional and is expected to take approximately 10 minutes. The survey is best viewed on a desktop or laptop computer.

Page 2: Please tell us about your role at school

1. Where do you teach? (Select all that apply)

*Schools are listed in alphabetical order:**

8J/9J Program
Admiral Seymour
Aries Program
Bayview
Britannia Elementary
Britannia Secondary
Byng Satellite Program
Captain James Cook
Carnarvon
Cedar Walk Program
Champlain Heights
Champlain Heights Annex
Charles Dickens
Charles Dickens Annex
Chief Maquinna
Collingwood Neighbourhood (Bruce Annex)
Crosstown Elementary
David Livingstone

David Lloyd George
David Oppenheimer
David Thompson
Dr. A. R. Lord
Dr. Annie B. Jamieson
Dr. George M. Weir
Dr. H. N. MacCorkindale
Dr. R. E. McKechnie
East Side Program
Edith Cavell
Elsie Roy
Emily Carr
Epic Program
Eric Hamber
False Creek
Florence Nightingale
Foundations program
Garibaldi Annex
General Brock
General Gordon
General Wolfe
Genesis Broadway
Genesis North East
Genesis South
George T. Cunningham
Gladstone
Graham D Bruce
Grandview
Hamber House Adolescent Day Treatment program
Hastings
Henry Hudson
J. W. Sexsmith
John Henderson
John Norquay
John Oliver
Jules Quesnel
Kerrisdale
Kerrisdale Annex
Killarney
King George
Kitsilano
Laura Secord
L'École Bilingue
Lord Beaconsfield
Lord Byng
Lord Kitchener
Lord Nelson
Lord Roberts
Lord Selkirk
Lord Strathcona
Lord Tennyson
Magee
Maple Grove
McBride Annex
Mount Pleasant
Nootka
Norma Rose Point School
Outreach Program
Pierre Elliott Trudeau
Pinnacle Program
Point Grey
Prince of Wales
Queen Alexandra
Queen Elizabeth
Queen Elizabeth Annex
Queen Mary
Queen Victoria (Secord Annex)
Quilchena
Renfrew
Roberts Annex
Selkirk Annex
Shaughnessy
Simon Fraser
Sir Alexander Mackenzie
Sir Charles Kingsford-Smith
Sir Charles Tupper
Sir Guy Carleton
Sir James Douglas
Sir James Douglas Annex
Sir John Franklin
Sir Matthew Begbie
Sir Richard McBride
Sir Sandford Fleming
Sir Wilfred Grenfell
Sir Wilfrid Laurier

Sir William Osler
Sir William Van Horne
Sir Winston Churchill
Southlands
Streetfront Program
Sunrise East Program
Take A Hike Program
Tecumseh
Tecumseh Annex
Templeton
Thunderbird
Tillicum Annex
Total Education Program
Trafalgar
Tupper Young Parents Alternative Program
Tyee
University Hill Elementary
University Hill Secondary
Vancouver Learning Network – Secondary
Vancouver Learning Network – Elementary
Vancouver Technical
Vinery Program
Walter Moberly
Waverley
Waverley Annex Learning Hub – Spectrum
West Coast Alternative Program
West Program
Windermere
Xpey' Elementary
Other (please list) _____

Page 3

2. This year, what is your role/program area at your school? (Select all that apply)*

Counsellor
French Immersion
Learning Assistance
Librarian
Life Skills
Principal
Resource Teacher
Special Education
Student Support Worker (SSW)
Support Teacher
Teacher: G1
Teacher: G2
Teacher: G3
Teacher: G4
Teacher: G5
Teacher: G6
Teacher: G7
Teacher: G8
Teacher: G9
Teacher: G10
Teacher: G11
Teacher: G12
Teacher: Kindergarten
Teacher Teaching on Call (TTOC)
Vice-Principal
(For secondary school educators):
Subject(s) you're teaching
_____

Page 4: Please tell us about how you use parks

3. Approximately how many times per school year do you access parks in your teaching?*
   - Never
   - 1–4 times
   - 5–9 times
   - 10–14 times
   - 15+ times

4. [For participants who answered "Never" on Q3]: Why not?

5. [For participants who answered 1–15+ times on Q3]: When you lead outdoor environmental learning in a park, how large a group typically participates (including teachers, students, staff and volunteers)?*
   - 1–9
   - 10–29
   - 30–49
   - 50+

6. [For participants who answered 1–15+ times on Q3]: Which parks do you access in outdoor environmental learning? (Select all that apply) *For a map of parks, click here*.*

Aberdeen Park
Adanac Park
Alexandra Park
Alice Townley Park
Almond Park
Andy Livingstone Park
Angus Park
Arbutus Greenway Park (Yew @ W 11th)
Arbutus Park (Arbutus @ SW Marine)
Arbutus Village Park (Valley @ King Edward)
Art Phillips Park (formerly Discovery Square)
Ash Park
Balaclava Park
Barclay Heritage Square
Bates Park
Beaconsfield Park
Bobolink Park
Braemar Park
Brewers Park
Burrard View Park
Callister Park
Cambie Park
Cambridge Park
Camosun Park
Captain Cook Park
Cardero Park
Cariboo Park
Carleton Park
Carnarvon Park
Carolina Park
Cartier Park
Cathedral Square
Cedar Cottage Park
Chaldecott Park
Champlain Heights Park
Charles Park
Charleson Park
China Creek North Park (E 7th @ Glen)

China Creek South Park (E 10th @ Glen)
Choklit Park
Clark Park
Clinton Park
Coal Harbour Park
Collingwood Park
Columbia Park
Connaught Park
Coopers' Park
CRAB Park at Portside
Creekside Park
David Lam Park
Deering Island Park
Delamont Park
Devonian Harbour Park
Devonshire Park
Douglas Park
Downtown Skateboard Plaza
Dusty Greenwell Park
Earles Park
Ebisu Park
Eburne Park
Elm Park
Emery Barnes Park
English Bay Beach Park
Everett Crowley Park
Falaise Park
Foster Park
Fraser River Park (Angus @ W 75th)
Fraser River Trail (Hudson @ SW Marine)
Fraserview Golf Course (Vivian Dr)
Fraserview Park (Victoria @ E 61st)
Garden Park
Gaston Park
General Brock Park
George Park (E 63rd @ St. George)
George Wainborn Park (Beach Crescent)
Gladstone-Riverside Park
Glen Park
Gordon Park
Grandview Park
Granville Island Water Park
Granville Loop Park (W 5th @ Granville)
Granville Park (Fir @ W 14th)
Grays Park
Grimmett Park
Guelph Park
Habitat Island
Hadden Park
Harbour Green Park
Hastings Community Park (E Pender @ E Hastings)
Hastings Mill Park (Alma @ Point Grey)
Hastings Park (E Hastings @ Renfrew)
Heather Park
Helmcken Park
Hillcrest Park
Hinge Park
Humm Park
Jean Beaty Park
Jericho Beach Park
John Hendry (Trout Lake) Park
Jonathan Rogers Park
Jones Park
Kaslo Park
Kensington Park
Kerrisdale Centennial Park (Yew @ W 42nd)
Kerrisdale Park (E Boulevard @ W 39th)
Killarney Park
Kingcrest Park
Kinross Ravine Park
Kitsilano Beach Park
Langara Golf Club (Alberta St)
Langara Park (W 49th @ Columbia)
Locarno Park
MacDonald Park
MacLean Park
Major Matthews Park
Malkin Park
Maple Grove Park
Margaret Pigott Park
Marina Square
Marpole Park
May & Lorne Brown Park
McBride Park

McCleery Golf Course (Macdonald St)
McCleery Park (Marine Crescent @ W 49th)
McGill Park
McSpadden Park
Melbourne Park
Memorial South Park (Ross @ E 41st)
Memorial West Park (Dunbar @ W 31st)
Moberly Park
Montgomery Park
Morton Park
Mosaic Creek Park
Mount Pleasant Park
Musqueam Park
Nanaimo Park
Nat Bailey Stadium
Nelson Park
New Brighton Park
Norquay Park
Oak Meadows Park (W 37th @ Oak)
Oak Park (W 59th @ Oak)
Oppenheimer Park
Oxford Park
Pacific Spirit Regional Park
Pandora Park
Park site on Blenheim
Park site on Puget Drive
Park site on Quesnel Drive
Park site on Shaughnessy Street
Park site on Trafalgar Street
Park site on Trinity Street
Pioneer Place (Pigeon Park)
Point Grey park site at Stephens Street
Point Grey park site at Trafalgar Street
Point Grey park site at Trutch Street
Portal Park
Price Park
Prince Edward Park
Prince of Wales Park
Ravine Park
Renfrew Community Park (E 22nd @ Renfrew)
Renfrew Ravine Park (Renfrew @ E 24th)
Riley Park
Riverfront Park (E Kent St S @ Elliott)
Riverview Park (W 66th @ Angus)
Robson Park
Rosemary Brown Park
Rosemont Park
Ross Park
Roundhouse Turntable Plaza
Rupert Park
Sahalli Park
Salsbury Park
Seaforth Peace Park
Shannon Park
Shaughnessy Park
Slocan Park
Spanish Banks Beach Park
Sparwood Park
Stanley Park
Strathcona Linear Park (Prior @ Hawks)
Strathcona Park (Malkin @ Hawks)
Sun Yat-Sen Chinese Gardens
Sunnyside Park
Sunrise Park
Sunset Beach Park (Beach @ Bute)
Sunset Park (E 51st @ Prince Edward)
Sutcliffe Park
Tatlow Park
Tea Swamp Park
Tecumseh Park
Templeton Park
Thornton Park
Thunderbird Park
Tisdall Park
Trafalgar Park
Trillium Park
Trout Lake Park
Valdez Park
VanDusen Botanical Garden
Vanier Park
Victoria Park
Victory Square
Volunteer Park
W. C. Shelly Park

Wendy Poole Park
West Point Grey Park
Westmount Park
William Mackie Park
Willow Park
Winona Park
Woodland Park
Yaletown Park
Others (please list) _____

7. [For participants who answered 1–15+ times on Q3]: What kinds of outdoor environmental learning do you lead with classes in these parks? (Examples: science experiments, nature walks, species identification, unstructured play)*

8. [For participants who answered 1–15+ times on Q3]: On a scale of 1–6, how satisfied have you been with your experiences in these parks?*
   1 – Very dissatisfied
   2 – Dissatisfied
   3 – Somewhat dissatisfied
   4 – Somewhat satisfied
   5 – Satisfied
   6 – Very satisfied

9. [For participants who answered 1–15+ times on Q3]: If you answered 1–3 above, what were your reasons? (Select all that apply)*
   - Location was too distant
   - Trip was too costly
   - Trip was too time-consuming to plan
   - Students didn't respond positively to environment
   - Students weren't engaged by learning activity
   - Environment didn't feel safe
   - Environment didn't feel welcoming
   - Other (please explain) _____

10. [For participants who answered 1–15+ times on Q3]: If you answered 4–6 above, what were your reasons? (Select all that apply)*
    - Location was convenient/close
    - Trip offered significant benefits for time/cost
    - Students responded positively to natural environment
    - Students enjoyed learning outside
    - Students enjoyed learning in a hands-on, applied way
    - Students enjoyed learning in physically active way
    - Students enjoyed mixing learning with some recreational time

- Environment felt safe
- Environment felt welcoming
- Other (please explain) _____

11. [For participants who answered 1–15+ times on Q3]: What kind of support do you usually receive when you lead outdoor environmental learning? (Select all that apply)*
    - I receive support from a community partner (e.g., Stanley Park Ecology Society …)
    - I lead the activities with school staff/volunteers
    - I lead the activities on my own
    - Other _____

12. [For participants who answered 1–15+ times on Q3]: If you lead outdoor environmental learning on your own or with school staff/volunteers, what resources would make it easier for you to lead it? (Select all that apply)*
    - None – I have everything I need
    - Maps
    - Suggested lesson plans
    - Professional development
    - Safety information
    - Safety training
    - Other _____

13. What kinds of barriers, if any, do you face in planning outdoor environmental learning in parks? (Select all that apply)*
    - No barriers
    - Safety concerns
    - Liability
    - Distance from school
    - Cost to school
    - Cost to families
    - Not enough adults to help out with trip
    - Lack of transportation
    - Regular curriculum taking all the lesson time
    - Too time-consuming or complex to arrange
    - Lack of environmental knowledge/training
    - Lack of lesson plans / activity ideas
    - Other (please explain) _____

14. How safe do you feel it is to deliver outdoor environmental learning in parks?*
    1 – Very unsafe
    2 – Unsafe
    3 – Somewhat unsafe
    4 – Somewhat safe
    5 – Safe
    6 – Very safe

15. What kinds of outdoor environmental learning do you feel ***wouldn't*** be safe to lead in parks?

16. If you experience barriers to using parks for outdoor environmental learning, what do you think could be done to remove these barriers?

17. Is there anything else you'd like us to know about your experiences with outdoor environmental learning in parks?

18. Would you be willing to participate in a 20-minute phone conversation to tell us more about your experiences with outdoor environmental learning in parks?*
    - Yes
    - No

[For participants who responded "Yes" to Q18]:
How do you like to be addressed? (optional)
First name _____
Last name _____

How would you like to be contacted?*
- Email
- Phone/Cell

[For participants requesting email contact]: What is your email address?*
Email _____

[For participants requesting phone/cell contact]: What is your phone/cell number?*
Phone/Cell _____

Thank you for taking our survey. Your response is very important to us.

Appendix B. Schools or programs with participants responding to survey

For the 76 participants who completed the survey, the following table displays the number of responses per school or program. (Some participants reported teaching at more than one.)

School	Responses
University Hill Elementary	10
Laura Secord	6
Norma Rose Point School	5
University Hill Secondary	5
Lord Selkirk	4
Renfrew	4
David Livingstone	3
John Henderson	3
Quilchena	3
Sir James Douglas Annex	3
Windermere	3
Captain James Cook	2
Grandview	2
King George	2
Lord Strathcona	2
Queen Elizabeth	2
Vancouver Technical	2
ABC	1
Admiral Seymour	1
Aries Program	1
Britannia Elementary	1
Byng Satellite Program	1
David Thompson	1
District Learning Services	1
Florence Nightingale	1
Gladstone	1
Hamber House Adolescent Day Treatment program	1
John Norquay	1
Killarney	1
Lord Beaconsfield	1
Lord Byng	1
Lord Roberts	1
Lord Tennyson	1
Magee	1
Maple Grove	1
Mount Pleasant	1

PASE	1
Queen Alexandra	1
Queen Mary	1
Sir Alexander Mackenzie	1
Sir Sandford Fleming	1
Tecumseh	1
Templeton	1
Thunderbird	1
Walter Moberly	1
Waverley	1
West Coast Alternative Program	1

Appendix C. Use of Vancouver parks (including Pacific Spirit Regional Park)

The following table displays reports of park use by all survey participants who reported using at least one park under the Park Board's jurisdiction, shown in proportion to the total number of participants in the study. (For example, 28% of all study participants reported using Trout Lake.)

Park	Participants reporting use, out of 65 participants	Percentage of all 76 participants
Trout Lake Park	21	28%
Pacific Spirit Regional Park	14	18%
Stanley Park	12	16%
Jericho Beach Park	10	13%
Spanish Banks Beach Park	6	8%
Brewers Park	5	7%
Kitsilano Beach Park	5	7%
Locarno Park	5	7%
Renfrew Community Park	5	7%
Renfrew Ravine Park	5	7%
Falaise Park	4	5%
Hillcrest Park	4	5%
Riley Park	4	5%
Quilchena Park	4	5%
Camosun Park	3	4%
Memorial South Park (Ross @ E 41st)	3	4%
Sun Yat-Sen Chinese Gardens	3	4%
VanDusen Botanical Garden	3	4%
Arbutus Greenway Park (Yew @ W 11th)	2	3%
Cariboo Park	2	3%
Chaldecott Park	2	3%
Champlain Heights Park	2	3%
Creekside Park	2	3%
Fraserview Park (Victoria @ E 61st)	2	3%
Granville Island Water Park	2	3%
Guelph Park	2	3%
Kerrisdale Park (E Boulevard @ W 39th)	2	3%
Killarney Park	2	3%
Robson Park	2	3%
Sahalli Park	2	3%
Tecumseh Park	2	3%
Woodland Park	2	3%

Andy Livingstone Park	1	1%
Carnarvon Park	1	1%
China Creek North Park (E 7th @ Glen)	1	1%
China Creek South Park (E 10th @ Clark)	1	1%
David Lam Park	1	1%
English Bay Beach Park	1	1%
Everett Crowley Park	1	1%
Gladstone-Riverside Park	1	1%
Grandview Park	1	1%
Habitat Island	1	1%
Hastings Mill Park (Alma @ Point Grey)	1	1%
Hastings Park (E Hastings @ Renfrew)	1	1%
Hinge Park	1	1%
Kensington Park	1	1%
Langara Park (W 49th @ Columbia)	1	1%
MacDonald Park	1	1%
MacLean Park	1	1%
Maple Grove Park	1	1%
Moberly Park	1	1%
Nat Bailey Stadium	1	1%
New Brighton Park	1	1%
Norquay Park	1	1%
Oppenheimer Park	1	1%
Point Grey park site at Trutch Street	1	1%
Prince Edward Park	1	1%
Ravine Park	1	1%
Riverfront Park (E Kent St S @ Elliott)	1	1%
Ross Park	1	1%
Strathcona Linear Park (Prior @ Hawks)	1	1%
Strathcona Park (Malkin @ Hawks)	1	1%
Sunset Beach Park (Beach @ Bute)	1	1%
Sunset Park (E 51st @ Prince Edward)	1	1%
Thunderbird Park	1	1%
Vanier Park	1	1%
West Point Grey Park	1	1%
Queen Elizabeth	1	1%
Total reports of park use (65 participants)	**180**	