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The Playground Fight:

Investigation of How School Playgrounds Help Steer Children Towards Nature

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Abstract:

This thesis examines the various roles of school playgrounds in the Lund municipality in relation to their ability to foster nature relationships in children. In the same vein, the thesis also explores the reasons behind why certain humans care more for the environment than others, especially in regard to taking pro-environmental action. Nature is explored as a positive experience which furthermore positively affects children in a numerous amount of ways such as health, cognitive development, emotionally, socially and most importantly, in the fostering of nature relationships which act as a way to fight learned helplessness. The findings of the research illustrate that although Sweden is a very environmentally forward country, the majority of school playgrounds in the Lund municipality do not project a great amount of nature or nature experiences, with the dominant ground materials on playgrounds being concrete, the most common location was suburban, and the most common activity was sports. The variety of experiences with nature or lack-thereof, explain why a certain portion of humans care more for the environment than others. Furthermore, with the predominant number of playgrounds having minimal amounts of nature experiences, it clarifies why only a small number of people take pro-environmental action.

Keywords: Human ecology, playground, playscape, school, play, learned helplessness, phenomenology, nature, Lund, Sweden, environmental education.

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This has been a long and hard project for me because until a year and a half ago I had no idea what human ecology was and the learning curve was steep.

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The Playground Fight:

Investigation of How School Playgrounds Help Steer Children Towards Nature

Upon the education of the people stands the fate of the country.

- Benjamin Disraeli (HaileMariam 2001, 112)

Education is the most powerful weapon which you can use to change the world.

- Nelson Mandela (2003)

1. Introduction:

Biophilia; a love of life and the living world (Fromm 1964, 9). The definition was further expanded by Wilson (1984) to include the rich, natural pleasure that comes from being surrounded by living organisms. Nature meanwhile, is defined in the 'realist' sense as "those material structures and processes that are independent of human activity (in the sense that they are not a humanly created product), and whose forces and causal powers are the necessary conditions of every human practice and determine the possible forms it can take" (Soper 1995, 132).

Since the 1950s there has been a growing trend of children spending less time being and playing in nature (Wight et al. 2016, 518). With the ever-increasing presence of concrete, availability of attention-capturing technology, parental safety concerns, and homework and afterschool activities, there has been an ever-diminishing presence of nature, thereby eliciting a need to "restore...the human connection to nature" (Light 2000, 64; Clements 2004; Copeland et al. 2012; Evernden 1999). Urbanisation is creating an alienation from nature, a connection which is thought (especially among children) to be very powerful in creating an attachment to nature. Furthermore, the lack of biophilia can explain the lack of action to protect the natural environment as adults. Famous naturalist and broadcaster Sir David Attenborough (The Guardian 2011) has warned that living in a modern urban living has made "over 50% [of the world population] is to some degree out of touch with the natural world", so much so that a malady known as 'Nature Deficit Disorder' (NDD) has sprung up and is said to be the cause for various other diseases such as depression, diabetes and ADD (Louv 2005, 34; Hailwood 2015, 2).

It may be that no amount of international treaties, government planning and regulations, or even environmental instruction in the classroom, will be sufficient if people lack the love and respect for nature to compel them to conduct their everyday business in ways that do not destroy their environmental support system (Marten 2001, 122).

A story Marten utilises to show case this involves a scenario where a child is separated from its family at birth and raised in a dormitory. There is daily indoctrination about family, about

love and respect one has for their cherished family. Compare this to a child who has been held in their family's arms and really lived the rich experiences of family dynamics. Will their actions towards their parents be the same as each other's? The same is true for nature. In addition, while these factors may help in the creation of an eco-identity for a person, this identity must be replicated a million-fold. One person cannot change all the actions of mankind. Both local level action and global level action must occur. Both need to inform the other and create a feedback loop. Hence the need for environmental education, and specifically of playgrounds.

The majority of children in Sweden which are enrolled and engaged in education, are there for at least a decade. The environment they are in, the people surrounding them, teacher and student, the classes they take, the experiences all help shape a person. Environmental education (EE) refers to a learning process that increases people's knowledge and awareness about the environment and associated challenges; it develops the necessary skills and expertise to address these challenges and fosters attitudes, motivations, and commitments to make informed decisions and take responsible action. Environmental education includes the three dimensions of education: about the environment, for the environment, and in or from the environment. UNESCO (1977, 11) defines the aim of environmental education as a way to "enable people to understand the complexities of the environment and the need for nations to adapt their activities and pursue their development in ways which are harmonious with the environment". One often overlooked aspect of environmental education are the playgrounds.

Playgrounds are the areas where in between classes children go and play, usually the piece of land is equipped with different sorts of recreation tools and facilities. Recess fosters learning in a non-formal setting, learning such as social interaction. Furthermore, specifically outdoor and nature play have been found to improve health (Huttenmoser 1995) physical and mental development (Fjøltoft 2001, 2004; Grahn et al. 1997), along with promoting environmentally responsible behavior (Wight et al. 2016). However, outdoor play in schools is decreasing. This is because schools need to illustrate that they are doing their jobs as educators and are teaching worthwhile knowledge to children. The method of evaluation for this, are standardized tests. As such, there has been an increase of pressure on schools' academic standards (Copple & Bredekamp 2009; Miller & Almon, 2009). As a consequence, playtime in the playground is devalued because they are not seen as adding any academic value (Patte 2009). In order to combat this narrative, this thesis explores the role of school playgrounds, looking specifically at whether and how, school playgrounds in the Lund municipality foster environmentally responsible behaviour.

1.1. Aim and Research Question:

The aim of the thesis is to contribute to the discussion of intersection of culture, power and sustainability. A further aim is to contribute to a larger debate on how to get people environmentally active, specifically by looking at how children experience nature in school

playgrounds. With the current propensity of climate issues, it is important to understand the actions or more accurately the lack-thereof.

As such, the first research question tackles: what is the reason behind why certain humans care more for the environment than others? Secondly, why do an even smaller percentage of people take pro-environmental actions? The principal research question of the thesis is: in what sense do compulsory school playgrounds in the Lund municipality foster nature relationships?

Previous research, articles and analytical concepts will be utilized to answer the first two questions. Meanwhile, the first task in being able to answer the third question is to first look at: what do the school playgrounds look like now? This includes looking at their location, their size, the type of ground materials used, and the activities available. Secondly, is to take those observations and discuss: what role do the playgrounds have or serve now? With this information a complete answer to the full question can be ascertained.

1.2. Scope:

The scope of the paper is a focus on the playground aspect of environmental education. While playgrounds are not the only possible source of outdoor nature experiences that children have, because of the frequency of visit, 5 days a week, and the time allocated, roughly 1-2hrs per day depending on the school, playgrounds form a major part of a child's total daily experience with nature. The study examines the different school playgrounds across a local scale and context, namely, Lund municipality located in Scania, the most southernly province of Sweden, see fig.1 and fig. 2. The reason behind the choice of location is because of easy access due to current living conditions.



Fig.1: The location of Lund (Sweden 2018).

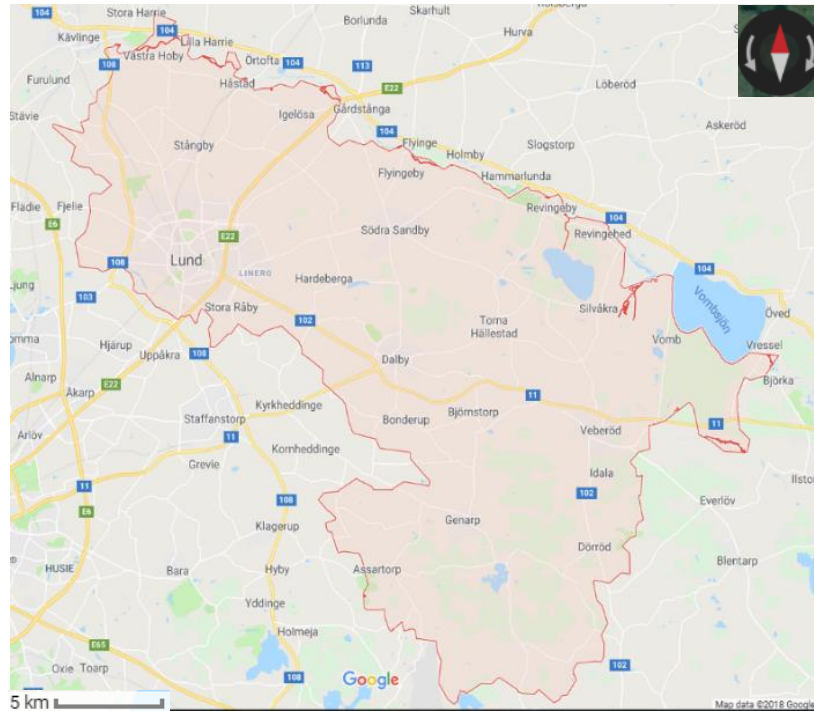


Fig.2: Lund municipality (Lund 2018).

The project itself focuses on school playgrounds from schools which includes the grades 1-9 which corresponds to ages: 7-16. Only compulsory schools have been utilised in the study. Furthermore, home-schooling, boarding schools, and learning disability schools have not been studied due to the increased amount of time and analysis that would be needed because of their different schooling system, pedagogical styles and teaching methods.

1.3. Rationale:

The rationale behind the topic choice is many-fold. Firstly, as already stated, this paper aims to contribute to the wider discussion of how to increase environmental engagement among people. Education is a useful tool in this quest, because 1) Every human being (according to the human rights convention) is entitled to education, consequently it reaches a wide berth of people, 2) A school's primary goal is to teach people about the world, and environmental education forms a big part of this.

Secondly, there is a perceived increased need for environmental education because of the worsening situation of climate change and all its attached consequences. With a global leader who went as far as to claim that climate change is a hoax invented by the Chinese (@realDonaldTrump 2012). Consequently, environmental education has become increasingly more complex due to the variety of conflicting opinions concerning climate science and more, and subsequently all the more important. The rationale behind the choice of playgrounds specifically is "(t)he playground is increasingly the only outdoor place in which children spend their time during the week" (Grahn et al. 1997, 97).

In terms of academic content on playgrounds, the majority of papers look at the benefits that playgrounds bring to children (see section 3.2: Huttenmoser 1995; Fjøltoft 2001, 2004; Grahn

et al. 1997; Wight et al. 2016, Carr & Luken 2011; Chawla 2013). A different subset of papers looks at how to improve playgrounds (Carr & Luken 2014; Frost 1992; Louv 2007). There have been numerous studies on EE, so much so that the subject area has received at least two journals dedicated solely to environmental education research. However, there is a vast imbalance in the content. There is an immense focus either on outcomes (environmental, academic or otherwise) or on behavioural impact on students (see section 3.3: Stern, Powell & Hill 2014; Ardoin et al. 2018; Wheeler et al. 2007). This thesis utilises the knowledge of these papers to thus investigate the various roles the school playgrounds serve across the Lund municipality. Furthermore, there is personal interest to see whether and how an environmentally friendly and forward country like Sweden is helping children to become environmentally friendly by looking at their playgrounds.

Finally, there is some lack of integration of GIS either as a visualisation tool or as an analytical tool with regards to EE and with school playgrounds. Of the available GIS papers, there are two prominent themes, one regarding accessibility (cf. La Rosa 2014; Nicholls & Shafer 2001; Abdul Al 2017) and the other regarding health and outcomes (cf. McCarthy, Hughey & Kaczynski 2017; Luke et al. 2011; Andersen et al 2015). The reasons for the utilisation of GIS were for 1) Visualisation of data which was important so that the reader could see where each of the schools were located but also their variables (i.e. size, school type, ground), 2) It allows for varied analytical patterns, specifically ground cover analysis, area measurements, and data enrichment 3) It is simple and effective, 4) There is currently very limited application of GIS concerning environmental education in existence, 5) I wanted to use it.

1.4. Structure of the Thesis:

The structure of the paper is as follows. Firstly, an explanation of the materials and methods utilised; desk-based analysis, direct observation, and GIS, along with the attached issues, and limitations involved. The third section delves into the background information needed for the case; first the concept of play, second is a presentation of previous research on playgrounds, thereafter on environmental education, next is a brief overview of the Swedish school system, and lastly is information regarding Sweden's connection with nature. The fourth section is the analytical frameworks and theoretical perspectives which is a combination of phenomenology, perceptions of nature and 'learned helplessness'. The fifth section is the results and analysis, which is a presentation of all the collected data and its analysis. The penultimate section is the discussion whereby all the analysed data will be further debated but on a larger scale and with the inclusion of the analytical frameworks and theoretical perspectives. The eighth section is conclusion which summarises the data, along with a look at what to gauge for the future.

2. Materials and Methods:

To ascertain an answer to the proposed research area, three main methods for data gathering were utilised; desk-based literature, direct observation and GIS. Desk-based analysis was utilised in order to ascertain general knowledge on the research area at hand. Direct

observation was employed as intel gathering to detail the various qualities of the school playgrounds. Finally, GIS was employed as a visual and analytical tool to measure ground cover and observe any spatial distribution patterns. By utilising a 'mixed methods' type of approach, a more complete picture of environmental education of playgrounds data research should emerge.

2.1. Desk-based Analysis:

The desk-based analysis of literature covered a wide amount of basic information which was necessary for the research analysis and in order to form a conclusion. The pro of desk-based analysis is that it allows for easy data collection on a wide variety of topics which feature as background information and literature review. This information is grouped into two main headings: general knowledge and specific knowledge. The general knowledge consists of basic information surrounding the concept of play, playgrounds, environmental education, Swedish schooling and Sweden's relationship with the environment. Specific knowledge meanwhile, concerns detailed knowledge for each specific school, such as: the surrounding area, presence of nature, school teaching style, school type. The latter information is vital in the creation of GIS maps, further explored in section 2.3 below.

The two approaches used to find data and relevant information were via branching and database searches. Branching included finding a good source via search engines like Google Scholar and then perusing the bibliography of the concerned paper to find further resources. Database searches included using key words pertaining to the dissertation such as: environmental education, playscapes, playground, Sweden education, GIS, in database journals such as: Nature, Environmental Education Research, International Journal of Play, The American Journal of Play, and the Lund University library.

2.2. Direct Observation:

Direct observation is, as the name implies, a form of perceiving or seeing. The main distinguishing factor of direct observation from participant observation is the removal of participation from the perceived action/event/persons/object. The observer in this case, strives to be as unobtrusive as possible so as to minimise the bias of the data being collected. The pro of utilising direct observation was the amassing of data without having to rely on other people as such the data collection occurred efficiently and smoothly. A con of direct observation is that certain types of pertinent data were only accessible through conversations with people.

In this instance, direct observation occurred in two ways: observation of school grounds (i.e. what is the turf made off), and observation of activities (i.e. what activities or interactions are there at the school). The observations were made at the location in question. In order to amass the observations, an ArcGIS application known as Survey123 was utilised which would allow for easy import of data into a GIS map (explored in section 2.3 below). Furthermore,

pictures were taken of the playground for visualisation of data¹. A sample of what the application and note taking process looked like is seen in fig.3.

The screenshot displays the Survey123 for ArcGIS interface. At the top, there is a navigation bar with 'Survey123 for ArcGIS', 'My Surveys', and 'Help'. Below this is a green header for the survey titled 'Lund school activities/interactions'. The main content area has a white background with a green header for the survey title. Below the header is a summary text: 'Summary of activities or interactions available at compulsory schools in the Lund municipality'. The survey consists of three numbered questions:

- 1** What kind of turf is available at the school? *
Grassy, wooded, sandy, concrete, faux, earthy,
- 2** What activities or interactions are available at the school?
Sports, gardening, open area, playground
- 3** What does the school ground look like?
Take a picture

Fig.3: Screenshot of Survey123 questions utilised per school.

The data collected was subsequently coded. Firstly, was the coding of the schools, this was accomplished through utilising previous data from Lund.se which had already amassed data on what type of school the facility was; municipal, independent or international. The reason for the inclusion of this data is because depending on the type of school, certain variables may alter such as the school system, pedagogy and teaching methods, this is further explained in section 3.4.

Second, was the coding of the location types or of the surrounding landscapes. There was a total of four categories: urban, suburban, village, and nature. The process of categorisation was through the utilisation of the data enrichment analysis tool of ArcGIS online which illustrated the population number of a surrounding area in addition to direct observation of the surrounding landscape. Urban landscapes were found in the centre of larger cities or towns, these held the majority of the population of the surrounding area. Furthermore, the area was characterised by a heavy presence of apartment complexes. Suburban landscapes had a smaller population than the urban landscape, and the majority type of residence were houses. Village was comprised of much smaller populations in comparison to the nearby city or town, and the area contained houses only. Nature landscapes contained the least amount of people. While nature landscapes contained a few houses they did not encompass

¹ The photographs of playgrounds in the thesis are ones taken by the author

apartment buildings and furthermore they had to be encircled by nature on at least three sides.

Third, was the coding of the type of activity available at the school; sports (i.e. football, basketball, working out, table tennis), play (i.e. swings, jungle gym, climbing frames, sand lot) and finally nature (i.e. wood, green spaces, water, garden, trees). The type of activity available at the schools illustrate the focus of said schools.

Fourth, the size of the playgrounds. Table 1 presents the author's size classification of the playgrounds.

Table 1: Author's classification of sizes of the playgrounds.

Size (square meters)	Size denomination:
>15,000	Extra-large
15,000-10,000	Large
10,000-5,000	Medium
5,000-3,000	Small
3,000 <	Extra-small

2.3. GIS:

ArcGIS is a geographic information system (GIS) software which allows for the "visual representation of complex socio-spatial processes embedded in everyday life experiences of the individual" (Boschmann & Cubbon 2014, 238). Utilising data stored in tables and layers, ArcGIS allows one to create, edit and present maps. A pro of utilising GIS as a method involves the efficient amassing of a variety of information concerning the data collected as well as the great visualisation and analysis of data. A con of GIS is that it is difficult to use without previous instruction.

In combination with the Survey123, the geographical coordinates of the school playground locations were amassed and exported into Excel and the ArcGIS Online database. Herein, points were created which held the collection of survey data; which school, what kinds of ground materials, what types of activities, picture of the location.

Subsequently, the creation of several different types of layers of the schools; majority ground type, school type, size, and location. ArcGIS furthermore allowed for ground cover analysis wherein different areas of the map were highlighted and demarcated into the different types of land usage, this included: forested, concrete, grass, sand, soil, water, turf. Then, with the measure tool the square footage of the area was measured in order to get the percentages of ground cover for each playground.

Other analytical tools such as the data enrich were utilised to get information concerning the surroundings of the points. While information such as household income, sex, jobs and more, were available, their utilisation would have shifted the scope of the thesis as well as increased the length of the thesis considerably. However, the data enrich did also present information concerning population numbers which was utilised in combination with the direct observance, and satellite maps in order to establish the different environs of the school

playground; i.e. it allowed for the coding of the different school landscapes into urban, suburban, village, and nature.

2.4. Issues and Limitations:

There were several issues that were encountered during the thesis research. The biggest issue was the needed participation/responses from schools and/or teachers. Originally, the focus of the thesis concerned whether and how EE practices differed across schools in the Lund municipality, however, due to a lack of responses from schools and teachers that specific question was abandoned. Consequentially, a research area and question were established which could conduct relevant and interesting research which would exclude the need for human participation.

Furthermore, there were some unknown variables which became limitations to the study. Firstly, concerning the time period for when the school was built or updated was another variable in the playground design. However, whether on their website, or on the buildings it wasn't stated for a majority of schools anywhere. The year they were built would possibly impact how they chose to design their grounds and what the focus is. Second was school size; it was impossible to know what terrains "belong" to which school without interaction. In other words, how far are children able to go during their breaks since there is no fence or boundary to keep them in place for a majority of them? Third, was the presence of construction on-going at some of the schools which made it difficult to analyse. And fourth, the time of year; because of the latency of winter this year (it was snowing in march still) it is possible that the grounds for some of the schools were not their normal ground type such as the 'soil' ones which should potentially be grass which had not had time to grow. Or it could have been because of over-activity. This classification was tricky without direct interaction with people.

Further concerns included the numbering of and classification of school activities which were based on my own observations. Not every little detail was written down unfortunately, so a certain number of activities especially 'play' ones are likely to be underestimated. A lot of schools also had doubles of certain things like several swings or several football courts but it was only counted as one object.

On the whole, this thesis only covered school playgrounds in the Lund area which may not be similar to other municipalities in the rest of Sweden.

3. Desk-Based Analysis:

Section 3 answers the primary research question: what is the reason behind why certain humans care more for the environment than others?

Section 3 is split into five sub-sections, each of which tackles necessary background information into the research topic. Firstly 3.1 introduces the concept of play and discusses its importance in culture. Section 3.2 dissects a variety of articles concerning specifically school playgrounds and introduces the concept of 'playscape'. Thirdly, section 3.3 show cases

the importance of environmental education. Section 3.4 succinctly outlines the Swedish schooling system in order to establish a foundation of what it means to go to a certain type of school and or year. Lastly, 3.5 introduces Sweden's position with regards to nature.

3.1. Play:

Play is essential to understand because it capitulates the reasons for why playgrounds are necessary. The concept of 'play' can be interpreted to mean a variety of things, as such it is important to define. Herein the characteristics of the term 'play' are the most helpful and critical to its definition, (Garvey 1990, 4):

- 1) Play is pleasurable, enjoyable. Even when not actually accompanied by signs of mirth, it is still positively valued by the player
- 2) Play has no extrinsic goals. Its motivations are intrinsic and serve no other objectives.
- 3) Play is spontaneous and voluntary.
- 4) Play involves some active engagement on the part of the player.

The concept of *Homo ludens* is a modern study of play which originates with Johan Huizinga's book with the same name. Herein, play is described as more than just an activity or a reflex. "It goes beyond the confines of purely physical or purely biological activity. It is a *significant* function – that is to say, there is some sense to it." (Huizinga 2002, 1) (emphasis in original). After all, "(p)lay is older than culture, for culture, however inadequately defined, always presupposes human society, and animals have not waited for man to teach them their playing" (*ibid.*). Furthermore, play is essential to culture and it permeates everything; war, music, law, etc.

Huizinga (2002, 3) doesn't believe the manifold of reasons people have given for why humans and animals play; these include discharging superabundant energy, training for the demands of life, relaxing after exertion, compensation for unfulfilled longings. Instead he explores play as something more, as something fun. The term 'play' is identified as having 5 characteristics: (*ibid.*, 8-10)

- 1) Play is free, is in fact freedom
- 2) Play is not "ordinary" or "real" life
- 3) Play is distinct from "ordinary" life both as to locality and duration.
- 4) Play creates order, is order. Play demands order absolute and supreme
- 5) Play is connected with no material interest, and no profit can be gained from it.

Jean Piaget's theory of play, also known as developmental stage theory or cognitive development theory aims to explain the diverse ways in which as a child ages their knowledge grows but also importantly, their ways of understanding and accumulating knowledge grows.

Knowledge is not a copy of reality. To know an object, to know an event, is not simply to look at it and make a mental copy or image of it. To know is to modify, to transform the object, and to understand the process of this transformation, and as a consequence to understand the way the object is constructed (Piaget 1964, 20).

These ways of knowing, occurs in four different stages: sensorimotor stage, preoperational stage, concrete operational stage, formal operational stage (Piaget 1964, 20). The first concern babies from birth to age two and their way of experiencing the world is through movement and senses. Furthermore, at this age the babies are also extremely egocentric. The second phase is from age two to seven (or whenever the child first learns to speak), here the child has trouble understanding logic, remains egocentric, but increasingly utilises creativity and imagination as play and pretending tools. The third stage ranges from children aged seven to eleven, wherein logic starts to form. However, physicality and manipulation of objects is the main method of learning, additionally classification of things plays a central role in comprehension, and lastly, they are no longer egocentric. Lastly, stage four is from ages eleven to sixteen and onwards, where the child develops abstract thought and utilise metacognition, additionally, skills oriented towards problem solving develop (*ibid.*, S8-S9). Furthermore, to explain the development, four factors were used: maturation, experience, social transmission and equilibration (*ibid.*, S10).

As such, depending on the type of play available, experienced or fostered, this heavily affects cognitive development of children. The next section, playground papers highlights specifically what types of playgrounds and playground materials are the best in fostering the cognitive development of children as well as the variety of other positive benefits.

3.2. Playground Papers

The playground is the time when children are not engaged in traditional formal learning, however, the playground still acts as a source of informal learning. Margie Carter (2007, 22) in her article Making Your Environment 'The Third Teacher' illustrates how an environment can "dazzle our senses, invite curiosity and discovery, and most importantly, foster strong, respectful relationships". The type of environment, specifically the availability and amount of nature, has a strong beneficial effect on children especially regarding the development of an attitude of caring towards the environment. The effect of the environment and outdoor play on children whether it concerns their social behaviours, health, or life lessons, has been written about considerably.

Huttenmoser (1995, 412), revealed in his intensive study of 1726 families the effect of natural environments improves children's health, decreases depression symptoms, while increasing attention span and powers of concentration. For example, there was both an increase in variety of activities in natural environments, such as water activities, flower picking, and self-invented games along with increased general activity, accompanied by increased sound capabilities, all of which are linked to increased health, happiness and other behaviours (*ibid.*, 410). These types of positive attitudes correlate directly to the availability of nature which furthermore fosters a positive view of nature due to the positive associations created. Subsequently, these associations lead to the development of an attitude of caring for nature because of the personal interests in preserving things which makes one happy.

Grahn et al. (1997) case study specifically showed the different effect of surroundings via two different kindergartens, one set in an outdoor natural environment, with the other being a

more traditional urban (i.e. less nature, and more concrete) type of playground surroundings. Herein, the complexity and diversity of natural environments, which urban playgrounds lacked, allowed for more creativity of play which overall helped significantly stimulate motor fitness (*ibid.*, 97). The nature playground due to their varied environment had an increased variability of types of play which overall permitted for more play and more in-depth play and hence fun. In comparison, the traditional urban playground had less activities which resulted in play being interrupted, furthermore, the limited amount of activities and the open space meant that children who wanted to be on their own found this relatively impossible thus stimulating negative memories of play and playgrounds. Overall, the children which received the more positive experiences from the playgrounds were those in the nature playground. The children who experienced more fun and more nature are ones which engage caring attitudes towards nature to be developed.

Herrington and Studtmann (1998) also investigated whether and how different landscapes of playgrounds affected children. Their two-year study included video documentation and analysis of children playing in different kinds of playgrounds. Herein, they discovered that the inclusion of natural material such as plants, stepping stones, ice sculptures, canopy, pine cones and more, in playgrounds had an increased positive effect on a child's social, emotional and cognitive development, especially in comparison to standard play equipment such as swings, and playhouses (Herrington & Studtmann 1998, 195, 204). For example, the use of loose materials such as sticks, leaves and rocks as construction material promoted cooperative play along with interpersonal skills (Barbour 1999, 95).

Barbour furthermore illustrated classifications of different types of playgrounds: traditional, contemporary, and adventure (*ibid.*). These differentiations follow Barbour's classification and definitions:

"Traditional" playgrounds are characterized by large, metal equipment, such as climbers, slides, and swings, on which children can exercise. "Contemporary" playgrounds usually include multi-purpose and linked structures that provide various means for entry and exit, and areas or fixtures that promote dramatic play. "Adventure" playgrounds incorporate various types of moveable materials and tools for children to use in constructing their own play structures (Barbour 1999, 76).

Further studies have since revealed that when children were offered a choice between the different types of playgrounds, their first choice was adventure, followed by contemporary, and lastly traditional (Hayward, Rothenberg & Beasley 1974, 166). This highlights how children themselves actively chose the types of playgrounds which promote physical contact with the environment.

Fjøtoft (2001, 117) indicated the significant effect on motor activity and fitness in children as a consequence of increased need for balance and coordination when engaged in nature-play. Fjøtoft (2004, 30) further illustrated the different possible functions performed via different types of vegetation and the resulting skills gained from said activity; i.e. tree climbing stimulated motor fitness, and balance, whereas shrubbery allowed for hiding and role-play activities which enthused creativity, and climbing rocks required coordination and balance.

Overall, creating a nature rich, diverse, complex, and aesthetically interesting outdoor playground has been shown to not only be an effective learning tool, but a relaxing, and enjoyable space away from the stress of formal academia, in addition to providing several other benefits, chief among being the development of human-nature relationship.

However, with recess time being on a downward trend (Patte 2009) and being undervalued, outdoor play in natural settings is also decreasing (Charles & Wheeler 2012, 3). 46% of youths (aged 6-25) as part of a study by The Outdoor Foundation, reported that the main reasons for decline in outdoor activities were due to lack of time and interest (*ibid.*). In combination with this, school playgrounds for whichever reason (e.g. financial, safety risks, location) have become concrete playgrounds. The experiences a child has in the nature playground are drastically different to concrete playgrounds. Previously, playgrounds with natural environments such as slopes and rocks proved to be obstacles, while the vegetation such as the trees, and shrubbery were utilised for climbing, and hiding. Furthermore, green spaces were seen as areas to run free, with the ponds and streams imbuing a whole new world with its own animals. Now, there is roughness and toughness of the concrete, the cold of the metal, and the lifeless plastic. As such, with less nature interaction there is less availability for children to imprint on nature and create the positive experiences which fosters caring attitudes towards nature. Ultimately the lack of nature experiences leads to less inclination towards pro-environmental action in adulthood. However, the method of combatting the “obsolete concrete, metal, and plastic playground” is through the creation of a new type of playground, termed a ‘playscape’ (Carr & Luken 2014, 80).

3.2.1. The Playscape:

“Playgrounds are not deemed to be worthwhile pedagogic experiences” (Carr & Luken 2014, 70) so how do we make them so?

Frost (1992) coined the term ‘playscape’ or an all-natural playground, with a focus of creating an engaging outdoor environment. Meanwhile, Elliott (2008) describes an effective playscape as at minimum, containing the following things:

- 1) Local landscape or a reconstruction of the indigenous environment
- 2) Natural elements dominate – trees, shrubs, sand, rocks, soil, and flowers
- 3) Loose natural materials and possibilities for open-ended interactions, explorations, and manipulations
- 4) Opportunities for risk-taking, spontaneity and discovery, sensory in all aspects
- 5) Accessibility
- 6) A sense of place
- 7) Multiple spaces or mini-environments
- 8) A dynamic environment.

A more in-depth discussion on these is accomplished by Luken, Carr, & Brown (2011, 328-329). Herein, they establish that playscapes are effective when they elicit activities which are multi-sensory, unique, and manages to establish a personal experience with the child wherein nature is the focal point. Next, the playscape should invoke creativity through the act of

having multiple types of uses, and not in a way that every activity is pre-determined and planned. Additionally, the utilised materials of the playscape should be able to be manipulated as and per the child's wants. And lastly, a playscape exists for the purposes of creating, encouraging and engaging children to take risks, explore, investigate, inquire and experience different types of play.

With these goals in mind, a playscape is also defined by the features it has. All playscapes should have some forms of all of the following features (Luken, Carr, & Brown 2011, 329):

- 1) Accessible water – streams, fountains, wading ponds
- 2) Unlevel topography
- 3) Gardens and/or edible landscape materials
- 4) Sand, rocks, boulders
- 5) Trees, grasses, shrubs, flowers, herbs, etc.
- 6) Nature-themed art or some play equipment may be included, but do not intrude upon or dominate the playscape
- 7) Pathways and gathering spaces
- 8) Hiding places, tunnels, felled logs, and digging pits
- 9) Seating for adults to observe children's play
- 10) Storage for child-sized equipment (shovels, buckets, etc.)

The advantages of a playscape in comparison to a traditional playground are manifold. Carr & Luken (2011) illustrate how mathematics, scientific inquiry and more benefit from interaction with playscapes. Furthermore, Chawla (2015) illustrates how increased interaction with nature, such as manipulation of physical environments (aka: building a tent out of sticks), or running down a hillock, increases cognitive, physical, linguistic, social and emotional domains. Specifically, the winding pathways provide orientation experience as well as the ability to create mental geographical maps of an area (*ibid.*, 329). Natural materials, such as leaves, rocks, and sticks help to spark creativity, along with management, categorization skills and scientific inquiry (*ibid.*, 330). Construction on the other hand aids with motor skills, with concentration and developing an interest in physics (*ibid.*).

A study by Wight et al. (2016) investigated the difference between a playground versus a playscape and its effect on children's scientific curiosity and inquiry, via video recordings. The study was comprised of observation of two different groups of children; one on a playground, and the other in a playscape. The data collection occurred over a period of three visits. Herein, the results illustrated that the area that captivated the students the most were the nature areas; water with 42.7%, and the woods with 33.6% (*ibid.*, 526). Interestingly, the two most captivating areas, water and woods are also the two least represented areas on traditional playgrounds. The activities meanwhile were sorted into four categories: functional play - "the use of senses and muscles to manipulate materials and learn how things go together", constructive play - "creating, organizing, or building and deconstructing things", dramatic play - "two or more children are engaged in make-believe play, which can involve roles or acting", and lastly games - "activities that follow agreed-upon rules" (*ibid.*, 524). The activity which received the highest participation at both types of playgrounds was functional play, second

was constructive play, third was dramatic, and last was games which received no participation at either type of playground (*ibid.*, 528, 530-531).

However, a possible explanation behind this is due to the bias of the videographers, in that the goal of the research was to investigate whether a playground or playscape led to science-based inquiries, hence football and other such types of rule-based games weren't filmed because there is the associated connection that those types of play do not lead to science-based inquiries. Overall, the study showcased that a playscape promoted more environmentally responsible behaviour due to the wider array of possible activities which would develop positive nature inclinations (*ibid.*, 232).

On a separate tangent, there are of course wider ranging benefits outside of the school discourse which playscapes provide. For example, the general increase of nature in and around various locations, this is especially beneficial to urban areas where there are a limited amount of green areas. Furthermore, the increase of green spaces would increase general accessibility for the general population as well since outside of school hours, anyone is welcome to use school playgrounds. Also increased presence of nature positively affect processes such as pollution, CO₂ capture, and biodiversity.

3.3. Environmental Education Reports:

This section focuses on environmental education and will outline what previous studies have researched and discovered concerning environmental education. Firstly, it looks at the studies which have assessed the impact of EE both concerning academia and behaviour and more. Secondly, it describes what previous studies have stated concerning what makes EE programs successful.

3.3.1. Impact of Environmental Education:

The most studied area when concerning EE are the associated impacts of it. These impacts have been dissected into five categories: academic achievement, career development, graduation requirement, behaviour, and civic-responsibility.

Of these categories, the one which has received the most amount of attention is the academic achievement sector. Of 20 studies concerning EE participation and consequent academic development, 18 reported positive correlations (Wheeler et al. 2007, 16). There was strong evidence that participation in environmental education programs led to increases in mathematical and science achievements, with less evidence for social studies, and mixed results concerning language arts (*ibid.*). Furthermore, the participation of yearlong outdoor EE programs, led to significant increases in GPAs, compared to traditional EE in classrooms.

Secondly was the study of the effect of EE upon career decisions in environmental fields. Once more, several studies indicated that through the participation of environmental education, there was an increased awareness and a piqued interest in environmental careers (Wheeler

et al. 2007, 27). Specifically, service-learning programs and outdoor opportunities played a large part in the sway of decision towards interest in an environmental career (*ibid.*).

Thirdly, was the effect of EE on the fulfilling and successful completion of graduation requirements. Only one study researched this link. They demonstrated a reduction of drop-outs and increased university enrolment as a result of direct participation in EE programs (Wheeler et al. 2007, 30).

Fourth is the effect of environmental education on behaviours, self-esteem, engagement and motivation. Behavioural studies were among the most prevalent studies found when searching for EE. Overall, there is a great amount of correlation between EE participation and positive behavioural modifications (Wheeler et al. 2007 31; Ardoin et al. 2018, 8), however, there is also a great amount of debate concerning how and whether traditional or non-traditional, or program length establish the positive behavioural changes (cf: Disinger 1982; Marcinkowski 1987; Sia 1984; Zelezny 1999). 15 studies illustrate evidence that certain EE programs have positive impacts on a students' self-esteem as well as increasing their level of engagement and motivation (Wheeler et al. 2007, 31).

Finally, eight studies examined the impact on civic responsibility, in other words "the actions a citizen is required to go for the good of society" (*ibid.*, 34). All eight studies reported that there was some evidence that participation in particular EE programs increased civic engagement (*ibid.*).

A separate study illustrates the variety of effects EE experiences with nature have had on children and adults. Chawla (2009) explores the role of empathy in care for nature and its development through nature experiences. Herein, Chawla (2009, 12) illustrates that a large number of both children and adults developed an attitude of caring for nature through experiences and with wild animals, plants and other elements of nature. The findings corroborated previous findings by Clayton on the formation of environmental identities wherein she stated:

One part of the way in which people form their self-concept: a sense of connection to some part of the nonhuman environment, based on history, emotional attachment, and/or similarity, that affects the ways in which we perceive and act toward the world; a belief that the environment is important to us and an important part of who we are (Clayton 2003, 45-46).

3.3.2. Successful Programs:

It is vital to remember that environmental education programs vary greatly in characteristics such as length, subject, and rigor. However, several researchers have examined and researched various environmental education programs and with it, have concluded some general conclusions over what makes for a successful EE program. The two biggest conclusions made concerning the success of programs are their ties to 1) Teaching practices – elements of active/experiential learning, 2) Community involvement with integrated curriculum, evaluations and a well-trained staff (Wheeler et al. 2007, 36).

Characteristics of the teaching and learning practices include: inquiry-based projects (i.e. activities), real-life projects, student-led projects and activities, and hands-on learning. Overall, the examination of studies revealed that through increased usage of the four above-mentioned practices, there was an increase in student engagement, collaboration, interest in the environment, a sense of pride, ownership, and respect for themselves and their peers, in addition to an increase in learning and remembering of environmental information (Wheeler et al. 2007, 36-37; Stern, Power & Hill 2014, 583). The idea behind it is that through active student-centred approaches “(l)essons and facts become more interesting when students have an opportunity to construct their knowledge themselves and to apply it to real, important and relevant situations” (Wheeler et al. 2007, 37). Also, through experiential learning it is easier to accumulate long-term memories and associated emotional connections (Stern, Powell & Hill 2018, 588). Additionally, Stern, Powell & Hill (*ibid.*) identify how in particular the identity and/or style of the instructor acted as a primary driver of positive outcomes for students. The notable program characteristics included: an integrated approach, communication, community involvement, professional development of EE teachers, proper assessment, long-term programs (Wheeler et al. 2007, 38).

3.4. Swedish schools:

The main fundamental principle in the Swedish educational system is one which is in accordance with Swedish society’s ideals and values; the equivalent access to education for all children and youths, irrespective of gender, socio-economic background, and place of residence (Eurydice 2018). Education in Sweden can begin from the age of 1 and continues to age 18. The Swedish school system consists of *förskola*, *förskoleklass*, *grundskola*, and *gymnasieskola*. However, not all years are compulsory in Swedish schools; only years 1-9 (ages 7-16) or the *grundskola* are governmentally mandated years of school.

There are two main types of schools in Sweden: municipal and independent. The municipal schools, or *kommunala skolor* run parallel to the independent schools, known either as *fristående skolor* or *friskolor*. Both the municipal and the independent schools, at the compulsory levels are grant-aided in addition to free-of-charge. Since *friskolor* are non-governmental schools, their owners vary from school-to-school, from foundations, to for-profit companies, or non-profit organisations and more. Traditionally, *friskolor* arose out of a need to teach what existing schools weren’t teaching. Hence why independent schools have different pedagogical orientations and activities, including the use of alternative educational models such as Montessori, Waldorf/Steiner or Freinet, or linguistic orientations, or even religious denominations. However, the reasons for establishing an independent school could also be purely for-profit reasons. Finally, there exist other private schools, International schools. If a school delivers a curriculum wholly or even partly in a foreign language (typically English), it can be classified as an international school. The education in international schools, furthermore, typically follow the curriculum of another country. International schools are among the few that may both apply for grants in addition to charging fees of admission.

3.5. Sweden's Nature Relationship:

Sweden consistently ranks amongst the top ten countries in terms of its environmental performance (EPI 2018). A nation with 10 million people, remains 97% uninhabited, and consequently with a lot of nature to take care of. Swedish policies aim to foster a good relationship between humans and nature, "expanding upon the belief of the importance of a good living environment and significance of contributing to environmentally sustainable practices" (Carr & Luken 2014, 71). The caring relationship between the people of Sweden and nature is one that been in the making for hundreds of years. One could say that Sweden has a Linnaean tradition.

The naturalist Carl Linnaeus who invented the modern taxonomy system for classifying and naming organisms is crowned as the person who "laid the foundation for Sweden as a nature-conscious nation" (Karwoski 2018). Linnaeus' work illustrated the close connections between all forms of life and their environment with man as the mediator, all of which affected "Sweden's wilderness to remain unpaved" (*ibid.*).

Secondly, of great importance was the creation of "Allemansrätten" or 'every man's right', which is the constitutionally guaranteed right of public access. This ensures that public land remains open to everyone, within loose parameters – the destruction of nature and interference with private homesteads is not permitted. This concept is deeply ingrained in all Swedes and has become connected to a Swede's national identity and self-image (Sténs & Sandström 2014), so much so that the practice is regarded as a national heritage which needs to be preserved (SEPA 2011; Sandell and Svenning 2011, 3).

Sweden's respect for nature consequently secured and protected large amounts of land from industrialisation through the creation of Europe's first national parks in 1909 (Karwoski 2018). Since 2017, there are now a total of 29 national parks and over 4000 nature reserves, which altogether cover more than a tenth of Sweden's land area (*ibid.*)

The recognition of a mounting lack of natural resources in the 1960s led Sweden to become the first country to establish an environmental protection agency, Naturvårdsverket (Swedish Institute 2018). Furthermore, in an international context, in 1972, Sweden hosted the first UN environmental conference which led to the establishment of UNEP (*ibid.*). It was one of the first countries to sign and ratify the international climate change Kyoto Protocol, and furthermore, played a large role in the creation of The Stockholm Convention (2001) treaty which improved waste management policies (*ibid.*). With this in mind, how far have these environmental ambitions and measures extended into education? And specifically, into playgrounds?

4. Analytical Frameworks and Theoretical Perspectives:

This section briefly outlines the various analytical frameworks and theoretical perspectives which are utilised to further analyse the results and create a discussion. Firstly, is phenomenology which looks at the importance of experience in the formation of perceptions. Secondly is a look at Soper's concepts of nature which illustrate how various perceptions exist.

Thirdly is the idea of 'learned helplessness' which explains how and why certain people react how they do when faced with a seemingly insurmountable problem.

4.1. Phenomenology:

Phenomenology is the study of human experience, and consciousness explored in everyday life. Phenomenology purports ontological assumptions which are subjectivist, in other words, people view the world in different ways, because they experience it in different ways. Of vital importance is the "conceptualization of subject-object relations" and the "processes of ordinary human description...: seeing, hearing, touching, smelling, tasting." (Tilley 2005, 201-202). Through these bodily experiences, phenomenology promotes interest in "the wider social practices that mediated experience of the landscape..." (Johnson 2012, 273), including the appearance of the landscape, the location, and the form. Dewey speaks of aesthetic experiences such as landscapes, as "consumatory experiences" which offer a deep appreciation of the connexion of things and persons (Dewey 1934, 23). Additionally, as added by Benediktsson (2007, 210) the "aesthetic experience is moreover made up of many strands of sense and emotion" and thus the need for a phenomenology approach, as it analyses the value of visuals. Furthermore, through this data, landscapes are understood as vital pieces in the formation of identities.

Lennert's (2017) article concerning Inuit landscape exploration of Godthåbsfjord, Greenland, illustrates the effect of bodily experiences (and ethnohistory) in creating cultural change. "It was not only landscapes changing because of environmental changes, but the change of social structures and traditions. These altered the meaning of the surrounding landscapes" (*ibid.*, 247). In other words, new movements in the landscape, caused new experiences and memories, which ultimately altered the perception and cultural value of the landscape. The critique surrounding phenomenology is the application of subjective understanding, especially its application from the present-day perspective to a past perspective (Johnson 2010, 118). For example, Lennert encountered landscapes which while illustrating their vastness, danger, and beauty, it was not until the application of local knowledge (the place-names, personal experiences, historical stories, myths) (*ibid.*, 246) through participatory mapping, that the landscape gained illustrative value to Lennert.

The choice of utilising phenomenology comes down to one thing, its focus on physical experience. Physical experiences refer to the importance of the different senses: olfactory, visual, auditory, gustatory and tactile, when living through something. This is important in this thesis because the variety of experiences that the different playgrounds bring ultimately distinguishes whether or not a certain playground will lead to positive or negative experiences for the children which in turn impact their relationship with nature. The application of phenomenology occurs through descriptive text of phenomena with the senses playing a central part of the experience of the event.

4.2. Perceptions of Nature:

A central theme of this thesis is the concept of nature and in particular the different meanings nature holds for a variety of people (in this case school children). The reasons for why people

have different relationships with nature, is because they view nature differently. The definition of nature used in this thesis is Kate Soper's (1995, 132) as stated in the first paragraph of the introduction.

Nature can be seen as both distinguished from humans and from culture but at the same time, nature can also be seen to include humans and culture. The former argument follows thus: the distinction of humans from other animals is due the human race being seen as the only race which has established culture, sophisticated language and even bipedalism and as such humans are not nature. This is seen as a very anthropocentric view of the world. The latter argument meanwhile adheres to the idea that since humans have evolved from apes, and apes by being animals are therefore nature, by that logic, humans are a part of nature, in addition to all of their creations and activities. Both of these views are dangerous in surprisingly similar ways. The primary accepts the fact that humans are the masters of nature and as such whatever actions occur which may damage nature are accepted for humans have the right to do what they wish with their subjects. The secondary view espouses a romanticised ideology of what nature is, which can mean that whatever actions humans do they are acceptable because humans are part of nature.

How do we accommodate the fact that as embodied entities we are clearly part of the order of nature, subject to its determinations and knowable in terms of natural science, while at the same time paying due heed to the fact that, qua Subjects, we are possessed of attributed – cognitive, moral and aesthetic capacities – seemingly unamenable to explanations of a physical kind? (Soper 1995, 44).

Concerning the ecological discourse of nature, it is important to note the various roles which 'nature' plays. Soper (1995, 155) categorises the roles of nature into three ideas of nature: the metaphysical, the realist and the lay. The metaphysical concept of nature is philosophy-based. It encompasses the ways in which humans question their relation to nature and the idea of the non-human (*ibid.*). The realist idea covers the various structures, processes and causal powers at play which govern the physical world (*ibid.*). The lay concept of nature is the everyday perception of and experience of nature (*ibid.*, 156). A person's understanding of nature is not limited to one idea but a combination of all three. As such a person's questioning of nature, their knowledge of nature and their experiences of nature all amass into their perception and view of what nature is and concurrently its effect on that person.

A modern view of nature is the neoliberalisation of nature. The neoliberalisation of nature or the creation of 'ecosystem services', has become a way for scientists, environmentalists, activists to garner the attention of people in power to care about nature. This is accomplished through various money-making schemes such as "banking nature", creating "environmental mortgages" or assigning biodiversity as a "financial asset", or even the "selling species extinction risk" (Benabou 2016). Through whichever reason, they are so removed from the idea of conserving or not degrading the environment just for the sake of not injuring ecosystems that the only way to get them to "care" for the environment, the application of value has to be added to it. With the decreased presence of nature, decreased interaction between humans and nature, in addition to the increased presence of concrete and urban

landscapes, more and more people could start to think of nature as only an asset. Hence the vital need for increasing the presence and interaction of nature among humans.

4.3. Learned Helplessness:

Learned helplessness is a mental state and behaviour which occurs when a person or animal has been subject to repeated negative or otherwise aversive stimuli to which it is deemed impossible to escape or avoid (Overmier & Leaf 1965, 217; Hiroto 1974; Maier & Seligman 1976). After this experience, the subject often fails to learn how to escape or avoid the stimuli and as such when the subject is thrust into new situations where previous knowledge would be required it instead accepts defeat and gives up. In other words, the subject has learned that it is helpless. The “outcomes are uncontrollable by his responses” which makes the subject “seriously debilitated by this knowledge” often in the form of motivational, cognitive and emotional effects (Maier & Seligman 1976, 4, 7)

Action or motivation to act or respond to the aversive stimuli wanes for future events. If the subject does respond, and the response provides a positive action such as relief, because of the past experiences, the subject often has difficulty in learning that her direct action caused the relief. Lastly, as a consequence of the aversive stimuli, emotional disturbance is likely to have occurred often in the forms of depression and anxiety which subsequently dominate the subject.

The notion of learned helplessness has since been extended to explaining responses to events in society. One such event is climate change, to which the responding action is environmental amotivation (Landry et al. 2018, 18). An illustration of this amotivation is in a study whereby 96% of individuals from more than 40 countries expressed concern over the environment, however, of those only 65% reported an inclination to undertake pro-environmental action (Inglehart 1995, 70). Correlated with the motivational wane is the belief that individual action amounts to nothing, or that the effort required to effect any change is too great (Gifford 2011; Pelletier et al. 1999).

The reason behind the choice of learned helplessness as an analytical concept is its applicability and explanation of responses of people to nature issues such as climate change. How the concept is used in the thesis is through its explanation of actions of people. Furthermore, through the creation of discourse of learned helplessness versus nature and the ramifications thereof.

5. Results and Analysis:

To answer the research question on how compulsory school playgrounds in Lund municipality foster eco-identities, it was vital to firstly establish some basic conjectures about the playgrounds. These basic conjectures include, location of the playgrounds, the different types of playgrounds, the type of ground available in the playgrounds, the sizes, and the different activities available in the playground.

5.1. General observations:

Playgrounds differed substantially, whether by ground type, amount of ground type, the activities available, general size, location, or type of school. For example, Sankt Thomas Skola is an independent school located in nature, with an extra-small playground which held a mixture of sports, play and some nature activities, additionally, with a majority of sand, it also had a mixture of concrete, grass, see fig.4. Svaneskolan on the other hand is a municipal school found in an urban area which contains a medium-sized playground with limited activities mainly focused on sports, and whose majority turf was 85% concrete, with limited amounts of grass, and sand, see fig.5. And so forth with the variety.

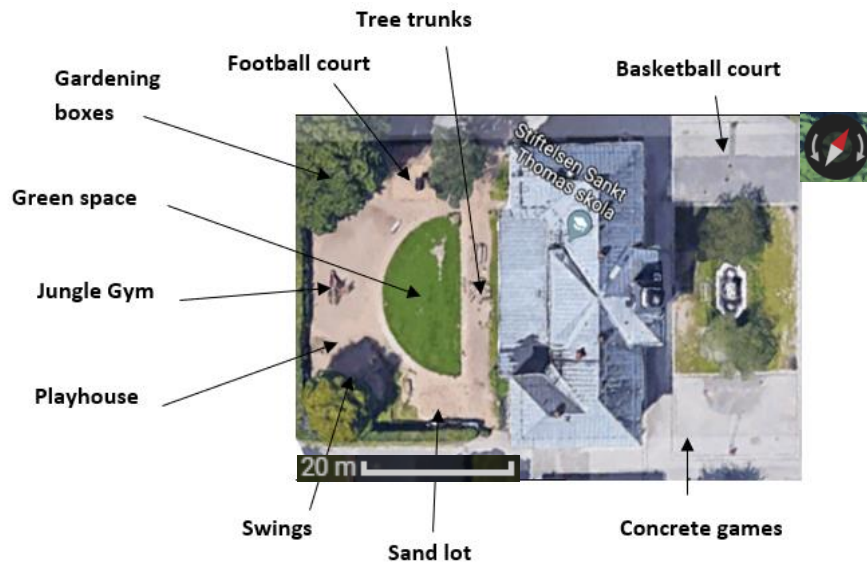


Fig. 4: Sankt Thomas Skola playground (Earthstar Geographics 2018a).



Fig.5: Svaneskolan playground (Earthstar Geographics 2018b).

5.2. Location:

A total of 54 compulsory school playgrounds were surveyed across the Lund municipality. Fig. 6 illustrates the spread of all the schools. 34 schools, or roughly 63% of all the schools were located in and around the city of Lund. 17% of schools were located in big towns; namely, Södra Sandby and Dalby, and the remaining 20% were found in small villages.

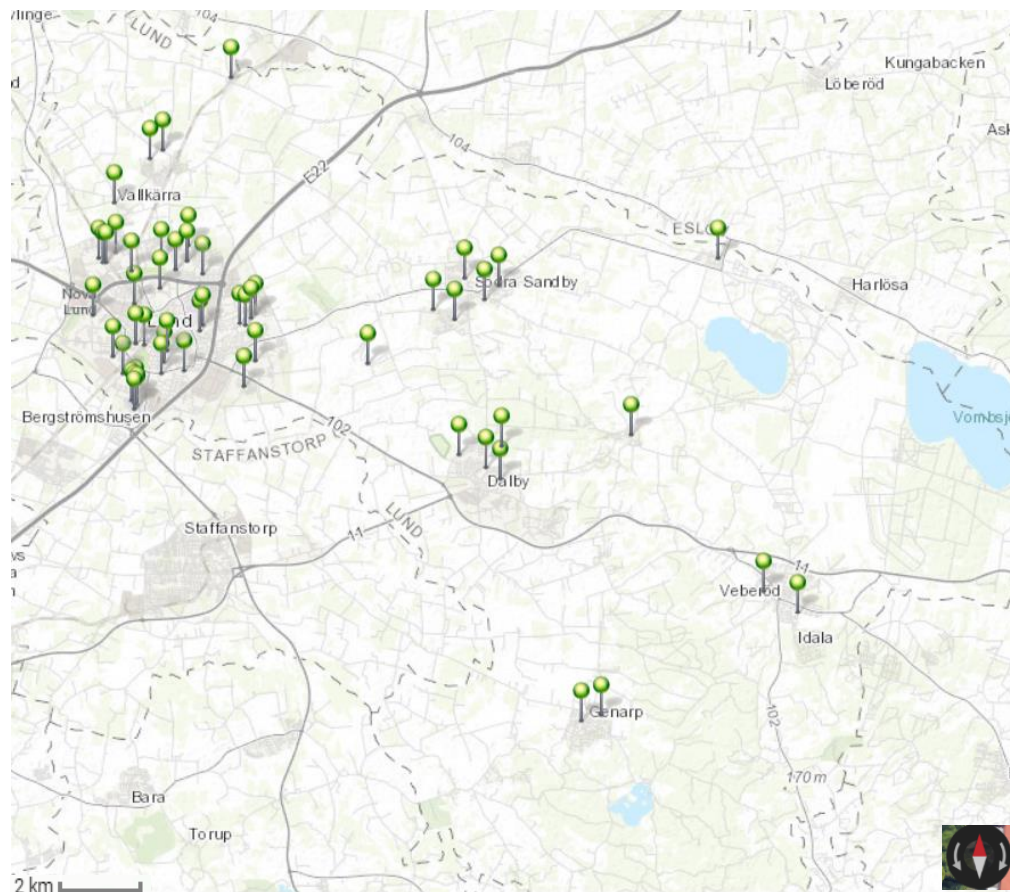


Fig.6: School locations (Waever 2018a).

Another way of looking at location was through the identification of the direct landscape, environs and immediate surroundings that the playgrounds were found in. These locations were separated into four categories: urban, suburban, village or nature landscapes, see fig.7. While general location wise 63% of school playgrounds were found in the city of Lund, only eight schools, or 15% of playgrounds were found in an urban or cityscape and was shown to be the least favoured location fig.8. The penultimate landscape was nature with ten schools, or 18% of the total. Second was village with 15 schools or 28% of the total. The most prevalent direct landscape was suburban, with a total of 21 schools, or 39% of the total amount.

Schools were historically one of the focal points of a town hence why a number of schools exist in urban areas. Subsequently, through population growth towns have expanded to cities and suburban areas have been built surrounding the urban landscapes, and as consequence more schools were established to satisfy the growing population. Villages environs meanwhile, have a high concentration of schools because historically within each village or densely populated area, a school has been established to allow for every persons right to education and equal access of education.

Nature landscapes allow for broader types interactions and an increased frequency of interactions with nature in comparison to all the other types of locations. The nature landscapes observed here are found in one of two locations, 1) On the outskirts of the city of

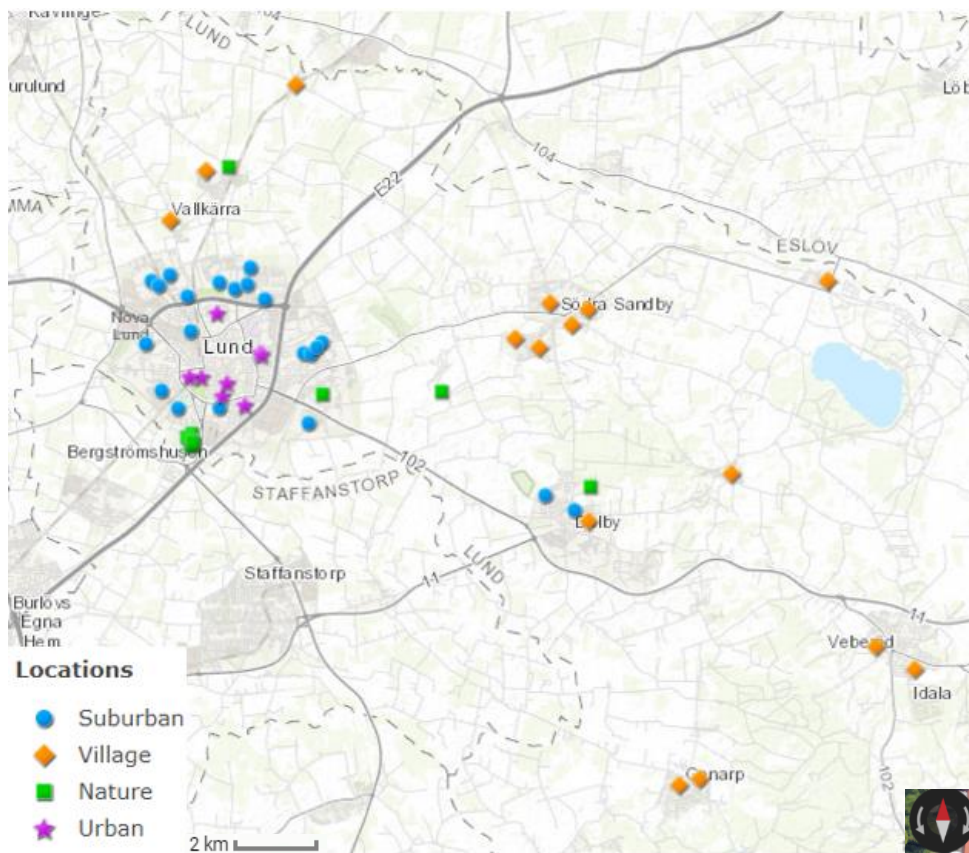


Fig.7: The different locations of the schools (Waever 2018b).

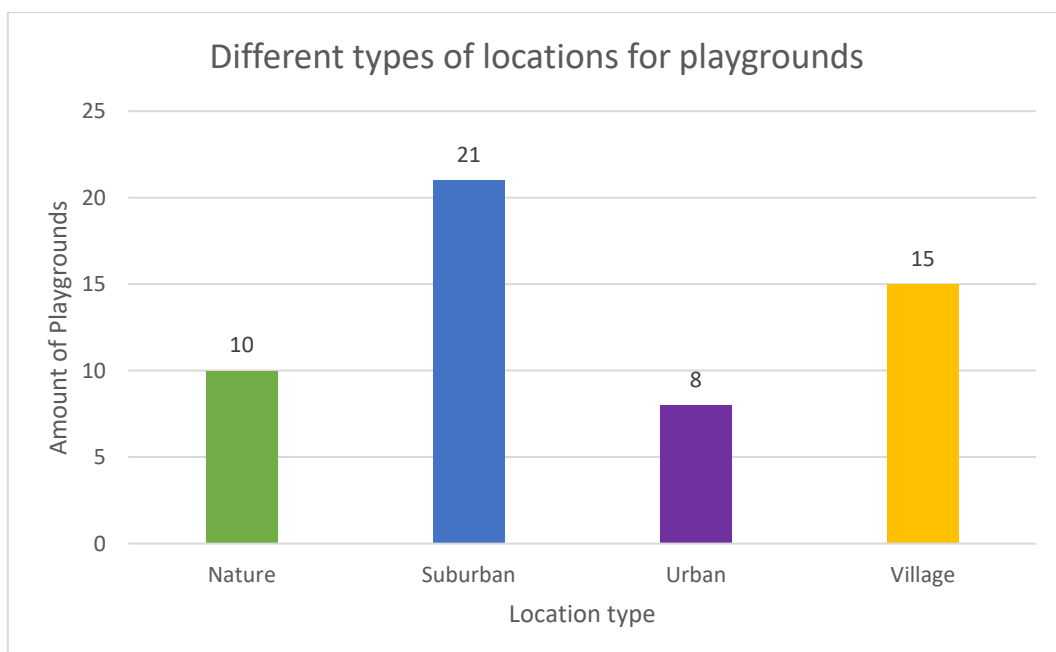


Fig. 8: The distribution of locations.

Lund, such as Sankt Lars park which is a more than 55acre wooded park, or the outskirts of smaller towns like Dalby next to woods, nature reserves and agricultural landscape, 2) In remote isolated areas which are surrounded by plains, agricultural landscapes and wooded areas such as Prästängsskolan or Lunds Waldorfskola.

5.3. School type:

The type of school was the next variable to be analysed. Of the 54 schools, 41 are municipal schools, eleven are independent schools and two are international, see fig.9. Municipal schools were the majority because following Sweden’s rule of every human’s right to education and free access of education in conjunction with municipal schools being government-run schools, meant that any densely populated area would have a school. On the other hand, independent schools which are non-governmentally established and run exist on a much lesser scale. International schools meanwhile are located in Lund city-centre most likely due to their international pedagogical style whose best placement for it is in big cities where it is more likely to find a broader range of non-Swedish speaking children.

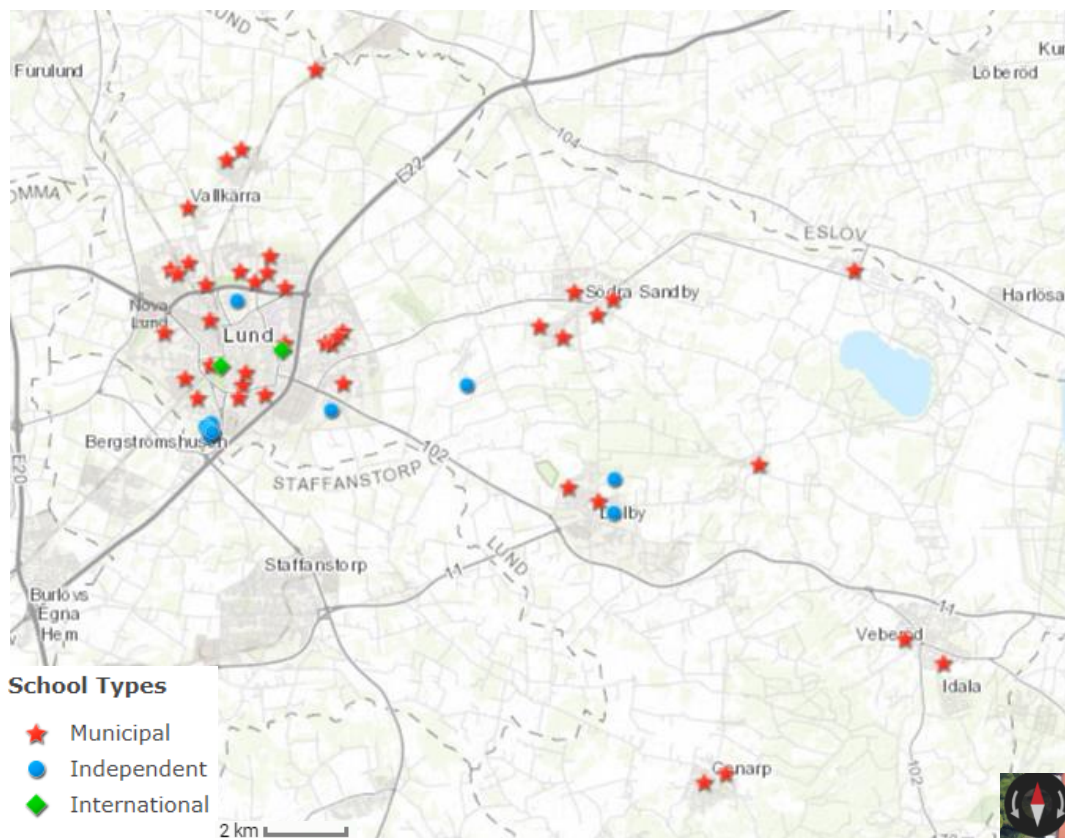


Fig. 9: The distribution of schools around Lund municipality (Waever 2018c).

When location was split down by school types the result was different, see table 2. Municipal schools were most heavily located in suburban areas with 49%, with 35% being in villages, 12% in urban, and 5% in nature. On the other hand, independent schools were mostly found in nature environs with as much as 73%, and the remaining were split evenly among urban,

Table 2: The placement of different school types. The darker the green the closer to 100% whereas, the darker the red the closer to 0%.

School Type	Urban (%)	Suburban (%)	Village (%)	Nature (%)
Municipal	12	49	34	5
Independent	9	9	9	73
International	100	0	0	0

suburban, and village. Finally, only two international schools existed on the whole, both were found within urban landscapes. This illustrates how in the Lund municipality independent schools have a closer physical and geographical touch with nature as compared to human-made society. Meanwhile, International schools are on the opposite side of the spectrum.

5.4. Sizes:

The sizes of the playgrounds were another observed, and measured variable. The sizes of the facilities had great range; the smallest playground was from Pusselbitens skola with slightly over 1000 square meters, compared to the largest at over 22,000 square meters from Hubertusgården. Of the 54 school playgrounds, the largest size category was medium with 33% illustrating the increased breadth among the schools. Overall breakdown is showcased in table 3.

Table 3: The breakdown of school playground sizes.

Area	Number of schools	Percentage
Extra-small	6	11%
Small	13	24%
Medium	18	33%
Large	11	21%
Extra-large	6	11%
Total:	54	100%

One analytical breakdown of size of playgrounds was via their locations, see fig.10. The majority of extra-small playgrounds were found in urban landscapes. Urban landscapes are generally very architecturally densely packed in addition to densely packed with people. As such, there is limited space available. Furthermore, the price of area in the city-centre of Lund is much higher than in suburbs or villages. As such, the smaller the needed area, the more cost-effective if the only choice of location is within an urban surrounding.

The most common location for small school playgrounds were villages. Schools in villages were established to cater to the small population of the village. Hence, with a small population, the schools themselves have no need to utilise space beyond the needs of their population.

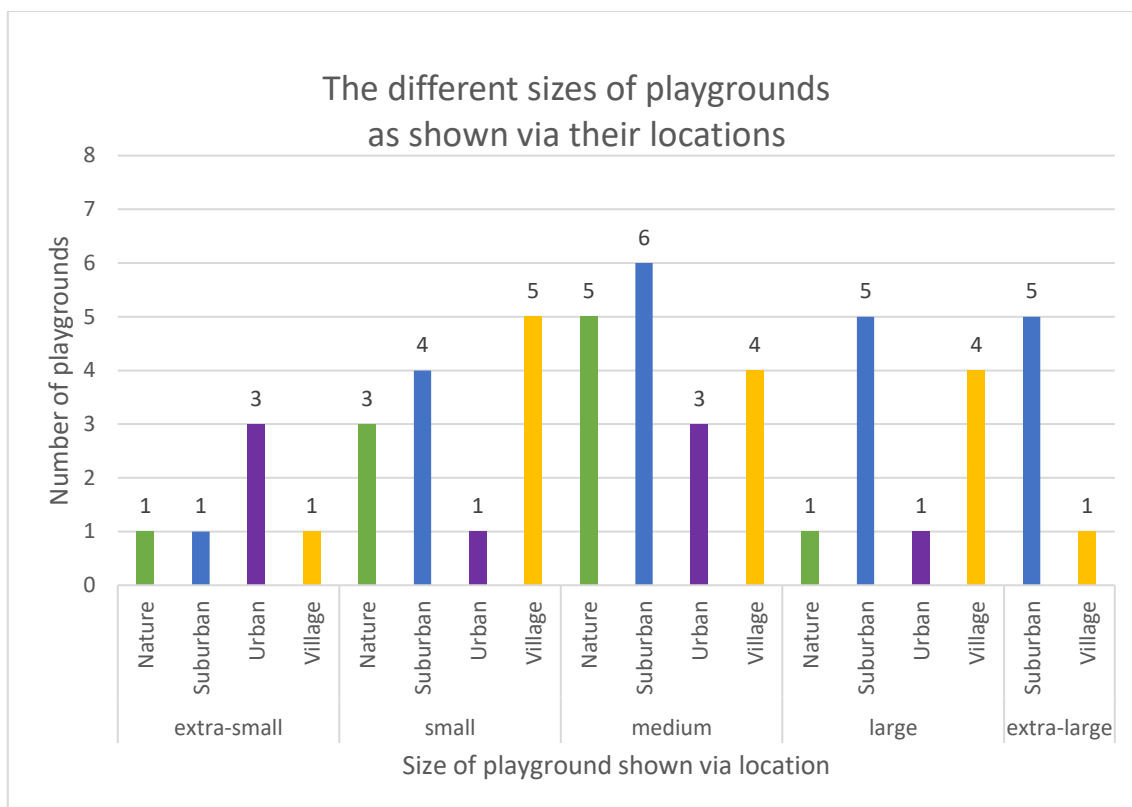


Fig.10: Comparing the sizes of playgrounds via their locations.

Medium-size school playgrounds were mostly found in suburban landscapes with a third of the total amount of medium-sized playgrounds. The most common type of size for playgrounds in nature surroundings was medium, this is also true for both suburban and urban located schools. Meanwhile, the most common type of size in village settings for school playgrounds was small.

While one would imagine that the playgrounds found in nature landscapes would have the biggest sizes due to the availability of space in their surroundings, nature located playgrounds had nil extra-large playgrounds. The extra-large playgrounds were most commonly found in suburban areas, with a total of six extra-large playgrounds and a resounding 5 of which were suburban.

Another analytical breakdown was via the school type, see fig. 11, and fig. 12. The playgrounds size has to encompass the number of students at the school. Municipal schools are generally large schools catering to roughly 200-300 students. In comparison, independent schools are ones which have been created because of private non-governmental wishes and they have a tendency to skew smaller because of the specialised pedagogical styles of the schools. As such, the greater the number of students at the school, the greater the need for larger playgrounds and vice-versa for small number of students and small schools. Hence while only 2% of municipal school playgrounds were extra-small, 27% of independent schools were extra-small. And vice-versa whereby, only the municipal schools had playgrounds larger than 15,000 square meters because they have to allow room for their large numbers of students whereas the small number of students of independent schools do not require as much.

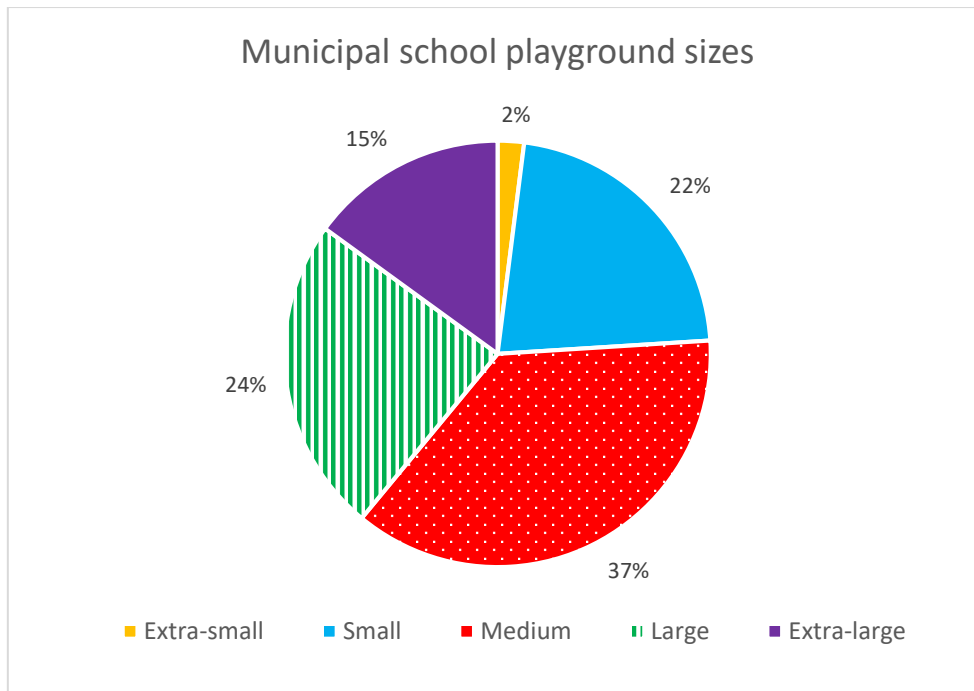


Fig. 11: Municipal school playground sizes.

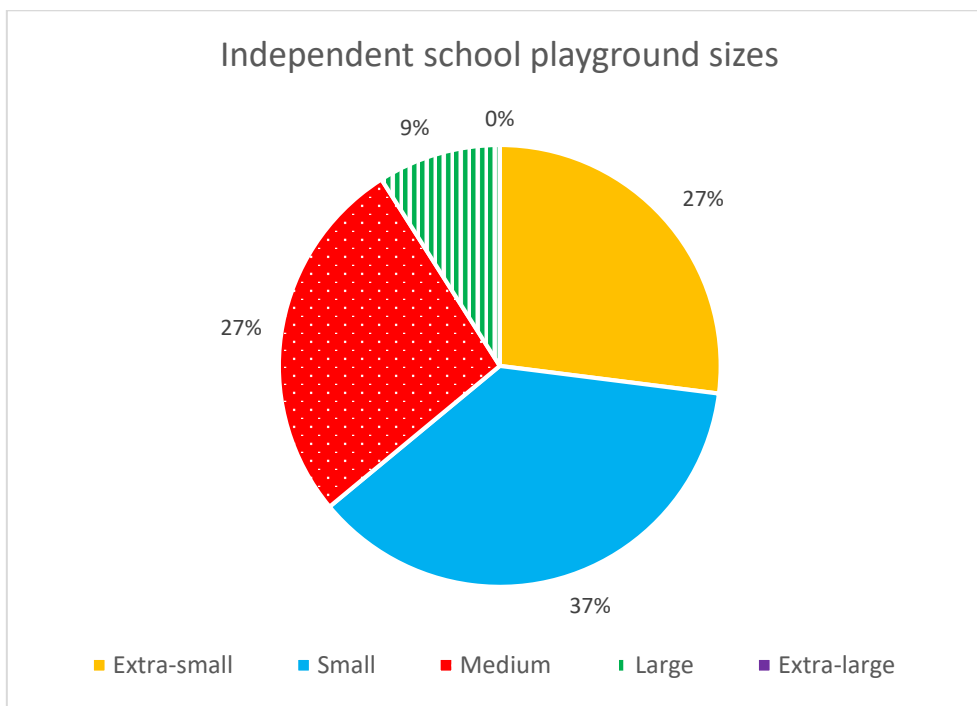


Fig. 12: Independent school playground sizes.

Additionally, 73% of independent schools are located in nature environments. As such the playgrounds themselves do not necessarily need to be as large because there is already an increased amount of outdoor nature play. Especially in comparison to the international schools which are 100% located in urban areas. Furthermore, municipal schools which while the majority were in suburban and subsequently village landscapes, only 5% of their schools lay in close proximity to nature.

5.5. Ground Types:

The ground types were observed in two different ways. Firstly, was the collection of all the different types of available ground on the playground, this included grass, sand, soil, concrete, shrubbery, wood, turf, gravel, water, see fig.13. As such, the most reoccurring type of ground was grass, followed closely by concrete and wood, with their presence at the 54 schools being 50, 49 and 48 number of schools, respectively.

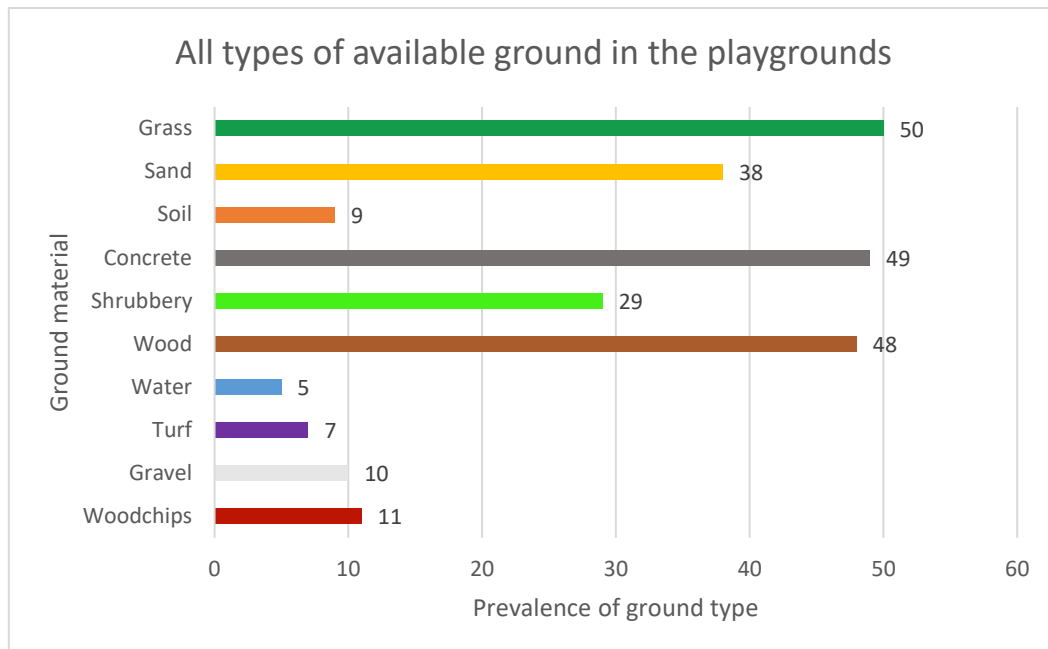


Fig.13: The prevalence of different ground materials across the 54 school playgrounds.

However, while grass may have been the most frequent type of ground, the size of areas differed greatly among schools. For example, while Palettskolan, and Lingua Montessori both had grass, concrete and sand on their playgrounds, when comparing between the two, the former has a much higher total coverage of concrete, and the latter has a higher total coverage of grass, see fig.14 and fig.15.



Fig. 14: Top-down view of Palettskolan playground (Earthstar Geographics 2018c).



Fig.15: Top-down view of Lingua Montessori playground (Earthstar Geographics 2018d).

A further example, is wood. While wood was present at all but six schools, some of the wooded areas on playgrounds consisted of a small and scattered collection of ten trees, such as Internationella Engelska Skolan (IES), see fig.16, while others such as Skrylleängskolan had an entire forest in their playground, see fig.17.



Fig.16: IES school playground.



Fig.17: Skrylleängskolan playground.

Because of this the most prevalent type of ground material per school was also noted. Of the possible ten types of ground material available, only half were a majority type of ground at a minimum of one school; these five included concrete, grass, sand, soil and wood, see fig. 18. Overall, 81% of the schools had either concrete or grass as their chief ground material, with a split of 44% and 37%, respectively. The remaining types lay at 7% for soil, 6% for sand, and 6% for wood. Overall, this illustrates how much of nature has been replaced with man-made things such as concrete. As well as show casing the different types of experiences children have within the playground.

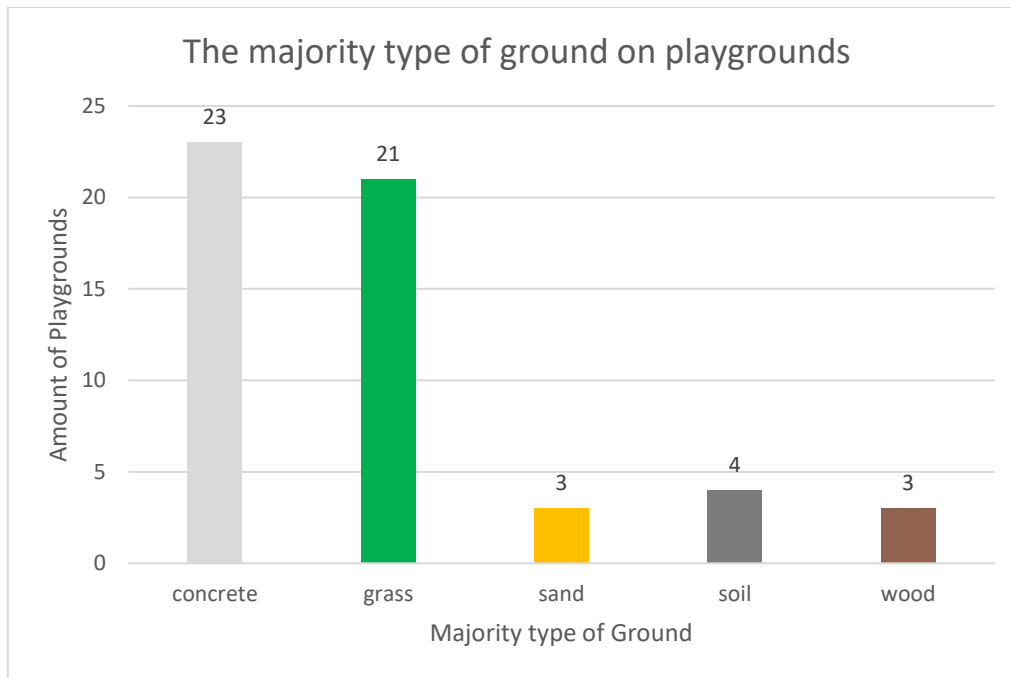


Fig. 18: The dominant ground available on the observed playground.

Three further analytical breakdowns with ‘majority type of ground’ were accomplished; via the location, via the school type, and lastly via the playground size. The most interest reveal concerning location, is that both in urban and suburban landscapes, concrete was the predominant type of ground on both, followed closely by villages with 40% of the schools, see fig.19. However, no nature landscape at all, contained concrete as its principle turf. In fact,

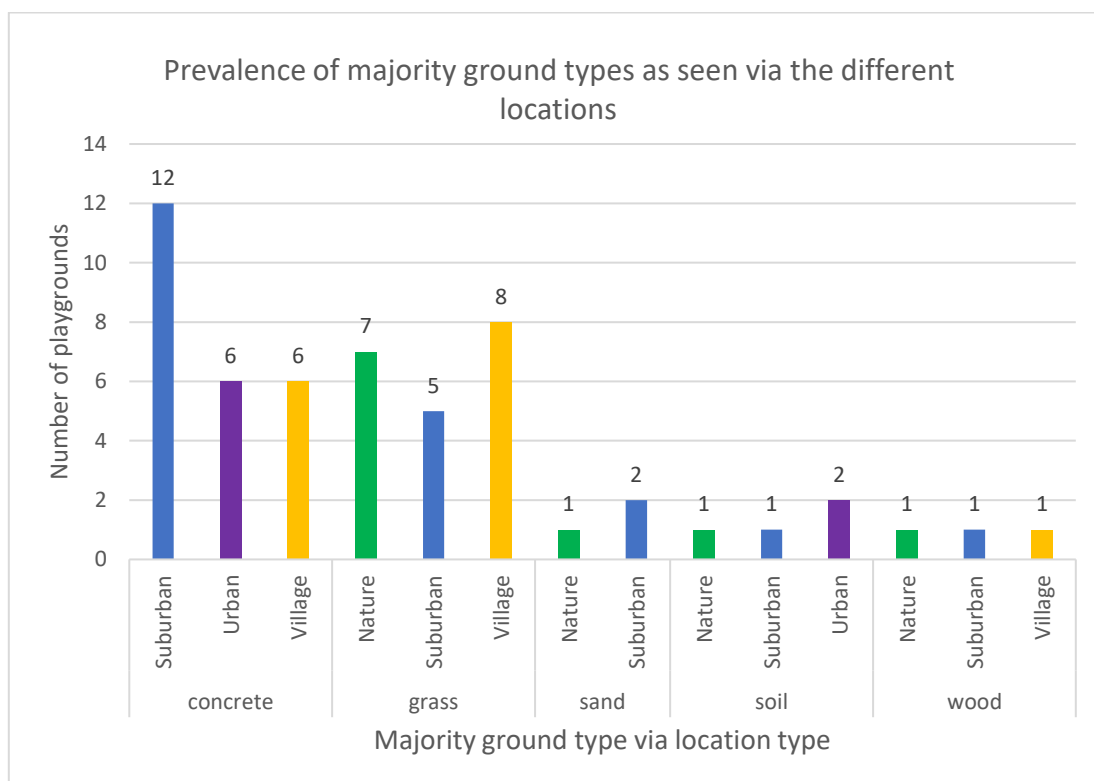


Fig. 19: The dispersal of majority ground types via location types.

70% of nature landscapes had grass as its majority type of ground, with the remaining 30% being split equally among sand, soil and wood. This showcases an explicit relationship between nature landscapes and nature ground types, the relationship being that if a school is located in a nature landscape, the predominant type of ground coverage is most certainly going to be a nature one and not a human-made material. Furthermore, no school playgrounds located in urban landscapes contained grass as its majority turf.

The next analysis looks at how the dominant ground types are divided according to the different school types, see fig.20. The biggest difference among the different school types is that for municipal schools, concrete constitutes the majority ground type for 56% of schools, the two international schools display concrete and soil, whereas on the other hand, for independent schools, grass is the dominant ground type with 64%. Furthermore, as with nature locations espousing only nature type grounds, so do independent schools. Both of these results, illustrate that independent schools utilise more nature-type materials and hence better environmental experiences for children.

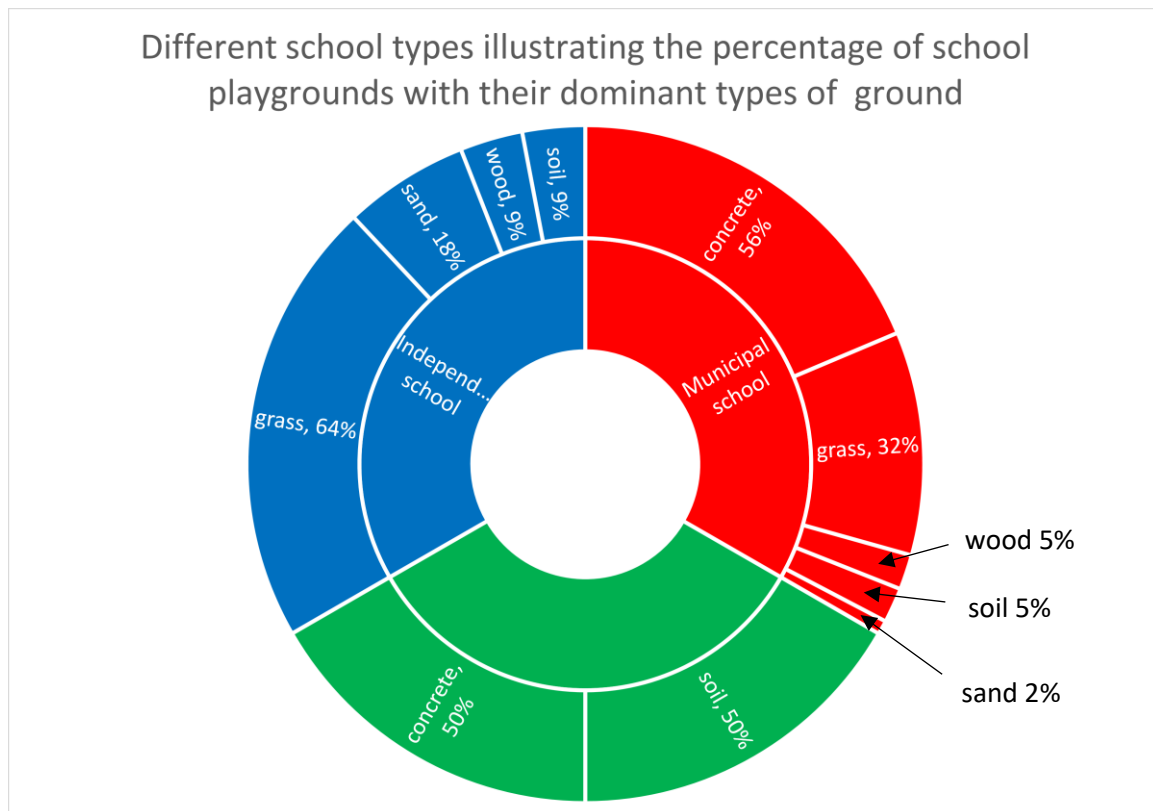


Fig.20: The division of dominant types of ground shown via the different school types.

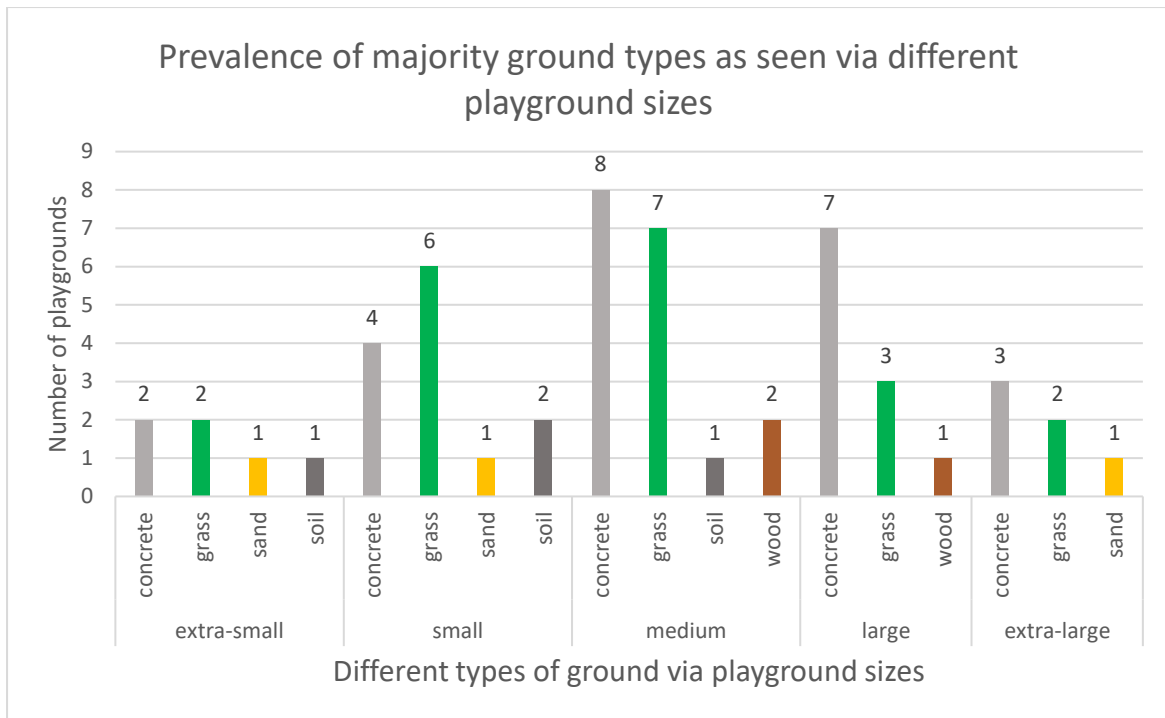


Fig. 21: Prevalence of different ground types as visualised via playground sizes.

Lastly, concerning ground types, see fig.21. The biggest and most interesting observation here is that grass dominant grounds have a tendency to be small-medium, whereas the concrete playgrounds which tend to be more medium-large sizes.

5.6. Activities:

The activities were divided into three major types: sports, play, and nature, see table 4. Of these categories, the sports activities were the most predominant in occurrence across all schools, in particular, basketball and football were present at 94% and 89% of school playgrounds, respectively.

Meanwhile, the highest occurring play activity lay at 83% and the second at 65% with the former being swings, and the latter, sand lots. In comparison, the nature activities were at 69% with green spaces, and second, and much lower at 39% with both tree trunks/beams and logs. Overall, sports placed highest in attendance, with play activities in second, and lastly nature activities.

A total sum of the types of activities was not completed because of the different variables that came into play. For example, swings were present at 83% of schools, and football at 89% a roughly similar number. However, the size of a swing set compared to the size of a football court is hugely different. The majority of play activities all require very small amounts of space and hence it is easier for schools to have a multitude of different play activities such as jungle gym, climbing frames, and seesaws or make the choice to have one football court. Overall, it is thus not a fair comparison to look at the total amount of activities between groups and contrast them. On the other hand, it is just because of those size differences that it is

Table 4: The frequency of different types of activities at the school playgrounds.

	Activity	Amount (out of 54)	Percentage
Sports Type Activities	Football	48	89%
	Basketball	51	94%
	Tabletennis	9	17%
	Climbing Wall	4	7%
	Other (i.e. Trampoline, skate ramp)	6	11%
Play Type Activities	Jungle gym	22	41%
	Swings	45	83%
	Slide	13	24%
	Climbing frames	30	56%
	Tires	11	20%
	Structures (i.e. boat, fort)	20	37%
	Sand lot	35	65%
	Tunnel	5	9%
	Seesaw	4	7%
	Rope	5	9%
	Concrete games (i.e. Hopscotch)	30	56%
Nature Type Activities	Garden	11	20%
	Greenhouse	2	4%
	Tree trunks/beams	21	39%
	Logs	21	39%
	Water	5	9%
	Green space	37	69%
	Gardening boxes	13	24%
	Rocks/boulders	6	11%
	Nature structure	10	19%
	Animal habitat	7	13%
Loose material (i.e. Sticks)	5	9%	

interesting to note that the majority of schools opted to have one activity which takes up more space, than a variety of activities which takes up the same space. However, the sports activities, mainly the football and basketball, are more often activities where a larger number of children can participate as compared to a swing where only one or two children can play together at one time, this factor potentially balances out the ‘space requirement versus activity number’.

The different school types each have a slightly different activity focus on their playgrounds, see fig.22. The most prevalent type of activity across municipal schools are sports activities, with basketball being available at 100% of the playgrounds and football at 95%. The following most rampant type of activity were the play activities, the main ones being swings at 90% of

schools, and sand lots at 71% and concrete games (e.g. hopscotch, 4 square, etc.). Nature activities came last with the highest occurring activity type being green spaces at 71%, and the second at almost half with 39% for tree trunks/beams and for logs. However, two nature features which neither of the other school types had were gardens and greenhouses. International schools, meanwhile, both showed no type of nature activity present at either playground. However, both had football courts, basketball courts, jungle gym, and climbing frames present. Independent schools in contrast had one activity from each group as the most prevalent across all its schools; all activities had 73% prevalence with basketball representing the sports, swings representing play and green spaces representing nature. Overall, independent schools had the highest percentage across nearly all of the nature activities, illustrating that independent schools have a higher chance of an environmental focus than the other two types, especially international.

Municipal schools have a heavy focus on traditional classroom learning, with interspersed activities, experiments and outings. Independent schools meanwhile, utilise a range of pedagogical styles from the traditional one, to Montessori, Freinet, Waldorf and more. These types of pedagogical styles, especially Montessori, focus heavily on “learning-by-doing”, applicability and practice of learning (American Montessori Society 2018). As such, independent schools have a much more intensive focus on outdoor learning and student-centred learning. The use of these teaching styles is exemplified in the increased sighting of nature-type activities at independent schools in comparison to the other.

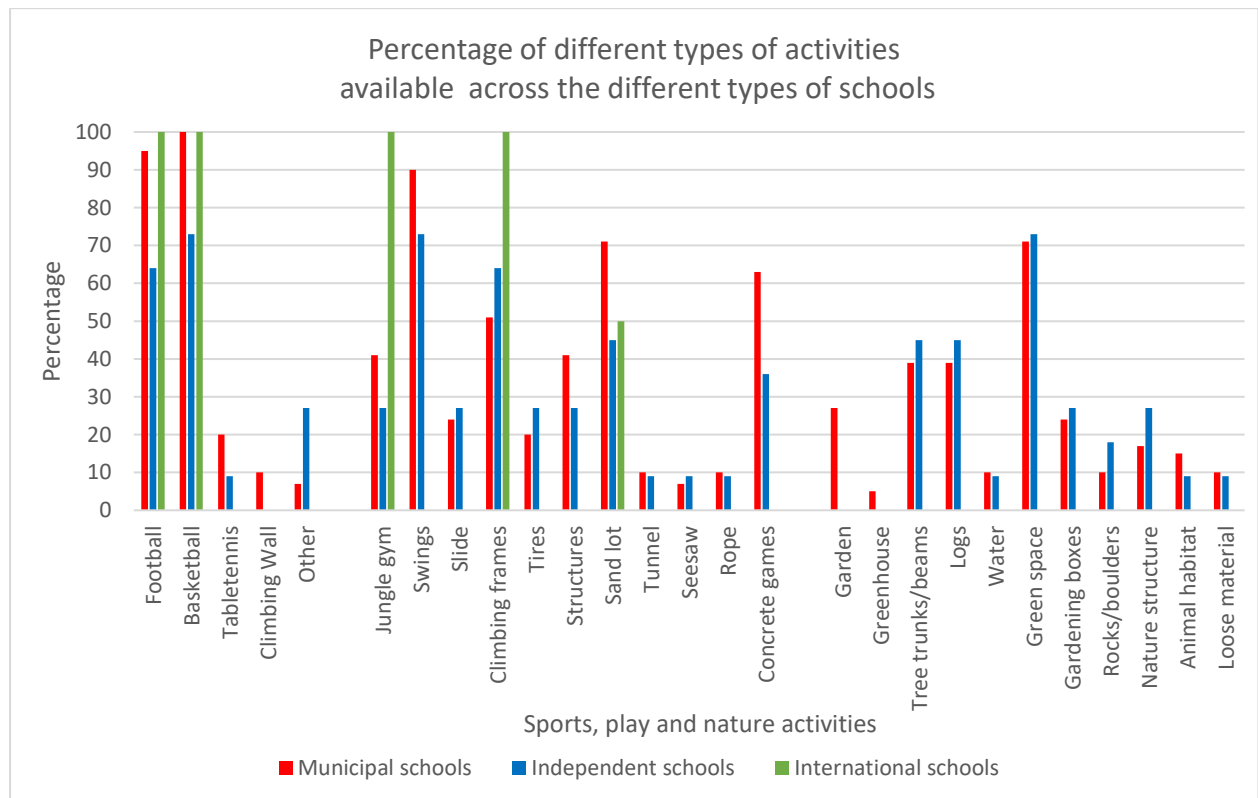


Fig.22: Comparing activities across the variety of schools.

5.7. Playscape Observations:

Along with the concept of playscape is a list of some of the minimum amount of features a school playground needs to have, in order for it to be considered a playscape, see table 5. Accessible water, unlevel topography, gardens, and hiding places were all found in less than half of the schools. A surprising note was that not all schools had some variety of trees, grasses, shrubs or flowers, these schools were: Håstad, International School of Lund Katedralskolan, Lund international school, Mårtensskolan, Vikingaskolan, three municipal and the two international schools.

Three playscape features were not taken into account for observation or analysis, these were: 1) Nature-themed art or some play equipment may be included, but do not intrude upon or dominate the playscape, 2) Seating for adults to observe children’s play, 3) Storage for child-sized equipment (shovels, buckets, etc.). The reason behind this was because for the first one lack of comprehension of the statement, and the other two didn’t seem extremely pertinent to the research question. On the other hand, some features had qualifiers. For example, for the ‘trees, grasses, shrubs, flowers’, it was not enough for a school to just have a couple trees, but a minimum of ten. The accessible water was actual water bodies and not just water monuments.

Table 5: Playscape feature breakdown across all schools.

Playscape Feature	Number	Percentage
Accessible Water	5	9%
Unlevel topography	24	44%
Gardens and/or edible landscape materials	20	37%
Sand, rocks, boulders	41	76%
Trees, grasses, shrubs, flowers	49	91%
Pathways and gathering spaces	37	69%
Hiding places, tunnels, felled logs, and digging pits	10	19%

Some additional features such as loose materials and fences were also observed as they were deemed an important feature of creating a playscape. Loose materials such as sticks or leaves, rocks were found at five schools: Ladugårdsmarken, Lerbäckskolan, Skrylleängskolan, Uggeskolan, and Vegalyckan. The three latter schools had wood as their predominant ground type. A total of 25 schools had complete fencing: municipal – 15 schools (37%), independent – eight schools (73%), international – two schools (100%). Some schools had partial fencing around their grounds, however, they were discounted because it was still permitting access from other grounds or paths.

In the breakdown between school types, see table 6, interestingly, municipal schools have a higher occurrence of accessible water, unlevel topography, gardens, sand/rocks/boulders, and hiding places. These features are ones which increase the complexity of the landscape

and variety of activities. Meanwhile, independent schools have a higher occurrence of trees/grasses/shrubs/flowers, and pathways and gathering spaces. Those features increase nature contact. The international schools fared the worst, with both playgrounds only having one feature, reinforcing their lack of nature focus.

Table 6: Playscape feature breakdown via the school types.

Playscape Feature	Municipal schools %	Independent schools %	International school %
Accessible Water	17%	9%	0%
Unlevel topography	49%	36%	0%
Gardens and/or edible landscape materials	39%	36%	0%
Sand, rocks, boulders	80%	73%	100%
Trees, grasses, shrubs, flowers	93%	100%	0%
Pathways and gathering spaces	71%	73%	0%
Hiding places, tunnels, felled logs, and digging pits	20%	18%	0%

Table 7 shows the division among schools and the amount of playscape features adopted per school playground. Only one school fit all the minimum requirements, Östratornskolan. More common was the presence of 3-4 of the playscape features.

Table 7: How many playscape features different schools had.

Feature amount	Number of schools
7	1
6	3
5	4
4	18
3	16
2	9
1	3
0	0

5.8. Summary:

Overall this is what was learned about school playgrounds across the Lund municipality. There is a great amount of variation from playground to playground whether in size, ground type availability, activities and more. Each school has its own priorities and focuses. But some generalisations were concluded.

Schools were found mostly in suburban areas, followed by village, nature and lastly urban. Now by itself this doesn't tell us all that much, however, when cross-referenced with ground, the results indicated that a large percentage of urban and suburban schools had concrete

dominant ground. In contrast, school playgrounds in nature and village environs had grass as their core ground material. Even more reinforcing for choosing nature or village located schools is that not a single school playground in those territories had a concrete majority. Additionally, school playgrounds in urban areas had no schools with grass as their dominant ground material, but suburban schools had a 24% likelihood that they will have grass.

In general, grass and concrete were nearly equal in terms of presence at schools. However, overall there were more concrete-dominant playgrounds in total than there were of grass or the other nature types. Municipal schools, which were the most frequent type of school (76% of all compulsory school in Lund municipality), also had more than half, 56%, of its playgrounds be concrete. In contrast, independent schools made-up 20% of the total number of schools, and they had 64% of playgrounds with grass dominance. Furthermore, not a single independent school had concrete as their majority type material. As with nature locations espousing only nature type grounds, so do independent schools. Both of these results, illustrate that independent schools utilise more nature-type materials and hence better environmental experiences for children.

While Municipal schools had numerous large playgrounds, the larger the playgrounds the higher likelihood of concrete predominant ground and thusly a decreasing proximity to nature. On the other hand, there was the international schools which were extra-small, and in urban settings which had concrete and soil as their main ground coverage. Lastly, independent schools meanwhile range from small-medium, but had a 100% likelihood of having a nature-type dominant ground coverage, with a more than 70% likelihood of it being grass.

In terms of activities, sports ranked first, followed by play and in last-place with quite a margin of difference was nature activities. Municipal schools followed that same pattern, however, the most interesting thing to note here was while independent schools had the most nature activities across most schools, a big thing that they lacked which municipal schools had were gardens and greenhouses. So municipal schools had more activity-type features, especially specific-outcome type activities. Independent schools however, had more feature varieties, which allowed for various-outcome type activities. International schools meanwhile showed no nature activities present at all.

In terms of the playscape paradigm, only a single school playground fulfilled all the minimum playscape requirements. More common was the presence of 3-4 features of the playscape design. Secondly, the play objects such as loose materials which were deemed important for different types of growth and development were barely existent on any of the playgrounds.

6. Discussion:

The focus of the research was to investigate firstly, what is the reason behind why certain humans care more for the environment than others? Secondly, why do an even smaller percentage of people take pro-environmental actions? And most importantly, in what sense

school playgrounds of compulsory schools across the Lund municipality help foster nature relationships?

While the first two questions have already been discussed in previous sections they along with the principal question will now be more fully elaborated on. Firstly, by looking at the various experiences children amass in the various playgrounds. Secondly, is a look at how nature can be used as a cure for learned helplessness.

6.1. Perceptions of Nature:

The lay concept of nature or surface view involves the everyday experiences. Children's perceptions of nature and knowledge of nature are formed by the everyday experiences their school playgrounds offer. There are many varieties of school playgrounds in the Lund municipality, however, the majority of the compulsory schools presented here had concrete as the dominant turf on their playgrounds and were found in suburban landscapes. As such, the two main types of experiences were a concrete versus a nature experience, with the former being the most dominant in presence across all the schools. Through the use of a phenomenological type of study; a comparison of the different senses each location holds, the experiences and outcomes of each type of environment is show cased.

Aesthetics of an environment play a large role in the formation of its perception. The experiences of concrete environments are visually simplistic in that there is nothing but an open courtyard area, as such there is nothing to stimulate cognitive development of any kind. On the other hand, nature environments are visually complex and colourful due to the amalgamation of a variety of different types of environments, materials and life such as shrubs, trees, grass, soil, flowers, birds, ants and more. This complexity is what helps stimulate cognitive development and haptic stimulation in children (Wight et al. 2016, 522-523). For example, comparing Fäladsgården playground, see fig. 23 which consists of a large open concrete area as compared to Skrylleängskolan playground, see fig. 24, which encompasses a large forest, one can clearly see the difference each establishment brings to the variety of experiences and stimulation as well as the effects. Overall, nature and nature materials add



Fig. 23: Fäladsgården playground.



Fig. 24: Skrylleängskolan playground.

complexity, aesthetic, and consummatory experiences which concrete ridden places do not. In addition, visual experiences involve various forms of both active life, e.g. birds, worms, bees, squirrel, hedgehogs, hares, and fish, and passive life, e.g. trees, plants, flowers. The prevalence of these types of encounters are most commonly found within nature environs. Furthermore, encounters with lifeforms have been illustrated to create an attitude of caring for nature through the development of empathy (Chawla 2009, 12; Clayton 2003).

A further experience of the environment is auditory. Concrete environments do not hold a variety of auditory experiences except from the hard clack of a shoe on the ground. Nature environments however holds a variety of animal life such as birds and grasshoppers in addition to the effect of wind upon the trees, the grass or the water which creates the pleasant rustling of leaves and blades of grass and swooshing of water. An environment that is teeming with sounds invites curiosity, relaxation and stress relief (Alvarsson, Wiens & Nilsson 2010) and empathy which has been shown to promote feelings of caring for nature (Chawla 2009, 12; Clayton 2003) overall creating a positive experience.

Next looking at the difference of tactile experiences. Concrete is hard and tough and depending on the weather freezing or sizzling. Nature encompasses a variety of different tactile experiences including both soft and hard, dry and wet, tough and pleasant. The increase of variety of possible experiences stimulates development, and furthermore the pleasant and softer textures leads to more pleasant experiences and perceptions.

In terms of olfactory, apart from when concrete is laid, it emits no smell, as such no form of positive experience or nostalgia is created. Nature on the other hand is packed with an assortment of smells from various flowering plants, grass, wood, petrichor. Flowers are especially renowned for their sweet and pleasant smells, hence their utilisation in perfumes. Olfactory data is stated as more potent than visual or linguistic data, especially when it concerns memory (Press & Minta 2000, 183). Nature smells, in particular grass is shown to be nostalgia inducing (Herz 2004; Press & Minta 2000). Nostalgia in this case being seen as a positive experience.

Lastly, briefly looking at gustatory. Concrete environments are harmful and unpleasant to eat. Nature environments depending on the type of flora, such as those cultivated in the kitchen gardens by schools, e.g. strawberries, parsley, apples, are good to eat. A number of plants on the other hand taste unpleasant and bitter but are not necessarily harmful, while others may cause possible ingestion issues. While concrete produces only negative experiences, nature environments produce an assortment of experiences from good to bad, but depending on one's knowledge of nature, the experience could be wholly good.

Overall, comparing the different variety, amount and complexity of experiences of the different types of environments, concrete environments do not offer stimulating experiences. Meanwhile, nature environments offer both a large variety and amount as well as complex and stimulating experiences which engage cognitive development of children.

On a slightly different tangent, focusing solely on the presence or absence of nature and concrete a different perception is formed. For example, playgrounds which illustrates swathes of concrete ground creates the perception that concrete is a normal type of ground with

nature being seen as a rare. Experiences such as those do not foster any sort of positive of caring attitude toward nature, because they lack the connection or bond that is formed through nature encounters. Furthermore, and possibly worse are the perceptions formed concerning nature that is penned in, see fig. 25 and fig. 26. Nature that is fenced invites



Fig. 25: Hagalundskolan playground



Fig. 26: Järnåkraskolan playground

perceptions of human or societal dominion or mastery over nature. Nature becomes a subject that is controlled and exists only as a resource or aesthetic thing and not something which is alive in itself, and furthermore keeps humans alive. These perceptions reflect many of the current dominating perceptions of the capitalist world system, which is viewed as “primarily an economic system that determine[s] the behaviour of the major social actors by the economic logic of making profits as manifested in the world extraction of surplus value and the ceaseless accumulation of capital at the world-scale.” (Grosfoguel 2011, 8; Chomsky 1999, 7; Lindbeck 1995, 477). Furthermore, it is possibly on account of these dominating perceptions of nature, that pro-environmental actions and behaviours aren’t occurring. Ultimately this has created the need for the establishment of deeper relationships between humans and nature.

Overall, the reasons for a variety of nature attitudes among humans comes down to the fact that everyone experiences nature differently. Furthermore, with non-nature being the dominant type of experience it further illustrates why only a small subset of people take environmental action; because only a small amount of people have been subjected to a variety of positive nature experiences which have created bonds between humans and nature.

6.2. Nature as a cure for environmental amotivation?

However, are positive experiences and an attitude of caring for nature enough to combat the feelings of learned helplessness? Especially with regard to environmental issues such as climate change. Learned helplessness is the feeling which develops after one begins to believe that no matter what one does, nothing can be done to change a negative situation. Other effects of learned helplessness include emotional disturbance which manifests in forms of

depression and anxiety which can cause long-lasting psychological and emotional damage to a person. Furthermore, both motivational and cognitive abilities are also impaired.

Enter environmental issues such as climate change. Climate change is argumentatively one of the biggest crises of the modern world. It is also the biggest crises for which there is seemingly, both the least effective and least undertaken action. And yet, climate change causes severe flooding of entire island nations, drastic food shortages, biodiversity extinctions and a long list of other highly consequential issues. However, the issues of climate change are also incredibly entangled with a variety of power structures and people in power which seemingly make money off of the climate disasters (Klein 2017, 145-146). As such, there has been limited forward motion to stop or mitigate climate change. Consequently, feelings of learned helplessness and waves of amotivation have developed (Gifford 2011; Inglehart 1995; Pelletier et al. 1999).

Psychologist Dr. HaileMariam (2001, 105) utilises the abundant amount of knowledge which suggests how early experiences shape future behaviours and applies it to feelings of learned helplessness. Herein she states how “education may be one of the variables that helps prevent children from developing a sense of learned helplessness” (HaileMariam 2001, 111). Combining this knowledge with the knowledge concerning the various positive effects and experiences nature, playgrounds and playscapes bring, children will become the driving agents or forces of change to combat feelings of learned helplessness and with it, start to tackle environmental issues (HaileMariam 2001, 111; Walker 2017, 76).

With a focus on creating engaging, captivating and pleasurable experiences, playscapes are the ultimate nature playgrounds. Playscapes stimulate environmental education through its variety of environments and available materials leading to a multitude of benefits including scientific inquiry, cognitive development, motor skills, emotional, social, creativity, physical, linguistic, mathematics and more, see section 3.2.1. Furthermore, studies have illustrated that in comparison to traditional type playgrounds; playgrounds characterised by metal playground equipment and a lot of concrete, that playscapes were the favoured type of play area, due to the increased complexity that the different environments bring in addition to the increased variability of possible activities. Sutton-Smith (2008, 119) furthermore explains how positive experiences such as ones that play establishes, become coping mechanisms for humans. Furthermore, Wells & Evans (2003, 311) illustrate that children utilise nature as a way to reduce stress in their lives. As such, playscapes are shown to prominently exhibit a large amount of positive experiences but more specifically, nature-oriented positive experiences. Playscapes provide “developmentally appropriate play and learning venue for the twenty-first century, thus perpetuating a fourth wave of environmentalism by encouraging very young children to play in and connect with nature” (Carr & Luken 2014, 70).

However, in terms of the presence of playscapes in schools across the Lund municipality, it is incredibly low. Östratornskolan was the only school out of the total 54 schools which exhibited all seven minimum feature requirements, see fig. 27. Östratornskolan is a municipal school, located in the suburban landscapes and it is among the largest schools of the municipality with more than 18,000sq m. While size plays a role in the ability to incorporate all the different features it is not the only variable as several other schools were the similar

sizes and some even bigger. Furthermore, the school while encompassing all the variety of playscape features and more nature features (i.e. greenhouse), the school also had sport and play activities. This illustrates that having a playscape school is definitely possible in the Lund municipality. Furthermore, it does not mean the neglect of other types of activities such as



Fig. 27: Overhead view of Östratornaskolan playground with labelled activities and areas (Earthstar Geographics 2018e).

sports and play. Secondly, while nature locations have shown to be more attuned to nature experiences, this does not disregard other area types as also fostering nature relationships.

As a whole, the school playgrounds of Lund municipality do not encompass a large presence or availability of nature on the majority of playgrounds. As such, positive experiences of nature and the development of an attitude of caring for nature or nature relationships are not overwhelmingly well fostered. However, depending on the different school one attends there is a difference. Municipal schools with a dominant concrete ground and suburban locations and sport focus and international schools with dominant concrete and soil grounds, urban locations and sport and play focuses do not purport nature relationships as much as independent schools. Independent schools with a 100% likelihood of a nature ground material, a majority of nature locations, and an equal attention to nature as to sports and play activities illustrate a higher attention focus on fostering positive nature experiences and nature relationships.

7. Conclusion:

Play is fun. Furthermore, play in nature is shown to be even more fun and leave a variety of positive experiences in comparison to non-nature play. In addition, nature has been shown to have an assortment of positive effects including on health, motor skills, social skills, emotional development and most importantly, in the eyes of this thesis, the establishment or foster of caring attitudes towards nature. Consequentially, if play within nature is a fun and

positive experience, children may start to associate nature with pleasure. Through furthered continuation of positive experiences with nature, biophilia can be established. The establishment of biophilia would mean a deep connection between humans and nature as equals or more likely as caretakers of nature has been created through the creation of emotional attachments and happy experiences. These caring attitudes are seen as one way to ultimately combat the lack or limited action towards climate issues.

Sweden is a very environmentally conscious country, as such the original hypothesis followed that the schools, more specifically the playgrounds would also demonstrate a pro-environment or nature experience. The variety of playgrounds means that children will receive vastly different experiences to one another. However, the majority of playgrounds exhibited concrete as the dominant ground material and were located in suburban landscapes, with a focus on sports, and thus receiving minimal-nature experiences. Furthermore, only one playground out of a total of 54 met the minimum requirements to be qualified as a playscape, the most effective all-nature outdoor playground a school can have.

For further and future analysis, a variety of variables and angles could be studied further. For example, information concerning the date school playgrounds were constructed, and the number of students could explain why certain schools are the way they are. Additionally, at least three of the analysed school playgrounds were under construction when this study was completed, it would be interesting to see how these new playgrounds are designed and whether for example the current political and social state of the world has been taken into account through an increase of nature in the playgrounds.

An interesting angle would be to explore the position of preschools, high schools, vocational schools, learning disability schools to see what their position is in relation to the compulsory schools explained here. For example, is there more nature for the younger they are, and less as they age? Furthermore, a comparative analysis of the schools from Lund municipality to other municipalities in Sweden or to other countries could be achieved to see how the different schools rank in terms of nature availability. Finally, if one were to get a good amount of responses from schools concerning their environmental education teaching practices as well as the after-school activities this would serve to add information to the current results.

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Figure 29: Earthstar Geographics (2018e) Map. *Overhead view of Östratornskolan playground with labelled activities and areas*. 1:20. Lund, Sweden: Earthstar Geographics.

² Figures not included are ones which have been created or photographed by the author themselves