

An Examination of 4th and 5th Grade Children's Conceptualization of Neighbourhoods in Halifax Nova Scotia

ENVS 4902 Environmental Science Undergraduate Honours Thesis

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Abstract

This study utilizes artistic expression, written description and verbal communication through interviews to better understand children's conceptualizations of neighbourhood. This conceptualization is used to determine how children define a neighbourhood, what children value in a neighbourhood, and whether aspects of nature are currently a part of their understanding of the area that they live in. Results from this study indicate that conceptualization of neighbourhood is primarily grounded in the children's sense of home, and opportunities for socializing or play, as seen through the importance of built play areas, parks and abundant references to familiar houses. The aforementioned combination infers a sense of community throughout the analysis. This adds to the body of knowledge in the area of children's perception of neighbourhoods as well as some understanding in terms of their biophilic relationship with nature.

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Chapter 1

How would you define a neighbourhood?
An area where community comes together – Participant 12

Introduction

1.1 Motivations and Background

Neighbourhoods provide a dynamic environment allowing children to learn more about themselves, their peers, their environment and the meaning of community (French, 2007). Maps serve as tools through which children can communicate, and adults can better understand information about their communities (Clark, 2011). By mapping neighbourhoods, children show their preferences (i.e. a cafe, a tree, a park), which in turn can elucidate the priorities that children give within their localities.

The hypothesis that humans have an intrinsic propensity to affiliate with nature is referred to as biophilia (Kellert & Wilson, 1993). This affiliation with the natural environment offers humans restorative opportunities, inflicts curiosity, and creates a comforting sense of compatibility between the land and the individual (Kaplan, 1995). David Orr sees an unquestionable need for our education through schooling and non-formal learning to be nature-centered (Orr, 1992), nurturing an understanding of the patterns, cycles and systems of the Earth (Mitchell and Mueller, 2011). If we are better able to understand what aspects of the natural environment are important to children, we can then interpret how to best foster feeling, understanding and compassion for the natural world; creating a generation striving to live humanely, peacefully and responsibly on our earth.

Research shows that grades 4-6 are a time of cognitive progress; children are increasingly able to think critically and theoretically, reflect on multiple perspectives, enhance their knowledge of different subjects and relate their knowledge to new learning situations (Eccles, 1999). This maturity shows that the fourth to sixth grades are an appropriate time to introduce more complex sustainability and environmental topics and discussion (Littledyke, 2004).

Although children are spending less time outside, it is not necessarily the case that they are uninterested in interacting with nature. Wells & Evans (2003) suggest that children prefer being outside, but due to numerous restrictions, many youth are unable to participate in the outdoors. Barriers include influences of technology (Jordan et al., 2006) and perceived dangers (e.g. strangers, traffic) (Carver et al., 2008). We also see an increase of the global population residing in urban settings (WHO, 2015), leading to lack of accessible green space (Louv, 2008). As of 2007, 31% of the Canadian population was composed of children and youth (Statistics Canada, 2009), and currently in Canada more than 80% of individuals live in an urban area (Employment and Social Development Canada, 2015). Not surprisingly, these obstacles limit youths' ability to experience the numerous educational (e.g. ecological literacy), psychological (e.g. increased self-esteem, reduction of ADHD symptoms), and physical (e.g. exercise, skill-building) benefits the natural world can offer (Schultz & Tabanico, 2007; Louv, 2008; Barton & Pretty, 2010; Taylor & Kuo, 2011).

This study will add to the evolving body of literature on student's conceptualizations of nature in neighbourhoods by investigating how 4th and 5th grade students at the Shambhala School in Halifax, NS, conceptualize neighbourhoods and specifically analyzing what aspects of the natural environment are deemed important to the students.

1.2 Summary of Literature

There are many studies that are relevant to this thesis. For example, Fitzpatrick (2014) conducted a study in London, Ontario, investigating children's perceptions and use of their school neighbourhood and how those perceptions link to the students' active transportation tendencies. Children were given maps with a clear plastic overlay, and were then asked to identify their homes, "routes", "destinations", and "zones" within their identified school neighbourhoods (Fitzpatrick, 2014). A second study conducted in London, Ontario, explored a child-guided protocol with students' aged 7-9, where the children were asked to lead the researchers on guided walks around their school neighbourhood (Loebach & Gilliland, 2010). Students utilized photography and mapmaking skills to communicate to the researchers their perception of the surrounding environment. In British Columbia a cognitive map study was conducted with students in grades 3 to 6 with hopes of collecting

information on what neighbourhood aspects were deemed important to the students (Halseth & Doddridge, 2000). The maps were analyzed by categorizing all map components into the five elements of urban design topology put forth by Lynch (Lynch, 1960). An Australian study was conducted to understand children's perceptions of their neighbourhood and to investigate any associations between these perceptions and physical activity (Hume et al., 2005). Children were asked to draw maps of their neighbourhood and include elements they felt were most important to them. Morrow (2001) reports on research conducted around the concept of 'social capital' relating to youths well being. Results reveal themes such as personal and familiar houses, pathways, parks and schools in maps drawn by the participants, aged 12 – 15 (Morrow, 2001). In rural Pennsylvania, Gillespie (2010) compared sketch maps of Amish and non-Amish children between the ages of 6-15 to examine the effects of culture on a child's perception of neighborhood. Map elements were categorized on spatial significance, utilizing two schemes for classification, a designative scheme and an appraisive scheme.

Children's perceptions of their home and neighbourhood environments have yet to be widely assessed (Hume *et al.*, 2005). There have been no studies found directly assessing the value of the natural environment in children's perception of neighbourhood, or, specifically, how children define a neighbourhood.

1.3 Study Introduction

This community based participatory action research project involves working with elementary school students with the primary objective of gaining a better understanding of how the children conceptualize their surrounding neighbourhoods and what aspects of nature are important to them in their neighbourhoods. This research is guided by the following question:

How do children in the 2015 grade 4/5 class of Shambhala School, Halifax, NS, conceptualize their home neighbourhoods?

By examining this topic the principal investigator hopes to gain a greater understanding of three related sub-questions:

1. How do children define a neighbourhood;

2. What do children value in a neighbourhood; and,
3. What is the extent to which natural environments are identified as important places in children's conceptualization of their neighbourhoods?

This research was conducted in collaboration with the teacher and students of the Grade 4/5 class at the Shambhala School in Halifax Nova Scotia. Work with the teacher and students included participatory map making, the development of artistic expressions of neighbourhood, and interviews with individual students about neighbourhoods. The 'mosaic approach' utilized allowed for the triangulation of data as well as providing options for the children to best represent their ideas (Stephenson, 2009).

The study is limited in scope to a specific city, school, age group and time. One of the Shambhala School's foundations with which they base their education on includes environmental stewardship (2015); therefore, doing this study at this particular school may lead to different results compared to a replicate study at a local public school. Children in grades 4 and 5 were used for this study, as this is the earliest recommended age to introduce complex sustainability and environmental topics and discussion (Littledyke, 2004).

1.4 Summary of Approach

The research questions were addressed by conducting four activities with the students, and analyzing the visual, written and verbal data collected. Activities 1 and 2 included collaborative map-making assignments of the students classroom and school neighbourhood respectively. Activity 3 was a take home assignment where the children answered a set of questions and made a personal map of their home neighbourhood. Activity 4 was an exit interview conducted individually with each student, focusing on their thoughts towards the previous activities as well as what a neighbourhood means to them.

Each of the neighbourhood maps collected in Activity 3 was entered into the software program NVivo for pictorial analysis and an *a posteriori* coding scheme was utilized. The artwork was cross-referenced to the supplementary artist's statement to account for certain parts of drawing/map that were difficult to see or interpret. The interviews conducted in Activity 4 were transcribed from the audio recording and entered into NVivo for qualitative analysis.

Chapter 2

Literature Review

2.1 Introduction

This chapter will outline the importance of environmental education, focusing on the natural environment and its relationship with the well-being of children. The biophilia hypothesis, videophilia, the theory of ecological literacy and the roles that each of these play within environmental education will be addressed. Current literature focused on children's perception of neighbourhood will be reviewed. Knowledge gaps in children's conceptualization of neighbourhoods and the locals children deem important in their neighbourhood will be identified. To conclude, future directions for research determined through the findings of this literature review will be addressed.

2.2 Environmental Education

The natural environment piques the curiosity in individuals allowing for the observation of the ebbs and flows of nature, the lessons learned from these observations can be viewed as environmental education. Although the phrase 'environmental education' was not universally recognized in scholarly circles until the mid-1960's (Palmer, 2002), and a solid definition of environmental education was not established until 1970:

Environmental education is the process of recognizing values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the interrelatedness among man, his culture and his biophysical surroundings. Environmental education also entails practice in decision-making and self-formulating of a code of behaviour about issues concerning environmental quality.

(IUCN 1970)

Environmental education incorporates the understandings of the natural world around us, typically taught through science, as well as an understanding of the social, economic and political systems surrounding us. With comprehension of these concepts and their application to everyday choices an environmental citizen is created. An environmental citizen is one who, to the best of their ability, acts in a responsible manner towards the environment with consideration to all choices and consequences of their actions (Berkowitz et al., 2005). Environmental education is a promising path to developing a society that

understands the systems of the earth and is equipped with the knowledge and skillset to mitigate any anthropogenic environmental effects on the planet and living things.

2.3 Biophilia Hypotheses and Videophilia

The Biophilia hypothesis is an integral part of environmental education. The Biophilia hypothesis asserts humans have a fundamental need to associate with nature and the natural world (Kellert & Wilson, 1993). This hypothesis provides a framework through which interdisciplinary research can be conducted to better understand humans' relationship with nature (Kahn, 1997). Yet, with the advances of technology, biophilia could be overshadowed by videophilia. In recent generations there has been an improvement and expansion of technological devices, which may be contributing to a decrease in meaningful experiences children have with the natural world (White 2004; Lougheed, 2008). The tendency to be absorbed with sedentary activities involving electronic media is referred to as videophilia (Pergams et al., 2006); a relatively new concept that has yet to be widely studied. With increasing avenues to access technology (televisions, household computers, laptops, tablets, personal phones, video games) we have viewed an increase amount of daily screen time in Canadian children. In 2004, 36% of Canadian children aged 6 – 11 spent more than two hours each day on screen time (Shields, 2005). In 2011 Colley described that self-reported screen time amongst Canadian youth was at least 6 hours a day on weekdays, and more than 7 hours a day on weekends. If barriers such as technology negatively influence children's opportunities to develop relationships with, and care for, the natural world continue to be obstructed then they are unlikely to care for nature as adults (Lowell, 2008). We must recognize the value in having a connection with nature so as not to have future opportunities for this connection disrupted by further advances in technology resulting in sedentary activities.

2.4 Nature Exposure

There is a growing body of literature outlining the benefits children gain from exposure to nature. It has been demonstrated that exposure to green space, in comparison to built environments, reduces the intensity of ADHD symptoms, allowing children to concentrate better after exposure to nature (Taylor & Kuo 2009; Taylor & Kuo 2011). A presence of nature nearby to a child's home has been shown to buffer the impact of life stress on children (Wells and Evans, 2003). Exposure to natural environments positively

impacts children's cognitive development, helping them direct attention and improving reasoning and observation skills (Wells, 200; Pyle 2002). Positive influences have been demonstrated between the relationship of proximity to green spaces and children's levels of physical activity (Gill, 2014). Matteo (2014) reports that long-lasting exposure to natural environments is integral in creating an affinity with the biosphere. Overall natural areas have been shown to provide opportunities for children to engage in imaginative play, experience their surrounding environment through firsthand learning, and form bonds with the natural world (Chawla, 2014). These studies have demonstrated that nature has a positive influence on child development and there are a variety of benefits to gain through nature exposure.

2.5 Ecological Literacy

The theory of ecological literacy promotes environmental education through stressing the importance that humans develop a connection with nature. In order for society to understand and act on the environmental crisis the education system must be life-centered, promoting healing, connection, empowerment and creation (Orr, 1992). The theory of ecological literacy incorporates teaching how to read the patterns, cycles and systems of the biosphere, encouraging human actions that nurture the integrity of the earth (Mitchell & Mueller, 2011). David Orr, through (Mitchell & Mueller, 2011) explains that ecological literacy fosters feeling, compassion and an understanding of the natural world. Teaching ecological literacy allows people to grow a relationship with the earth.

2.6 Children and Urban Planning

The needs and expectations children have for their surroundings must be seriously considered when planning urban spaces. There is a perception of children as 'problems' in urban settings, leading to the creation of environments that are hostile towards children's needs and aspirations (Davis & Jones, 1997). When designing a landscape the designer must take into account both the function and aesthetics. When children view an urban environment aesthetics is often outweighed by the functional features of a space, which represent potential for play areas (Acar, 2013). A further understanding of what children value in urban design has yet to be widely studied (Wilks & Rudner, 2013). There is a need for communication methods in which children can express what they value in an environment in order for urban planners to incorporate these features into urban design.

2.7 Children's Perception of Neighbourhood

How children perceive neighbourhoods can be addressed through the use of a variety of tools. One of these tools is the CANEP (Children's and Adolescents Neighbourhood and Environment Perception) Scale (Biseggar et al., 2008). This scale uses six questions to assess the participant's perception of safety, cleanliness, and opportunities for social interaction within their local. The Canadian Institute of Planners (2000) released a manual for planners and educators to aid with teaching children and youth about urban planning and community development. The manual consists of a variety of activities, some of which focused on mapmaking, allowing children to express their perception of neighbourhood. Studies have been conducted to better understand how children and youth perceive their surround neighbourhoods. Perception of neighbourhood has been examined through child led tours of neighbourhoods utilizing photography (Loebach & Gilliland, 2010), group discussion of neighbourhood maps and areas frequented (Fitzpatrick, 2014), and through participatory mapmaking (Gillespie, 2010; Hume *et al.* 2005; Halseth & Doddridge, 2000.) These studies offer insight into the current tools utilized to assess children's conceptualization and perception of their surrounding environments.

2.8 Communication Through Mapmaking

Maps provide a form of communication allowing adults to view children's perceptions of their surrounding environments. Maps serve as tools through which children can communicate, and adults can better understand information about their communities (Clark, 2011). In order for a child to make a connection with a place and understand their surroundings, first they must journey through it (Catling, 1979; Golledge *et al.*, 1992). Lynch (1960) utilized sketch maps to understand how adults view and use their cities. Lynch outlined five ways in which people would communicate landscape elements: paths, landmarks, districts, nodes and edges (Lynch, 1960). The body of research conducted with children and their alignment with this communication through landscape elements has yet to be widely assessed. A study conducted in Los Angeles utilized sketch maps to gain a greater understanding of where local youth felt fear throughout their neighbourhoods (Curtis et al., 2014). Common these arising in these maps were the utilization of landmarks, districts and edges. A program being delivered in Mumbai, Delhi and Hyderabad teaches children how to draw topographical maps of their neighbourhoods. These maps have

allowed the children to better communicate to their government officials where they feel unsafe in their neighbourhood, where sanitation is unsatisfactory and where potential parks and play spaces could be integrated (Sturgis, 2015). An Australian study used the tool of neighbourhood mapmaking to better understand children's perception of neighbourhood and what they valued, these values were then linked to the children's physical activity (Hume et al., 2005). Children's maps often contain encoded messages (Halseth & Doddridge, 2000) and are able to provide us with valuable information on how they conceptualize their surroundings, including their perception of environment (Barraza, 1999). By having children create maps of their neighbourhoods we can gain a greater understanding of what they define as their neighbourhood and what they view as being important aspects of their surroundings.

2.9 Conclusion

This literature review has covered the importance of environmental education, its link to the Biophilia hypothesis and nature exposure, and the value of having children input ideas into urban planning and current studies utilizing mapmaking and children's neighbourhood perception. The fundamental need for nature in a child's environment and its effect on the well-being of humans has been well studied (Kellert & Watson, 1993; Wells, 2000; Wells & Evans, 2003, Taylor & Kuo, 2009). An important knowledge gap was identified in understanding how children define a neighbourhood, and specifically what, if any, environmental factors they deem important in a neighbourhood. Knowledge in these fields can lead to a more cohesive understanding of children's complete conceptualization of neighbourhoods. This knowledge is especially timely in an age where technology is increasingly influencing the way children bide their time (Colley, 2011), and researchers are weary that videophilia is a looming threat over the biophilia hypothesis (Pergams *et al.*, 2006). Through this literature review I have identified the need for tools to understand children's perception, definition, and value of neighbourhoods, as well as the importance given to environmental factors within their locals. I hope to fill this knowledge gap through the creation of mapmaking activities and comprehensive data analysis of study participants maps, written data and verbal communication.

Chapter 3

Methods

3.1 Overview

The research was conducted in the grade 4/5 class of the Shambhala School in Halifax Nova Scotia. Data was collected through four activities conducted with the students in the class. Three of the activities included collaborative or independent map making. The fourth activity was a one-on-one interview with each student focused on children's definition of neighbourhood and what they value in a neighbourhood. The principle investigator took field notes during activities 1 and 2 to identify ways in which to improve the activities for future replication. Maps were collected for activities 1-3 and analyzed for activity 3. Interviews in activity 4 were audio recorded and further transcribed for analysis.

3.2 Study Population

Non-probabilistic, purposive sampling was used for our study sample to specifically gather data from the grade 4/5 students (N=18). Research has shown that this age is a time of cognitive process where children are increasingly able to think critically and theoretically, reflecting on multiple perspectives and able to relate their knowledge of different subjects to new areas (Eccles, 1999). This maturity shows that the fourth to sixth grades are an appropriate time to introduce more complex sustainability and environmental topics and discussion (Littledyke, 2004).

3.3 Research Tools

Mapmaking, artist's statements, and interviews are the research tools utilized for this study. The maps served as tools through which the children could communicate, and adults could better understand the children's perception (Clark, 2011). When mapping their neighbourhood, children show their preferences (i.e. a cafe, a park, a church) that help adults understand the priorities that children give within their localities. Allowing children to represent their perception through artwork is beneficial as it provides a chance for the presentation of responses that are (a) sometimes missed by other procedures and (b) difficult to communicate in writing or verbally (Watson, 2004; Baker et al., 2013).

Table 1 provides an overview of the activities conducted with the students and

research tools utilized throughout each activity. Each day in the classroom consisted of an hour and a half of the children’s morning class time.

Activity	Description	Date(s)
Activity 1: Classroom Mapmaking	Learned about map components Worked in groups to construct maps of their classroom	Oct 20 Oct 22 Oct 23
Activity 2: Mapping the Shambhala Neighbourhood	Went on a walk around school Worked in groups to construct maps of their school neighbourhood	Nov 2 Nov 5 Nov 6
Activity 3: Take Home Neighbourhood Mapmaking	Individually created maps of their home neighbourhood Wrote responses to six question in relation to their neighbourhood	Nov 23
Activity 4: Exit Interviews	Individual verbal interviews between participants and principle investigator focusing on neighbourhood	Dec 15

Table 1: Outline of 4 activities conducted at the Shambhala School with the 2016 Grade 4/5 class.

Activity 3 was supplemented with the artist’s written responses to six questions (Appendix I) in order to better understand each child’s independent artwork. One-on-one interviews were conducted as the last activity to get a final understanding of the participants’ perception of neighbourhood. The ‘mosaic approach’ was utilized to allow for the triangulation of data as well as providing options for the children to best represent their ideas (Stephenson, 2009).

3.4 Procedure Description

A private school was chosen for this project due to time constraints regarding ethics approval with the public school board. The teacher of the grade 4/5 class at the Shambhala School, Mrs. Katia Younger, was contacted via email (Appendix VI) to inquire about including the project into her curriculum. Parental consent forms (Appendix IV) for data

collection were sent home with the students to be returned to the principle investigator within one week, this allowed for the parents to voice any questions, comments or concerns with the research. The activities were incorporated directly into the curriculum, therefore allowing all students to participate whether or not they had a signed consent form. Data was only collected from those individuals with a signed form.

Detailed lesson plans were designed for each of the four activities and are included in Appendix I. Activity 1: Classroom Mapmaking is composed of three classroom days with the students, and a total of 3.5 hours of classroom time. Students were taught about maps and their key components. Students were then asked to make a collaboration map of their classroom in groups of 3. The students were assigned to groups based on their class seating arrangements and pre-determined group dynamics recommended by the teacher. This activity was run as a pilot project to gain a better understanding of students' background knowledge in terms of understanding the mapmaking process. Map data analysis did not take place with Activity 1.

Activity 2: Mapping the Shambhala Neighbourhood took 3.5 hours of classroom time. This activity included a guided walk around the school neighbourhood followed by working in groups of 3 to create a neighbourhood map. Small student work groups were assigned using the same method outlined in Activity 1. This assignment allowed the students to collaborate and share ideas with one another about their school neighbourhood, creating comfort and preparing them to design a map on their own for Activity 3. Activity 2 required a guided walk around the neighbourhood with the participants, the path is outlined in Appendix I. Map data analysis did not take place with Activity 2.

Activity 3: Take Home Neighbourhood Mapmaking was a take home assignment requiring minimal in-class time with the students. This assignment asked the student to create a representation (map) of their neighbourhood in relation to themselves in order to come to a deeper understanding of the area in which he, she, or they live in. The participants were asked specifically to create a map including what they value, and what they deem is important in their neighbourhoods. The student was given a piece of Bristol board and encouraged to be as creative as they could in constructing the map of their neighbourhood. Children submitted their map along with answers to six questions about their neighbourhood (Appendix I).

Activity 4: Neighbourhood Exit Interviews included a one-on-one audio-recorded interview conducted by the principle investigator with each of the students. Each interview was approximately 5 minutes in length, asking 8 questions (Appendix I). Students were given the opportunity to skip any questions and return to them at the end of the interview. Interview questions focused on how children define a neighbourhood, where their perceived boundaries are, and what children think is important to have, or not have, in a neighbourhood.

3.5 Analysis

All students in the class submitted signed parent permission forms allowing for data collection and analysis of their work (Appendix IV). All of the maps from activity 3 were entered into the software program NVivo for pictorial analysis using an *a posteriori* coding scheme. On a general level, a code is a “researcher-generated construct that symbolizes and thus attributes interpretive meaning to each individual datum for later purposes of pattern detection, categorizations, theory building, and other analytic processes” (Saldaña, 2013, p. 4). This is a common method used in qualitative research to understand patterns and themes that arise from numerous sources of data. This strategy is effective at categorizing and grouping together themes from respondent data in order to understand common topics (Cope, 2010), in this case neighbourhood conceptualization, that result from participation in the study. All codes fell under four over-arching headings: Built Environment, Natural Environment, Hybrid Environment and Other, the breakdown of these can be found in Appendix II.

The maps provided by participants in the mapmaking activities were coded using an adapted method from Baker et al. (2013) that specifically helps with comparing children's illustrated answers with their written answers. For example, when Baker et al. (2013) asked children to draw about climate change, the authors noted that certain statements made reference to “greenhouse gas”, a code that was missed when only analyzing drawings. Ultimately, by employing a cross-referencing method between visual, written and verbal data sources, it adds validity to the references made in the data and ensures that all codes are captured. For our study, the maps for Activity 3 were coded (Appendix II) for content elicited from the legend of the map as well as the content interpreted from the artists'

design. The artwork was then cross-referenced with the artists' answers to the assigned map questions: What do I enjoy doing in my neighbourhood? What are my favourite places in my neighbourhood? And what is important to me about my neighbourhood? These were then cross-referenced with student's lists of neighbourhood community gathering places to gain an understanding of the value placed sense of community. These findings were used to help answer the original research question and sub-questions.

The interviews conducted in Activity 4 were transcribed from the audio recording and entered into NVivo for qualitative analysis. Using *a posteriori* coding (Appendix II), interviews were analyzed with a specific focus on (1) how the children defined a neighbourhood, (2) what the children valued in a neighbourhood, and (3) what environmental and natural aspects were identified in the interviews. Data for Question 1: "how do children define a neighbourhood?" was gathered from the interviews conducted with each of the eighteen participants, and cross-referenced with the drawing provided by participants. Interview question 3 asked students "In general, what is a neighbourhood", followed by the sub-question 3a "How would you define it". Responses were placed into the following 5 categories: Community, physical area, social construct, safety, and unknown. Data for Question 2: "What do children value in a neighborhood" were gathered from interview questions 5 and 6. Interview question 5 asked participants "What do you think are important things that are specifically in your neighbourhood" and interview question 6 asked, "What are some things not in your neighbourhood that you would like to see there", these answers were further cross-referenced for Question 3. Sub-question 3 was also addressed through interview question 8 by asking students if they included anything about nature in their neighbourhood maps, and why or why not.

Chapter 4

Results & Discussion

4.1 Demographics

Results for this study were gathered from children aged 9-11, all students of the grade 4/5 class at the Shambhala School in Halifax, NS. Shambhala is a private P-12 school located in the North End of the Halifax Peninsula. The school offers a unique curriculum encouraging students to develop into confident, creative thinkers holding value in social and environmental awareness (Shambhala, 2015). Shambhala also inspires students to create a personal connection with the world, community, and nature. From observation of the students home neighbourhood maps, eleven of the participants appear to live in the on the Halifax Peninsula, whereas seven potentially reside outside of the peninsula.

4.2 Sub-question 1: Defining a Neighbourhood

One of the main questions of inquiry for this study was how children define “neighbourhood”. The analysis of the children’s own maps and their responses to the interviews in Activity 4 help us better understand this. The main themes that arose in the analysis regarding children’s definition of neighbourhood can be broadly placed into 5 categories: Personal Construct, Physical Area, Community, Safety, and Unknown. The most prominent of these definition themes can be viewed in Fig. 1.

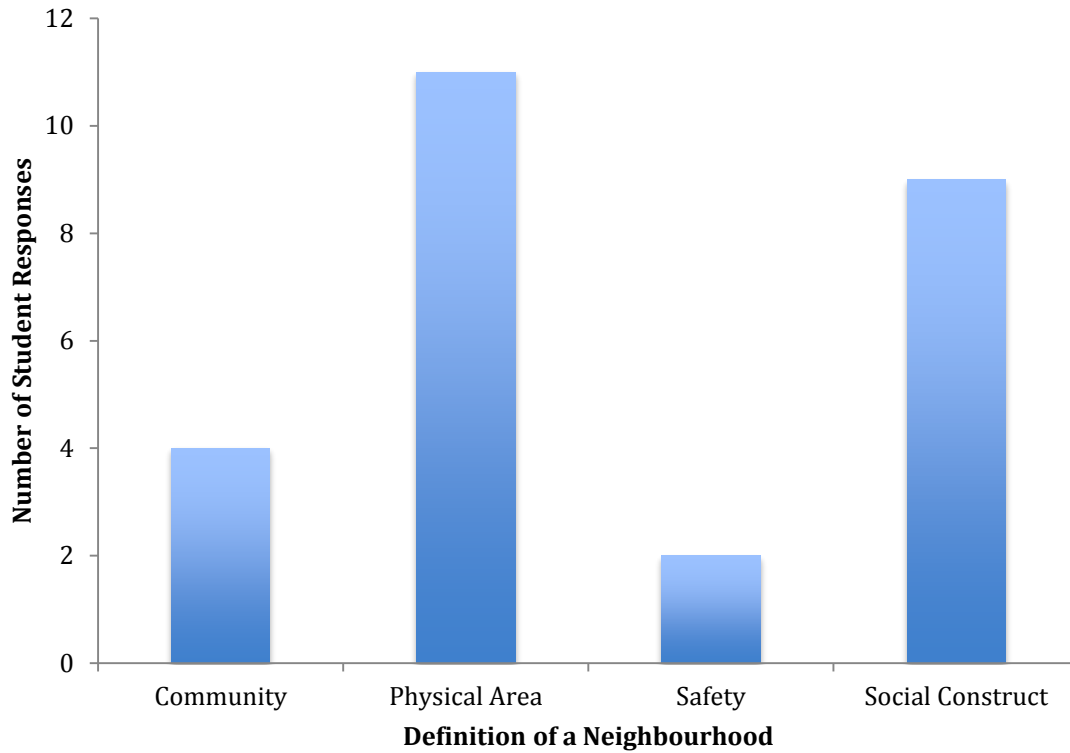


Figure 1: Major themes arising through data in relation to sub-question 1: how do children define a neighbourhood.

The two most frequent understandings of neighbourhood fall under one of two broad areas: a physical area, and a personal construct. Physical area responses were given in terms of the child's understanding of the physical boundaries of their individual neighbourhoods:

I think a neighborhood is inside the boundaries that you're allowed to go in ... My boundaries are ... from my house to the playground, and I think that's practically my neighbourhood. – Participant 14, Activity 4, Q3

The verbal response from Participant 14 supported by the participants' artwork (Fig 2), where we see the participants house on one side of the map, and the playground they frequent on the opposite end.



Figure 2: Neighbourhood map provided by participant 14 in Activity 3.

When asked “How do you know where the boundaries [of your neighbourhood] are”, six of the participants mentioned parental-imposed boundaries within their answers. This shows that amongst the individuals defining their neighbourhood as a physical area, some are bound by parental influence and have yet to explore and experience their surroundings enough to create their own neighbourhood definition. These results show a gap amongst participants in experience with the larger environment not unlike the one viewed in Halseth & Doddridge’s (2000) study, potentially influenced by age.

The other way children viewed neighbourhood was through a personal construct. This code was used when children defined their neighbourhood precisely how they, as individuals, experience and perceived it:

I would define my neighbourhood as where I can walk and where I really like to go
– Participant 2, Activity 4, Q3a

Through pictorial analysis we see that Participant 2 designed a map (Fig 3.) directly reflecting the places that they are able to walk to in their neighbourhood.



Figure 3: Neighbourhood map provided by participant 2 in Activity 3.

These definitions provided an insight of the children’s perceived neighbourhood, by which recognizing that they had an idea of their definition of neighbourhood, although did not have the communication to precisely state what their neighbourhood entails.

4.3 Sub-question 2: Valued Elements in a Neighbourhood

This study also sought to understand what aspects of neighbourhoods that the children valued. Students’ artistic (Activity 3 map), written (Activity 3 map writing assignment) and verbal responses (Activity 4) were analyzed to better understand what the participants value in a neighbourhood. Common themes arising in the neighbourhood maps produced for Activity 3 are shown in Table 2.

Code	Number of Sources
Built Play Area	6
Restaurant	7
Store	5
Pathway	5
Arbitrary House	12
Familiar House	10
My House	18
Park	5
Tree	10

Table 2: Most commonly coded objects from participants’ maps in Activity 3. N=18. Talled by the total number of sources (participants) that included one or more of the stated code.

Seven of the nine common themes in Table 2 are coded under the Built Environment. All of the students’ included their own home on the map, 10 included familiar houses, and 12 included arbitrary houses. Familiar homes were most commonly attributed to those of friends or family. The importance placed in homes, as well as value placed in aspects of the built environment are common results noted throughout a variety of other children perception based neighbourhood studies (Fitzpatrick, 2014; Gillespie, 2010; Hume *et al.* 2005; Halseth & Doddridge, 2000).

Common themes that arose through Activity 3 from the participants written responses to “what are my favourite places in my neighbourhood” and “what is important to me about my neighborhood” are found in Table 3.

Code	“What are my favorite places in my neighbourhood?”	“What is important to me about my neighbourhood?”
Familiar House	3	3
My House	4	3
Built Play Area	4	1
Store	4	1
Tree of significance	0	2
Socializing	0	2

Table 3: Most commonly coded written responses to Activity 3 questions 3 and 5.

The responses found in Table 3 directly align with the common themes noted throughout the verbal and illustrated responses.

When asked “What do you think are important things that are specifically in your neighbourhood?” and “What are some things that are not in your neighbourhood that you would like to see there?”, children gave a number of responses (Table 4). Throughout Tables 2, 3 and 4 we see value placed in social interaction through the codes for built play area, stores, restaurants, friends houses, and social and community. Social connections and opportunities for interacting with others; whether it is through playing at friend’s houses, socializing at built play areas, gathering at restaurants or seeking community spaces, have been recurring themes in studies pertaining to children’s conceptualization of

neighbourhoods (Fitzpatrick, 2014; Hume *et al.* 2005; Morrow, 2001). These themes represent the participants’ value placed in social interaction and connection with others.

Code	IQ5 “Important”	IQ6 “Missing”
Built Play Area	4	3
Store	5	1
Familiar House	9	1
My House	5	0
School	2	3
Community	3	2
Park	5	3

Table 4: Most Commonly coded responses to Activity 4, interview questions 5 and 6.

Common themes arising through the written responses were similar to those in the verbal responses as well, adding validity to the children’s’ perceptions. For example Participant 7 consistently highlighted the importance of their house and their friends houses throughout responses:

My favourite places in my neighbourhood are: my friends’ house and my house

– Participant 7, Activity 3, Q3

I: What do you think are important things in your neighbourhood?

P: Important things in my neighbourhood are like my friends’ house and my house

– Participant 7, Activity 4, Q5

With a slight change in phrasing from the written question (what is important) to the verbal (what are important things), we can view a shift in response from trees to park, and from socializing to community. Codes for socializing were utilized in instances where the participants referred to “playing with friends” or associating with others in their neighbourhood:

These are a few things in my neighbourhood that are important to me: my house, street parties and summer time bike rides to Jubilee Junction – Participant 10, Activity 3, Q5.

Whereas the community code was applied on a more physical basis:

I: What do you think are important things that are in your neighbourhood?

P: Any type of places where your community can meet

– Participant 6, Activity 4, Q5

Stores and restaurants were recurring themes throughout analysis. Some students referred to restaurants as community gathering places, where others put value in stores or restaurants because that is where they acquired their favourite food or items relating to their hobbies. Themes of stores and restaurants in children's perception of urban neighbourhoods were prominent throughout related studies (Fitzpatrick, 2014; Hume *et al.*, 2005; Halseth & Doggridge, 2000).

The most prominent themes shown throughout the mosaic of responses were the participants' own houses and houses familiar to the participant. Fig. 4 shows one participants' depiction of their neighbourhood, and the value they put in familiar houses. Studies conducted with similar age groups also demonstrated common themes of personal and familiar houses (Fitzpatrick, 2014; Gillespie, 2010; Hume *et al.*, 2005; Halseth & Doddridge, 2000). In Gillespie's study, all of the non-Amish participants included neighbours on their maps, exhibiting a sense of community. Through the presence of houses in our participants maps combined with the community results in Table 4, we see a sense of community arise within the study population of Shambhala School as well. These findings support the basis of the Shambhala School teachings of encouraging students to find a deep connection within their communities.



Figure 4: Home neighbourhood map drawn by Participant 11, Activity 3. Demonstrating participants' importance placed in familiar houses, as shown in legend.

4.4 Sub-question 3: Importance of the Natural Environment

One of the goals of this research was to better understand the place of nature in the children's understandings of their neighbourhood. The importance participants' placed on the natural environment was determined through the mosaic approach; gathering results from all three forms of data in order to add validity to responses by noting recurrences of common themes in multiple data sources.

When analyzing the maps, pictorial representations of nature included trees, water sources and deer. By far, the most prominent pictorial representation of nature was trees (n=10). Fig. 5 illustrates one participant's conceptualization of neighbourhood in relation to the natural environment. This participants' map demonstrates a strong themes of trees, and includes a garden as well as a river. Participant 5 continues the natural environment theme throughout their data by describing their neighbourhood boundaries in terms of natural elements:

I: where are the boundaries?

P: oh, the boundaries are from the tire swing up where the big hill ends, and then down to the bottom of my driveway, which is the river

- Participant 5, Activity 4, Q3b

Within the interviews, participants also articulated in some instances that nature was important to them (i.e. Table 3 depicts 2 responses where students indicated that trees were of importance to them, and parks were a prominent theme arising in Activity 4 as shown in Table 4). These results align with those of Fitzpatrick (2014), Halseth & Doddridge (2000) and Hume et al. (2005). With the study population attending a private school that values and promotes environmental stewardship, prevalence of Natural or Hybrid environments was expected to be higher than other mapping and conceptualization studies, but this was not the case. Barraza (1999) noted in her study of children's drawing about the environment that there was no strong evidence suggesting that children attending schools with environmental policies would develop a higher concern for environmental problems; the same holds true for this study in terms of environmental value. As viewed in Fig. 3, some participants hold higher value in the natural environment than others, but this may be due to where the participant resides. Most of our study population is lives an urban setting leading to less access to a natural environment than children living in a rural area, as depicted by Participant 9, Fig. 5.



Figure 5: Home neighbourhood map drawn by Participant 9, Activity 3. Participant demonstrates value in Natural and Hybrid environments, including trees, water and gardens.

4.5: Other Interesting Findings

There were some unanticipated themes that arose in the analysis of the data that are worth mentioning. For example, five student's included pathways in their map drawings (Table 1). Paths are noted as one of the five landscape elements in Lynch's topography (Lynch, 1960). The grade 4 – 6 age group in Halseth & Doddridge's (2000) study depicted a variety of paths, not solely roads for automobiles. Pathways were also a common theme arising in Gillespie's study (2010). Two of our participants noted "secret" passages, exhibiting a sense of ownership and pride within their community. The presence of pathways shows the children's experience and understanding with the larger environment around them (Halseth & Doddridge, 2000).

Only two participants alluded to the importance placed on sedentary activities, most likely attributed to watching television or playing video games. Outdoor play, and value placed on Natural and Hybrid environments undoubtedly outweighed that of value placed on technology. These are promising results, opposing the notion of videophilia within our study population.

4.6: Conceptualization of Home Neighbourhoods

An overall conceptualization of neighbourhood within the study participants is viewed through their connection with their homes, showing ownership, and homes of friends and family members, suggesting value placed in having a sense of community. Other strong themes arising include those of stores and restaurants. Participants have referred to stores and restaurants largely as places where they acquire their favourite things:

Oh, and I'm just going to highlight this one shop that's in my neighbourhood and on my map which is my favourite thing is Subway – Participant 6, Activity 4, Q 5.

All of the major themes identified through this study have also been exhibited throughout the aforementioned studies in Chapter 4. This study is able to add validity to the previous body of literature in the field of children's conceptualization of neighbourhoods.

Chapter 5

Conclusion

5.1 Summary

This research has examined 18 children's conceptualization of their home neighbourhoods in Halifax, NS. Conceptualization of neighbourhood was viewed from three aspects: how children define their neighbourhood, what children value in a neighbourhood, and what, if any, environmental aspects children deem important in their neighbourhood. Utilizing a mosaic approach by collecting artwork, written and verbal data we add validity to the children's responses by seeing recurring themes in all three areas of data collection. Results from this study indicate that conceptualization of neighbourhood is primarily grounded in the children's sense of home, and opportunities for socializing or play, as seen through the importance of built play areas, parks and abundant references to familiar houses. The aforementioned combination infers a sense of community throughout the analysis.

This study was able to add to the evolving body of literature pertaining to children's conceptualization of neighbourhood. This study was unique in the way that it sought out a specific child generated definition of neighbourhood. Further research on child-constructed neighbourhood definitions and the value children place in the natural environment are recommended avenues for future research. One way to do this would be by looking into common activities and time allocation for these activities of this age group to give a broader sense of what is valued within a neighbourhood. In order to get a better sense of how children define their neighbourhood the four main definition themes (social construct, community, physical area and safety) could be utilized where children, rather than researcher, categorize the elements they include in their maps and written responses into these groups.

5.2 Limitations and Delimitations

This study is limited by a number of factors; time, influence, result application, sample size and sample population. The limitations of time effect how long children will be given to create their maps and complete interviews, perhaps resulting in a rushed creative

process. Time also comes into play when creating a comfortable learning environment where the children are able to openly ask questions and share ideas while having a researcher in the classroom. While speaking to the children all comments and questions posed had to be carefully thought out as to not sway any individuals thoughts toward what they value and how they perceive their neighbourhood. As the home neighbourhood mapping activity was a take-home project, parental influence could not be monitored, although measures were taken in the homework instructions specifically asking parents not to assist with the assignment. Further, utilizing a purposive research population from a private school indicates that the results cannot be generalized to a wider population, although the curriculum created for the four activities can be used to replicate the study.

Due to the time constraints of this project a small sample size was chosen to work with for ease of data collection, management and class time. Purposive sampling from a private school was conducted for ease of entry into the classroom. The age group of grade 4/5 was deemed best in order to introduce complex sustainability topics and discussion into the coursework (Littledyke, 2004).

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5.1 APPENDIX I

Activity 1: Classroom Mapmaking

Day A (9:00 – 10:00): Introduction to mapmaking

Personal Introduction + have students introduce themselves:

- Here to teach about maps and to learn how you create maps

Brief students about the four planned activities:

- 3 in-class activities over the next few months, and one take home activity
- 3 of the activities are map making, and the fourth one I'll ask you some questions about your maps

Ask class:

- Have you ever used a map?
- How are maps helpful?
- What can you map?

Activity: Hand out blank pieces of paper

- Give students 5 minutes and ask them to “map” their route to school
- Ask: what kinds of images they used (how did they draw a road, did they draw any buildings, etc)
- Our brains are hardwired to think about maps, we can naturally create them *hopefully* (ex; someone asking for directions). Maps are a way for us to take what we see in our surroundings and create a representation of it to share with others

Intro to scale:

- Ratio or proportion between the distances measured on the map to the corresponding distances measured on the ground
 - o Relate what they just drew to scale, how everyone's map is a different size and is made up of a different area
 - o Example of scale using length of classroom

Ask class:

- What makes a map easy to read?
- What makes a map hard to read?
- What should be included in a good map
 - o Title, north arrow, legend, scale. (elaborate on each)

Day B (9:00 – 10:30): Classroom Mapmaking

Materials (per group of 3 students):

- 1 piece of white Bristol board
- 25 small popsicle sticks
- 20 large popsicle sticks
- 15 small wooden cubes
- Construction paper
- 20 pipe cleaners
- Pencil crayons
- Markers
- Tape
- Glue

Review four components of a map:

- Title, north arrow, legend, scale

Introduce collaborative mapmaking activity:

- Objective: To create a map of the classroom for a “new student” that will be joining the class. We want the student to feel comfortable with this new space so include classroom components that are used frequently, as well as what you (the student) value most
- Be sure to also include the four main components of a map
- Divide students into six groups of three

Material handout:

- Each group receives an equal amount of materials
- Students are encouraged to use pencils crayons and markers
- Students have 1 hour to complete maps

Day C (9:00 – 10:00): Mapmaking Sharing

Class discussion:

- What was hard about making the maps?
- What was easy about making the maps?
- Looking back, what would you have done differently?

Sharing circle:

- Sit in a circle, give each group 5 minutes to share their maps
- Allow for questions from other students
- Conclude with how we can interpret the same space in a variety of ways depending on what an individual values, this is a good thing

Activity 2: Mapping the Shambhala Neighbourhood

Day A (9:00 – 10:15): School Neighbourhood Walk

Materials:

- Clipboards (1 per student)
- Google map of area for part one (18)
- Simple route map of area for walk (9)
- List of questions (9)
- Extra pencils/ pens

Hand out of Google maps:

- Ask: what do you think a neighbourhood is, how can it be defined?
- Hand out maps and ask each student to put a circle around what they would identify as the Shambhala neighbourhood. Put names on them
- What are some of the features of the Shambhala school neighbourhood?

Tools for map creation:

- Students will be put in groups of 3, each student will have a clipboard
- One student in each group will have a list of questions to invoke thought and discussion of what they see on the walk (read questions to class first and ask if they understand all of the questions)
- One student in each group will have a line drawing of the route that will be taken, this can be used to help formulate the map later, students are encouraged to draw on this (show students where the school is and what direction we will begin walking in)
- One student will be the 'observer' and have a blank piece of paper to take extra notes or draw on

Introduction to walk:

- Explain that we are going to go for a walk around the school, and then mapping what we see
- Remind them of safety rules: Stay on sidewalk, follow crossing signals, stay with their group of three (and the larger group as a whole)
- Remind them that they will be working in their groups next day to create a map (like Activity 1) of the Shambhala neighbourhood
- Put jackets on
- Hand out clip boards and make sure group members are together
- Remind students to bring something to write with
- Begin walk

Questions:

1. What different types of buildings exist in the Shambhala School neighbourhood?
2. What types of commercial places are in our school neighbourhood (restaurants, supermarkets, gas stations, etc.)?
3. Are there any industrial places in our school neighbourhood (i.e. factories, warehouse, electrical plants)
4. What community areas are in our school neighbourhood (schools, libraries, churches, temples, police stations, fire stations, public works, bus stations, etc.)
5. Are there empty places in our school neighbourhood?
6. What kinds of nature do you see in your school neighbourhood, and where do you see it?
7. If you were going to create a map of the school neighbourhood, what do you think is important to include?
8. What are some of the favourite things you saw on the walk (write them below and indicate on the map where they are located)

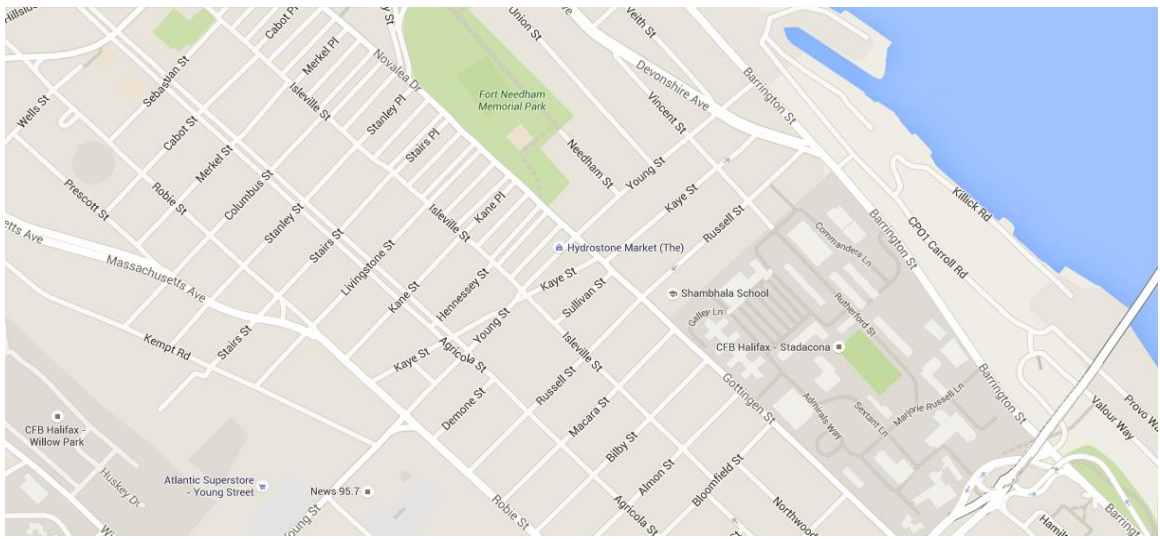


Figure 1: Google map image of North End of Halifax NS. Students were asked to draw a circle around where they perceive the boundaries of their school neighbourhood are.

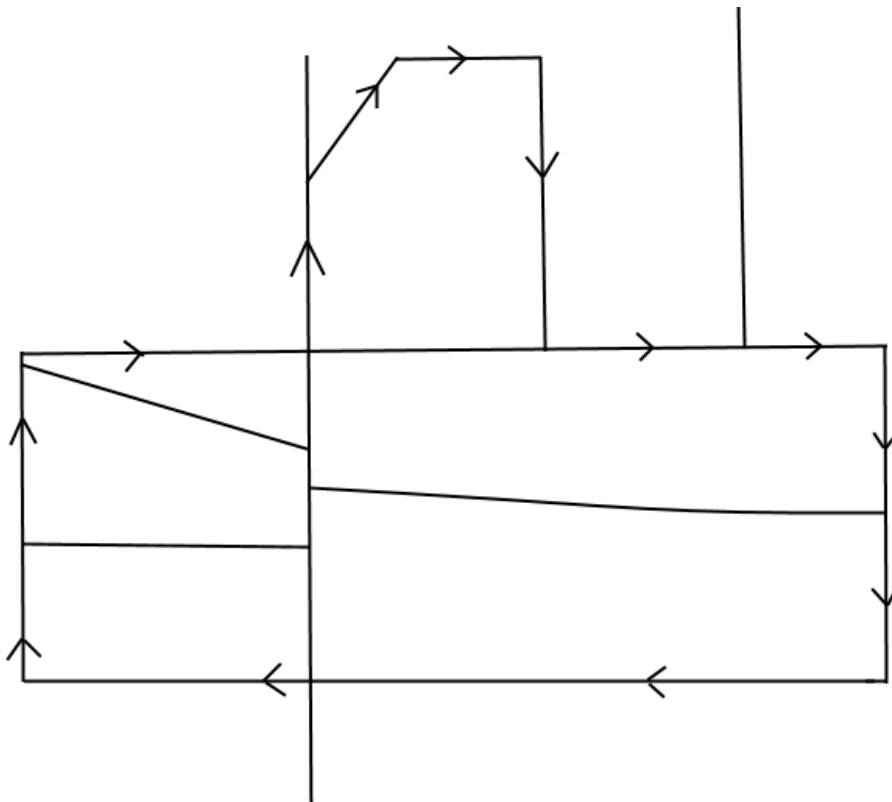


Figure 2: Line drawing of route taken through Shambhala school neighbourhood. Students were encouraged to draw on this during the walk.

Review:

- Review four main components of a map
- Remind students of answers from “What was hard, easy and what they would do differently?” in regards to map making

Introduce collaborative mapmaking activity:

- Objective: To create a map of school neighbourhood for a “new student” that will be joining the class. We want the student to be excited for their new school neighbourhood
- Be sure to also include the four main components of a map
- Create map based on what you (students) value most
- Divide students into six groups of three
- Remind students that this is a collaborative process and to respect each individuals input

Material handout:

- Each group receives an equal amount of materials
- Each group receives notes that they took the previous activity day during the walk
- Students are encouraged to use pencils crayons and markers
- Students have 1 hour to complete maps

Day C (9:00 – 10:00): Mapmaking Sharing

Class discussion:

- What was hard about making the maps?
- What was easy about making the maps?
- Looking back, what would you have done differently?

Sharing circle:

- Sit in a circle, give each group 5 minutes to share their maps
- Allow for questions from other students
- Talk about Activity 3 being an individual take home assignment and ask if there are any questions about creating a neighbourhood map as an individual

Activity 3: Take Home Neighbourhood Mapmaking

Materials:

- 1 piece of Bristol board per student

Grade 4/5 Neighbourhood Mapping Assignment

Introduction

For this take-home assignment, you get to make a map of your home neighbourhood (if you have more than one home, choose one of them, or find a creative way to combine them all). Don't forget to apply all of the skills that you learned in class when we made maps of your classroom and school neighbourhoods.

Important note

- You should take a walk around your neighbourhood before you start.
- Remember to depict your neighbourhood how you view it (there are no right or wrong ways of doing it)!
- If your parents or guardians ask to help out or suggest what you should put in your map, you should politely tell them to go and play somewhere else!

Tasks

- a) Use the provided piece of Bristol board to create a map of your home neighbourhood
- b) Write your answers to the questions below on a separate piece of paper and attach them to your map
 - i. Where are the boundaries of my neighbourhood (where does it start/end? how big is it?)?
 - ii. What do I enjoy doing in my neighbourhood?
 - iii. What are my favourite places in my neighbourhood?
 - iv. Are there areas in my neighbourhood where community comes together?
 - v. Here is a list of areas in my neighbourhood where community comes together:
 - vi. What is important to me about my neighbourhood?

Key Components For Maps

- i. Title
- ii. Legend
- iii. North arrow
- iv. Your name
- v. A scale (this is **not** for your map – but go ahead and include it if you want to)

Due Date

Monday December 7th in class.

Activity 4: Exit Interviews

Materials:

- Audio recording device
- List of questions

Overview:

- Interviews conducted one-on-one
- Students will have the opportunity to skip any questions and go back to them, if they wish, at the end
- Each student will be given 10 minutes for the interview

Interview questions:

1. What did you like about the previous three activities?
2. What did you not like about the three previous activities?
3. In general, what is a neighbourhood?
 - a. How would you define it?
 - b. How do you know where the boundaries are?
 - c. How do you know when you've gone from one neighbourhood to the next one?
4. Do you think everyone thinks differently about a neighbourhood?
 - a. How do you think they think differently?
5. What do you think are important things that are specifically in your neighbourhood?
6. What are some things that are not in your neighbourhood that you would like to see there?
7. Is there anything that is in your neighbourhood that you would prefer wasn't there?
8. When you drew your map of your home neighbourhood did you include anything about nature in it?

APPENDIX II

Code Book
Children's Neighbourhood Study

Built Environment

- Built Play Area
- Car
- Commercial
 - Business (other)
 - Store
 - Restaurant
- Health Care
- House(s)
 - Arbitrary house(s)
 - Familiar house
 - My House
- Car
- Road
 - Crosswalk
 - Driveway
 - Labeled
 - Pathway
 - Sidewalk
 - Traffic light
 - Unlabeled
- School

Hybrid environment

- Backyard
- Garden
- Park

Natural Environment

- Tree
- Water
- Wildlife

Other

- Community
- Fun
- Physical Activity
 - Walking
 - Biking
 - Play
- Sedentary Activity
- Socializing
- Waste Management

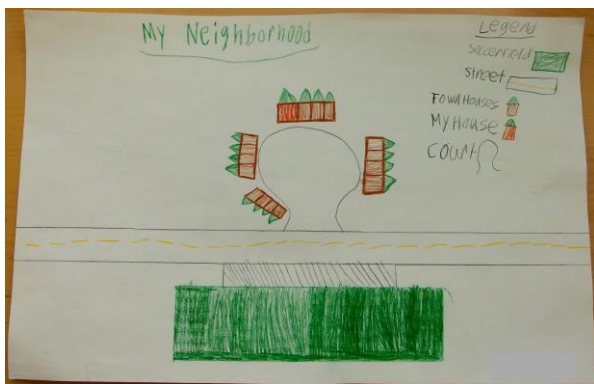
APPENDIX III: Children's Home Neighbourhood Maps, Activity 3



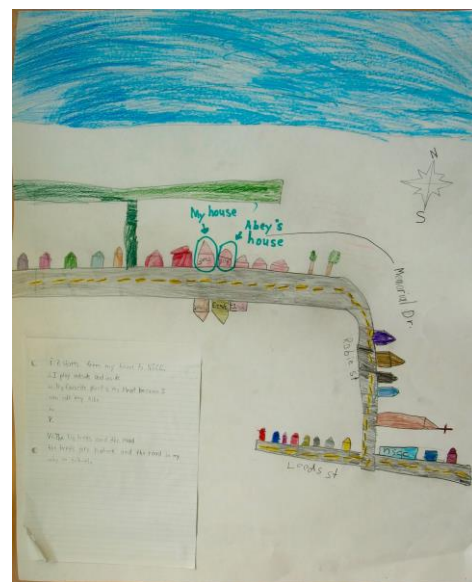
Participant 1



Participant 2



Participant 3



Participant 4



Participant 5



Participant 6



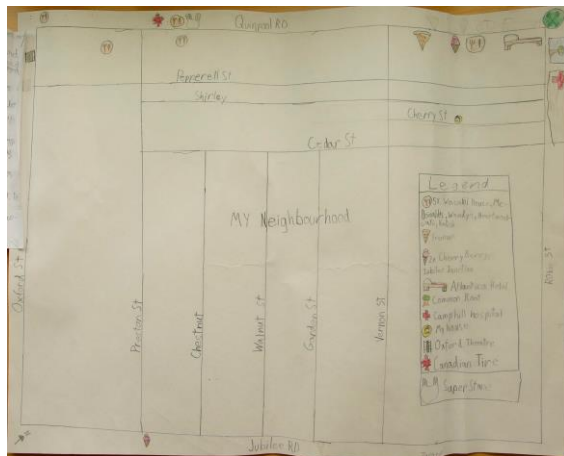
Participant 7



Participant 8



Participant 9



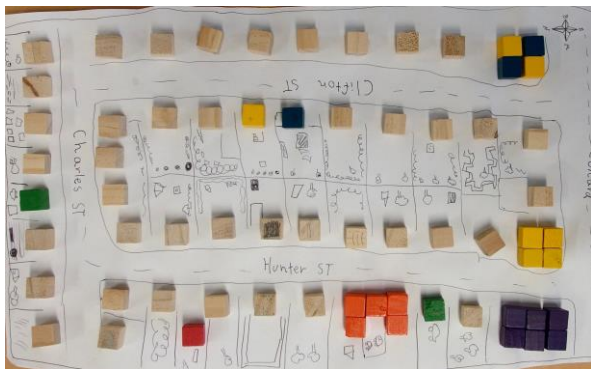
Participant 10



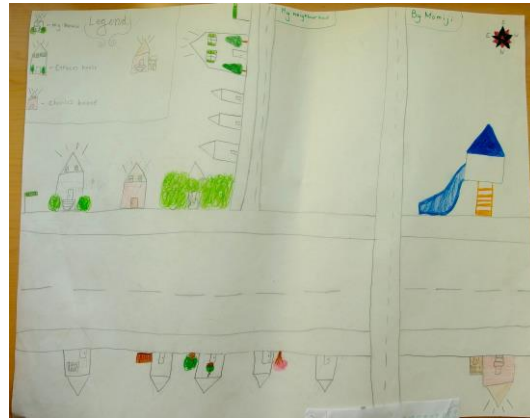
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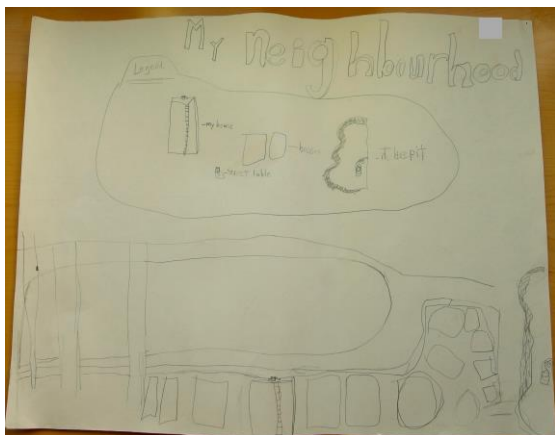
Participant 12



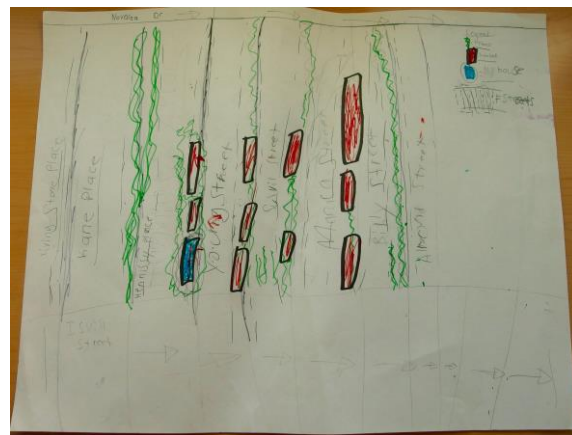
Participant 13



Participant 14



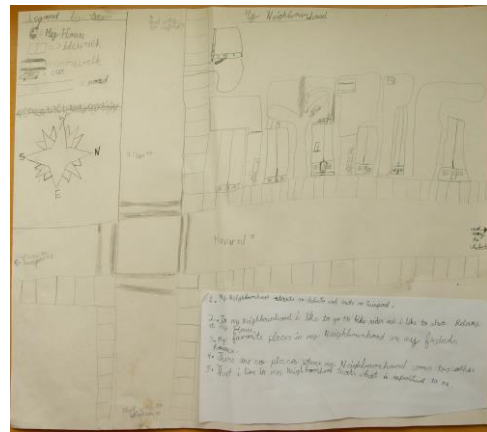
Participant 15



Participant 16



Participant 17



Participant 18

APPENDIX IV



CONSENT FORM

Project Title: An Examination of 4th and 5th Grade Children's Conceptualization of Neighbourhoods in Halifax Nova Scotia

Dear Parents of Students in the Shambhala School Grade 4-5 class of 2015/16.

We are excited to be working with Ms. Younger and the Grade 4-5 class this year on a research study to gain a better understanding of how children understand neighbourhoods and what they see as important aspects of neighbourhood. The research is being conducted by Adrean Ojoleck who is an undergraduate student in the Faculty of Science under the supervision of Dr. Tarah Wright at Dalhousie University. Adrean and Tarah will be going into the Grade 4-5 classroom on multiple occasions throughout the year to guide them through the activities related to this study. These activities will be part of the curriculum this year, however, we will only collect and analyze the data of those children who have returned consent forms to the school. The collection of data from your child's work is up to you. The information below tells you about what is involved in the research, what your child will be asked to do and about any benefit, risk, inconvenience or discomfort that they might experience. Please ask as many questions as you like. If you have any questions later, please free to contact either of us at any time.

Who Is Conducting the Research Study

Principal Investigator: Adrean Ojoleck, Dalhousie University, BSc. Major and Honours in Environmental Science degree program, adrean.ojoleck@dal.ca

Supervisor: Dr. Tarah Wright, Dr. Tarah Wright, Professor, Dalhousie University, Environmental Science, tarah.wright@dal.ca

Purpose and Outline of the Research Study

The primary objective of this research is to gain a better understanding of how children conceptualize their surrounding neighbourhoods. Specifically, this study focuses on understanding children's perceptions of their classroom, school neighbourhood, and home neighbourhood. By investigating this topic the principal investigator hopes to gain a greater understanding of (a) how children define a neighbourhood, (b) what children value in a neighbourhood, and (c) extent to which the environment and nature are identified as important places in children's conceptualization of neighbourhood.

Who Can Participate in the Research Study

Any student registered in Ms. Katia Younger's Grade 4/5 class at the Shambhala School, Halifax, NS, is eligible to participate in the study. Given the age of your child, consent needs to be given by you as their parent/guardian (please see below). Participating in this study has no impact on your child's role in the class. All students will be taking part in the activities associated with this study, however, we will only collect and analyze the data of those children who have returned consent forms to the school.

What Your Child Will Be Asked to Do

To help us better understand how children conceptualize neighbourhoods we will guide students through 4

activities (only 3 activities for students who have not returned consent forms). Activities 1 and 2 will be held in October, and Activity 3 and 4 in November.

The activities will consist of three in-class activities and one take-home assignment. In Activity 1, students will be guided in discussion about the importance of maps and what makes a good map, then students will work in groups to create a visual map of the classroom. Activity 2 includes a walk around the Shambhala neighbourhood followed by a second collaborative map-making session. During the guided walk the PI will take field notes on likes and dislikes noted by the students. These likes and dislikes will be general observations, and will not be associated with the students' alphanumeric codes. Data collection will only be noted if the children making the observations have signed consent forms. Activity 3 is a take home assignment where the students create a representation (map) of their neighborhood in relation to themselves. The students will be given a piece of Bristol board and are encouraged to be as creative as they can in creating a map of their neighbourhood. Children will hand in their map with the answers to the following questions attached on the side:

- Where are the boundaries of my neighbourhood (where does it start/end? How big is it)?
- What do I enjoy doing in my neighborhood?
- What are my favorite places in my neighborhood?
- Are there areas in my neighborhood where community comes together?
- Here is a list of areas in my neighbourhood where community comes together:
- What is important to me about my neighborhood?

Activity 4 is an exit interview where they will be asked the following questions:

- What did you like about the previous 3 activities?
- What did you not like about the 3 previous activities?
- What is a neighbourhood? How do you define it (where are the borders? What are the elements?)?
- What is important to have in a neighbourhood?
- What is important to NOT have in a neighbourhood?
- What do you value about your neighbourhood?
- What do you think your neighbourhood is missing?
- What is the most exciting thing you learned from these activities?

Only students with signed consent forms and the appropriate boxes checked will participate in Activity 4, all other activities will be part of Ms. Youngers regular curriculum, we are therefore asking consent only to collect and analyze data related to your child's contributions to and submissions for Activities 1-3.

Possible Benefits, Risks and Discomforts

Students who participate in this study will indirectly contribute to knowledge in the field of non-formal environmental education.

Given the nature of this study, the perceived risks and/or discomforts for participants are minimal. A potential discomfort that may be felt by participants is: inability to understand what a particular question is asking them. The probability of this discomfort is low.

During the interview, students will have the option to skip questions alter previous answers, or revoke participation all together by verbally informing the PI that they would no longer like to participate.

Compensation / Reimbursement

There will be no compensation/ reimbursement for your child's participation in this study.

Privacy and Confidentiality

The maps your child designs will be analyzed by the PI and her supervisor. The exit interviews will be audio recorded and then transcribed to ensure all answers are completely captured. Your child will be offered the opportunity to read their transcribed interview and make changes to their answers should they wish.

Once all relevant data has been gathered, it will be transcribed or captured pictorally into electronic documents and compiled into a computer program called NVivo. This program is popular in social science research as it provides a researcher with the tools necessary to organize, compile, analyze and make connections between different data. The data will remain in NVivo, on a password-protected computer in a locked research lab on Dalhousie campus to ensure that only the research team has access to participant responses. Back-up copies of the electronic data will be put on an encrypted external hard-drive that will remain in the locked lab throughout the research process.

In extreme cases, confidentiality may need to be broken. In particular, with this type of study it must be clear that it is the researcher's legal responsibility to report any information that may indicate a participant has been subjected to abuse or harm.

All data gathered for this study will be kept private. In unlikely circumstances, other authorized officials at the University such as the Research Ethics Board or the Scholarly Integrity Officer may have access as well. In order to keep you/your child's information confidential throughout the study, each student will be assigned an alphanumeric code (e.g. A1, A2, B2), known as their 'participant code name', that will act as an identifying indicator throughout research process in both written and electronic documents. Any identifying information will be kept separately from other data in a locked cabinet or on a password-protected computer within an encrypted file. The final results of the research are to be shared in: (a) a thesis format, (b) scholarly publications, and (c) conference presentations.

In specific insitances, a direct quote that your child made in the exit interview, may be used in the final report. By signing this consent form, you/your child agree that your child's direct quotes may be used within the thesis, but only using your child's assigned alphamumeric participant name (i.e. their real name will never be used and will only be known by the PI and supervisor). Further, the class will be acknowledged in any publications that result from the study, but exact names will not be used.

If You Decide to Stop Participating

While the activities for this study are to be part of the curriculum in the Grade 4/5 class this year, you/your child is free to choose to not have his/her/their data used in the study. If **you/your child** decide that you do not wish her/his/their data to be used any longer, you can inform us in writing at any point throughout the year up until March 1, 2015 (after that time, it will become impossible for us to remove the results will already be published). Further **you/your child** can also decide whether **you/your child** wish for any of the information that they have contributed up to any point to be removed from our analyses. In terms of Activity 4, you may revoke your child's participation by informing us in writing at any point up until

Activity 4 takes place in November. If your child feels uncomfortable during the interview they may verbally communicate to the PI that they no longer wish to participate in the Activity. You may revoke your child's data from Activity 4 any time up until March 1, 2015 by informing us in writing.

How to Obtain Results

We will provide you with a short description of group results when the study is finished. No individual results will be provided.

Questions

We are happy to talk with you about any questions or concerns you may have about your participation in this research study. Please contact Adrean Ojoleck (at 902-302-9547, adrean.ojoleck@dal.ca) or Dr. Tarah Wright (at 902-494-3683, tarah.wright@dal.ca) at any time with questions, comments, or concerns about the research study (if you are calling long distance, please call collect). We will also tell you if any new information comes up that could affect your decision to participate.

If you have any ethical concerns about your participation in this research, you may also contact Catherine Connors, Director, Research Ethics, Dalhousie University at (902) 494-1462, or email: ethics@dal.ca

Signature Page

Children's Neighbourhood Study: An Examination of 4th and 5th Grade Children's Conceptualization of Neighbourhoods in Halifax Nova Scotia

Principal Investigator: Adrean Ojoleck, Dalhousie University, 902-302-9547, adrean.ojoleck@dal.ca
Supervisor: Tarah Wright, Dalhousie University, 902-494-3683, tarah.wright@dal.ca

Please read the following statement before signing the consent form:

My child and I have read the explanation about this study. My child and I have been given the opportunity to discuss it and any questions I have posed have been answered. My child and I agree to their participation in this study. My child and I realize that the analysis of their work for Activity 1 – 3 and participation in Activity 4 is voluntary and that my child and I are free to revoke their work from the study at any time.

Participant's Name (Child)

Participant's Parent/Guardian

Date

Adrean Ojoleck, Principal Investigator

Date

_____ I agree to the participation of my child in Activity 4
Parent/ Guardian Initial

_____ I agree to the use of audio recording during my child's Activity 4 interview
Parent/ Guardian Initial

_____ I agree to the use of my child's quotes from Activity 4 in publication of this study
Parent/ Guardian Initial

APPENDIX V



Social Sciences & Humanities Research Ethics Board

Letter of Approval September 29, 2015

Ms Adrean Ojoleck
Science\General (Science)

Dear Adrean,

REB #: 2015-3596

Project Title: An Examination of 4th and 5th Grade Children's Conceptualization of Neighbourhoods in Halifax Nova Scotia

Effective Date: September 29, 2015

Expiry Date: September 29, 2016

The Social Sciences & Humanities Research Ethics Board has reviewed your application for research involving humans and found the proposed research to be in accordance with the Tri-Council Policy Statement on *Ethical Conduct for Research Involving Humans*. This approval will be in effect for 12 months as indicated above. This approval is subject to the conditions listed below which constitute your on-going responsibilities with respect to the ethical conduct of this research.

Sincerely,

A handwritten signature in blue ink, appearing to read "Karen Beazley".

Dr. Karen Beazley, Chair

Appendix VI: Consent from Mrs. Katia Younger, Shambhala School

From: "kyounger@shambhalaschool.org" <kyounger@shambhalaschool.org>
Date: Thursday, 16 April, 2015 3:08 PM
To: Tarah Wright <tarah.wright@dal.ca>
Subject: Re: potential collaboration at in your class next year

That's awesome! We are studying Canada next year and mapping is a big part of it. We can definitely work this in to the curriculum next year. Let's meet in August to discuss final details.

Katia

On Apr 15, 2015, at 9:04 PM, Tarah Wright <Tarah.Wright@Dal.Ca> wrote:

Hi Katia!

I would like to ask if you are open to having a crackerjack Honours students (under my direction and with my extensive help) work with you and your class next fall (2015) on a collaborative research project to better understand how children conceptualize neighbourhoods using the tool of mapmaking. The project would involve us working with your class of students throughout the fall semester (see attached document – 3 learning visits and 1 take home assignment). Our team would work with you and the students in participatory data collection including participatory map making, the development of artistic expressions of neighbourhood, and interviews with individuals about neighbourhoods. We would also love to write a journal with the results of the study (we would do the majority of the writing, but would ask for their input and use direct quotes from them AND acknowledge their participation in the paper). Of course, we would go throughout the Research Ethics Board before engaging in this work as well as gaining consent from the school and from parents. Let me know if this interests you at all and we can meet and discuss. NO PRESSURE!

Cheers, Tarah

P.s. Why your class? Research shows that grades 4-6 is a time of cognitive progress; children are increasingly able to think critically and theoretically, reflect on multiple perspectives, enhance their knowledge of different subjects and relate their knowledge to new learning situations (Eccles, 1999). This maturity shows that the fourth to sixth grades are an appropriate time to introduce more complex sustainability and environmental topics and discussion (Littledyke, 2004).

Tarah Wright, Ph.D.
Dalhousie University
Environmental Science