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Master Thesis

**Green spaces and children's sites
of physical activity**

Barns fysiske aktivitet og grøntområder i
skolegården

Master in public health with the emphasize on
lifestyle changes

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Abstract

The background of this study is the decline in physical activity levels in children and the public health concern for physical inactivity that emerges from it (Norwegian Directorate of Health, 2011). Physical activity can be a preventive measure for a number of lifestyle diseases and essential with regard to children's development and growth (Norwegian Directorate of Health, 2011). The school ground is a place where Norwegian children spend countless hours and can therefore be a great arena for promoting physical activity and health (Norwegian Directorate of Health, 2010). There are a number of positive correlations between having green spaces in the school ground and children's physical activity in the existing literature (Dyment & Bell, 2006; 2007; Tranter & Malone, 2004). The biophilia hypothesis was used as background theory for this study as it builds on the belief that people's relationship with nature is biologically based and that this relationship affect their development (Kellert & Wilson, 1993).

This study explored the relationship between having green spaces in the school ground and children's sites and type of physical activity in the school ground, using contact parents with their child(ren), PE teachers and principals at compulsory schools in Norway. The researcher employed here a basic quantitative survey approach, using Questback for data collection and SPSS for data analysis.

The results showed that the green spaces in the school grounds studied was an important feature to the children, as it was one on the two places where most children were physically active. The respondents perceived effect of green spaces show that both the parent group and the school officials (PE teachers and principals) view green spaces in the school ground as very positive in terms of promoting physical activity, more constructive play, more cooperative play, more civil play behaviour and encourages the students to explore the natural environment. Both the parents and the school officials rated "opportunities for exploring nature" as the number one encouraging factor in terms of physical activity. The results showed a clear picture of the importance of having green spaces in the school ground and the effects it have on the children, something that also correlates to the research on the field (Dyment & Bell, 2006; 2007; Titman, 1994; Tranter & Malone, 2004).

Norsk Sammendrag

Bakgrunnen for denne studien er nedgangen i fysisk aktivitet blant barn og unge i Norge og en stadig økende inaktive befolkningen (Norwegian Directorate of Health, 2011). Fysisk aktivitet kan være et forebyggende tiltak for en rekke livsstilssykdommer og viktig i forhold til barns utvikling og vekst (Norwegian Directorate of Health, 2011). Skolegården er et sted hvor norske barn bruker utallige timer og kan derfor være en god arena for å fremme fysisk aktivitet og helse (Norwegian Directorate of Health, 2010). Det finnes en rekke positive korrelasjoner mellom å ha grøntområder i skolegården og fysisk aktivitet blant barn i den eksisterende litteraturen (Dyment & Bell, 2006; 2007; Tranter & Malone, 2004). Biophilia hypotesen er den teoretiske forankringen i denne oppgaven, og den bygger på troen på at menneskers forhold til naturen er biologisk basert, og at dette forholdet påvirker menneskets utvikling (Kellert & Wilson, 1993).

Denne studien har undersøkt sammenhengen mellom å ha grøntområder i skolegården og hvilke steder barn er fysisk aktive i/på og type aktiviteter de driver med i skolegården. Deltakerne i denne studien er kontaktførelde med sine barn fra hvert klassetrinn, kroppsøvingslærere og rektorer i grunnskolen i Norge. Forskeren har brukt en kvantitativ metode, ved hjelp av Questback som verktøy med å lage de to undersøkelsene og for datainnsamling. Dataanalyseprogrammet SPSS ble anvendt i analyse av dataene.

Resultatene viste at grøntområdene i skolegårdene spilte en viktig rolle for barna da dette var et at de to stedene hvor barna var mest aktive. Respondentene oppfattet effekten av grøntområder som veldig positiv både i forhold til å fremme fysisk aktivitet i skolegården, fremme mer konstruktiv lek, fremme bedre samarbeid mellom elevene, fremme mer sivil lekeatferd og i forhold til å oppfordre elevene til og utforske naturen. Både foreldre, kroppsøvingslærere og rektorer rangerte "muligheter til og utforske naturen" som den mest oppmuntrende faktoren i forhold til fysisk aktivitet blant elevene. Resultatene viser et klart bilde av betydningen av å ha grøntområder i skolegården og betydningen det har for barna, noe som også korrelerer med forskningen på feltet (Dyment & Bell, 2006; 2007; Titman 1994; Tranter & Malone, 2004).

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1. Introduction

Outdoor life and Norwegian tradition go well together. Ever since the Stone Age, Norwegians used nature to supply food, to live in as well as to simply survive. While Norwegians continue to harvest food from nature, they no longer use nature for survival purposes but more like an arena to enjoy great adventures, to socialize and to be physically active (Mytting & Bischoff, 2008).

The benefits of physical activity are considered important to health and wellbeing of all population (Ministries, 2005). Numerous benefits from participation in physical activity are identified in the existing literature, one of them being the prevention of obesity and overweight (Global Advocacy Council for Physical Activity, 2010). Physical activity can be used as a preventive measure on a number of diseases, especially lifestyle diseases like diabetes, high blood pressure and mental illnesses. Physical activity can also impact people's mental health as it can reduce stress and give more energy (Ministries, 2005).

Research suggests that Norwegian children's levels of physical activity have decreased in the last decade (Norwegian Directorate of Health, 2011). The newly published Norwegian recommendations for physical activity (Norwegian Directorate of Health, 2014) suggest that children ought to be active 60 minutes a day in moderate to high intensity activities; while at least three times a week, they should engage in activities of high intensity for increasing muscle and bone strength (Norwegian Directorate of Health, 2014b). According to the Norwegian Directorate of Health (2010) the school ground is a place where children spend many hours and can therefore be a great place to promote physical activity and health (Norwegian Directorate of Health, 2010). The connections between green space and physical activity are strong and the correlation is positive, as research shows green spaces to be an important factor in keeping children and youth physically active (Evergreen, 2014). Green space is defined as a landscape covered with grass, trees, rocks and other types of natural vegetation (United States Environmental Protection Agency, 2014).

The present project's aim is to investigate any potential differences in the different sites of physical activity of pupils in relation to the existence and use of the green spaces available in different Norwegian compulsory schools. Parents with their children and school staff (teachers and principals) participated in the study and shared their views to help the

researcher answer the following research question: “*How do Norwegian children’s sites of physical activity vary when enrolled in compulsory education schools with different size of green spaces?*” The rationale for this study is that if green spaces provide the opportunity and means for children to be more active during the school day then if more green spaces exist within school yards around Norway physical activity participation will get a boost during the compulsory school years.

The significance of this study is supported by the positive relationship found in the existing research between green spaces in the school ground and more active children (Dyment & Bell, 2006;2008). The gap in the field is geographical as no research in this particular area has been conducted in Norway. Research in Norway has explored the pedagogic aspects of green school grounds but not how these may relate to the physical activity levels of the students (Fjørtoft, 2001).

2. Review of the literature

In this section the existing literature on green spaces in the school ground and physical activity is reviewed and presented. More specifically, the researcher reviewed theoretical frameworks and research studies on the biophilia hypothesis, physical activity and the health benefits that can be achieved from it, the connections between green spaces and physical activity, the benefits of green spaces in the school ground and health promotion as it may relate to the school ground.

2.1 The Biophilia Hypothesis

The biophilia hypothesis was proposed by Kellert and Wilson (1993) and argues that nature plays an important role in people's lives while this role stems from a biological need of people for nature and other forms of life. The hypothesis involves a number of assumptions about the relationship between the natural environment and human beings. The first of these assumptions is that the relationship is biologically based; the second assumption is that the relationship is a part of human heritage; the third is that the relationship is an important factor for achieving personal fulfillment and individual meaning. Lastly, the fourth assumption of the hypothesis is that human beings have an interest to take care of and conserve nature and its diversity of life (Kellert & Wilson, 1993).

Kellert and Wilson (1993) explained that the relationship between the natural world and people's relationship to nature can affect human identity and personal fulfillment. They stated that there is a biological connection between human beings and nature: "The biophilia hypothesis boldly asserts the existence of a biologically based, inherent human need to affiliate with life and lifelike processes" (Kellert & Wilson, 1993, p. 42). The hypothesis suggests that people's relationship to nature can influence their cognitive, emotional, aesthetic and spiritual development. The human relationship to nature has according to Kellert and Wilson (1993) existed for over hundreds of years and began with human beings living in nature along with other organisms and animals. This makes the relationship part of the human heritage (Kellert & Wilson, 1993).

Louv (2009) stated that: "Given a chance, a child will bring the confusion of the world, wash it in the creek, turn it over to see what lives on the unseen side of that

confusion” (Louv, 2009, p. 7). Louv (2009) explained the unlimited possibilities that exist in nature for a child to explore, and the way children can use nature as an arena for privacy from the adult world, to relax and disengage. Childhood and children’s perspectives on nature have changed dramatically since the 1980`s and according to Louv (2009), children are now more interested in electronic devices and television than exploring nature. Louv (2009) calls this “nature-deficit disorder”, which is not a medical term, but a way of describing the arising issue of children’s lack of connection to nature and lack of curiosity for nature and its possibilities. Louv (2009) further argued that children have a need for nature in terms of healthy development of learning and creativity:

This need is revealed in two ways: by an examination of what happens to the senses of the young when they lose connection with nature, and by witnessing the sensory magic that occurs when young people-even those beyond childhood-are exposed to even the smallest direct experience of a natural setting (Louv, 2009, p. 55).

This connection to nature that Louv (2009) describes corresponds with the biophilia hypothesis with regard to the assumption of a biological based connection to nature (Kellert & Wilson, 1993).

2.2 Physical Activity

Physical activity is something that most people engage in every day and is defined by the World Health Organization (WHO) as “any bodily movement produced by skeletal muscles that require energy expenditure” (WHO, 2015). According to The Norwegian Directorate of Health, physical activity is a source of physical surplus, health and well-being and cognitive development (Norwegian Directorate of Health, 2014a).

By encouraging people to increase physical activity, health issues can become both preventable and treatable (Norwegian Directorate of Health, 2014a). The Norwegian Directorate of Health published its newest national recommendations for the levels of physical activity for adults and youth in 2014. Being physically active on a regular basis can provide energy and promote health and is important in the treatment and prevention of a number of lifestyle diseases. Benefits from physical activity are well documented and researched, these benefits are amongst others increased lifetime and improved quality of life (Norwegian Directorate of Health, 2014b).

2.3 Children and physical activity

The Toronto Charter for Physical Activity presents a broad list of health benefits gained from physical activity at various ages (Global Advocacy Council for Physical Activity, 2010). Physical activity reduces the risk of overweight and obesity among children, while it can also contribute to the social development and growth in children (Global Advocacy Council for Physical Activity, 2010).

Especially for children, the World Health Organization reports numerous benefits from being physically active. These benefits are: improving cardiorespiratory and muscular fitness, improving metabolic health biomarkers and bone health, but also a reduction of symptoms of anxiety and depression (World Health Organization, 2010). The World Health Organization (WHO) recommends children in ages 5-17 years to be physically active 60 minutes per day. WHO (2010) adds that if these minutes are expanded the health benefits will only increase. The Norwegian Directorate of Health (2014) also recommends 60 minutes physical activity every day for children, but specifies that these should be spent in activity of moderate to high intensity. In addition to the 60 minutes, it is recommended that at least three times a week, exercise for strengthening bone and muscle strength should be included.

According to the WHO's (2004) "Global Strategy on Diet, Physical Activity and Health": "Schools influence the lives of most children in all countries. They should protect their health by providing health information, improving health literacy, and promoting healthy diets, physical activity, and other healthy behaviors." (World Health Organization, 2004, p. 9). To make this possible, all schools should have the right equipment and facilities for promoting physical activity and offering quality physical education to children (World Health Organization, 2004).

In addition to the physical benefits of physical activity for children, like developing healthy musculoskeletal tissues and a healthy cardiovascular system, there are also psychological and social benefits such as improved self-esteem and self-confidence. Moreover, improved control over symptoms of depression and anxiety are also among the psychological benefits that children can achieve by being physically active on a regular basis (World Health Organization, 2004)

2.4 Research on the benefits of green spaces

Veitch, Bagley, Ball, and Salmon (2006) interviewed 78 parents from high, middle and low socio-economic areas in Melbourne in Australia. The aim of the study was to get a better understanding of where children play in their after school time and on weekends as well as the reasons for these choices. “The ecological model guided the development of questions designed to assess a range of influences on children’s active free play, including influences at the individual level, social environment level and physical environment level” (Veitch et al., 2006, p. 385). The parents identified safety and social factors as key themes, but also the design of the different play structures and areas as important factors as to where their children played. Safety was a major concern for the parents, 58% of them expressed concerns regarding strangers, with regard to their children’s safety. Children in this study were in average 8.3 years of age, and reported that after school hours and on weekends they usually play in their backyard, parks, playgrounds and different outer urban areas, for example bushes or rivers. Seventy-four percent of the parents said that their children spent most of their free time in their own backyard. Places like swimming pools and school yards were also mentioned by the parents, but were not considered to be the children’s usual place for after school free play (Veitch et al., 2006).

Maller, Townsend, Pryor, Brown, and St Leger (2005) researched the health and wellbeing effects of contact with nature by summarizing theoretical, empirical and anecdotal evidence in a literature review. The researches presented nine different articles with evidence supporting the assumption of contact with nature to have a positive effect on health and wellbeing. The results from the review report that there was evidence supporting psychological positive effects of human contact with nature. This contact included positive interactions with animals and the view of nature and landscapes (Maller et al., 2005). They also found that people prefer natural landscapes and environments, when given a choice; this was the case particularly in environments with water features, large trees and intake vegetation, regardless of people’s culture and nationality. The researchers found support in that having nature close by was important to people whether or not they used it. They reported that when being in proximity of nature it gave people higher life satisfaction and a more positive outlook on life (Maller et al., 2005).

2.5 Research on green spaces in school grounds

The school ground is for many children a place to play, explore, learn and develop. A number of children prefer to play in natural environments, like nature and wild spaces, the green school ground gives children great conditions and opportunities to play, learn and explore nature (Maller & Townsend, 2006). Research on green space located within school yards varies, while findings support a clear correlation between physical activity, health, active play, child development and green spaces. While existing research addresses some limitations to these findings like the children's safety and limitations of space and access to green spaces, it mainly brings to light benefits from having green spaces in the school ground (Dyment, 2005; Dyment & Bell, 2007;2008).

Maller and Townsend (2006) researched the health benefits from hands on contact with nature. The study was conducted in Australia with 90 participating elementary schools. There were three objectives in the study: The first was to define what kind of hands-on nature-based activities were held at the different elementary schools. The second was to determine the amount of hands-on contact the children had with nature. The third objective was to inquire the principals and teachers perceptions regarding the benefits of hands-on contact with nature. Sixty-five percent of the participating schools reported engaging their students in hands-on nature-based activities, 55.6% reported that gardening activities were used at their school, and 38.9% reported that their school had hands-on activities with animals. The researchers' reported in their results that principals and teachers viewed hands-on nature-based activities as having a very positive effect on the children. Indicators like working well with others, interpersonal relationship, caring for living things, interest in the environment/nature and interest in learning were all rated as either being "positively affected" or "very positively affected" (Maller & Townsend, 2006).

In Tranter and Malone's (2004) research, two primary schools in Canberra, Australia were compared in terms of school grounds. One of the schools was surrounded by a forest and natural environment while the other was located in a rural environment surrounded with shops and buildings. The aim of the study was threefold: Aim one was to explore the children's opportunities in the school ground for environmental learning, using different research techniques, such as mapping of the physical features in the school ground, analysis of children's drawings of the school ground, systematic observation and interviews of

children. Aim two was to explore the connections between the geographies in the school grounds and the children's play behaviors. Aim three was to explore why there were differences in the two schools concerning levels of learning opportunities. The study was conducted through the use of "detailed mapping of the physical features of the school grounds, systematic observation and mapping of children's drawings of the school and grounds, interviews with the children in years three and/or four (aged eight to 10 years)" (Tranter & Malone, 2004, p. 136). The results showed that many of the children listed green space as their favorite place within the school grounds because of all the opportunities they had in the green spaces. These opportunities provided the children with a creative playground, where they could use their imagination and practical skills. One of the clear differences was that the children in the school surrounded by the natural environment spent much more time outside and were more active than the children attending the rural school (Tranter & Malone, 2004). At the school with forests and natural environment, the staff would accept the act of children digging the school ground and explored every aspect of the natural environment in their own creative ways. The natural landscape of this school and the staff acceptance of the children activities at this school gave the children more opportunities for environmental learning than the children at rural school had (Tranter & Malone, 2004).

Dyment and Bell (2006) conducted a national survey in Canada to investigate the relationship between green school grounds and children's physical activity enrolled in elementary schools in Canada. A total of 59 schools participated in the study, resulting in 105 questionnaires answered by parents, teachers and school administrators. This research suggest that having a green school ground, with trees, rocks, wildflowers, gardens, sand, logs, water features and other types of green areas has an impact on the activity level and the types of activities the students engage in during school hours (Dyment & Bell, 2006). One of the main findings was that the green school grounds supported a wider variety of activities that appealed to a bigger proportion of the student body compared to conventional school grounds. This finding was seen to be promoting more physical activity at all levels (light, moderate and vigorous) across the student population. In addition to promoting more physical activity, in schools with green school grounds the students was engaging in different forms of physical activity like climbing, building shelters, chasing butterflies and different types of non-competitive and open-ended play (Dyment & Bell, 2006).

The researchers found that the green school ground promoted more civil play behavior, more constructive play, more imaginative play and more active play. By giving the

students the opportunity to explore nature, the school ground was encouraging the children to be more active. The design of the school ground was found to be a very important factor in terms of the effectiveness of the green school grounds. The school ground should according to Dymont and Bell (2006) be designed to provide the student with enough space and safety and maintenance concerns must be taken care of to achieve the benefits green school grounds can provide (Dymont & Bell, 2006).

Research findings from Dymont and Bell (2007) builds on the research mentioned above and set out to investigate the design and culture issues that affect physical activity and active play among the students, by using two of the questions from the survey in the research by Dymont and Bell (2006). Their results revealed that design and culture in the school ground can both be a limiting and an enabling factor in terms of physical activity. Design issues in the school yard can be limiting factors in terms of maintenance concerns, safety concerns, lack of shade, lack of movable parts, lack of adequate space and inability to supervise students in the different green spaces. Culture in the school yard can also have limiting effects, for example social dynamic among students, bullying, school rules that prohibit active play, if supervisors discourage active play or if the green space is of limits for the students. The researchers found that the children were more active when the rules and supervision of the school ground allowed for open-ended and non-competitive play, as well as opportunities to take care of a garden or other forms of green space. These factors can affect the effectiveness of green spaces in the school ground in terms of enabling or limiting physical play.

Dymont and Bell (2008) also investigated the impact of green spaces in the school yard by comparing schools before and after the greening process of their grounds. This research also builds on the study done by Dymont and Bell (2006). They found that the transformation in the school ground environment was dramatic and this transformation had a positive effect on the amount of active play for the students. The parents, teachers and school administrators who responded shared that the transformed green school ground gave students a wider variety of opportunities for physical activity within the school ground. They concluded that school ground greening promotes physical activity for students, while it also contributes to creating a more inclusive environment for the whole student body.

Arbogast, Kane, Kirwan, and Hertel (2009) explored the connection between outdoor recess time and vegetation. The research was conducted using a survey to 988 public

elementary schools from 101 districts in Virginia, USA. Ninety-three percent of the surveys were answered by principals. The results showed that the schools with a bigger school yard were more likely to have recess timer outside. The researchers concluded that by having a large school yard it gives the students more freedom to engage in different types of activities. In addition, they found a positive relationship between time spent outside and number of deciduous trees within the school yard (including small, coniferous and large trees), the school yards with more trees had students that spent more time outside. Arbogast et al. (2009) explained this correlation by the great amount of shade these large trees provide as a reason to why it correlated with time spent outside. Arbogast et al. (2009) stated that “A greater percentage of outdoor recess time with more coniferous trees could be an indication of the presence of sports fields as large coniferous trees are commonly used to screen sports fields from other views...” (Arbogast et al., 2009, p. 453). Lastly, a difference was found between urban and non-urban schools in terms of outdoor recess time: the urban schools had less outdoor recess time, which was explained by traffic and size of the school ground.

Lucas and Dymont (2010) researched where children choose to play when on school ground during recess and lunch time and the influence of green school grounds. They studied an Australian primary school with more than 400 students aged between five and 12 years of old. They used the SOPLAY observation technique (a system for observing play and leisure activity in youth) for over an 11-day period and divided the different areas of the school ground into different target areas. The different areas were: green spaces, paved sports courts, canteen courtyard, manufactured equipment, paved thoroughfare and mini oval. The results showed that green spaces was the most popular choice for play amongst the students, followed by paved sports courts, the mini oval was the target area that was least used by the students to play in. The researchers also explored the difference in boys and girls in terms of where they choose to play, which revealed some gender difference. The green spaces were the most popular amongst the girls and the paved sports courts was the most popular amongst the boys.

Titman (1994) researched the “Hidden curriculum of school grounds”, the physical environment of the school grounds and how it affects the children’s behavior and attitudes were investigated. There were four main objectives in the study: aim one was to study the significance of the “Hidden curriculum” of the school grounds, aim two was to look at the relationship between the children’s behavior and attitude and management of the informal curriculum, aim three was to see if there was any correlation between the design of school

grounds and the quality of the children's experience, aim four was to investigate the elements in the process of development and change of the school ground in terms of the children's behavior and attitude. The study was conducted in 12 schools in England and Wales with a sample of 216 children between the ages of 5-12 using in-depth interviews with children using collage boards with pictures, group interviews of the children and interview of the head teacher at each school. There was also taken photographic records of the different school grounds (Titman, 1994).

The results of the study show that the children value the external environment at the school ground highly, Titman (1994) explain that some of the children have access to external environments of quality outside of the school that satisfied their need, but many other children did not have this opportunity. For these children the access was limited to the school ground and this was the only place they could be outside and satisfy their needs in a safe environment, "For these children, school ground represented a kind of repository for all the need which they believed could only be met by the outdoors" (Titman, 1994, p. 56).

If the school ground met some of the children's needs in terms of features outside and the design of the grounds, the children viewed this as the school understood their needs and valued them. In the schools where the children's needs not met according to the children, they viewed that as the school not caring about them. In these schools time spent in the school grounds was often an unpleasant and uncomfortable experience for the children (Titman, 1994).

The children viewed the school ground as a place for "doing, "thinking", "feeling" and "being", but the most important thing in the school ground was that it supported the need to have fun for the children. The children desired places that were varied and wide, where they could explore and challenge themselves, like natural landscapes with trees, water features and animals. Most of the schools studied did not live up to the children's ideal of what a school ground should look like and include. "Their wide range of other needs were largely ignored or prohibited either by the design of the grounds and/or by the way these were managed" (Titman, 1994, p. 59). The children in the school grounds where their needs were not met felt that their purpose in the school ground was to chase each other, play organized games or rush around.

2.6 Health promotion in the school ground

A crucial problem for Norway's public health appears to be the increasing levels of sedentary behavior combined with a decrease in physical activity levels among children and youth, which according to the Norwegian Directorate of Health (2010) can lead to an increase in overweight and obesity numbers. Today there is a clear need for promotion of physical activity and prevention on the issues of children overweight, obesity and sedentary behavior (Norwegian Directorate of Health, 2010). In 2012, 96% of Norwegian six year old boys met the requirements of 60 minutes physical activity a day, but only 58% of Norwegian 15 year olds met the same requirement, while the percentage of active 15 year olds girls was only 43. Among the Norwegian population of nine year olds, 70% of the girls and 86% of the boys met the physical activity requirement (Norwegian Institute of Public Health, 2012).

Considering the amount of time each child spends in the school ground during compulsory education, this area can be a good place to promote health and physical activity. According to The Norwegian Directorate of Health (2003) the school grounds in one fourth of Norway's schools are too small for the students to be physically active in, in a satisfactory manner and the percentage is increasing with larger cities. The shortcomings highlight the need for regulations for area size as well as for the design of school facilities (The Norwegian Directorate of Health, 2003).

In summarizing, the studies reviewed reveal an important positive relationship between the amounts of school situated green spaces and students' physical activity (and/or active play at young ages). This knowledge, which has clear practical ramification, such as the cultivation of green space on school grounds, can have a significant role in increasing physical activity of children during their compulsory education years (Norwegian Directorate of Health, 2010).

As of today there are some laws and regulations concerning the school ground environment in general in Norwegian schools, the The Education Act (2015) states that Norwegian schools and school grounds should be constructed in a way that takes the children's safety, learning, health and well-being into consideration (The Education Act, 2015). There are no regulations or laws from the government concerning the area of the school ground, how big it should be or what features it should include (The Norwegian Directorate of Health, 2003). It is suggested by the The Norwegian Directorate of Health

(2003) to set some ground laws and regulations of the school grounds. It is suggested that the school ground should be proportional with the number of students that are enrolled at the schools, for example in small schools (less than 100 students) it is suggested that there should be a minimum of 5000 m², for medium sized schools (between 100 and 300 students) the minimum is suggested to be 10 000m² and for large schools (more than 300 students) the minimum is suggested to be 15 000m² (The Norwegian Directorate of Health, 2003).

3. Methodology

Scientific methods is about researching and investigating. The aim of the present study is through a quantitative survey approach to explore the availability and/or absence of school yard green spaces along with their students' levels of physical activity. Quantitative methods are suitable for research where a larger amount of data from many people are being used to provide an overview of the scope of a phenomenon or effect that is measured (Bryman, 2008).

3.1 Research Approach: Survey

A survey approach was chosen as it can help the researcher provide answers about behaviors, beliefs and opinions, characteristics, expectations and knowledge through an explanatory, exploratory and descriptive research design (Neuman, 2011). In social research, the survey method is the most widely used technique for data gathering (Neuman, 2011). A survey aims to gather descriptive information about one or several topics and many different variables. The survey design was suitable for this project as it aimed to explore several aspects of school green spaces and student physical activity variables. As Neuman (2011) suggested, survey research is appropriate for projects that measure and describe beliefs and behavior and use have large numbers of participants (Neuman, 2011).

A web survey was conducted for the purposes of this study. Web-based surveys conducted by email are chosen due to their low cost but also speed and accessibility for collecting data. When using a web survey, the researcher sends out an invitation by mail to the respondents with a link to the survey where the respondents may answer the survey online (Bryman, 2008). There are two different types of web surveys, interactive and static ones (Neuman, 2011). This study used a static web survey, which gave the respondents the liberty of completing it at their convenience (Neuman, 2011).

Nonetheless, there are three critical disadvantages for the researcher to consider when conducting a web-based survey: coverage, privacy and design issues (Neuman, 2011). Coverage is an issue concerning internet access and computers and in this study's case it may have been an issue if some of the parents invited to participate did not have a computer or internet access at home. All of the teachers and principals have access to a computer at

school. The second disadvantage, privacy is very important concerning the respondent's anonymity and privacy. Neuman (2011) suggests using secure web sites with passwords to ensure that the respondent's privacy is secure. In this study, the web-based software Questback was used which has function that can protect respondents' anonymity. The third disadvantage is design issues, as web surveys are very flexible concerning design and the researcher must be aware of this when developing the survey. According to Neuman (2011) the best way to design a survey is by providing just a few questions for each screen and making sure that the whole question is viewed. Including a progress indicator is a good way for motivating the respondent to complete the survey by knowing how much is left for him/her to do. The instructions given in a survey should be easy to understand while the opportunity for the respondents to go back to previous questions should exist (Neuman, 2011).

When designing the present study's survey all of the abovementioned concerns mentioned were taken into consideration. Both surveys (one for school officials and one for parents with their kids) had few questions on each page/screen, a progress indicator; a function that gave the possibility to go back to a previous page or question, while instructions given were short and concise.

Moreover, benefits and limitations also exist when using a self-administered survey. One of the limitations of a self-administered survey is that there is no one there to help the respondent if any questions are unclear or confusing, nor to make sure that the questions are answered the way the researcher intended it to be (Bryman, 2008). When the respondents are administering the survey by themselves, it gives them the opportunity to read the whole questionnaire (or at least the whole page/screen) before answering; the questions are therefore not totally independent of each other. This can result in that the respondents are not following the right order of the questions (Bryman, 2008) and potentially be influenced when answering one question by knowing other question that follow. When conducting a self-administered survey there is also a greater risk of missing data compared to an interview method, because of lack of supervision and guidance (Bryman, 2008).

The benefits of conducting a self-administered survey are the absence of interviewer effect, the absence of interviewer variability and the convenience for the respondents. The interview effect refers to an interviewer being present who may affect the respondent's answer, depending on the interviewer's way of asking the questions (Bryman, 2008).

Interviewer variability concerns a case where more than one interviewers are present and they ask the questions differently or not in the same order. Both of these effects are avoided when using a self-administered survey (Bryman, 2008). The third benefit is about the convenience the respondent enjoys, as a self-administered survey gives the respondent the possibility to answer the survey whenever he/she wants and from wherever he/she wants to (Bryman, 2008).

3.2 Participants

Data was collected from compulsory schools in Norway. The participants were chosen based on the principle of purposive sampling (Neuman, 2011). Two criteria were used: (i) residency (limiting potential participants to one county) and (ii) level of direct or indirect knowledge about children's physical activity at school (limiting potential participants to school officials, PE teachers, parents and children).

The rationale for the use of criteria is to gain a clear and precise view of the situation, hence the researcher explored parents and children's, and school officials' views. By including these groups, the researcher could gain a detailed perspective and potentially different perspectives between these groups (Neuman, 2011). To make this project feasible (time- and expense-wise) data were collected from one county in south-east Norway, hence the sample of the study cannot be representative of all states of Norway. Thirteen (13) compulsory schools from the county were invited to participate, nine (9) of them responded. These schools have green spaces in their school grounds, but the size of green space areas varies from approximately 3.000 to 27.179 square meters. There were 58 participants in total; nine (9) principals, 10 PE teachers, three (3) other teachers and three (3) respondents with an administrative position within their respective schools that responded as well as 33 parents with their child and/or children. The demographic information of the participants is presented in the result chapter.

The decision for inviting parents with children was based on the fact that as the researcher aimed to learn mainly from the children (who are the main actors in this study), but their parents are important agents at a child's early stages of life thus their views and experiences with green spaces in the school ground and use of them by the children was equally important. A possible limitation of this approach could be that the parents answered

alone without the child, and the researcher did not receive the child's perspective. Time- and cost-wise it was not possible to interview the children to ensure their experiences with school green spaces would be voiced due to the large number of children to be involved in this study. Moreover, it was also not feasible to invite all children and parents of schools to participate, hence "contact parents" from their respective class were invited to participate. This also made the sample of this study random (Neuman, 2011) as the researcher had no prior contact with the schools and contact parents change every year.

3.3 Procedures

The web survey was designed and developed using the Questback software. Questback is web-based software for questionnaires and surveys. By the use of standardized software the researcher obtained accurate information from a wide selection of respondents and crossovers and immediately compiled information using advanced, automated analysis tools (Questback, s.a-b). The survey was tested by one fellow student and one professor at the researcher's academic institution. By testing the survey, the researcher received feedback on the questions whether any of the items were unclear or difficult to understand. The testing also gave the researcher an idea of whether the questions were understood the way they was intended to. This stage of the research was important for the researcher to get feedback and advice before sending it out to the respondents (Neuman, 2011).

The process of inviting respondents to this study started in November, 2014 when the researcher called 37 elementary schools in the specific county to inform them of the project and invite them to participate. Nine of them agreed. The first communication was conducted via telephone and if the school agreed to participate the information letter was sent by electronic mail. Neuman (2011) suggest locating respondents either in person, by mail, by internet or by telephone.

The participating schools principals' upon receiving the information letter they were asked to forward it to all potential participants (i.e., PE teachers, school officials, other principals and administrators) as well as contact parents of the different classes. After the letter was reviewed by different members of the school and upon their agreement, the principals were asked to provide the researcher with a list of the participant email addresses so the researcher could send out the survey. The data collections started in January 2015 and ended

in March 2015. The respondents were sent an invitational email containing the link to the survey. Once they entered the survey, there was an introduction section where the participants received detailed information about the survey and their participation rights. This section ending with the option: “By clicking next you agree that you have read the information letter”. This way the participants consented to participate in the survey (see Appendix 1 Consent form).

3.4 Data collection

A combination of open-ended and close-ended questions was used in the survey. Open-ended questions give the respondent room for explanations and reasoning. Closed-ended questions give the respondent alternatives, but not the possibility for their own reasoning or explanations (Dillman, 2000). This approach gave the respondents a way to express their views and opinions, and to the researcher the possibility to compare different answers. The questions that were developed is based on the survey previously used in a study conducted by Dymont and Bell (2006) in Canada and were modified according to the existing research-based knowledge in order to fit the Norwegian population explored.

Two different surveys were prepared; one for school officials, principals and PE teachers and one for parents with their child (see Appendices 2 and 3, respectively). The questions for the school officials and PE teachers explored information on facilities and opportunities, green spaces available and student access to it, etc. The questions for the parents and child/children explored the actual usage of the school yard space, where children are active and why, children`s favorite places for physical activity and free play, what the parent thought about the school facilities, green space as well as the environmental impact on the child(/ren).

3.5 Reliability and validity

The consistency of the measurement of a given concept is considered to be the reliability of a research project. Validity refers to the conceptual and operational definitions of research and how the two fit together, in other words if it really measures the study is intended measure (Bryman, 2008; Neuman, 2011). The objective of ensuring validity is to avoid random and systematic errors when attempting to measure something (Neuman, 2011).

The survey used in this thesis was used before by Dymont and Bell (2006) and was validated prior to distribution by a panel of experts with suitable academic background. The survey demonstrated good content validity evidence and high ratings from the panel. The survey was further revised according to the comments from the panel and pilot tested before distribution (Dymont & Bell, 2006). The survey was also adjusted to fit the population studied and tested, and changes were made after comments provided during the testing which improves the study's reliability. In this study the survey was translated to the Norwegian language in order to fit the population of the study and certain terms used with the Canadian population were adjusted to fit the Norwegian school ground setting. For example changing the facilities listed in the survey to facilities that are present in Norwegian schools and adding a question about what class the parents belonged to so that there could be made comparisons between them. The language translation was checked by 2 bilingual experts within the academic setting (a professor and a master student). However the adjustment of terms was not tested and thus constitutes a possible limitation for the study.

3.6 Data analysis

Quantitative analysis is about operationalizing the results in terms of numbers and coding to make the results measurable (Bryman, 2008). The quantitative results from the surveys were analyzed using descriptive statistics. Descriptive statistics is using simple statistics to describe the results and the basic patterns of the results (Neuman, 2011). The analysis of the responses to the two surveys followed the analytic methods used in the study conducted by Dymont and Bell (2006), who originally used this survey. Descriptive demographics of the population studied are presented with text, diagrams and tables. The analytic method used by Dymont and Bell (2006) entailed descriptive statistics such as means, percentiles, frequency diagrams and tables.

The first step of a quantitative analysis is to code the data, coding the data means to collate the raw data using a systematic and organized system that makes it possible then to analyze (Neuman, 2011). In coding the data, it was converted from Questback to the Statistical Package for Social Sciences (SPSS). After the data was carefully coded into SPSS, the next step was cleaning the data. This process consisted of verifying the coding, which can be done in two different ways. Possible code cleaning is checking the data for impossible codes; this means codes that are not used in the material. Contingency cleaning is

cross-classifying two different variables looking for impossible connections. These two processes are an important step towards verify the data and the coding of the data; if mistakes were made in the coding and not discovered, the whole research project can be ruined (Neuman, 2011).

In the present study, there were 183 cases of missing data in the survey for teachers and principals and 91 cases of missing data in the survey for the parents with children. In this study the missing data was treated by single imputation, this method give the researcher to option of replacing the missing data for example with a mean variable, this can be the mean for a specific group, gender or other variable or value from another respondent based on similarities in terms of age, occupation or affiliation (Newman, 2003). In this thesis the data was replaced with the mean for the specific schools on the specific question and class was used as replacement in this thesis. Using this method can affect the data by distorting the results (Pallant, 2007). Because of the scope of the missing data and the rather small size of the participant groups, other options of treating missing data (exclude cases list wise and exclude cases pairwise) were not possible, because it would then be almost nothing left to analyze.

3.7 Ethical considerations

The participant's right to privacy and confidentiality is central in social research. It is essential to treat the participants with respect and dignity (Neuman, 2011). According to Neuman (2011), every participant ought to sign an "informed consent" to the researcher, while he/she will maintains the right to withdraw from the project at any time if he/she so desires. In the present project, to inform the participants about the study, their participation rights, and data treatment, an information letter (See Appendix 1) was handed out to the participants by the principals at each school. The consent was given by the participants online as a part of the web based survey (see section above on procedures).

There are some ethical considerations when using an instrument like Questback (Neuman, 2011). The security statement from the Questback webpage states that "Any information stored on the Questback site is treated as confidential. All information is stored securely and is accessed by authorized personnel only" (Questback, s.a-a). Questback uses the Secure Socket Layer (SSL) to secure their customers data and instruments (Questback,

s.a-a). The information that was stored at Questback was connected to a user account accessible only to the researcher, Brita Almestad and was password protected.

The Norwegian Social Science Data Service (NSD) is the data protection official for research conducted at Norwegian universities and university colleges. All research that collects sensitive information must be submitted to NSD for approval before a research project is initiated (Norwegian Social Science Data Service, 2012a). The project was submitted to NSD for approval in November 2014 (See attachment 4) and the comments from NSD were taken into consideration and the requirements followed. In a research project where children are involved, NSD has special guidelines, such as in smaller research projects with non-sensitive data and children under the age of 15, their parents have to give consent for them (Norwegian Social Science Data Service, 2012b).

4. Results and discussion

The data of this study was analyzed using SPSS, version 22. This chapter presents the findings and discussion of the results. First the background information about respondents and the participating schools is presented, for the reader to get an overview of them. Following, the informants' answers from the survey questions are presented through the use of illustrative figures and tables. Combining in this chapter the results and the discussion of them gives the reader a clear and organized view of what was found, what it means and how it relates to the existing literature. This decision follows the work of Dymont and Bell (2006) who previously used this survey and presented in such way. The discussion part of the chapter presented here is written in light of the research question and further considers the theory that informed this study and the existing applied research.

4.1 Descriptive background information

4.1.1 Participant information

The participants of the study consisted of nine principals, ten PE teachers, three other than PE subject teachers, three school officials and 33 parents with children, resulting in a total of 58 participants. Among the school officials group there were eight (32%) males and 17 (68%) females, in the parent group there were 10 (30.3%) fathers and 23 (69.7%) mothers. Of the children (as reported by their parents) there were 22 (60.6%) boys and 12 (36.4%) girls. In Tables 1-3, various demographic information about participants is presented, such as age, education, occupation, work experience, etc.

Table 1

Parents' Demographic Information

	Frequencies	Percentages
Gender		
Mothers	23	69.7
Fathers	10	30.3
Age		
Under 30	2	6.1
30-40	13	39.4
41-50	18	54.5
Education		
Primary School diploma	1	3.0
High School diploma	9	27.3
Bachelor degree	17	51.5
Master's degree	4	12.1
Doctoral degree	0	0
Other education level	2	6.1
Occupation (classified in categories)		
Service and safety	2	6.1
Health, care and medicine	8	24.2
Logistics and communication	1	3.0
Industry and construction	1	3.0

Administration and economy	5	15.2
School, leisure and education	10	30.3
Commerce and customer service	3	9.1
Food production	2	6.1
Disability benefit recipient	1	3.0

Table 2

School officials' demographic information

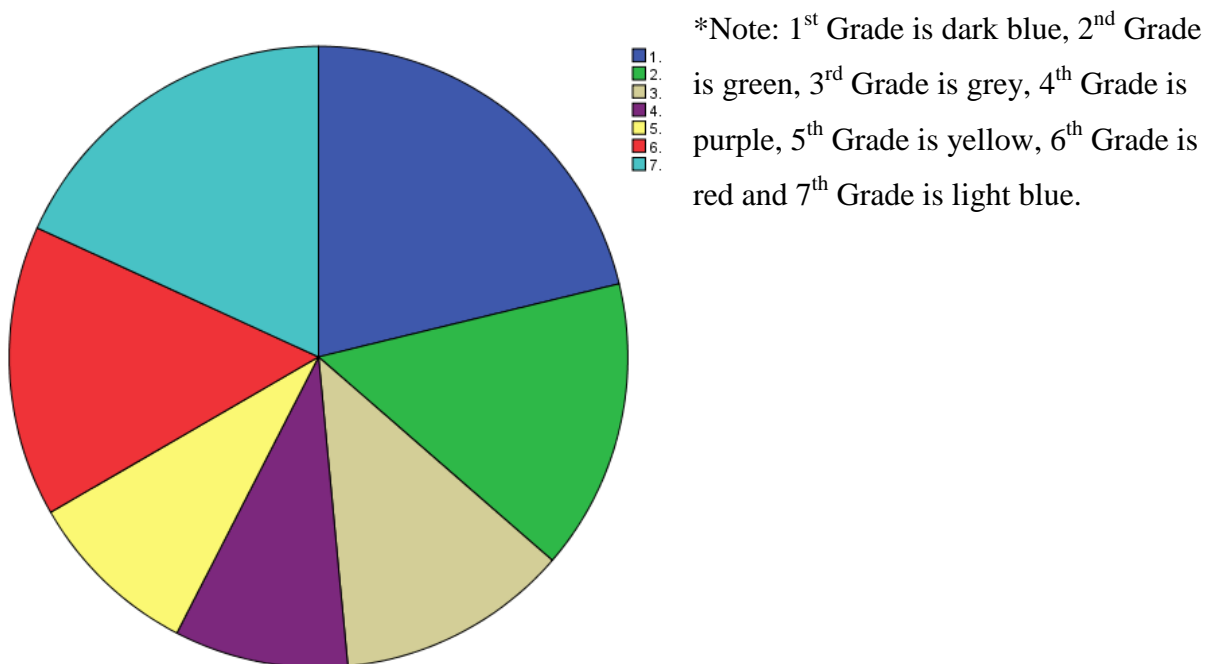
	Frequencies	Percentages
Gender		
Female	17	68
Male	8	32
Age		
Under 30	2	8.0
30-40	10	40
41-50	6	24
Over 50	7	28
Education		
Primary School diploma	1	4.0
High School diploma	0	0
Bachelor degree	18	72

Master's degree	4	16
Doctoral degree	0	0
Other education level	2	8.0
<hr/>		
Years employed in the public education system		
0-5	4	16
6-10	3	12
11-20	12	48
More than 20	6	24
<hr/>		

Figure 1 portrays the distribution of the grades for contact parents who participated in the study: 18.2% of the parents belonged to grade 7, 15.2% to grade 6, 9.1% to grade 5, 9.1% to grade 4, 12.1% to grade 3, 15.2% to grade 2, and 21.2% to grade 1.

Figure 1

Parents with kids that participated and class they represented



4.1.2 School information

Nine schools participated in the study. In Table 3 descriptive information for these is presented.

Table 3

Participating schools' information

Schools	Number of teaching staff	Number of students	Estimate of size of school ground in m ²	Percentage of green space
School 1	65	225	11000	20
School 2	30	280	10000	40
School 3	7	38	10000	90
School 4	9	104	20000	50
School 5	8	60	11 819	50
School 6	8	85	10000	70
School 7	12	117	3000	70
School 8	25	350	10000	20
School 9	11	77	27 179	60

The size of the school ground and percentage of green spaces vary between schools; the smallest school ground was estimated at 3000 m² and the biggest school ground at 27 179 m². The estimated percentages of green spaces within the school ground also varied from 20% to 90%. This information was reported by the school principals.

There are currently no minimum terms of schools grounds in Norway, but suggestions exist regarding a minimum demand for the size of a school's grounds. Norwegian Directorate of Health (2003) suggests that in general there should exist a

minimum of 50 m² for each student. Schools are proposed to be asked to follow some space requirements, such as for small schools (less than 100 students) the suggested minimum is 5000 m², for medium sized schools (between 100 and 300 students) the suggested minimum is 10 000 m², large schools (more than 300 students) the suggested minimum is 15 000 m² and if the school has more than 300 students an additional 25 m² is suggested for each student (The Norwegian Directorate of Health, 2003). It is up to each municipality to impose requirements and since there are no state requirements, in some municipalities there are no demands in terms of size. Still some functional requirements exist from each municipality.

4.2 Features in the school ground

The school officials were also asked to report on the various features available in their school grounds. All schools reported having football fields (100%), 96% have sled hills and grassland habitats, 92% have sand elements and seating areas, 90% have trees, 88% have rocks or boulders and play equipment, 76% have woodland habitats, 68% have ski slopes, 64% have hockey/ice skating fields and 56% have floral gardens and/or flowers within their school grounds. At a smaller extent the following features were reported by school officials being available on their school grounds: athletics tracks (8%), wetland habitat (8%), water elements (16%), bike path (16%), art (20%), beach volleyball field (28%), bird feeder (32%) and nature trail/fitness trail (40%),

Having a variation of different features in the school ground provides the children with a variety of play opportunities and according to Stine (1997) children prefer a play environment that is natural, challenging and complex. The planning and design issues in the school ground is very essential to the children's surplus, gain and experiences (Dyment & Bell, 2007). The Norwegian government has some guidelines, laws and requirements on how the schools grounds should be designed and the facilities that should be present in the school ground, but not in terms of size and detailed requirements on the facilities and design. According to § 9a-2 in the The Education Act (2015), the Norwegian school grounds should be planned, arranged and constructed in a way that takes the children's health, well-being and learning outcomes into consideration (The Education Act, 2015).

The findings here show that the majority of the schools have a variety of facilities present in the school ground; this variation can contribute to the promotion of physical activity in the school ground. If the school were to have very few and not varied facilities, it

would not apply to the whole student body, but by having a variation of facilities each student can find at least one facility that meets their needs (Dyment & Bell, 2006).

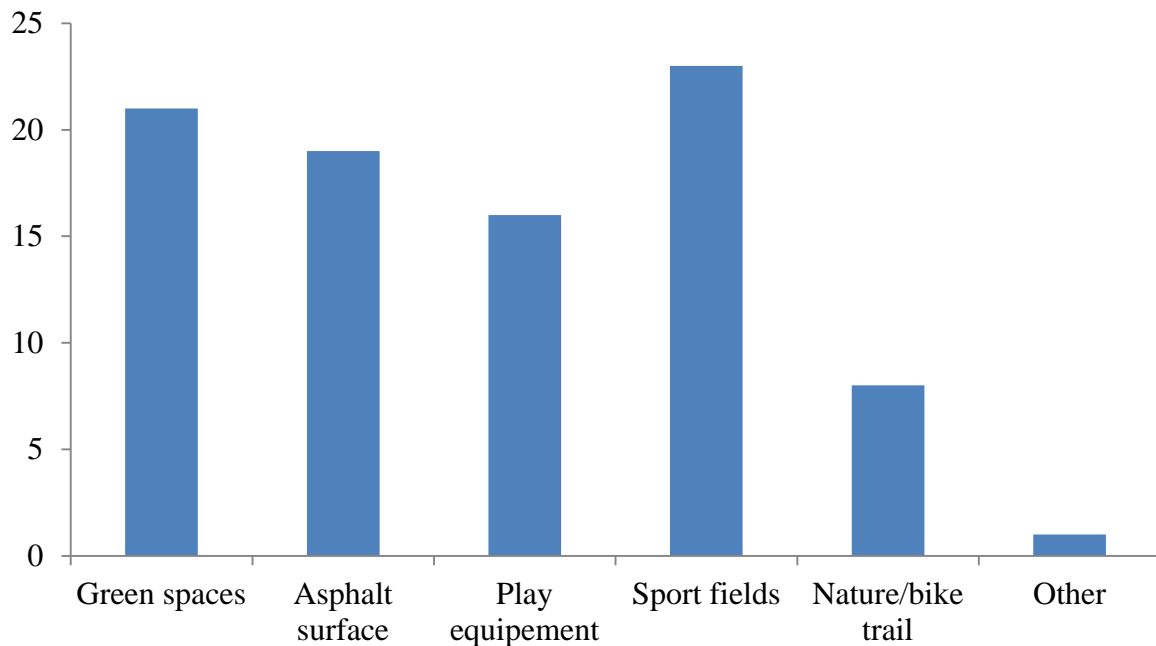
The different feature in a school ground have different meanings for the children and according to the research by Titman (1994) trees was one feature that the children highly valued. The children was very aware of the characteristics of the trees and how they could be used, some of the trees were scare, some of them was great for climbing and some was nice to look at. Considering that 90% of the schools studies in this thesis had trees in the schools ground, it is an important feature and the children can use this in many different ways as long as it is accessible for the children. Flowers was also a highly valued as an aesthetic feature in the research by Titman (1994) and the children was highly aware of the different color of the flowers, this was a appreciated feature especially when the children was included in the planting and caring for them. “Children were very aware of the range of sensory responses and stimulation which flowers gave them and valued them highly” (Titman, 1994, p. 39). This can be seen in context of the biophilia hypothesis where caring for living things like flowers is considered to be important for human beings spiritual, cognitive, emotional and aesthetic development. According to the hypothesis the connection to other living organisms is biologically based in human beings (Kellert & Wilson, 1993).

4.3 Students’ Physical Activity Sites within the School Grounds

The measure of this study was to explore if there is any difference in the sites of the children’s physical activity in relation to size of green space in the school ground. An important part of the study is to map in what part of the school ground the children are active. The size of green spaces can have an effect on the children’s activity levels and type of activities in the school ground (Tranter & Malone, 2004), studying where the children are active is therefore an important measure in this study. Figure 2 portrays areas where their children are active according to the parent/child views and Figure 3 portrays the school officials’ views about where the children at school are most active.

Figure 2

Sites of students' physical activity according to their parents' views

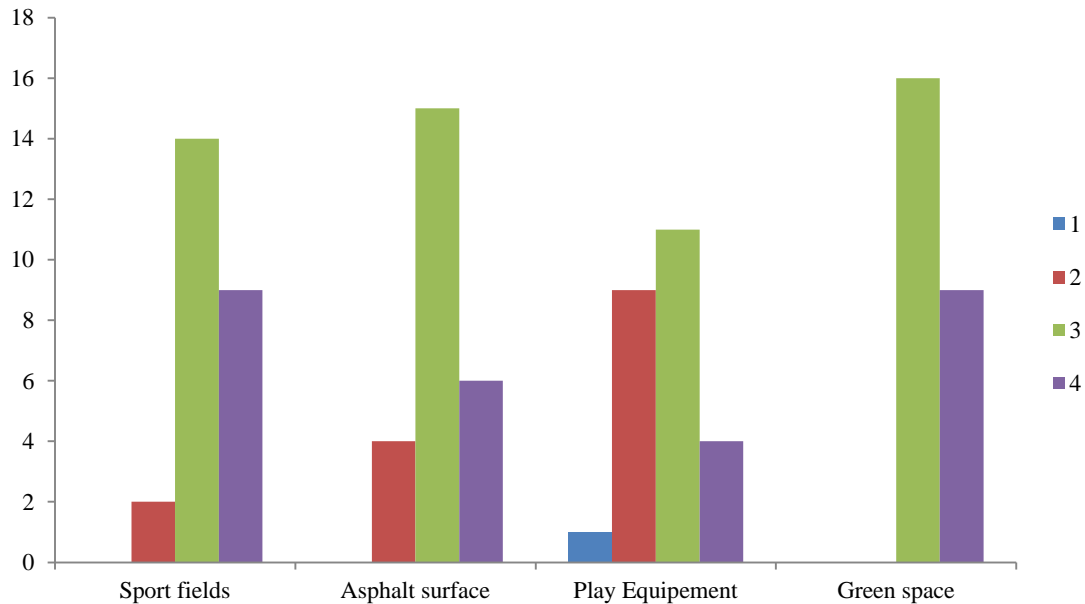


. *Note: The X-axis shows the frequencies of the parents and the Y-axis shows the different areas of active play.

The frequencies presented in Figure 2 correspond to the following percentages: Sport fields (69.7%) and green spaces (63.%) are the areas where kids appear to be the most active, followed by asphalt surfaces (57.6%), and play equipment (48.5%). Nature and bike trail areas with a percentage of 24.2% was the areas where few of the children were active according to their parents.

Figure 3

Sites of students' physical activity according to the school officials' views



*Note. 1 = No students, 2 = Few students (less than 10%), 3 = Many students (10-50%), 4 = Most students (More than 50%).

Translating the frequencies into percentages, 36% of the school officials answered that more than 50% of the student body is active in the green spaces and sport field's areas. Sixty percent of the school officials answered that many students (10-50%) are active on the asphalt surface areas, while the site on school grounds that attracts the least of student activity is the play equipment area where 36% of the school officials answered that few students (less than 10%) is active there, while 4% of them answered that no students are active in the play equipment area.

Independent samples t-tests were computed to examine any differences in the participants' views regarding where the children play between schools with larger and smaller green areas (> 50% and < 50% of school ground) and yield non-significant differences ($p > .05$). This finding however may not be representative of the participant responses due to the small number of participants entered in the analysis. In the existing literature there have been found significant results in terms of size of green space and where the students are active, as mentioned below.

In the research done by Tranter and Malone (2004), two different schools were compared, one with plenty of green spaces and natural environments and one urban school with not as much green spaces and natural environments. Their results reported that the children at the school with much green spaces listed the forest as their favorite place to play, while the other school students listed sport fields as their favorite place to play.

The answers portrayed in Figures 2 and 3 show that having green spaces in the school ground can be essential as it is one of the places the students are most active according to both parents and school officials. Dymont and Bell (2006) found that the green spaces in the school ground support a wider range of activities that can reach out to a bigger part of the student body. The students have many different interests and green spaces can be a way to meet their needs in terms of possibilities to engage in different activities. The size of green space in the school ground can also affect how it is used by the employees at the schools. In the study by Tranter and Malone (2004) who compared two schools of different size of green spaces differences were found in terms of the usage of green space. In the school with bigger green spaces, the teachers incorporated these spaces in class at least once a week according to the children that were interviewed. The children from the school with less green spaces said that there was little use of the outdoors within class time. Among different activities that the children engaged in were gardening and farming lessons when an educational garden existed in their school ground (Tranter & Malone, 2004). Green spaces can provide more opportunities in terms of physical activity but also in terms of incorporating it in the education.

Using green spaces in class as part of the school curriculum or using green spaces as an alternative classroom gives the children opportunities to connect with nature and learn about it through hands-on-contact, which according to the Biophilia hypothesis is part of the human nature and human heritage. One of the assumptions of the hypothesis is that by having contact with nature one can achieve personal fulfillment and individual meaning (Kellert & Wilson, 1993). By using green spaces as a classroom/teaching arena, the students have more opportunities to be physically active than sitting inside in a classroom. This can again contribute to health promotion by engaging the children in more physically activity in the school ground.

The study conducted by Titman (1994) that investigated how children read the external environment as positive or negative. The elements that were identified as positive

by the children were trees, natural colors, woods, leaves, big grassy areas, animals, places that have wildlife and places that challenged them. The negative elements identified by the children were damaged things, dirt, rubbish, litter, places that are boring, places where there was no place to sit/shelter/hide, unnatural colors, pollution and animals. The children identified many elements that are categorized as green space which they viewed as positive elements (Titman, 1994). In the present study green spaces was reported by the school officials as an area that most of the students were active, this can be seen in relation to the findings from Titman (1994) as the children rated many green space features as positive. Another significant finding in the research by Titman (1994) was that places where the children were allowed to do different things like climbing or building things were also viewed as positive elements, while places that children were not allowed to do these things were viewed as negative elements. In other words, places where the children are given the opportunity to explore themselves, like green spaces was preferred by the children (Titman, 1994).

The study conducted by Lucas and Dymont (2010) investigated where children played on school grounds of a primary school in Australia. The results showed that the green space part of the school ground was the most popular, followed by the different sports courts. The researchers argue that these results may be due to the size of the different spaces, the green space studied was the biggest in size, followed by the sport courts at the school researched. The size of the different areas studied in this thesis may be like the research by Lucas and Dymont (2010) affect the different places children were active in. Similarly, in the present study, the survey results also show that sports fields and green spaces are the two places where children are most active. This can be due to the size of the different areas, considering that the average percentage of green spaces in the school grounds studied is 52% of the total school area. In other words, over half of the school ground is considered to be green space, this can be an explanation as to why children choose to play on it. Moreover, all of the schools that participated in the present study reported having football fields, which also take up a lot of space. Both of these factors may contribute to where the children are active influenced by the size of the green areas and football fields.

The play equipment area was one of the places that a minority of the children were active, in other words the place that was least used by the children. In the research by Titman (1994) the fixed play equipment did not meet the children's need in terms of play. The children desired equipment where they could adapt it or change its apparent meaning to

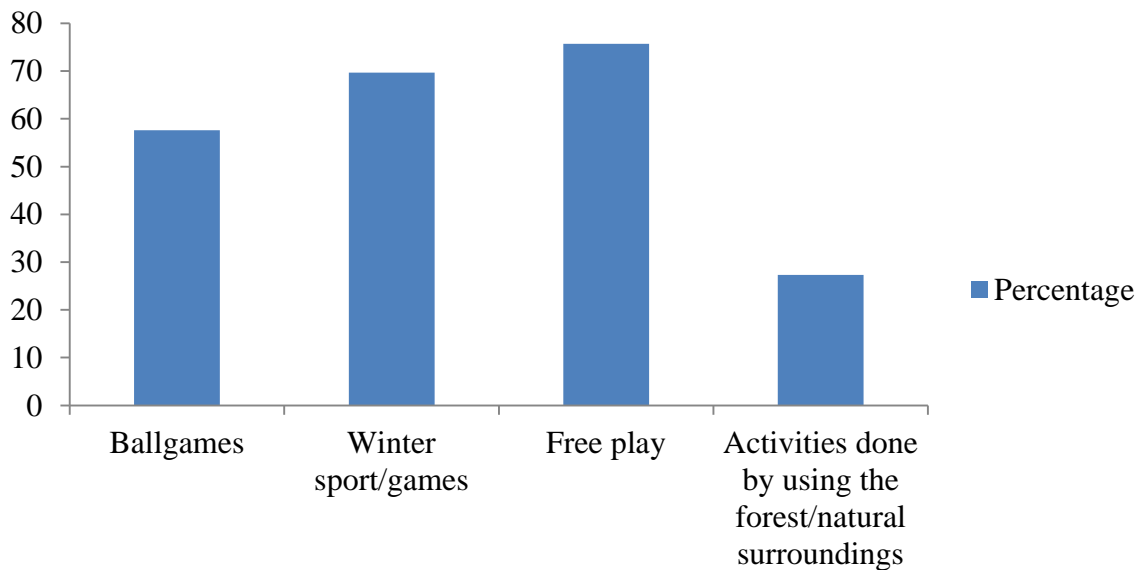
something else, the more the children could change or manipulate the equipment, the better. Titman (1994) also found that the color of the equipment played a role as to if it was interesting for the children or not, the most desired looks was items that was in natural colors, in wood and in a landscaped area. The possibilities of the equipment, the way it looks to the children and the context it is placement can be an important factor to the usage of the play equipment.

4.4 Type of Physical Activity

The parents were asked to describe what kind of physical activity their child engaged in when on school ground. Parents reported a total of 26 different activities. The different activities parents reported were then organized by the researcher into four larger categories of activities in order to be able to better presented and discussed here. These categories were: Ballgames, winter sports, free play and activities in the forest/natural surroundings. The ballgame category include each and every type of play with ball, the winter sports or games category include every type of activities/sports that are conducted in the winter time; like skiing, sledding, ski jumping, and others. The free play category includes playing in sand box, different games that does not include a ball or is conducted in the winter time. The activities in the forest/natural surroundings category include activities like climbing in trees, building huts and playing in nature. According to the frequency of the activities reported by the parents percentages were computed and are reported in Figure 4.

Figure 4

Parents: Types of physical activity the children engage in in the school ground



According to the parents, 75.7% of their children engage in different types of free play on the school ground, such as playing catch, hide and seek, play in the swings and playing in the sandpit, 69.9% engage in winter sports/games, 57.6% engage in different ballgames and 27.3% engage in activities that take place in the forest/natural surroundings. It is possible that the high percentage of winter sports/games is not a representative one of children preferred activities considering that the survey was administered and answered during the winter. In case the survey was answered in spring or early summer different answers might have been provided by the parents. The survey did not ask the parents to answer what activities their children play in other seasons and this can be a limitation of the study. Free play activities can for the most part be conducted anywhere there is space enough and the place in the school ground where there is most space is the green areas of the school, considering that the sport fields are used to play competitive sports and the play areas with play equipment does not have much open space. The school officials reported the green spaces as one of the two places where most of the children were active, given that green spaces is the most suited place for free play, there seems to be an agreement between the parents and the school officials in terms of free play.

The research by Dymont and Bell (2006) show that the most vigorous type of activities took place on turf playing fields at school while at the green spaces a high

percentage of light level of activities was reported. The vigorous activities on the turf playing field can be explained by the types of activities that are conducted in the different turfs, this may be a football field or volleyball field where competitive and vigorous sports are usually played. In the green spaces there are multiple opportunities for different types of play and according to Tranter and Malone (2004) the children are more constructive and imaginative in their play activities in natural surroundings. By using the nature and its possibilities in play activities, the children can experience a sense of wellbeing by hands on contact with nature (Maller & Townsend, 2006).

The kind of play that goes on in green spaces or a natural environment is different from the type of play that goes on at school grounds without or with limited access to green spaces or natural environment, “Compare, for example, a child simply walking the pavement with a child walking along logs, across, posts or through a labyrinth” (Dyment & Bell, 2006, p. 26) While there are similarities in terms of heart rate, the quality of play and the experience for the child was also reported as being different (Dyment & Bell, 2006).

Free play is the category that according to the parents of this study most children engage in. This is a type of play that is not structured but often involves some rules to play by. The unstructured form of play gives children the opportunity to play in any kind of environment, whether it is on pavement, in the woods, on grass or in the variety of play equipment in the school grounds. According to Frost and Brown (2010) the kind of play a child engage in can affect the child’s development and adaption to the outside world. A child need spontaneous, free play in outdoor play areas in natural setting or in built settings, as this type of play can contribute to the child’s social skills, fitness and motor skills. Without the opportunities to engage in this kind of play the child will according to Frost and Brown (2010) be deprived of an inherent need that can damage the children’s development. Given that the average amount of green spaces in the school grounds studied is 52%, the children that are enrolled at these Norwegian compulsory schools are given the opportunity to gain the benefits presented above.

4.5 Perceived Effect of Green Spaces within School Grounds

The parents and the school officials were also asked to report which condition (from a list of conditions, see Appendix 2 and 3, page 48 and 56) regarding school ground encourage

physical activity among the students. The different statements were answered according to the respondents level of agreement using an array of answers that ranged from strongly disagree to strongly agree (strongly disagree, disagree, agree, strongly agree). Table 3 presents the parent and officials' views on the effects they believe that green spaces have when available on school grounds.

Table 4

Percentages of school officials and parents responses on the effects of green space on school grounds

<i>Green space in the school ground...</i>	<u>Strongly disagree & Disagree</u>		<u>Strongly agree & Agree</u>	
	<i>Officials</i>	<i>Parents</i>	<i>Officials</i>	<i>Parents</i>
Strengthens the link between play and learning/cognitive development	0	9.1	100	90.9
Promotes more cooperative play	4.0	6.1	96	93.9
Promotes better integration of physical activity into school life generally	0	12.1	100	87.9
Supports a wider variety of play activities	4.0	9.0	96	91
Promotes more imaginative/pretend social play	4.0	9.1	96	90.9
Promotes more civil play behavior	8.0	9.1	92	90.9
Encourages student exploration of the natural world	20	24.3	80	75.7
Promotes more constructive play	12	18.2	88	81.8

Having green spaces in the school ground appears to have a positive effect on the student's play, cooperation, relation to each other and the kind of play they engage in according to both the parents and the school officials. Majority of the participants agreed with the statements asked in the survey. Effects like "Strengthens the link between play and learning/cognitive development" and "Promotes better integration of physical activity into

school life generally”, received a high rate of answers and are in accordance with findings presented in existing research (Dyment & Bell, 2008; Tranter & Malone, 2004)

Independent samples t-tests were also computed to examine any differences in the participants’ view regarding the effect of green spaces between schools with larger and smaller green areas (> 50% and < 50% of school ground) and yield non-significant differences ($p > .05$). As reported before, this finding may not be representative of the participant responses due to the small number of participants entered in the analysis.

The positive effects of green spaces have been widely researched. According to the research on the field there are numerous mental and physical benefits from being active in and having hands on contact with nature/green spaces (Dyment & Bell, 2008; Maller & Townsend, 2006) The results of the present study show that the majority of the respondents are positive to green spaces and the different effects it has on the children by having green spaces as a part of the school ground. According to Dyment and Bell (2006) the different statements in Table 4 are how green spaces in the school grounds can promote physical activity and enhance the quality of play. The results from this study and the study by Dyment and Bell (2006) both show that perceived effect of having green spaces in the school ground is great according to the respondents. Looking at the results displayed in Table 4 and the results from Dyment and Bell (2006), it is clear that green spaces in the school ground have a very positive impact on the children and is therefore an essential feature to have in a school ground in terms of the children’s health and well-being, but also in terms of quality of play and the children’s experiences.

There can be some limitations to having green spaces as a feature in the school ground, as it requires the employees from the school and school officials to facilitate the opportunities this feature can give the children. There are several concerns to consider as to the effectiveness of having green spaces in the school ground. According to the research by Tranter and Malone (2004) children can benefit from having nature as a playground in the school, but in their research they experienced that the adults are more concerned that the school grounds look tidy with newly cut grass, shiny play equipment’s and no untidiness and that the children are looking clean, the researchers mean that these kinds of concerns limit the benefits the children can accomplish from the different features, “...our study reveals their preference is for loose materials to manipulate, long grass to play in, the freedom to make their own constructions and even develop their own gardens” (Tranter & Malone,

2004, p. 153). This shows that the adult's responsibilities also have to be taken into consideration. For children to get the best possible benefits from having green spaces in their school grounds the school administrators and employees have to be aware of the measures that must be done, this may also be where the Norwegian schools have something to learn in terms of facilitating green spaces for the children.

One of the research findings Titman (1994) found when researching how children read the school grounds was the children's high value of grass. For the children the grass was a place for multiple actions and activities, the grass area was also a place for the children to investigate and explore. The problem with the areas in the schools that were studied was that the children were not allowed to use the area or the area was heavily restricted. This caused frustration among the children and the grass became something that could be broken if they used it according to the children (Titman, 1994).

Although there are limitations, green spaces in the school ground seems to benefit the students positively according to the school officials and the parents. According to the The Education Act (2015) "All pupils attending primary and secondary schools are entitled to a good physical and psychosocial environment conducive to health, well-being and learning" (The Education Act, 2015). The schools are also required to actively promote health in a systematic and continuous manner. By implementing more green spaces to the schools that are lacking this feature and designing the schools that already have these green spaces in a way that it is desirable and accessible for the children the schools are actively promoting health. By providing their students with green spaces in a satisfactory manner at the school grounds the schools are promoting physical activity and health, given that green spaces are as effective as the respondents perceive.

4.6 Time spent outside when in school

The parents were asked to give an estimate of how many minutes their child spends on the school ground during each recess. The school officials were also asked to estimate how many minutes in general the children spend outside during recess. Tables 4 and 5 below show the parents and the school officials' estimates on how much time the students spend outside on school ground during each recess period. The minimum and maximum in each table is the minimum number of minutes and maximum number of minutes reported by each

group. The mean is the average for each recess in each group as calculated by the SPSS descriptive function.

Table 5

Parents estimate of the time their child(ren) spends outside on the school ground during different recess periods.

	<u>M</u>	<u>Min</u>	<u>Max</u>
First recess	10.91	2	20
Second recess	10.55	2	30
Lunch	20.91	10	30
First recess after lunch	11.94	2	30
Second recess after lunch	9.03	2	30

Table 6

School Officials estimate on the time their child(ren) spend outside on the school ground during different recess periods

	<u>M</u>	<u>Min</u>	<u>Max</u>
First recess	13.28	6	30
Second recess	14.47	1	30
Lunch	22.92	0	30
First recess after lunch	12.92	6	30
Second recess after lunch	4.61	0	20

It was important to have some information (even an estimate) about how much time students tend to spend outside. This time spent outside is when potentially the students might

use the green spaces available to them on school grounds. A t-test was computed to examine any differences between parents and officials views regarding the time spent outside at recesses, which yield non-significant differences ($p > .05$). This finding may not be representative of the participant responses due to the small number of participants entered in the analysis, especially officials.

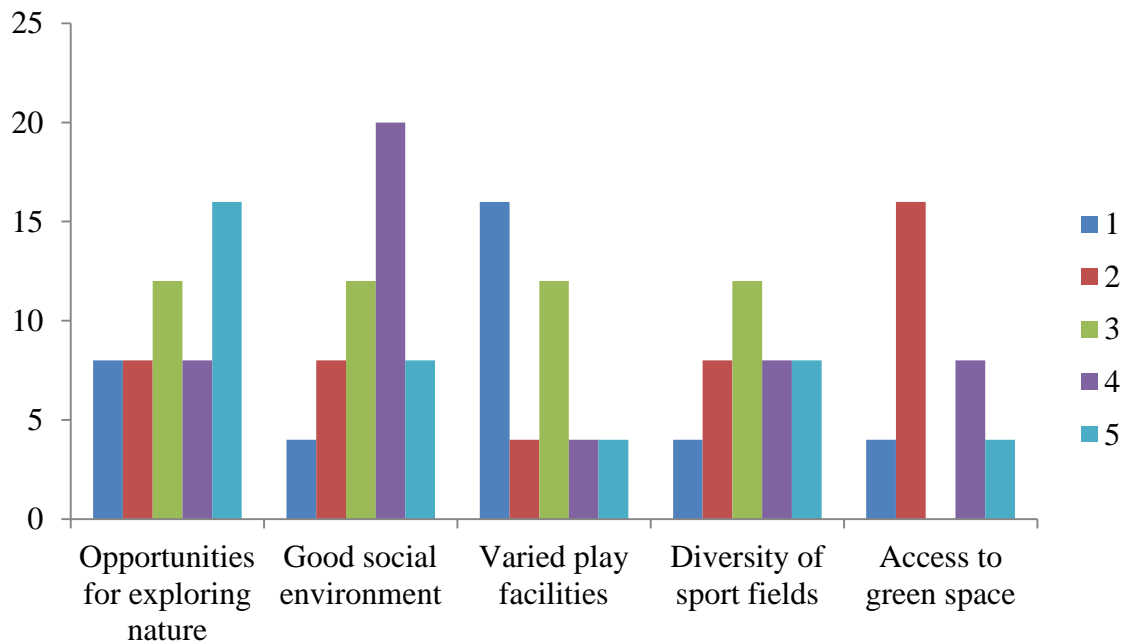
To the naked eye, there appears to be some small variability between the two groups' answers, where school officials think that the students spend a little bit more time outside during recess than the parents do. This may be due to that parents are answering considering only their child, while school officials answer for the whole student body. Moreover, the school officials are present at school and observe students' time spent and activities while parents only receive information from their children. Again, these numbers could be different if the survey was answered in the spring time when the weather is better and students may spend more time outside. This was a limitation of the study asking about time outside and of green spaces use during the winter when in reality all is white (covered with snow) in Norway. Although the results showed no significant differences here, the results of (Arbogast et al., 2009) showed that the students at schools with larger size of green spaces spent more time outside during recess than students at schools with smaller size of green spaces. Accurate measurements and not estimates are required for gaining this knowledge and a larger sample size of respondents.

4.7 Factors that encourages physical activity amongst students

The survey asked the school officials and the parents about factors present in the school ground that they believed would encourage physical activity. They were asked to rank a list of different factors from 1-5, where ranked as 5 would be the most encouraging one and as 1 the least encouraging one. Figures 5 and 6 below present the parents and school official's views on these factors. The different factors ranked were: opportunities to explore nature, good social environment, varied play facilities, diversity of sport fields and success to green space.

Figure 5

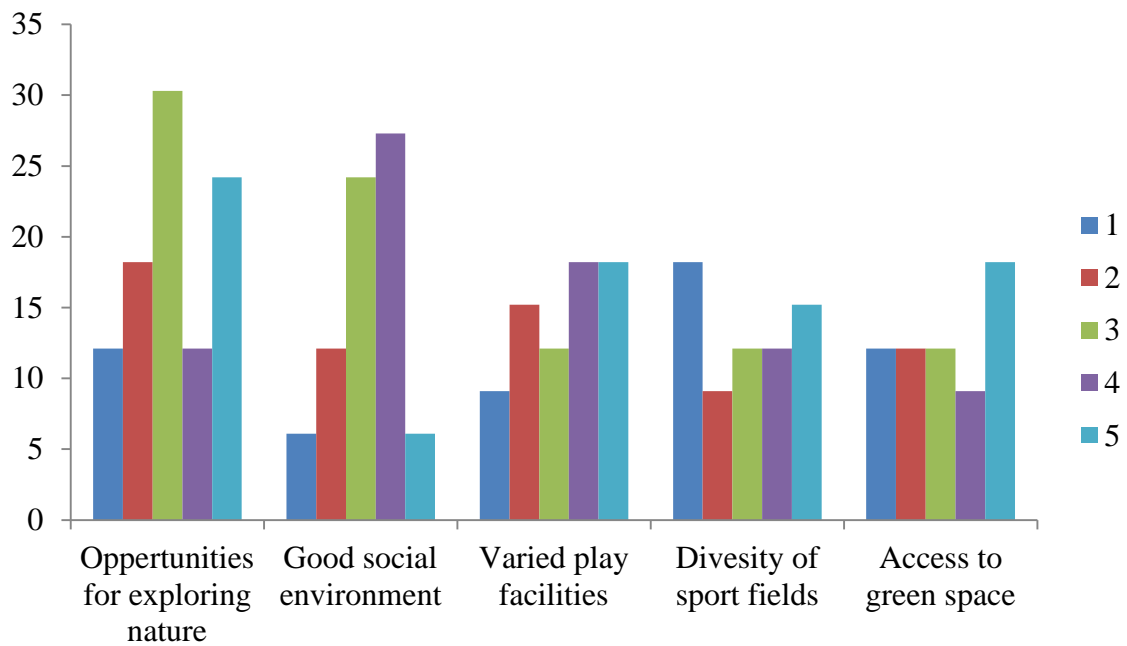
School officials: Factors that encourage physical activity in the school ground



*Note: The table shows percentages.

Figure 6

Parents: Factors that encourage physical activity in the school ground



*Note: The table shows percentages.

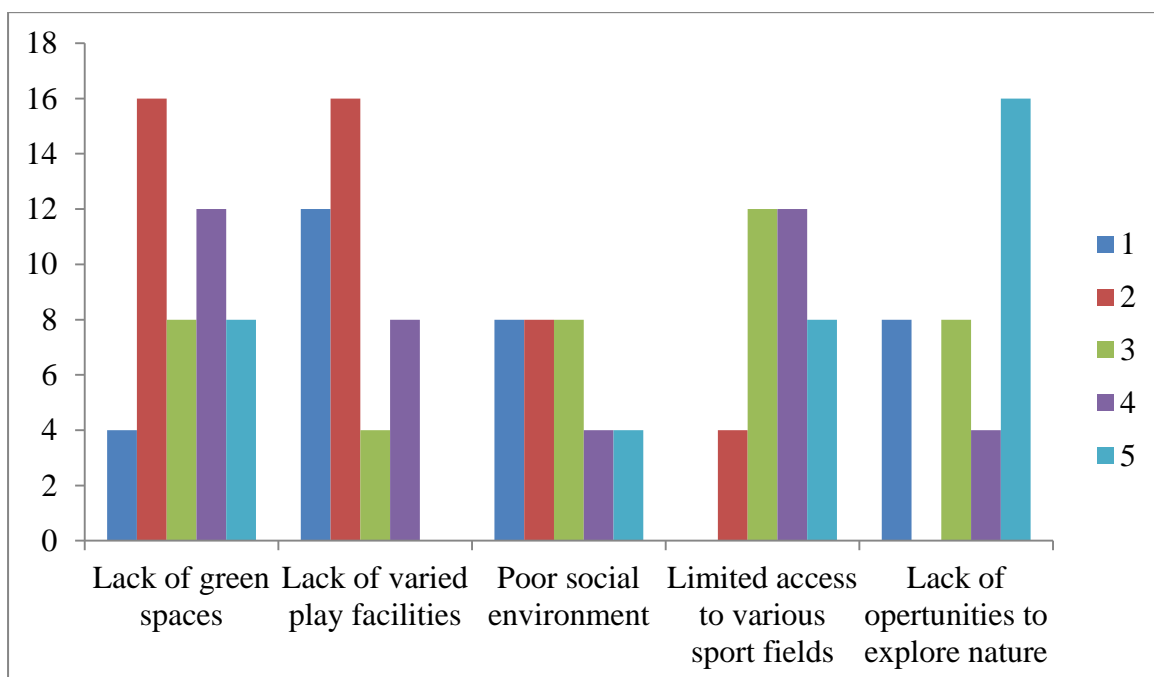
Again to the naked eye, there appears to be some variation between the parents and the school officials' views on the different factors that encourage physical activity. According to the parents, "opportunities for exploring nature" (24.2%) was the most encouraging factor for physical activity in the school ground, followed by "access to green space" (18.2%) and "varied play facilities" (18.2%). The school officials ranked "opportunities for exploring nature" (16%) as the most encouraging factor, followed by "good social environment" (8%) and "diversity of sport fields" (8%).

4.8 Factors that do not encourage physical activity among students

Analogously, the survey asked participants to report their views on factors that did not encourage physical activity. Figures 7 and 8 show the school officials and the parents view on these factors. Again the participants were asked to rank the factors from 1-5, where ranked as 5 would be the most discouraging one and as 1 the least discouraging one.

Figure 7

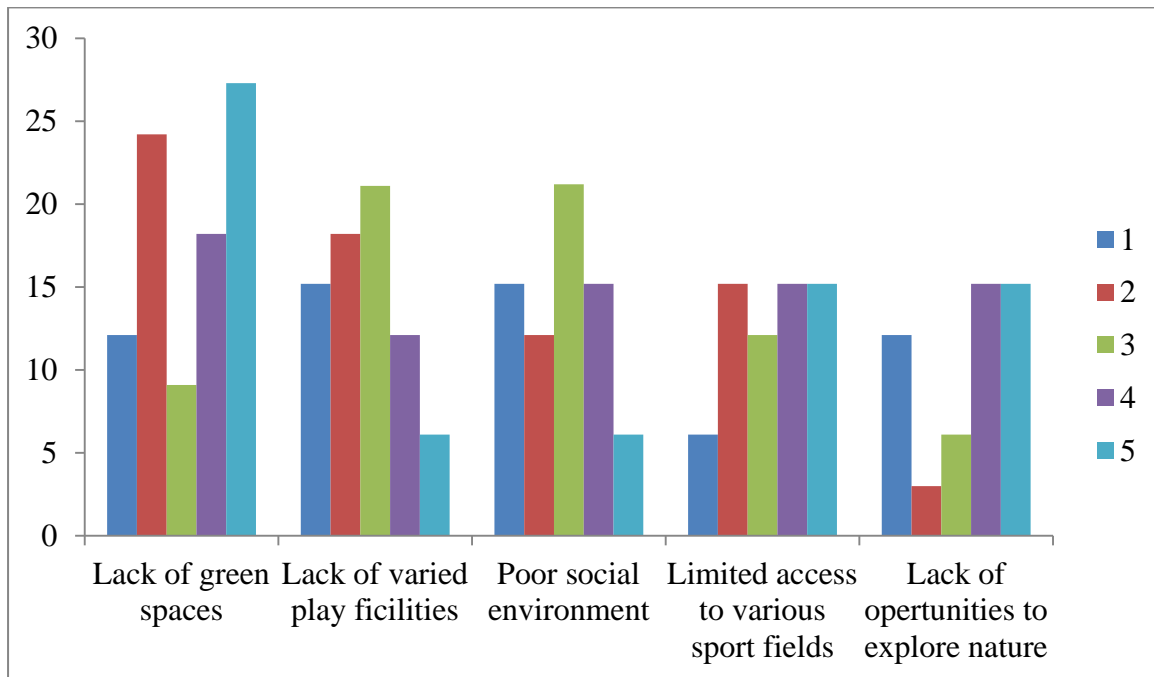
School officials: Factors that does not encourage physical activity in the school ground



*Note: The table shows percentages. There was some missing data in these answers.

Figure 8

Parents: Factors that does not encourage physical activity in the school ground



*Note: The table shows percentages. There was some missing data.

Both the parents and the school officials listed “Opportunities for exploring nature” as the most encouraging factor for promoting physical activity in the school ground. Opportunities can mean one of two things, either the school ground does not have any nature to explore or the children are not allowed to access these areas. According to de Vries, Claben, Eigenheer-Hug, Korpela, Maas, Mitchell & Schantz (2011) the different facilities in a green space environment can influence the areas ability to promote physical activity. Areas that support active usage of the green spaces rather than spaces that are constructed for organized sports are considered to promote physical activity in a higher degree (de Vries et al., 2011). The right kind of facilities in a green space area can have a significant impact on the users and the different type of activities that are conducted there, with facilities like bike trails, hiking trails, play equipment and different courts the space can attract different people with different interests, in other words, it will be suitable for a bigger part of the population as it takes many different interests into consideration (de Vries et al., 2011).

In terms of factors that do not encourage physical activity, the school officials rated “lack of opportunities to explore nature” as the number one limiting factor, while the parents

rated “lack of green spaces” as the number one limiting factor in terms of encouraging physical activity. In other words, green spaces are essential according to both the parents and the school officials regarding promotion of physical activity. Owen, Humpel, Leslie, Bauman, and Sallis (2004) researched the connections between environment and engagement in physical activity. Their results showed some positive correlations between physical activity and walking distance to parks from the participants’ home. In other words, people who lived close to parks engaged in more physical activity.

The study by Dymont and Bell (2008) reported that green school grounds promote physical activity through providing a variety of different activities and in addition to the conventional school features like different sport fields and play structures. The parents surveyed in the present study rated lack of green spaces as the most limiting factor considering the promotion of physical activity. When not having green spaces or having limited green spaces in the school ground the children do not get to experience the benefits of it and can therefore be a limiting factor. According to Dymont and Bell (2008) green school grounds promote health by integrating physical activity into the students everyday life at school, by designing the school grounds to fit the students’ needs and in terms of promoting physical activity, the design of a green school ground is an important measure to achieve the goal of getting more children physically active on a daily basis (Dymont & Bell, 2008).

Both the parents and the school officials value the green spaces at their school grounds greatly and given the research presented above and in the literature review the benefits of having green spaces in the school grounds are substantial (Dymont & Bell, 2006; 2007; 2008; Lucas & Dymont, 2010).

5. Conclusion

This study set out to investigate the relationship between the size of green spaces in Norwegian compulsory school grounds and site of physical activity among the students among with the perceived effects of green spaces according to the respondents, with the following research question: *“How do Norwegian children’s sites of physical activity vary when enrolled in compulsory education schools with different size of green spaces?”*

Although there was no significance found in the different test that were conducted, the results show that the children’s physical activity was mostly conducted in green spaces and in the different sport fields of the school ground. The respondent’s perceptions of the effect of green spaces show that having green spaces in the school ground can be very beneficial for the children. This is also supported by the biophilia hypotheses, which believe that the relationship between human beings and nature is essential in terms of their development and personal fulfillment (Kellert & Wilson, 1993). The results and the research on the field (Dyment & Bell, 2006; 2007; Lucas & Dyment, 2010; Titman, 1994; Tranter & Malone, 2004) show that having green spaces in the school ground can be an effective measure to promote physical activity throughout the student body.

The significance of this study can be linked to the public health issues in Norway regarding physical inactivity. Regardless of the lack of significance found in different tests that were computed, the descriptive findings portray a positive link between green space and health, both physical and mental. Nonetheless, further research on the field in Norway is warranted in order for health promotion on school grounds and the use of green spaces to become important public health elements and potentially ways of attraction for getting more children to be physically active enough.

5.1 Limitations

The limitations of this study apply to the planning process and the framework the researcher was given in terms of time and resources as well as to the implementation of study.

One of the limitations of the study is the group of participants; the schools that responded to the invitation to participate were at the end very much alike in terms of size of

school grounds and percentage of green spaces. The schools with smaller size of green spaces that were initially contacted did not agree to participate. This potentially resulted in a very similar sample of respondents. The schools with smaller size of green spaces that were contacted were in general bigger and more urban school than the ones with larger size of green spaces. Another limitation in terms of the similarity amongst the schools was that there were four schools from the same municipality; the similarity among these schools may be bigger than between other school from different municipalities. These schools may have the same guidelines and requirements in terms of school grounds and can therefore be very similar. However due to budget constraints a larger study outside one county was not feasible.

The fact that the study was conducted in the winter time could be another limitation to the findings as to how much time students spent outside during recess hours, the different types of activities they engaged in and the school ground and sites of physical activity. If the study was conducted during the spring or the summer time the answer might have been different. The respondents were not asked to answer considering the whole year or a specific season, and this can be viewed as a limitation of the planning and the development of the survey. The survey did not ask the parents to answer what activities their children play in other seasons and this can a limitation of the study, as the answers could have been different if this was specified in the survey

The lack of time and the narrow focus of this thesis may have also contributed to some limitations as time was an important pressure factor to the planning part of the process, and the time the respondents had available to answer the survey. There could have been a bigger response rate if the researcher had more time, which again could have affected the results. The different limitations to being an inexperienced researcher may have also affected the study in terms of planning the process, selecting and inviting participants, choosing the appropriate research approach and the developing of the survey questionnaires. There is always room for improvement and without the experience in research it makes the process more difficult.

Another limitation of the study is the testing of the surveys, there were two people that participated in the testing. If the surveys had been tested by several people, the researcher could get more feedback and the quality of the survey could further improve. The answering of the survey contains some limitations. In the survey for parents with their child,

a contact parent with their child would answer the survey together. Whether the parent typed in his/her views or the child's views the researcher does not know. To overcome this potential limitation, it is emphasized in the consent form and information letter that the children's views are essential to the project and the parents are mainly asked to type their child's view.

5.2 Suggestions for Future Research

One of the main goals in the Public Health Report is to stop the increase of diabetes and overweight in the Norwegian population (Ministry of Health and Care Services, 2015). One of the measures the Ministry of Health and Care Services (2015) states to reach this goal is to implement more physical activity in compulsory education. It is therefore essential to conduct more research on the field and investigating the effects green spaces in the school ground can have on physical activity in children enrolled in compulsory schools in Norway.

Measuring the level of physical activity among the children and comparing this to the amount of green spaces present in the school grounds in Norway would contribute to getting a clear picture of the "effectiveness" of green spaces in Norwegian compulsory school grounds and if shown to be effective can be used for preventive measures of inactivity.

Another suggestion for future research would be the implementation of an intervention, much like Dymont and Bell (2006) did who followed the transformation of a school ground in making it more suitable for the children and in ways that can promote more physical activity. Evaluating the differences before and after the transformation of the school grounds, and what kind of differences the school staff and the children experiences, could offering valuable information to municipalities for ways to promote physical activity in the school ground and how the schools can make the green spaces more "productive".

The research on the field have portrayed positive findings in terms of the benefits and effects of having green spaces in the school ground to promote physical activity (Dymont & Bell, 2007). Observing children in compulsory schools in Norway in recess periods and in their free time at school; where they play, how they play and what features in the school grounds attracted most attention from the children as well as where they are most active could provide us with important insight on the possible changes that can be made to increase levels of physical activity among the children.

During this process the researcher of the present study has learned a lot about the research on the benefits of having green spaces in school grounds, and given that Norway's health issues relate to physical inactivity (Norwegian Directorate of Health, 2014b), promoting physical activity in the school grounds seems more and more important and can be an effective measure for getting children more active as part of their everyday life at school. If the benefits of having green spaces in the Norwegian school grounds were well documented and researched, the government could potentially establish some guidelines and requirements in terms of design of the schools with the goal of getting more children physically active. Lastly, comparing the size of green spaces of Norwegian compulsory school grounds to schools of other countries and at the same time how the global recommendations for physical activity are met to see if there is a link to green spaces and physical activity levels would give the field of public health a beneficial view over the differences between different countries.

6. References

- Arbogast, K. L., Kane, B. C. P., Kirwan, J. L., & Hertel, B. R. (2009). Vegetation and outdoor recess time at elementary schools: What are the connections? *Journal of Environmental Psychology, 29*, 450-456. doi: 10.1016/j.jenvp.2009.03.002
- Bryman, A. (2008). *Social research methods* (3 ed.). Oxford, England: Oxford University Press.
- Dillman, D. A. (2000). *Mail and Internet surveys: the tailored design method* (2 ed.). New York: Wiley.
- Dyment, J. (2005). Green school grounds as sites for outdoor learning: barriers and opportunities. *International Research in Geographical and Environmental Education, 14*(1), 28-45. doi: 10.1080/09500790508668328
- Dyment, J., & Bell, A. (2006). *Grounds for action: Promoting physical activity through school ground greening in Canada*. Canada: Evergreen.
- Dyment, J., & Bell, A. (2007). Active by design: promoting physical activity through school ground greening. *Children's Geographies, 5*(4), 463-477. doi: 10.1080/14733280701631965
- Dyment, J., & Bell, A. (2008). Grounds for movement: Green school grounds as sites for promoting physical activity. *Health Educ Res, 23*(6), 952-962. doi: 10.1093/her/cym059
- Evergreen. (2014). *Greening School Grounds*. Retrieved 29.09.14, from <http://www.evergreen.ca/our-impact/children/greening-school-grounds/>
- Fjørtoft, I. (2001). The natural environment as a playground for children: the impact of outdoor play activities in pre-primary school children. *Early Childhood Education Journal, 29*(2), 111-117. doi: 10.1023/A:1012576913074
- Frost, J. L., & Brown, S. L. (2010). *A history of children's play and play environments: towards a contemporary child-saving movement*. New York: Routledge.
- Global Advocacy Council for Physical Activity. (2010). *The toronto charter of physical activity: a global call for action*. UK: Global Advocacy Council for Physical Activity.
- Kellert, S. R., & Wilson, E. O. (1993). *The Biophilia hypothesis*. Washington, D.C: Island Press.

-
- Louv, R. (2009). *Last child in the woods : saving our children from nature-deficit disorder*. London: Atlantic Books.
- Lucas, A. J., & Dymont, J. E. (2010). Where do children choose to play on the school ground? The influence of green design. *Education 3–13*, 38(2), 177-189.
- Maller, C., & Townsend, M. (2006). Children's Mental health and wellbeing and hands-on contact with nature. *International journal of learning*, 12(4), 359-372. doi: <http://hdl.handle.net/10536/DRO/DU:30003638>
- Maller, C., Townsend, M., Pryor, A., Brown, P., & St Leger, L. (2005). Healthy nature, healthy people: 'contact with nature' as an upstream health promotion intervention for populations. *Health Promot Int*, 21(1), 45-54. doi: 10.1093/heapro/dai032
- Ministry of Health and Care Services. (2015). *Folkehelsemeldingen: mestring og muligheter (Public health report: mastery and opportunities)*. (White paper nr.19 2014-2015). Oslo: Ministry of Health and Care Services.
- Mytting, I., & Bischoff, A. (2008). *Friluftsliv (Outdoor Life)* (2. ed.). Oslo: Gyldendal undervisning.
- Neuman, W. L. (2011). *Social research methods: qualitative and quantitative approaches* (7 ed.). Boston: Pearson.
- Newman, D. A. (2003). Longitudinal Modeling with Randomly and Systematically Missing Data: A Simulation of Ad Hoc, Maximum Likelihood, and Multiple Imputation Techniques. *Organizational Research Methods*, 6(3), 328-362. doi: 10.1177/1094428103254673
- Norwegian Directorate of Health. (2003). *Skolens utearealer : om behovet for arealnormer og virkemidler (The school's outdoor areas: the need for land use norms and instruments)* IS-1130. Oslo: Norwegian Directorate of Health.
- Norwegian Directorate of Health. (2010). *Forebygging, utredning og behandling av overvekt og fedme hos barn og unge (Prevention, diagnosis and treatment of overweight and obesity in children and adolescents)* IS-1734. Oslo: Norwegian Directorate of Health.
- Norwegian Directorate of Health. (2011). *Fysisk aktivitet blant 6-, 9- og 15-åringene i Norge (Physical activity among 6-, 9 and 15-year olds in Norway)* IS-2002 Oslo: Directorate of Health.
- Norwegian Directorate of Health. (2014a). *Kunnskapsgrunnlag fysisk aktivitet: innspill til departementets videre arbeid for økt fysisk aktivitet og redusert inaktivitet i befolkningen (Evidence of physical activity. Input to the Ministry's further efforts to increase physical activity and reducing inactivity in the population)*. IS-2167 Oslo:

-
- Directorate of Health. Retrieved from <http://www.helsedirektoratet.no/publikasjoner/kunnskapsgrunnlag-fysisk-aktivitet/Publikasjoner/IS-2167.pdf>.
- Norwegian Directorate of Health. (2014b). *Anbefalinger om kosthold, ernæring og fysisk aktivitet (Recommendations on diet, nutrition and physical activity)*. IS-2170 Oslo: Norwegian Directorate of Health.
- Norwegian Institute of Public Health. (2012). *Fysisk aktivitet - Faktaark med statistikk (Physical Activity - Fact Sheet with statistics)*. Retrieved 26.09.14, from <http://www.fhi.no/artikler/?id=56857>
- Norwegian Ministries. (2005). *The Action Plan on Physical Activity: Working together for physical activity 2005-2009*. Oslo: Ministries
- Norwegian Social Science Data Service. (2012a). *Data Protection Official*. Retrieved 11.03.15, from <http://www.nsd.uib.no/personvern/en/index.html>
- Norwegian Social Science Data Service. (2012b). *Kindergarden and School*. Retrieved 18.10.14, from: <http://www.nsd.uib.no/personvern/forskningstemaer/barnehageskole.html>
- Owen, N., Humpel, N., Leslie, E., Bauman, A., & Sallis, J. F. (2004). Understanding environmental influences on walking: review and research agenda. *Am J Prev Med*, 27(1), 67-76.
- Pallant, J. (2007). *SPSS survival manual : a step by step guide to data analysing using SPSS for Windows* (3rd ed.). Maidenhead: McGraw-Hill ; Open University Press.
- Questback. (s.a-a). *Collection and processing of customer data*. Retrieved 24.09.14, from <http://www.questback.com/security-statement>
- Questback. (s.a-b). *Hvorfor Questback (Why Questback)*. Retrieved 24.09.14, from <http://www.questback.com/no/hvorfor-questback>
- Stine, S. (1997). *Landscapes for learning : creating outdoor environments for children and youth*. New York: Wiley.
- The Education Act. (2015). *LOV-2015-04-24-23 § 9a*.
- The Norwegian Directorate of Health. (2003). *Skolens utearealer - Om behovet for arealnormer og virkemidler (The school's outdoor areas - the need for the acreage norms and instruments)*. IS-1130. Oslo: Norwegian Directorate of Health. .
- Titman, W. (1994). *Special places, special people : the hidden curriculum of school grounds*. Godalming: WWF UK/Learning through Landscapes.

-
- Tranter, P. J., & Malone, K. (2004). Geographies of environmental learning: an exploration of children's use of school grounds. *Children's Geographies*, 2(1), 131-155. doi: 10.1080/1473328032000168813
- United States Environmental Protection Agency. (2014). *What is open space/green space?* Retrieved 29.09.14, from: <http://www.epa.gov/region1/eco/uep/openspace.html>
- Veitch, J., Bagley, S., Ball, K., & Salmon, J. (2006). Where do children usually play? A qualitative study of parents' perceptions of influences on children's active free-play. *Health Place*, 12(4), 383-393.
- Vries, D. S., Claben, T., Eigenheer-Hug, S.-M., Korpela, K., Maas, J., Mitchell, R., Schantz, P. (2011). Contributions of natural environments to physical activity: theory and evidences base. In Nilsson, K., Sangster, M., Gallis, C., Hartig, T., de Vries, S., Seeland, K., Schipperijn, J. (Ed.) (pp. 205-243) *Forests, trees and human health*. New York: Springer.
- World Health Organization. (2004). *Global strategy on diet, physical activity and health*. Geneva: World Health Organization.
- World Health Organization. (2010). *Global recommendations on physical activity for health*. Geneva: World Health Organization.
- World Health Organization. (2015). *Physical activity*. Retrieved 05.03.15, 2015, from: http://www.who.int/topics/physical_activity/en/

Attachements

Attachement 1: Consent form

Forespørsel om deltakelse i forskningsprosjekt

”Grønt Områder i skolegården og aktive barn”

Bakgrunn og formål

Denne studien er et masteroppgaveprosjekt av Brita Almestad som en avslutning på «Master i folkehelsevitenskap» studiet ved Høgskolen i Hedmark. I dette prosjektet vil sammenhengene mellom grøntområder i skolegården og aktivitetsvanene til elevene bli undersøkt. Temaer som vil bli belyst er: Mengde grøntområder i skolegården, elevenes bruk av grøntområder og grunner til bruk og sammenhengene mellom fysisk aktivitet og grøntområder.

Dette prosjektet vil undersøke grunnskoler, hvor utvalget er ulike skoler i et bestemt område i Norge. Rektorer/skoleledere, kroppsøvlingslærere og kontaktforeldre for hver klasse med sine respektive barn vil utgjøre utvalget i dette prosjektet, barnas meninger og svar er essensielle i dette prosjektet.

Hva innebærer deltakelse i studien?

Datainnsamlingen vil kreve aktiv deltakelse ved å svare på en web basert undersøkelse i form av et spørreskjema. Spørsmålene vil omhandle hvilke fasiliteter som er tilgjengelig i skolegården i forhold til grøntområder, bruken av slike områder og hvor i skolegården elevene er aktive og elevenes assosiasjoner med disse områdene.

Hva skjer med informasjonen om deg?

Alle personopplysninger vil bli behandlet konfidensielt. Dataene vil kun være tilgjengelig for studenten, Brita Almestad og hennes veileder Stiliani Chroni, Professor ved Høgskolen i Hedmark (stiliani.chroni@hihm.com, 97631001). Dataene vil være sikret på studentens egen pc som er passord beskyttet og hos web klienten Questback, hvor undersøkelsen blir utført.

Prosjektet skal etter planen avsluttes i Mai, 2015. Etter prosjektet er levert og muntlig eksamen er gjennomført vil alle data bli slettet. Mens prosjektet pågår vil dataene være lagret på studentens datamaskin.

Frivillig deltakelse

Det er frivillig å delta i studien, og du kan når som helst trekke ditt samtykke uten å oppgi noen grunn. Dersom du trekker deg, vil alle opplysninger om deg bli anonymisert.

Dersom du ønsker å delta eller har spørsmål til studien, ta kontakt med Brita Almestad (Tlf: 40452530, epost: balmestad@gmail.com).

Studien er meldt til Personvernombudet for forskning, Norsk samfunnsvitenskapelig datatjeneste AS.

Samtykke til deltakelse i studien

Hvis barnet er under 15 år, vil deres respektive foreldre gi samtykke for dem. Samtykke blir gitt som en del av undersøkelsen. Dette vil det bli gitt informasjon om i undersøkelsen. Barnas syn er viktig for prosjektet og foreldrene er i hovedsak bedt om å skrive sine barns syn når dette blir spurt om i undersøkelsen.

Attachment 2: Survey for parents with child(ren)

Bakgrunn

1) * Vennligst beskriv din nåværende yrkesretning og arbeidssituasjon

2) * Vennligst oppgi din alder:

- Under 30
- 30 - 40
- 41 - 50
- Over 50

3) * Kjønn:

- Mann
- Kvinne

4) * Hva er din høyeste gjennomførte utdanning?

- Grunnskole

-
- Videregående Skole
 - Høgskole (Bachelor)
 - Høgskole (Master)
 - Doktorgrad
 - Andre

Om din skole

5) * Navn på skole:

6) * Hvilket klassetrinn er du kontakt forelder til?

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.

7) * Barnets kjønn? (I den klassen du er kontakt forelder i)

2 4 6 8 10 12 14 16 18 20 22 24 26 28 30

Første

friminutt

etter

lunsj

(minutte

r per

dag)

Andre

friminutt

etter

lunsj

(minutte

r per

dag)

9) * Hvilken effekt tror du at grønt områdene i skolens utearealer har på ditt/dine barn? Klikk på det svaret som samsvarer best med din mening. 1= Sterkt uenig, 2= Uenig, 3= Enig, 4= Sterkt Enig

1 2 3 4

Fremmer mer kooperativt spill

Fremmer mer sivil lekeatferd blant elever

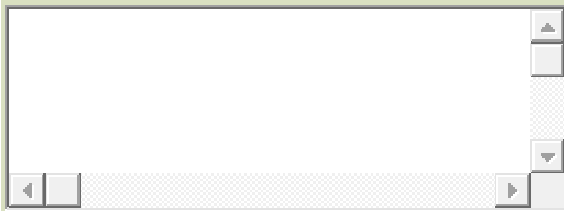
Fremmer mer fantasibasert sosial lek

Fremmer mer konstruktiv lek (Bygging av fort, sand slott, hytter osv.)

	1	2	3	4
Oppfordrer elevene til og utforske naturen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Støtter en større variasjon av aktiviteter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Styrker sammenhengen mellom lek og læring/kognitiv utvikling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Promoterer bedre integrasjon av fysisk aktivitet inn i skole hverdagen generelt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Fysisk aktivitet er definert som all kroppslig bevegelse

10) * Hvilken form av fysisk aktivitet eller lek er det vanligvis ditt barn driver med i skolens utearealer?



11) * Hvor i skolens utearealer bedriver ditt barn med disse aktivitetene?

- Skolens grøntområder (skog, hager, gress områder)
- Idrettsbaner (fotball, volleyball, ski osv.)
- Asfalt/betong dekkende områder
- Stier/løyper (ski, sykkel, tur)

Lekeapparater

Andre

12) * Med hjelp fra din sønn/datter: Vennligst vurder i hvilken grad forholdene i skolens utearealer kan være med på oppmuntre ditt barn til å være fysisk aktive i skolegården. 0= Ikke aktuelt, 1= Fremmer ikke fysisk aktivitet, 2= Fremmer fysisk aktivitet, 3= Fremmer i høyeste grad fysisk aktivitet.

	0	1	2	3
Mangfold av landskapet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mangfold av lekemuligheter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Området er godt definert (vegetasjon, sittegrupper, lekeapparater)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Skjermede områder for lek (Skjermet for vær og vind)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flyttbare objekter (sand, leker, pinner, steiner o.l.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Muligheter for ikke konkurransedyktig lek	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Muligheter for utforskning av naturen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Muligheter for å ta vare på planter og grøntområder (Vanning, raking, rengjøring, plukke ugress o.l.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Muligheter for å observere dyreliv (fugler, insekter, småvilt o.l.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sosial dynamikk hos elevene (bedre samarbeid,	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

0 1 2 3

fantasifull lek, høy deltakelse)

Sosial dynamikk mellom voksne og barn (samarbeid
og høflighet)

13) Med hjelp fra din sønn/datter: Vennligst ranger alternativene nedenfor fra 1-5, i forhold til hvilke forhold dere mener oppmuntrer til fysisk aktivitet i skolegården

Muligheter for utforsking av naturen

Godt sosialt miljø

Varierte lekemuligheter

Mangfold av idrettsbaner

Tilgang på grøntområder

14) Med hjelp fra din sønn/datter: Vennligst ranger alternativene nedenfor fra 1-5, i forhold til hvilke forhold dere mener ikke oppmuntrer til fysisk aktivitet i skolegården

Mangel på grøntområder

Lite varierte lekemuligheter

Dårlig sosialt miljø

Liten tilgang på ulike idrettsbaner

Lite muligheter til og utforske naturen

Attachment 3: Survey for school officials (principals and PE teachers)

Bakgrunn

1) * Vennligst oppgi hvilken stilling du har:

- Rektor
- Kroppsøvingslærer
- Annen lærer
- Annen administrativ stilling

2) * Vennligst oppgi din alder:

- Under 30
- 30 - 40
- 41 - 50
- Over 50

3) * Kjønn:

- Mann
- Kvinne

4) * Hvilken utdanning har du?

- Grunnskole
- Videregående Skole
- Høgskole (Bachelor)
- Høgskole (Master)
- Doktorgrad
- Andre

5) * Hvor mange år har du vært ansatt i det offentlige skoleverket?

Om din skole

6) * Navn på skole:**7) * Hvor mange undervisnings ansatte har dere?**

8) * Hvor mange elever har dere?

For lærere: Hvis dere ikke vet det eksakte svaret, kan dere gå videre til spørsmål 10.

9) Hvor stor er skolegården ved din skole? (Vennligst oppgi svaret i kvadratmeter)

Grøntområder er definert som et område med gress, trær, eller annen vegetasjon.

10) * Hvor mye av skolens område er grønntområder? (Vennligst oppgi svaret i prosent)

11) * Hvilke egenskaper finnes det i skolegården ved din skole?

- Trær
- Blomster
- Sand områder
- Vann elementer (bekk, elv, dam, innsjø o.l.)
- Sitte områder

-
- Natur løype/sti
 - Sykkelsti
 - Fuglehus
 - Store eller små steiner
 - Skog områder
 - Gress områder
 - Våtmark områder
 - Kunst
 - Fotball bane
 - Sandvolleyball bane
 - Friidrettsbane
 - Lekeapparater
 - Ski løyper
 - Akebakker
 - Skøyte/hockey bane
 - Hinderløype
 - Andre

12) * Hvilke av disse egenskapene er tilgjengelige for elevene?

- Trær
- Blomster
- Sand områder
- Vann elementer (bekk, elv, dam, innsjø o.l.)
- Sitte områder
- Natur løype/sti
- Sykkelsti
- Fuglehus
- Store eller små steiner
- Skog områder
- Gress områder
- Våtmark områder
- Kunst
- Fotball bane
- Sandvolleyball bane
- Friidrettsbane
- Lekeapparater

-
- Ski løyper
 - Akebakker
 - Skøyte/hockey bane
 - Hinderløype
 - Andre

13) * Hvilke av disse egenskapene brukes av elevene i deres friminutt/pauser?

- Trær
- Blomster
- Sand områder
- Vann element (bekk, elv, dam, innsjø o.l.)
- Sitte områder
- Natur løype/sti
- Sykkelsti
- Fuglehus
- Store eller små steiner
- Skog områder
- Gress områder

-
- Våtmark områder
 - Kunst
 - Fotball bane
 - Sandvolleyball bane
 - Friidrettsbane
 - Lekeapparater
 - Ski løyper
 - Akebakker
 - Skøyte/hockey bane
 - Hinderløype
 - Andre

14) Vennligst estimer hvor mye tid, per dag, en elev bruker i skolegårdens uteområde ved følgende:

2 4 6 8 10 12 14 16 18 20 22 24 26 28 30

Første

friminutt

(minutter

r per

dag)

2 4 6 8 10 12 14 16 18 20 22 24 26 28 30

Andre

friminutt

(minutter per dag)

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Lunsj

(minutter

r per dag)

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Første

friminutt

etter

lunsj (minutter per dag)

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

Andre

friminutt

etter

lunsj (minutter per dag)

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------	--------------------------

15) * Hvilken effekt tror du at grønt områdene i skolegården ved din skole har på elevene? Klikk på det svaret som samsvarer best med din mening. 1= Sterkt uenig, 2= Uenig, 3= Enig, 4= Sterkt Enig

	1	2	3	4
Fremmer mer kooperativt spill	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fremmer mer sivil lekeatferd blant elever	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fremmer mer fantasibasert sosial lek	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Fremmer mer konstruktiv lek (Bygging av fort, sand slott, hytter osv.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Oppfordrer elevene til og utforske den naturlige verden	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Støtter en større variasjon a aktiviteter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Styrker sammenhengen mellom lek og læring/kognitiv utvikling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Promoterer bedre integrasjon av fysisk aktivitet inn i skole hverdagen generelt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

16) Vennligst estimer hvor mange elever som er fysisk aktive ved de ulike delene av skolegården. 1=Ingen elever 2=Få elever (mindre enn 10%) 3=Mange elever (10-50%) 4= De fleste elevene (Mer enn 50%)

	1	2	3	4
På en vanlig dag, hvor mange elever er fysisk aktive på de ulike GRESS OMRÅDENE i skolegården?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
På en vanlig dag, hvor mange elever er fysisk aktive på de ASFALT/BETONG dekkende områdene i skolegården?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	1	2	3	4
På en vanlig dag, hvor mange elever er fysisk aktive i de ulike LEKEAPPARATENE i skolegården?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	1	2	3	4
På en vanlig dag, hvor mange elever er fysisk aktive på de ulike GRØNTOMRÅDENE i skolegården?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

17) * Vennligst vurder i hvilken grad forholdene i skolegården kan være med på oppmuntre elevene til å være fysisk aktive i skolegården. 0= Ikke aktuelt, 1= Fremmer ikke fysisk aktivitet, 2= Fremmer fysisk aktivitet, 3= Fremmer i høyeste grad fysisk aktivitet.

	0	1	2	3
Mangfold av landskapet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Mangfold av lekemuligheter	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Området er godt definert (vegetasjon, sittegrupper, lekeapparater)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Skjermede områder for lek (Skjermet for vær og vind)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flyttbare objekter (sand, leker, pinner, steiner o.l.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Muligheter for ikke konkurransedyktig lek	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Muligheter for utforskning av naturen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Muligheter for å ta vare på planter og grøntområder (Vanning, raking, rengjøring, plukke ugress o.l.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Muligheter for å observere dyreliv (fugler, insekter,	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	0	1	2	3
småvilt o.l.)				
Sosial dynamikk hos elevene (bedre samarbeid, fantasifull lek, høy deltakelse)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sosial dynamikk mellom voksne og barn (samarbeid og høflighet)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

18) Vennligst ranger alternativene nedenfor fra 1-5, i forhold til hvilke forhold dere mener oppmuntrer til fysisk aktivitet i skolegården

Muligheter for og utforske naturen	<input type="text"/>
Godt sosialt miljø	<input type="text"/>
Varierte lekemuligheter	<input type="text"/>
Mangfold av idrettsbaner	<input type="text"/>
Tilgang på grøntområder	<input type="text"/>

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
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19) Vennligst ranger alternativene nedenfor fra 1-5, i forhold til hvilke forhold dere mener ikke oppmuntrer til fysisk aktivitet i skolegården

Mangel på tilgang på grøntområder	<input type="text"/>
Lite varierte lekemuligheter	<input type="text"/>
Dårlig sosialt miljø	<input type="text"/>
Lite tilgang på ulike idrettsbaner	<input type="text"/>

Liten mulighet for og utforske naturen



Attachment 4: NSD approval

Norsk samfunnsvitenskapelig datatjeneste AS
NORWEGIAN SOCIAL SCIENCE DATA SERVICES



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N-5007 Bergen
Norway
Tel: +47-55 58 21 17
Fax: +47-55 58 96 50
nsd@nsd.uib.no
www.nsd.uib.no
Org.nr. 985 321 884

Stiliani Chroni
Institutt for idrett og aktiv livsstil Høgskolen i Hedmark, campus Elverum
Postboks 400
2418 ELVERUM

Vår dato: 12.12.2014

Vår ref: 40669 / 3 / AGL

Deres dato:

Deres ref:

TILBAKEMELDING PÅ MELDING OM BEHANDLING AV PERSONOPPLYSNINGER

Vi viser til melding om behandling av personopplysninger, mottatt 10.11.2014. Meldingen gjelder prosjektet:

<i>40669</i>	<i>Grønt områder i skolegården og aktive barn</i>
<i>Behandlingsansvarlig</i>	<i>Høgskolen i Hedmark, ved institusjonens overste leder</i>
<i>Daglig ansvarlig</i>	<i>Stiliani Chroni</i>
<i>Student</i>	<i>Brita Almestad</i>

Personvernombudet har vurdert prosjektet og finner at behandlingen av personopplysninger er meldepliktig i henhold til personopplysningsloven § 31. Behandlingen tilfredsstiller kravene i personopplysningsloven.

Personvernombudets vurdering forutsetter at prosjektet gjennomføres i tråd med opplysningene gitt i meldeskjemaet, korrespondanse med ombudet, ombudets kommentarer samt personopplysningsloven og helseregisterloven med forskrifter. Behandlingen av personopplysninger kan settes i gang.

Det gjøres oppmerksom på at det skal gis ny melding dersom behandlingen endres i forhold til de opplysninger som ligger til grunn for personvernombudets vurdering. Endringsmeldinger gis via et eget skjema, <http://www.nsd.uib.no/personvern/meldeplikt/skjema.html>. Det skal også gis melding etter tre år dersom prosjektet fortsatt pågår. Meldinger skal skje skriftlig til ombudet.

Personvernombudet har lagt ut opplysninger om prosjektet i en offentlig database, <http://pvo.nsd.no/prosjekt>.

Personvernombudet vil ved prosjektets avslutning, 10.05.2015, rette en henvendelse angående status for behandlingen av personopplysninger.

Vennlig hilsen

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Dokumentet er elektronisk produsert og godkjent ved NSDs rutiner for elektronisk godkjenning.

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Personvernombudet for forskning



Prosjektvurdering - Kommentar

Prosjektnr: 40669

Utvalget informeres skriftlig og muntlig om prosjektet og samtykker til deltakelse. Informasjonsskrivet er godt utformet, men følgende setning må slettes: "Datamaterialet vil bli hentet inn anonymt ..." da datamaterialet ikke vil regnes som anonymt når det inneholder indirekte personidentifiserende opplysninger (alder, kjønn, skole, etc).

Når barn deltar aktivt, er deltagelsen alltid frivillig for barnet, selv om foreldrene samtykker. Det innebærer at barnet bør få tilpasset informasjon og at forsker må få barnets aksept under datainnsamlingen. I tråd med dette bør den som foretar datainnsamlingen ha tilstrekkelig kompetanse til å tilpasse fremgangsmåten slik at barnets behov ivaretas.

Personvernombudet legger til grunn at forsker etterfølger Høgskolen i Hedmark sine interne rutiner for datasikkerhet. Dersom personopplysninger skal sendes elektronisk eller lagres på privat pc/mobile enheter, bør opplysningene krypteres tilstrekkelig.

Questback er databehandler for prosjektet. Høgskolen i Hedmark skal inngå skriftlig avtale med Questback om hvordan personopplysninger skal behandles, jf. personopplysningsloven § 15. For råd om hva databehandleravtalen bør inneholde, se Datatilsynets veileder: <http://www.datatilsynet.no/Sikkerhet-internkontroll/Databehandleravtale/>.

Forventet prosjektslutt er 10.05.2015. Ifølge prosjektmeldingen skal innsamlede opplysninger da anonymiseres. Anonymisering innebærer å bearbeide datamaterialet slik at ingen enkeltpersoner kan gjenkjennes. Det gjøres ved å:

- slette direkte personopplysninger (som navn/koblingsnøkkel)
- slette/omskrive indirekte personopplysninger (identifiserende sammenstilling av bakgrunnsopplysninger som f.eks. bosted/arbeidssted, alder og kjønn)

Vi gjør oppmerksom på at også databehandler (Questback) må slette personopplysninger tilknyttet prosjektet i sine systemer. Dette inkluderer eventuelle logger og koblinger mellom IP-/epostadresser og besvarelser.

