New Voices in the Woods
– A Study of Children’s Experience of the Forest as an Outdoor Educational Space.

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I'm always astonished by a forest.

It makes me realize that the fantasy of nature is much larger than my own fantasy.

I still have things to learn.

Günter Grass, from a Guardian interview, 2010
**Title**

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Abstract

There is a growing body of literature that recognizes the importance of outdoor learning spaces in educational practice with children. However, previous studies of the outdoor learning spaces have omitted to address the young children’s perspectives on the outdoor environments that they experience as a part of the Forest School’s educational approach. Research on the subject has been mostly restricted to an adult perspective. Furthermore, the previously published studies are limited to Scandinavian countries and available in Scandinavian languages and, therefore, not easily accessible to an international audience. The aim of the present dissertation project is to explore young children’s (aged 3-6 years) voices on their experience, sense-making, and understanding of the educational space of a forest. A qualitative research paradigm was employed to explore the components that characterize children’s perception of the outdoor educational space. Ethnographic research methods (participants observation, informal conversation and material collection) were used to investigate children’s outdoor activities performed in two Italian preschools: a kindergarten outdoor oriented school and a Forest School. The collected materials (fieldnotes, interviews, and children’s drawings) were processed using a six-steps Thematic Analysis with the aim to gain a complex account of the data. The results indicate that the way children use, interact and, confer a meaning to their experience in the woods are represented by the following themes: Type of Place Attended, Nature Engagement, Relationship with the Woods, Responsibility and Risk, Imagination, Emotional Responses, Affordances, Relationships with Others, Discovery and Experimentation, Nature Education, Concerns for Nature, and Learnings Connected to the Curriculum. These results have provided a deeper insight on the children’s experience of the outdoor learning space of a forest. Moreover, the empirical findings in this study contributed to provide a new understanding of how children bond with the natural world and how they behave and experience it. Taking into account the exploratory nature of the present thesis, future research should further address the children’s perspectives on the outdoor education space, the forest. Furthermore, it would be interesting to investigate if the cognitive, emotional, and social resources and environmental attitudes developed by children in the forest as outdoor educational space are strictly intertwined with this particular environment or if they can be realized in more a conventional school setting.

Keywords
Outdoor Educational Space, Forest, Positive Outcomes, Children’s perspective, Forest School, Kindergarten Outdoor Oriented, Ethnographic Research Methods, Six-steps Thematic Analysis, Connection, Bonding and Action Towards Nature.
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Linköping in May 2018

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Chapter 1: Introduction

Nowadays the use of outdoor learning spaces like forests has become increasingly popular. Previous research has found that children who attend Forest Schools can gain a series of advantages, due to the time spent in such outdoor environments such as greater social interaction (Moore, 1986), concentration and self-discipline (Taylor & Sullivan, 2001), motor fitness (Fjørtoft, 2001), creativity and imagination (Moore & Wong, 1997; Taylor, et al., 1998; Fjørtoft 2000) awareness reasoning and observational skills (Pyle, 2002), independence and autonomy (Bartlett, 1996).

Understanding children’s perspectives on the outdoor environments, they experience as a part of the Forest School’s educational approach is, therefore, a matter of high interest in educational research. In fact, the main reason for this focus of interest is the dearth of literature related to children’s own views regarding their experience of the forest as an educational space. Previous research in education has mainly focused on teachers’ perception (Harris, 2017) of children’s learning outcomes associated with being outdoors and on older children’s perceptions (Aziz & Said, 2012) and preferences when it comes to outdoor landscapes (Müderrisoğlu & Gültekin, 2015) and nature (Keliher, 1997).

The lack of studies on young children’s perspective on their experience of outdoor places is pointed out in Scandinavian literature, for example in Fägerstam (2012) and Celé (2006). Ånggård (2015) performed studies on children’s perspective on outdoor places outside schools and education centers. Other places taken into consideration were also unedited places, “natural places who (sic) nobody takes care of” outside the schoolyard such as green areas, wild meadows and old football fields (Hammarsten, 2015, p. 1).

Moreover, since the literature available on the topic focuses on the Scandinavian countries, the papers are written in the Scandinavian languages. Hence, those are hardly accessible to an international audience.

One first example of this fact is the Swedish article from Johansson and Samuelsson (2003), where the authors focused on children’s perspective on educational research and practice. In a recent thesis (Hedberg, 2015), the writer studied the role of the forest as a teaching room for biology classes. She was keen on figuring out how teachers could use the forest as a biology classroom and how children were influenced by this environment. Two other recent works (Hammarsten et al., 2016, Hammarsten et al., 2017) focused on the study of children’s special places in forest gardens in Sweden.
The current lack of literature in the English language, regarding children’s perception of the forest as educational space, led me to conduct the current research project. As noted, the educational research on children’s experience outdoors is mostly located in Scandinavia or other countries located in Northern Europe such as the United Kingdom (see for example Murray & O’Brien, 2005). My intention is to enrich the existing literature from the perspective of the Italian context, where an interest in outdoor education has only recently developed in comparison to countries located in the Baltic area and other European countries such as Germany, Austria, Poland, United Kingdom, and Switzerland (Carpi, 2018). For these reasons, the present qualitative study will be focused on the investigation of young children (aged 3-6), with an emphasis on their awareness when it comes to natural spaces encountered during their participation in a Forest School.

The theoretical background comes from the disciplines human and children’s geography, developmental psychology, educational psychology, environmental psychology and ecological psychology. In accordance with these disciplines, I will describe preschool children’s interaction with nature in the educational setting that I mentioned earlier. In doing so, the research focus will be on children’s own voices and experiences because children’s perspective and their understanding of a situation do not correspond to those of adults like teachers or parents (White & Stoecklin, 1998). As mentioned by the authors, children see nature not as a background, but as a stimulator and experimental component of their activities.

The reason for using children’s geography as a supplement to the processes and practices of the early childhood education field is that this discipline focuses on how social and environmental worlds can shape children’s perceptions and experiences of the environment. This viewpoint is therefore useful in revealing children's voices concerning their experience in the wilderness inside the learning approach Outdoor Education and the alternative educational space Forest School.

Developmental psychology is also pivotal because young children are in a particular phase of cognitive and social development and of course this needs to be taken in to account. In fact, the way the child interacts with the environment is influenced by the child’s developmental maturity. Furthermore, the educational psychology viewpoint is used because the particular educational approaches used in the research setting I selected will influence children’s views of the educational forest space.

In the end, the discipline environmental psychology and ecological psychology are used to analyse the interplay between children and their surroundings which in the current case corresponds to the wilderness, where their outdoor school activities occur.
To conclude, boosting research on the topic is important, first because it will the base for a new first-hand knowledge that is useful for both practitioners and parents in their role of children’s educators and caregivers; second it will contribute to the body of knowledge available in the English language; and finally, it will open up the discussion between the Italian and Scandinavian outdoor education fields.
Chapter 2: Literature review

The review of the literature establishes the context and the relevant theoretical background of the children’s perspectives on the outdoor environments, they experience as a part of the Forest School’s educational approach. In fact, the topic under investigation needs to be addressed in terms of the following issues:

- The Outdoor Education learning approach;
- The informal learning Forest School movement;
- How children experience the natural environment, inquired according to a geographical perspective;
- Young children’s cognitive development and learning, from the perspective of developmental psychology;
- Young children interaction and sense-making of the environment as educational space and relevant concepts;
- A contextually situated conceptualization and use of nature, in the form of a theoretical model to explain children’s encounter with nature.

A short introduction to the Outdoor Education approach

The Outdoor Education can be defined as:

“multifaceted field of research and education that includes adventure education, leadership skills, tranquil outdoor life, friluftssliv, and human nature relationship as well as fieldwork and other school-based learning in different subject and settings” (Fägerstam, 2012, p. 1). Furthermore, the Higgins and Loynes model (1997) which represents the Outdoor Education practice as based on three main areas of outdoor activities, "outdoor activities, environmental education" and "personal and social development", taking place within a framework of safety (Figure 1).
The OE is a cultural construct characterized by complexity and by a distinct setting in nature. According to Szczepanski (2009), this construct can be indeed thought and applied in different ways among the European countries. To give some examples, it corresponds to the Scandinavian ‘Friluftsliv’ (Fri-free, luft-air, open natural space, liv-life), the Finnish ‘Erä’ (place of recreation and hideaway), the German ‘Erlebnispädagogik’ (leben=life, vitality), the Czech ‘Turistika’ (journeying out of doors which connects outdoor life and learning about the culture, historical sites and environment) and the French ‘Plein air or plein nature’ (activities in open air and nature) (Festau and Humberstone, 2006).

The core process that happens in Outdoor Education is the learning process Outdoor Learning. To explain this concept the Institute for Outdoor Learning’s definition is very explicative:

“purposeful and planned experience in the outdoors. It’s a broad term that includes discovery, experimentation, learning about and connecting to the natural world, and engaging in outdoor sports and adventure activities. Outdoor Learning is used for academic, social, mental health, wellbeing, inter and intrapersonal development. Experiences are usually led by an instructor, teacher or leader and can be provided for an individual or group. Outdoor Learning helps people of all ages, backgrounds, and
abilities to reflect and learn about themselves, each other and their environment” (Institute for Outdoor Learning, 2017).

An important feature of the Outdoor Learning is the selection of an appropriate space for education because that is where the students learn the relationship between the knowledge and the physical reality of the place. This feature refers to the Constructivist approach in pedagogy, where personal experience allows learners to construct their knowledge about the world (Higgings and Nicol, 2002). The natural environments for the Outdoor Learning can be distinguished in “urban green spaces” more related to the urban setting such as parks, green areas into the cities, schoolyards, gardens, playscapes) and “wilderness areas” as wooded areas, forests, lakes, ponds, creeks, walking trails, fields) (Parson 2011, p. 8).

Nowadays it is difficult to observe children learning in a totally wild environment, consequently, an appropriate research field where to implement my dissertation project is the Forest School practice, whose wild environments are less affected by humans. The following paragraph will present a brief explanation of the evolution of the Forest School movement and a short summary of the related state of the art on the topic.

The Forest School movement: A brief introduction, historical evolution and the current state of the art

The Forest School movement had its origin in Scandinavia in the 1950s and is focused on teaching children about the natural world. A Forest School is attended by the children in a regular and repeated way (once or twice a week). The outdoor learning sessions last from a minimum of six weeks to extended periods of time, up to the whole school year (Harris, 2017). The same movement also developed in Denmark and Germany in the early 1990s, in Great Britain in the mid-1990s and in Italy in the 2000s (Gruner, 2012). In Sweden the Forest Schools are called ‘I Ur och Skur’ (lit. ‘In Rain and Shine’) (Gunilla, 2009b). In Denmark and Germany the concept of Forest Kindergartens is more common. In fact, in the Danish language they are called ‘Skovbørnehaver’ (lit. ‘forest nurseries’) (Jørgensen, 2014), and ‘Udskole’ (lit. ‘outdoor schools’) (Bentsen and Jensen, 2012). In Germany, the name for the Forest Kindergarten is ‘Waldkindergarten’ (Kane and Kane, 2011). More recently the equivalent ‘Bush school’ emerged in Australia (Archimedes Training, 2012a) as well as the concept of ‘Scuola nel Bosco’ in Italy (Antonietti, 2018).

According to the Forest School network, the Forest School is an inspirational process that offers all ages regular opportunities to achieve and develop confidence through hands-on learning in a woodland environment (Murray & O’Brien, 2005). The pedagogical principles
which stand on the basis of the Forest School approach are indicated by Waite and colleagues (2006) as:

1. Presence of a supportive environment;
2. Tasks separated into small pieces;
3. The use of the natural environment;
4. Engaging with all senses.

These pedagogical principles make the Forest School setting ideal for studying children’s voices about their experience of this particular education space.

The learning process that occurs during the Forest School activities is social because it implies conversation and interaction among children. The children can create meaning from their direct experience, in accordance with the constructivist theory: what they already know is constructed and added to their knowledge during the frequent visit to the real world (Dahlgren & Szczepanski, 1998). In this setting, the child exercises the curiosity and achieves experiential learning (Morin, 2000), or using the Kolb definition of the learning process depending on first-hand experiences: learning by doing or experientially (Kolb, 1984). Some examples of activities carried out in the Forest School are various and include: “building structures, making objects, learning safety routines, games, small achievable tasks and co-operative tasks” (Murray et al., 2003, p. 18).

The advantages of using this educational venture are diverse (Wales & Dillon, 2005): cognitive (understanding of the environment, remembering the name of the plants), affective (respect for the environment, protection of flora and fauna), interpersonal and social (team working), physical and behavioural (advance in stamina and balance).

Numerous studies have investigated the Forest School educational approach. In the UK relevant work on this area of inquiry has been made by Knight (2011), who explored the use of the Forest School ethos with a wide range of students, of different age and from different settings (2013). Furthermore, Knight (2013) also explored the cross-cultural transferability of the Forest School educational approach. Other than the Knight (2013) investigation on the cross-cultural debate on forest schools, Waite and colleagues (2016) recently presented a conceptual framework to compare the English ‘Forest Schools’ and the Danish ‘udeskole’.

Another relevant contribution on the topic comes from O’Brien who together with Murray investigated (2007) the impact of Forest School on British children. Later on, O’Brien (2009) further elaborated upon the role of Forest School on children’s development. Another relevant contribution on the topic comes from Sobel (2015) who shared experiences and steps for
creating a successful forest kindergarten program. Furthermore, the historical evolution of the Forest School in the UK can be read in the work of Cree and McCree (2012).

The Swedish ‘I Ur och Skur’ preschools are also mainly investigated by Swedish scholars, with publications available in the Swedish language (see e.g. Änggård 2012; 2014). However, some resources in the English language are also accessible. In fact, Roberston (2008) made a comprehensive report on the Swedish Forest Schools including information on their history, expansion, characteristics, benefits and future perspectives. In Denmark, the outdoor schools have been studied by Bentsen and colleagues. The authors first examined the theory and practice behind the Danish ‘Udeskole’ (Bentsen & Jensen, 2012) as well as the extension and dissemination of the educational approach (Bentsen at al., 2010) with the aim to gain a comprehensive understanding of it (Bentsen at al., 2009). The available literature in the English language on the German ‘Waldkindergarten’ is very limited (see e.g., Kane & Kane, 2011; Fritz et al., 2014) and most of the resources are accessible in the German language. The available resources on the Australian “Bush Schools” are also limited (see e.g. Elliott & Chancellor, 2014), because of the novelty of the approach (Leather, 2018). The interest of Italian scholars for the possibility to educate children in nature, using educational approaches inspired by the Forest School movement has developed in Italy just in recent years (Chistolini, 2015). The accessible literature is, therefore, recent and mostly available in the Italian language (see e.g. Antonietti & Bertolino, 2017; Chistolini, 2016; Farnè, 2014; Guerra, 2015; Malavasi, 2013; Ferraris & Oliverio, 2011; Schenetti, Salvaterra & Rossini, 2015). Only a few papers (Valent et al., 2013; Monti et al., 2017) are available in English.

To conclude, the literature reviewed above is a further proof of what recently was stated by Leather. The author stated that the Forest School educational approach is “culturally, socially and historically situated” (Leather, 2018, p. 1). Taking into consideration the cultural, social and historical differences of the Forest School educational approach in creating new and internationally accessible literature in the English language is, therefore, a crucial prerequisite for a comprehensive of the topic under investigation in the present thesis dissertation.

The Human and Children’s Geography perspectives of education, and children's experience of the natural environment

Although education seems not to be a geographical matter, the sub-discipline Geographies of Education has been recently developed. In this field, the geographical perspective is used to enhance the study of education (Collins & Coleman, 2008; Hanson Thiem 2009; Holloway & Jöns, 2012), and alternative education spaces. These are described
by Holloway and colleague (2010) as a diverse range of spaces where alternative education happens, such as homeschooling, Steiner Schools, Montessori Schools, Democratic Schools, Care Farms and Forest Schools. In fact, considering Geographies of Education as a young sub-discipline, there is a relatively small body of literature that is concerned with alternative education spaces. Some examples are the few references that focus on Steiner schooling (Kraftl, 2006) and homeschooling (Kraftl, 2013).

The research on alternative educational spaces is related to another sub-disciplinary field of Geography, Children's Geographies. Its focus is on how children's perceptions, experiences, and opportunities are socially and spatially structured (Célé, 2006). Many geographical studies (e.g. Tuan, 1977) had a central interest in the everyday lives of children and their connection to material environments. Tuan (1974), used the term "topophilia" referring to the bond between a person and a material environment. More recently, some geographical studies have focused on the children's attachment, connection and representation of nature in general (Linzmayer et al., 2014; Hordyk at al., 2015; Collado et al. 2016; Skar et al., 2016). In spite of this, there is a dearth of studies about how the children actually bound with a particular learning space as forests or woodland areas.

The work from the geographer Philo (2003) has been my prime source of reflection, creating the premises to include the children’s geography perspective in investigating children’s views of their experience of the educational space of a forest. In his paper, the author points out the necessity to pay attention to those, labeled by Bachelard (1971) as ‘children’s reveries or bored daydreams’. The latter concept is indeed a mixture of memories, imagination, and emotional elements, crucial in the everyday life of a child. In fact, the “childhood reveries are the reveries of the child himself or herself normally occurring in solitude[...],” while “[...] the spaces of childhood reveries have to be in some fashion located away from the world of adults” (Philo, 2003, p. 12). In a commentary paper on Philo (2003), Jones (2003) describes a reverie as a state where:

consciousness can slip back into a more dreamlike state, where the imagination, freed from the firm direction of the focuses thought and action, can begin to ‘drift’ back into all the remembered spaces, events and feelings, which are stored in our minds” (Jones, 2003, p. 32).

Furthermore, Bachelard (1971) himself points out that the peaceful spaces or sites of the reverie are more important than the timings. The children’s daydreams are described as bored because imply them doing nothing, referring to the definition of the geographer Wood “of searching, a time of change, a time of esthetic” (in Aitken, 2001, p. 16).
Philo’s expectation is that adult researchers reconnect with their own childhood reveries and use those to do their inquiry work with children. He points out that material created by the children such as stories, telling, drawings, plays (if applicable), and written productions is a good source of children’s daydreams. Moreover, adults’ reveries as long as children’s ones are concepts that need to be taken into consideration when adults researchers want to investigate about children’s world. First, as an adult researcher, the use of memory to understand childhood can be quite challenging, as pointed out by Treacher (2000). It true that the adults have been children (we do have memories of our childhood), however an adult researching children’s experience can be tempted to look for his lost childhood (this might lead us to interpret children’s data pointing out what is lost and gone from our childhood) or the point of view applied on children’s world remain the one from the adult (with its own places, pressures, and emotional and social challenges).

For these reasons, the focus on children’s reveries, which are a mixture of imagination and memory, and not just memories, is the way to prevent the issues mentioned early. The use of adults’ reverie to understand children’s world is useful just if the adult’s mind works with materials that differ from conscious reflexive thought, such as feelings remembered by the body and the mind. The material created by children’s have not to be driven by the research process planned in advance by the adult researcher. Children’s stories, drawings, and plays need a private space to be accomplished, which are the reveries or daydreams.

Other than memories and imagination, a third element that needs to be considered in studying children’s experience is emotion. Children live constantly on an emotional rollercoaster, as well as for adults studying children imply entering a state where emotion and feelings have the main role.

To conclude, in exploring children’s experiences of the educational space of a forest I will also focus my attention on the internal mysteries of children’s world expressed in their jottings, drawings, diaries as a source of their imagination and memories about the space forest. In fact, children’s views and experiences of the forest can appear as a topic that can hardly be accessed in terms of research and, therefore, neglected. The notion of reverie might help the researcher to overcome the early mentioned difficulties and helping to fully access children’s world.
Children’s cognitive development and learning: A Developmental Psychology perspective

To understand how young children who attend a Forest School perceive and experience their outdoor educational space, it is also necessary to disseminate children’s cognitive development. One first model that might be taken into account is the Piagetian one of children intellectual growth (Singer et al., 1996). According to Piaget, children overcome four stages (sensorimotor, preoperational, concrete operational and formal operational) of cognitive development. The children participating in the present thesis project are placed in the second stage, the preoperational. In this stage, young children, aged 2-7, can think intuitively and the learning process occurs through the internal representation of the direct experience (Aspiranti, 2011). The Piaget’s theory is a classic explanation of how young children understand the environment, where the main role seems to be played by the stage of development the child is in. According to this, young children prefer exploration as a learning mechanism.

However, more recent and updated theorizations have been developed to explain children’s cognitive development and go behind the limit of Piaget’s theory, where exploration is the preferred mechanism of learning. One work relevant for the present dissertation project is the Legare’s one (2014). She reflects on the role of both explanation and exploration’s mechanisms in young children’s ability to engage in scientific reasoning and learning about the causality of the phenomenon. According to the author, prior knowledge is not the only element which leads children to create their explanations or to act discovery-oriented actions. The final step for the child involved in this process is being able to reason scientifically. In fact, she describes children as “characteristically curious” (Legare 2014, p. 1). This means they tend to explain unknown events and their connections through play (Legare, 2012) and exploration. The author states that “children learn more effectively when their exploration uncover knowledge as opposed to confirming information they have already observed” (Legare, 2014, p.3). The same author in a previous work stated that through exploration children are trying to discover explanations for the unknown events (Legare et al., 2010). According to her, both mechanisms, explanation, and exploration, according to the author “operate in tandem” (Legare 2014, p. 1).

This theoretical area is relevant for the present dissertation project because, as pointed out by Lagare (2014), an understudied area is the application of explanation and exploration mechanisms in informal learning environments such as children’s science museums.
On the contrary, other theoretical accounts of children’s learning underline that the role of interlocutors such as the teacher or another child is crucial for the children learning. Siraj-Blatchford and Manni (2008) describe this concept as “situated shared thinking” (p. 1), where the interlocutors (a child and mates or a child and an adult) are engaged in a common task for an extended period of time. In fact, sharing attention and how the communication takes place are preconditions for this particular learning endeavor. Gustavsson and Pramling (2014) considered the learning situation where preschool children learn about nature by being in it, for example during excursions to a forest. In this learning situation, the authors point out that children need the support from adults to perceive natural phenomenon and their characteristics while learning about them. The authors also pointed out that the kind of conversational patterns which are used by the adult playing the role of the interlocutor has an influence on children’s learning. The Gustavsson and Pramling’s (2014) work underlines the role of explanation. They define the latter as the underlying mechanism for children’s learning.

The informal educational environments, that is forests or woodland areas, under study in the present dissertation, are the perfect site where Legare’s theory (2014) and Gustavsson and Pramling (2014) might or might not find an application.

**How children interact and make sense of the environment**

**Properties of affordance of the environment**

To understand children’s experience of the environment, affordance is a key concept. It refers to the interactive possibilities of an environment (Gibson & Walker, 1984). The relationship between the users and the environment is based on the functional features of the environment. According to this notion, a place has to be used for specific activities. The environment provides information such as surfaces, boundaries, events, objects and place layout. The way this information is processed depends on the users’ intentions, movement (sitting, standing, walking etc.), and senses (sight, hearing, taste, smell, and touch). The information perceived leads children to understand where they are, where they are going and what they fulfill. The information can refer to new features of the environment and to children’s capabilities (exploratory information) or to the results of affordances learned in the past (performatory information).

The affordance concept is, therefore, intertwined with the learning process. In fact, according to Gibson’s view the notion of learning “is always supposed to be a matter of improvement— of getting in closer touch with the environment” (Gibson & Gibson, 1955, p.
Greeno (1994, p. 337) reported that in the Gibsonian’s view, “people and animals are attuned to variables and invariants of information in their activities as they interact as participants with other systems in the world that we inhabit”. The latter quotation makes clear that the general theoretical account for the agent’s interactions with the system in their environments is ecological psychology. The latter has indeed its focus on agents’ relations with their physical systems and environments. Moreover, the notion of affordance was used by ecological psychology in situations involving social interactions and interactions with physical systems having concepts and methods of ethnographic social science as a background. The relationship between the agent and the environment are bidirectional because according to Greeno (1994, p. 338):

“An affordance relates attributes of something in the environment to an interactive activity by an agent who has some ability, and an ability relates attributes of an agent to an interactive activity with something in the environment that has some affordance”.

To sum up, an affordance is both a property of the environment the agent interacts with and a property of the agent which support the activity itself. However, if a situation is characterized by a system that would afford for some activity, that activity does not have to be taken for granted. Additional conditions such as motivation of the agent in the situation are needed.

In Änggård’s paper (2016) the concept of affordance is described by the author as a series of functions provided by the environmental objects that individuals apprehend in relation to themselves. According to this definition, the environment is described as passive because the affordances are used nor by humans and neither by animals. As regards the role of human beings and the environment in relation to the concept of affordance, an anthropocentric position view human as the only agents in the world. An opposite theoretical position, posthumanistic, is assumed by Brad (2003), where both humans and nonhumans are involved in different processes. According to this view, non-humans such as animals, environments, things and other materials are also agents in the world. Agency is not an attribute of an agent, but part of the on-going reconfiguration process of the world. The experience that children have in the forest as educational space can be described as embodied, because sight, sounds, smells, touch, and tastes are involved to varying degrees. In fact, Änggård (2016) points out that play activities as sensorimotor, construction and symbolic are common in nature. In this context, the expected affordances, according to Heft (1988) are for example running on flat surfaces, tree climbing, privacy time in shelters and constructions made by outdoor materials.
To conclude, since the focus of interest of the present paper is the interactive relationships among children and their physical environment of reference (the forest educational setting), the notions of Gibsonians or more recants elaborations on the concept of affordance have to be taken into account.

**Influencing factors of the connection between place attachment and emotions**

Another aspect that needs to be taken into account in addressing children’s interaction with the environments is that strong emotions are attached to places. Reference on this matter can be found in studies on adult memories of childhood favorite places (Korpela *et al.*, 2002), which were associated with the feeling of security, privacy, and control. Indeed, these favorite places seem to have a restorative effect (Kaplan, 1995) on children. In those, they feel calm, relaxed, and comfortable.

Taking into account a recent literature review (Aziz & Said, 2012), developmental needs, individual physical and social factors have a crucial role in influencing children’s place preference and play behaviors in outdoor environments. In fact, children’s need to be addressed, challenged and stimulated. They need to observe, think, focus their attention, engage in enjoyable activities and meet peers. Children’s engagement in a particular setting is influenced by their psychological affection and distinctive experiences with that setting. Complexity, variety, opportunity to be manipulated and challenged are the physical factors that influence the children’s actions in an environment. In the end, the independent mobility of the child, and presence of other children are the relevant social factors.

**Children’s different encounters with nature**

The impact of contact of children with nature on children development has been explored by Kellert (2002). According to him, children’s experiences in nature can be classified into three types: direct, indirect and vicarious or symbolic experience.

The first type implies the child having a physical contact with natural settings and nonhuman species, which are totally apart from human intervention and control. For example, a child playing in a nearby forest.

In the indirect experience, the physical contact with nature is still involved but it is more restricted and managed. One example is the children encounter of animal and plants in a nature center.
In the vicarious or symbolic experience, the child does not have a direct encounter with nature. To the child are presented representations or depicted scenes of nature, which can be realistic or symbolic. An example is a child watching a tv show, a movie or pictures in a book about nature.

In Klaar and Öhman’s (2012) paper it is mentioned that according to Dewey’s pragmatic philosophy, the toddlers’ encounters with nature are described as transactional experiences, based on transactions which are defined as the interplay between the child and the environment. The above-mentioned theorizations are therefore explicative of direct encounter that children have with the forest, the informal educational space they interplay with.

A contextually situated conceptualization and use of nature: A theoretical model to explain children’s encounter with nature

The current paragraph will present the few investigations focused on how nature is conceptualized taking into account the above-mentioned social, cultural, cognitive, and historical aspects. Ånggård’s article (2010) is focused on different ways of talking about and making use of nature in a Swedish preschool with an outdoor focus. She identified three ways in which nature is used and represented by teachers:

1. A classroom where children can learn about nature in different ways; children learn by actively exploring and experimenting the environment (Dewey 1990; Piaget 1989). For example, in the activity of exploration realized by the use of tools, the leader asks a question, the children respond and then a feedback is given to them. According to Rosseau (1762) and Fröbel (1826) children are also encouraged to use their senses and develop the feeling for nature. Nature is then defined as a place where to learn.

2. A home where to eat, sleep, go to the toilet, socialize and play; every children’s routine has its own place, dining room, bathroom, bedroom (the school base). The fact that physical and care needs are satisfied creates a sense of home feeling. Nature has a calming effect, its perceived as home, and a peaceful and cozy place where to stay. Nature is defined as a place where to be.

3. An enchanted world, where magical things can happen, populated by fairy figures and animals with human traits. In the Swedish Friluftsfrämjandet’s program (Friluftsfrämjandet.n.d.) there is a fairy character, the troll Mulle. Nature is presented by teachers as a place for fantasy play. All of this helps children to create a relationship
with nature. Nature seen as a fairyland is tied to the traditional culture for children. For example, the fairy tales often have a forest as setting, is populated by animals or creatures, and elements of the forest have symbolic meanings (Bettelheim, 1976).

Another work that depicts how nature is represented and conceptualized, in the Norwegian context, is the one from Nilsen (2008). The author’s results showed that nature was represented by practitioners in a nature care center as places that need to be cared and protected for, a place for wildlife and where children can learn about the flora and fauna.

To sum up, since the possibility to retrieve resources focused on ideas and relationship from sparsely populated countries such as Sweden (Änggård, 2010) and Norway (Nilson, 2008), it is not surprising because these concepts are culturally dominant. However, in spite of that, the experiential perspective on children in their encounter with nature has not yet been investigated in these countries.

A contribution on the topic of children’s subjective accounts of nature comes from the American scholar, Louise Chawla, who developed (2007) a model related to the impact of encounters with nature in early aged based on ecological psychology field and the attachment theories in early years. Aimed to build her model the author asked American and Norwegian environmentalists what triggered their engagement with the environment. Chawla explored environmentalist’s adolescence and childhood memories, where the role of parents taking them outdoor was crucial as well as “special places in nature where they played as a child or hiked, camped or fished as an adolescent” (Chawla, 2007, p. 145). The theoretical background of Chawla’s model is ecological psychology, which assumes that humans are dependent on the limits and resources of the natural world, which can be discovered through direct perception of these restrictions and positive qualities.

To describe the interaction between children and the natural environments, the author refers to the Kittä’s (2006) positive cycle of mobility, access, and engagement (Figure 2). In fact, according to her, the free play in an accessible natural environment is the situation where an animate organism (the child) use movement to investigate the surrounding environment, which affords body movements. If the surrounding environment has created a satisfactory experience due to progressive challenges, the child will be motivated to continue the exploration and develop environmental concern.
Figure 2. Positive interactive cycle of accessibility, mobility, and engagement with the environment (Kyttä, 2006).

Other than Chawla’s model (2007) of nature’s experiences during childhood or adolescence associated with a caring attitude towards the environment in adult environmentalist, there seems not to be any other model or empirical research focusing on investigating how children engage with nature and how this bond is trigged, from a children’s perspective. For these reasons, the present research study will try to make clear what are those labeled by Kyttä (2004) as perceptible self-produced effects of nature encounters for children. My study will focus on observation and making children articulate what they have done in the forest, what they have noticed, what a place there means for them. These sources of information will be supported by guided tours where they move through a place and talk about it.

Summary

The empirical research pursued with the present thesis project aims to understand children’s voices of their experience in the forest, as educational space in a Forest School venue. As evidenced by the literature review, a multidisciplinary theoretical background has been considered because of the complexity of the topic under study.

The human and children’s geography theoretical account is an essential starting point for my inquiry. In fact, in the alternative educational space, forest, children's perceptions, experiences, and opportunities are influenced by the spatial and social structures of the
educational space itself. At the same time, the ways children represent and understand the space is influenced by the way they process reality. A glimpse on children’s cognitive development and learning theories is therefore essential. Furthermore, the concept of affordance is pivotal. Indeed, the functional features of the environment create an occasion for children to become familiar with the environment (Matthews, 1992). The following step is, therefore, to an understanding of children’s meaning of the educational space forest in relation to their cultural context and everyday experience. Moreover, aspects such as things, objects, and animal creatures that are properties of the natural environment have to be considered. To sum up, children’s developmental needs, individual, physical and social factors, as well as, their mental constructions, knowledge, and values had to be taken into account in enquiring children’s viewpoint of the educational space of a forest.

To conclude, the present dissertation project considering aspect such as the children’s stage of cognitive development and learning, the spatial and social features of the educational space, their encounter, use, and interpretation of natural spaces with specific affordance properties, will lead to offer a holistic and comprehensive children’s own view of their experience of the forest as an educational space.
Chapter 3: Aim of the research and research question

Dissertation rationale

The focus of interest of the present thesis work, young children’s perspectives on the outdoor environments that they experience as a part of the Forest School’s educational approach, was identified due to the lack of data on this matter.

The literature review reveals that the adult perspective on this issue is dominant. In fact, the Forest School initiative is mostly evaluated by an adult as evident from multi-participant studies, anecdotal evidence, and case studies. For instance, Murray and O’Brien (2005) evaluated the Forest School initiative in England and Wales.

Hence, little research has been carried out specifically looking at preschool children, and existing data focuses on older children’s perceptions. An example is a study on the attitude of older children (aged 8-11 years) towards the environment while attending a Forest School program (Turtle et al., 2015). The perceptions of primary school children attending a Forest School initiative and its implication and their parents were also investigated by Close (2012) in his doctoral dissertation.

The current research project aim is, therefore, to try to explore younger children’s (aged 3-6 years) voices on their experience in the educational space of a forest. In fact, to reduce the gap in the literature the purpose is to highlight young children’s comments and behaviors on their experiences in the forest. An important prerequisite to gain this sort of data is to reduce as much as possible the possibility that children’s experiences are filtered through too intrusive adult interpretation.

Research question

The following research question need to be addressed as regards the aim to explore children’s perspective on the outdoor environments that they experience as a part of the Forest School’s educational approach:

- How do children experience and make-sense the educational space of a forest in a Forest School educational setting?
Chapter 4: Methodology

The research paradigm

A qualitative research paradigm is appropriate to understand the children’s views of their educational experiences in the forest. In fact, ethnographic research methods are very suitable to encapsulate the children perception and experience in this outdoor learning space. Warming (2011) describes ethnographic fieldwork as the appropriate method to empower children’s perspectives, overcoming the issue that this aspect is “more difficult to gain” from younger children (Thorne, 2008, p. 436). Due to the use of ethnographic research methods, young children can, therefore, be competent meaning makers and explorers of their environment of the outdoor educational space of a forest.

First of all, I combined these different methods to give children the opportunity to express their voice in a comprehensive way. This is in line with the fact that the current project aim is doing research with children, not on children. This results in a child-centered approach, ensuring their participation and their perspectives represented in an empathetic and empowered way (Spyrou, 2011). Secondly, the combined use of methods increases the validity of the research.

I used participant observations of the Forest Schools activities based in the forest and informal conversations and semi-structured interviews with the children as main methods. I also used accessory methods, such as walks and talk with children and artifact collection (drawings, photographs of the forest environment and photographs of nature crafts) to gain their different perceptions of the educational space of a forest.

Study setting: The outdoor preschools and geographical educational spaces of the study

The first school setting and the related outdoor learning space of the forest

The first school under study is a preschool that can be labeled as Forest School. In fact, the majority of the activities with children have the forest as the main setting. The preschool building is located in a Northern Italian town. However, the main school activities are carried outdoors, in a forest (Figure 3) by a mountainous locality, situated 15 kilometers away from the town.
The educators drive children to the forestry area using two vans. The roundtrip is an hour long per day. The mountainous locality is famous for a mountain shelter and restaurant located there. A few meters away from the shelter there is a house used as a center for the preschool activities which is situated just a few meters from the edge of the woods.

The school is attended by one group of 16 children aged between 3 years old and 6 years old. In the group, two other children of a different age (one younger child 2 years old and an older child aged 9) are also included. The staff consists of 4 educators (2 females and 2 males), with undifferentiated roles.

The school is inspired by nature in the following ways: the mornings, as well as the lunch break (from 10.00 AM to 1.30 PM), are spent outdoors in the forest. Nature is also incorporated in other ways such as conversations among children, conversations between educators and children, fairy tales, songs, rhymes, and games focused on nature. Moreover, some artifacts (e.g. butterfly nets, jars with a magnifier to observe insects and an infrared camera to capture animals’ movements in the forest) are used during the hours spent outdoors to boost the children interactions with nature and its elements.

The school activities take place from Monday to Friday, 8.00 AM to 2.00 PM (30 hours a week). At 9.00 AM the group of children and educators transfer by bus from the school building in town to a mountainous locality. The outdoor activities are held every weekday from
10.00 AM to 1.30 PM in the forest by the mountainous locality. Before 10.00 AM the children gather in the garden outside the school building.

The outdoor sessions are not dependent upon the weather. The group head outdoors even when it is very cold or hot, there is the snow, ice or rain. The group usually have a fruit-based snack time around 10.15 AM as soon it arrives at the forest. They have their lunch (a packed lunch that each child brings from home and kept warm in a food thermos) at midday in different locations, in the forest or by a mountain shelter. In case of rain, the lunch break is spent inside a tent or in the mountain shelter. The children leave the forest at 1.30 PM. This routine always stays the same in spite of the weather and season. The outdoor activities are carried out all the year round because the school also run a summer camp and extra activates on Saturdays during the school terms.

One of the educators also run Colslieu painting (Stern, 1995) sessions on Monday morning from 8.00 AM to 10.00 PM with children. In the school building in the town, there is a room designated for expressive and artistic activity. This is the only indoor activity performed by the children.

The second school setting and the related outdoor learning space of the forest

The second preschool setting is a private nursery and kindergarten, run by an association, with a strong orientation towards outdoor activities.

The preschool has two groups of children attending it: one group of small children between 1 years old and 3 years old attending the nursery section and the other group comprising older children aged between 3 and 6 years old attending the kindergarten section. The staff consists of 2 or 3 educators according to the number of children that are willing to participate in the outdoor sessions: 2 educators with 7 or 8 children, 3 educators with 13 or 15 children. The children involved in the outdoor activities are aged between 2 and 6.

The preschool is located in a small northern Italian village in an ordinary residential building. The site is small but well-equipped as in a conventional preschool. The schoolyard is shared with a public park. The school is located about 800 meters from the woods. Two locations in the woods (Figure 4 and 5) are indeed reached in about 10 minutes’ walk. A third location, an abandoned farmstead by the woods is reached by just the older children walking 20 minutes (Figure 6).
Figure 4. First location of the second school site: “The Woods with the Small Traps”.
To reach all the tree locations the children are challenged by facing a 26% uphill route. They are also invited by the teachers to prepare their forest equipment (the rain trousers, the mountain boots and a jacket or a hoodie according to the season) with as much as autonomy as possible. Children are silent when they walk to the forest. When arrived at the designed destination, they usually enjoy free play time in the woods.

The school is permeated by nature in the following ways: the mornings (from 9.30 am to 11.30 am) are spent outdoors in the nearby forest. A fruit-based snack is eaten outdoor when the weather is nice, otherwise, the children eat their snack as well the lunch at the school. When the moment to leave the woods comes, the children are gathered in a circle to say thank you to the woods. Nature is also incorporate by children in other ways such as (e.g. nature related conversations with educators and with the other children who stayed at school, nature books, nature crafts and drawings collected in a diary of the forest). Moreover, some of the artifacts
(magnifiers and a binocular to observe insects and an herbarium where children can collect plants) used during the hours outdoors to explore nature and its elements.

The children go to the forest three times a week. This activity is affected by the weather. If it is too cold or too hot or if there is rain, ice, or snow, the children stay indoors. The outdoor sessions are therefore carried out mainly during autumn, spring, and summer until the end of the school term.

**Procedure**

The empirical material consists of a total of 10 days of fieldwork (5 consecutive days in each school), for a total of 35 hours of observation, informal conversations, and material collection of 3-6-year-old children’s outdoor activities in two different Forest School settings.

**Participant observation**

The first method I used is participant observation because it led me to gain a picture of children’s experiences of when they spent time in the forest. I performed participant observation, according to Bryman’s (2015) description through observation of children’s interactions with the environment and by asking them questions related to the activities while they were performing those.

I carried out participant observation because the young children’s experience of an outdoor environment and its related phenomena is physical rather than verbal and practical rather than conceptual (Klaar & Öhman, 2012). According to these premises, children are supposed to actively experience the educational space of a forest, using their own bodies on the basis of what they like, what they dislike, what they dare or do not dare to do.

**Semi-structured interviews and informal conversational interviews**

The secondary methods I used are semi-structured interviews and informal conversational interviews with children. The first interviewing techniques is used when the researcher does not get more that one possibility to interview someone. This kind of interview is characterized by a certain degree of freedom in its delivery, but it also needs to cover questions and topics that have been planned in advance (Bernard, 2011). Some of the questions I asked to the children can be read in the interview guide (see Appendix I. Interview guide). Not all the questions included in the guide were asked to all the children. The conversations were mostly led by a child’s focus of interest and availability at the moment of the conversation.
In fact, if needed, further questions not included in the interview guide were asked to children to gain a better understanding of their viewpoints. Informal conversational interviews, was the second interviewing technique I employed. In this form of unstructured interview, the set of questions were generated instantaneously during my conversations with the children (Jamshed, 2014).

In spite the fact that the chosen methodology has the purpose to give children the possibility to express their point of view about their experience in the forest, it has some drawbacks: semi-structured interviews and informal conversational interviews do not easily provide quantitative data and they imply an imbalance of power between children and adults since the latter may bias the young participants. The first concern is not a crucial matter because the current research project is trying to investigate how children experience, make sense of the environment forest as educational space. Quantitative data are, therefore, the best source of information when the reasons why children experience and make sense of the forest in a certain way are inquired. On the contrary, in the current project, the focus is on how children do experience and make sense of the space of a forest. Considering the nature of the current investigation, qualitative data need to be collected.

As regards the social imbalance between the researcher and interviewed children, this matter is taken into account in the current project. The format I employed to register children’s views on the matter under investigation is unstructured and informal enough to prevent biasing the children. Not to not mention the fact that the interviews occurred after children gave assent to participate, with the possibility to stop at any time.

**Walk and talk**

Other than participant observation and informal interview with children, I used the walk and talk method. Here children led me to different places in the forest and gave me their account of them (Klerfelt & Haglund, 2015). This method gives children the power to control the conversation’s content on the base of a posed question. It is the children themselves that directly ask the researcher to perform the actions of “looking and listening” and not the other way around. For this reason, the data acquired by this method well refers to children’s voices, views, and representations (Christensen, 2004).

The walk and talk method required to prompt the children with questions such as: “What is the funniest or the most boring or beautiful or dangerous place in the forest?” The prompted discussion was then registered in a written format. Differently from the originally used method, because of the young age of children (from 3 to 6 years old) involved in the
current study, I took care as a researcher to take pictures of the places chosen by children or places they consider as a response to the asked question.

**Ethical considerations**

In the present study, the parents and teachers agreed to sign a written consent form to participate in the study. The consent form has been sent by email to educators and parents of the schools that took part in the study. The form is reproduced in Appendix II. Consent Form. The letter preceding the consent form explained the study’s purpose and the procedure.

Parents were informed that they could quit participation at any time, without the necessity to specify any excuse or reason for the withdrawal. A verbal assent to the participation was also asked directly to children. As the project involved very young children I was really sensitive to non-verbal expression of whether they wanted to participate or not. The anonymity of children and educators participating was emphasized.

**My role as researcher**

As stated by Klaar & Öhman (2012), there is no clear delimitation between the researcher, the research object, and the research apparatus. The obtained data, related to children’s experiences and sense-making of the forest as educational space shows an effect of the interaction among those elements. In this sense, the authors recommended the researcher to practice reflexivity. In fact, I tried to make my own mental reflections during and after the data collection time. This practice led me to distance myself from the research process and to reflect on my own part in it, putting myself outside the process itself. This role as co-producer of knowledge has ethical implication because as a researcher I am responsible for my effect on human and nonhuman agents.

**Data processing**

In analyzing the data, the aim was to explore children’s views, experiences and sense-making about the outdoor space forest and its affordance. Taking into account the exploratory nature of the work, I tried to keep on open-minded attitude towards what would emerge from the data I collected.

As research analysis method I used a six-step Thematic Analysis according to the procedure described by Braun & Clarke (2006). I chose this method because, as described by the authors, it is flexible and it can be therefore applicable to a wide range of theoretical and
epistemological approaches. In fact, because of its flexibility, the thematic analysis can provide a rich, detailed, and complex account of the data.

The six-steps I used were the following: first I transcribed on the computer all the observation notes, the walking tour conversations and the two interviews with children. The drawings collected in one of the school sites were also scanned and saved in a JPG format on the computer. The next step was reading through the transcripts and observing the children’s drawings many times. In the meantime, of the reading phase, I also started coding the transcripts and drawings notes according to my research question (which is how children experience and use the outdoor environment of the forest and how they make sense and understand this educational space). During this step, I coded the data by hand. The following step was to find main themes. Having reviewed the literature I was expecting certain themes to emerge; however, I tried to keep my mind open to other new themes that might have emerged from my data. The fourth step consisted of a further revision of my themes to check if they were working in relation to the text I coded. The subsequent phase was naming the themes. One example of the coding phase can be seen in the following interview excerpt (Figure 7):

Figure 7. Example of Coding.

Codes:
- **Red** = Emotional responses (positive emotions towards nature)
- **Teal** = Responsibility and Risk (children dependence on adults)
- **Grey** = Discovery and Experimentation (children actions related to nature)
- **Yellow** = Nature engagement (animals).

At this point, I started to organize my themes on the transcribed files and scanned drawings on my computer. The final step consisted in writing the report of my findings, the current thesis section named ‘Results’.
Chapter 5: Results

The present exploratory study revealed that the twelve broad themes emerged from the thematic analysis of my data regards children’s views and use of the educational space of a forest: Type of Place Attended, Nature Engagement, Relationship with the Woods, Responsibility and Risk, Imagination, Emotional Responses, Affordances, Relationships with Others, Discovery and Experimentation, Nature Education, Concerns for Nature, and Learnings connected to the Classroom or Curriculum. Table 1 presents the themes that emerged from the data and the color coding I used. Each theme is presented and explained in the following paragraphs. The names of the themes I used were inspired by those found in the recent works of Harris (2017) and Norðdahl and Einarsdóttir (2015).

Table 1. Themes identified in coding fieldnotes and interviews transcripts and drawings.

<table>
<thead>
<tr>
<th><strong>Color coding</strong></th>
<th><strong>Themes of analysis</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>Type of Place Attended</td>
</tr>
<tr>
<td>Yellow</td>
<td>Nature Engagement</td>
</tr>
<tr>
<td>Blue</td>
<td>Relationship with the Woods</td>
</tr>
<tr>
<td>Turquoise</td>
<td>Responsibility and Risk</td>
</tr>
<tr>
<td>Pink</td>
<td>Imagination</td>
</tr>
<tr>
<td>Red</td>
<td>Emotional Responses</td>
</tr>
<tr>
<td>Black</td>
<td>Affordances</td>
</tr>
<tr>
<td>Purple</td>
<td>Relationship with Others</td>
</tr>
<tr>
<td>Gray</td>
<td>Discover and Experimentation</td>
</tr>
<tr>
<td>Brown</td>
<td>Nature Education</td>
</tr>
<tr>
<td>Red</td>
<td>Concerns for Nature</td>
</tr>
<tr>
<td>Orange</td>
<td>Learning Connected to the Classroom or Curriculum</td>
</tr>
<tr>
<td>Other¹</td>
<td>Other¹</td>
</tr>
</tbody>
</table>

¹ Miscellaneous themes
Type of Place Attended

According to the kind of school children were attending (the Forest School or the kindergarten outdoor oriented), they had the opportunity to attend different educational settings. I included these places in the theme *Type of Place Attended*.

Taking into consideration this theme the Forest School’s children spent their school time mostly in the forest or in the meadow by the mountain shelter of the mountainous locality where the Forest School took place. The children attending the kindergarten with an outdoor orientation were spending some hours a day in the forest, the meadows, or the public garden located in the surrounded area of their school.

In both school settings, children used special names to define the outdoor places they usually attended. The children from the Forest School agreed altogether to name their preferred locations in the forest. Some examples of names given by the children are “the Big Beech Tree” to refer to a spot in the forest where a big beech tree, “the Mosses Woods” to describe a spot in the forest where there is a big stone covered by moss, and “The Mushroom curve” to indicate a part of a trail that in summer is covered by mushrooms. In the same way, the children attending the kindergarten outdoor oriented gave to the outdoor places they usually attend special names such as ”The Meadow of the Sun” (Figure 8), “The Woods with the Small Traps” (Figure 9) to identify two clearings in the forest and “the Maso of B.” that describes and abandoned Alpine farmhouse. These special places were also represented and verbally described by children in their drawings as shown in the subsequent examples:

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2 The original Italian names of the listed places are: “il Grande Faggio”, “il Bosco dei Muschi” and “la Curva dei Funghi”.

3 I wrote “Maso of B.” instead of the complete name of the Alpine farmhouse to preserve the anonymity of the location of the kindergarten.

4 The original Italian names of the listed places are: “il Prato del Sole”, “il Bosco delle Minitrappole”, and “Maso B.”.
As regards the indoor places attended, both schools have a school building. In the case of the Forest School, the school building is used just in the morning as a meeting point or to perform the Closlieu art activity once a week for one hour. Because of the nature of the second kindergarten, an outdoor oriented school setting, the school building is used most of the time, while the outdoor sessions occur for a couple of hours, two or three times per week.

**Nature Engagement**

Another recurrent theme in the data was that children engage with nature mostly by first-hand interaction with it. This led them to recognize, use and classify natural things and in the end develop *Nature Engagement*. The first-hand experiences that children can have with nature occurs in several ways such as interaction with natural elements, materials, animals, and routines in nature.

One explanatory incident of this theme is the following:
The teacher A., following the children’s request, takes a small notebook out. It is children’s herbarium. A small girl, C. (3 years old) brings to the teacher a leaf from a plant and ask her “What is it?”. A. responds: “It’s a prickly plant”. After that, the small girl goes to search for many other leaves of different shape and colors to be inserted in the herbarium. A small group of children ahead is observing what they call “small worms”. The teacher and I respond that “those are not insects but plants. They are pollens of hornbeam” (Fieldnotes ALGQ_day 1_16042018, p. 2\(^5\))\(^6\).

The children’s engagement with nature was also evident from their drawings where natural flora and fauna often were depicted. The pictures in Figure 10, Figure 11, and Figure 12 represent these elements.

![Figure 10](image_url)

Figure 10. The pine tree of the woods with the water and stripes (Il pino del bosco con l'acqua e poi le righe).

\(^5\) A legend for the references system used for Fieldnotes and Interviews can be read in Appendix III.

\(^6\) La maestra A., su richiesta di un bambini sfodera un piccolo quaderno. E’ il loro erbario. C. una bambina di 3 anni le porta una foglia di una pianta e le chiede “che cosa è”? A. risponde “è un rovo”. A quel punto la bimba parte alla ricerca di altre piante con foglie di forme e colori diversi dalla precedente e li porta alla maestra da inserire nell’erbario. Un gruppetto di bambini poco più avanti sta osservando invece quelli che loro definiscono “vermicelli”. Io e la maestra A. rispondiamo loro “non sono insetti, ma sono delle piante” (sono i pollini del carpino). (Fieldnotes ALGQ_day 1_16042018, p. 2).
Relationship with the Woods

Taking into account the children’s view of their relationship with the woods my data suggested that the relationship children had with it was more similar to a relationship they had with an adult or a friend. Some children’s verbalizations (individuated in my data illustrate this result. In fact, children were addressing the forest as they would have addressed a human being. This result is very evident in the following excerpts:

It’s 1.30 pm. The small child A. (3 years old) is sitting in the van on the seat next to me and says: “Bye, bye Woods!” The educator D. who is sitting in the driver seat hear the child’s exclamation and smiles back to him. Then he adds to the child
exclamation: “Eh, yes. Thank you, Woods, for welcoming us even today. See you tomorrow!” (Fieldnotes SNBRdG_day 3_11042018, p. 3).  

It’s 11.10 am. The group of children is gathered by the teacher in a circle. It’s the time to say bye, bye to the woods. The children in the circle say “Thank you woods for hosting us!” (Fieldnotes ALGQ_day 1_16042018, p. 2).  

Responsibility and Risk  

Another main theme that emerged from my data was responsibility and risk which includes the following children’s behaviors: children’s autonomy and their dependence on adults. Children were stimulated to individuate potential risks and hazardous situation that might have negative impacts on their wellbeing. In doing so they were encouraged to be as autonomous as possible, asking the adult’s intervention just when they were not able to deal with the situation on their own. The following incident is explanatory of this situation:  

One of the children A. (3 years old), who was playing by some bushes, gets stuck into them and starts crying. The educator M. rush immediately over him and asks the child: “Do you need help?” The child while crying makes him understand that he needs help. Thanks to the educator help the child is set free form the bushes (Fieldnotes SNBRdG_day 1_09042018, p. 2).  

The previous excerpt elucidates a situation where the child cannot deal with the risky situation alone. Therefore, he asks the adult to help him. The subsequent event shows the opposite pattern, where children are in a potentially hazardous situation, but where they feel able to manage it on their own.

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8 Ore 11.10. Il gruppo viene richiamato dalla maestra a fare un cerchio. E’ il momento di salutare il bosco. I bambini in coro dicono “Grazie bosco per averci ospitato!” (Fieldnotes ALGQ_day 1_16042018, p.2).  

9 Uno dei bimbi A. (3 anni) che stava giocando nei pressi dei cespugli, rimane incastrato e inizia a piangere. Prontamente l’educatore M. accorre e chiede al bambino: “Hai bisogno di aiuto?” Questi tra un pianto e l’altro gli fa intendere che ha bisogno di aiuto. Grazie all’aiuto dell’operatore viene liberato dai cespugli (Fieldnotes SNBRdG_day 1_09042018, p. 2).
One the way back, the children N. (3 years old) and S. (4 years old) are walking on the top of a little dry-stone wall with moss on it which is by the trail. S. is walking silently, while N. is producing some laments, however, his face expresses happiness and relaxation. In fact, in response to the educator D. question “Do you feel safe walking on the dry-stone wall with moss on it?”, the child nods and keeps walking (Fieldnotes SNBRdG_day 5_13042018, p. 2)\(^\text{10}\).

**Imagination**

Another finding emerged from the data was that forest was a setting able to stimulate children’s imagination and creativity. The theme *imagination* constitutes in children’s activities such as imaginative play activities and games. This result can be seen in the following excerpt which happened when children were playing by a wooden den in the forest:

The child L. (3 years old) comes close to me holding in one hand a wide and short wooden stick. He looks at me and says “It is glue” referring to the wooden stick and repeats that other 4 or 5 times. Then he gets even closer to me and says “It’s glue because a dog had done an owie to the little house”. He repeats that many times and then comes back to play by the shelter. Then, he comes back to me and refers to a point on the shelter roof where he put the glue on. Even another child, E. (4 years old) is holding a similar stick in his hand. I, therefore, ask him “Have you also put the glue on the house?”. He responds to me: “Yes, because before the house was not built. Then, when then the house is finished just the construction workers can get in”. After a while, L. comes back to me always holding the wooden stick in his hand and says to me: “I have done a lot” referring again to the point where he put the glue on the house. (Fieldnotes ALGQ_day 3_18042018, p. 2)\(^\text{11}\).

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\(^{10}\) Sul sentiero di ritorno N. e S. camminano sul muretto ricoperto di muschi che costeggia il sentiero. S. cammina silenziosamente, mentre N. emettere dei versi come ad esprimere fatica e concentrazione; tuttavia il suo volto esprime serenità e rilassatezza. Infatti alla domanda dell’educatore D. “Ti senti sicuro a camminare sul quel muretto ricoperto di muschi?”, il bambino annuisce e continua a camminare (Fieldnotes SNBRdG_day 5_13042018, p. 2).

\(^{11}\) Il bambino L. (3 anni) mi si avvicina stringendo in mano un ramo tozzo e grosso. Mi guarda e dice “E’ colla” indicando il ramo e lo ripete per altre 4 o 5 volte. Poi mi si avvicina ancora di più e dice “E’ colla perché un cane ha fatto bua alla casetta”. Lo ripete più volte e poi torna a giacere vicino alla casetta. Poi torna da me e mi indica il punto di un ramo del tetto della casetta dove lui aveva messo la colla. Anche un altro bambino E. (4 anni) sta reggendo un bastone simile in mano. Allora gli chiedo “Hai messo anche tu la colla alla casetta?” . Lui mi risponde: “sì, perché prima la casa non era costruita. Poi quando è finita solo i muratori possono entrare”. Poco
This strong imaginative component of children play in the forest is also showed in the subsequent picture (Figure 13) where the child had drawn also about another child E. (5 years old) acting like a monkey in the forest.

![Figure 13](image_url)

Figure 13. Winter. E. that throws the soil in the snow and E. does the little monkey at the Meadow of the Sun. Twigs, a cloud and a pine with snow (Inverno. E. che lancia la terra sulla neve. G. che fa la scimmietta al Prato del Sole. Rami, nuvola con pioggia e un pino con la neve).

**Emotional Responses**

Children’s *Emotional Responses* was another theme evident in the data, both form fieldnotes, and interviews. Salient aspects of this theme were the two following manifestations: positive emotions towards nature and negative emotions towards nature.

The teacher G. asks the children if they noticed anyone new that morning in class. They respond “*yes, there is a new teacher*” referring to me. The teacher says “*yes, there is the new forest’s teacher*”. The child G. (5 years old) is very enthusiastic by the idea to go in the forest and says “*Yes, how wonderful! Let’s go to the Meadow of the Sun!*” (Fieldnotes ALGQ_day 1_16042018, p. 1).

The previous fieldnotes extract is representative of children’s joy and amusement about the ideas of going into the woods. More evidence as support of this finding comes from an interview with a child:

> dopo L. torna da me reggendo in mano il bastone dicendomi “*ho fatto tanta*” indicando il punto in cui aveva messo la colla sulla casetta (Fieldnotes ALGQ_day 3_18042018, p. 2).

12 La maestra G. chiede ai bambini se non hanno notato nessuno di nuovo in aula quel mattino. Loro rispondono “*si, c’è una nuova maestra*” e indicano me. La mestra. dice “*si c’è una nuova maestra del bosco*”. Il bambino G. (5 anni) è entusiasta all’idea di andare nel bosco e dice: “*si che bello! Andiamo al Bosco del Sole*” (Fieldnotes ALGQ_day 1_16042018, p. 1).
“S: How do you feel in the forest?

I: I am happy.

S: And then?

I: And then… I come up in my mind to play games with friends.

S: Is there something that you do not like of the forest?

I: I do not like when P. gives me pinches.

S: Do you have any favorite place where you go?

I: Yes, the Meadow of the Sun and the Woods with the Small Traps” (Interview with I., 5 years old, ALGQ_day 3_18042018, p. 2)

In the previous extract the negative emotions are not referred to the place of the forest itself, but to an incident happened in the forest with another child.

It has to be noted that in particular situations children see the forest as a place unpleasant and uncomfortable for them. In the following interview excerpt, G. (9 years old) explain the reasons why for him being in the forest is both pleasant and unpleasant.

“S: How do you feel and what do you like to do in the forest?

G: I am happy and I feel good when with D. (the educator) we search for insects and salamanders.

S: What do not you like and what does not make you feel good in the forest?

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13 “S. Come ti senti nel bosco?
I. Sono contenta.
S. E poi?
I. E poi... mi viene in mente di fare giochi con gli amici.
S. C’è qualcosa che non ti piace del bosco?
I. Non mi piace quando P. mi da i pizzicotti.
S. Hai un posto preferito in cui andate?
I. Sì, il Prato del Sole e il Bosco delle Minitrappole”(Interview with I. 5 years old: ALGQ_day 3_18042018, p. 2).
G: I do not like when it rains and my shoes get wet because I put my feet in the water. I do not like when N. hit me with wooden sticks.” (Interview with G. 9 years old SNBRdG_day 5_13042018, p. 3)\(^\text{14}\).

Another result evident from my data is that children experience negative emotions such as disgust but at the same time sensation of pleasure while playing in the forest. The disgust is also caused by man-made traces left in the forest such as trash. The following excerpts are explicative examples:

T. (5 years old) and A. (5 years old) are back to the muddy trail. A. dives his hands into the mud and says “How disgusting!” or “It is disgusting”. T. also dives her hands into the mud and exclaim “Bleah” (Fieldnotes SNBRdG_day 3, p. 3)\(^\text{15}\).

G (4 years old) finds a piece of plastic in the woods and says “How disgusting” (Fieldnotes SNBRdG_day 4, p. 2)\(^\text{16}\).

**Affordances**

The way children experience the forest is also dependent upon what this particular place afford them to do (theme *affordances*). From my data is evident that children acted coherently with their body movements and using the natural or man-made tools.

As regards the children’s body movements, for example, a bunch of wooden trunks afforded children to sit on them or move them around, a trail afforded to walk along it, a big rock afforded climbing, a dry-stone wall afforded the possibility to walk on it, the mud afforded making constructions with it, the puddles afforded children to jump or walk in them. Taking into account the use of man-made or natural tools, wooden sticks afforded children to build a den or to throw them in a pond. Telescopes and magnifiers afforded them to observe plants and insects. Butterfly nets and jars afford children to capture insects and observe them.

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\(^{14}\) S: Come ti senti nel bosco e cosa ti piace fare nel bosco? Cosa vorresti fare ancora?
G: Mi piace e mi sento bene quando con D.(educatore) cerchiamo gli insetti e le salamandre.
S: Cosa non ti piace o non ti fa sentire bene nel bosco?
G: Non mi piace quando piove o quando ho le scarpe bagnate perché ho messo i piedi nell’acqua. Non mi piace quando N. mi picchia con i bastoni. (Interview with G. 9 years old SNBRdG_day 5_13042018, p. 3).

\(^{15}\) T. (5 anni) e A. (5 anni) sono di ritorno al sentiero fangoso. A. immerge le mani nel fango ma al contempo esclama “che schifo” oppure “è una schifezza”. Anche T. immerge e muove le mani dentro al fango ed esclama “bleah”(Fieldnotes SNBRdG_day 3, p. 3).

\(^{16}\) G.(4 anni) trova un pezzo di plastica nel bosco e dice “che schifo” (Fieldnotes SNBRdG_day 4, p 2).
The subsequent excerpt is a good example of the children’s affordance of a little hill in the forest:

The group of children which are playing at what they named “the cliff” (which is, in reality, a small hill) moved on the upper part of it with the aim of climbing it. One of the children G. suggests to a play-mate to “use the big handles” (some tree roots that came out the soil). As soon they reached the hill summit the aim of the play was inverted: to slide down the cliff like “it was a slide” (Fieldnotes ALGQ_day 2_17042018, p. 2)\textsuperscript{17}.

In Figure 14 is represented what children would do with trees. The child who made the drawing specified that the children depicted “were climbing the trees at the Woods with the Small traps, doing that in a very fast way” (Drawings ALGQ_day 4_19042018).

Figure 14. Children playing in the woods with the Small Traps. They climb the trees and go really fast (Bambini che giocano nel 'Bosco delle Minitrappole' Essi si arrampicano sugli alberi e vanno velocissimi).

**Relationships with Others**

My results show that children were keen on interacting with others (main themes). In fact, they were particularly inclined to interact with other children, educators and living beings present in the forest.

\textsuperscript{17} Il gruppo di bambini che gioca presso quello che chiamano “il burrone” (in realtà una piccola collinetta) si è spostato nella parte più bassa con l’obiettivo di scalarlo. Uno dei bambini suggerisce a uno dei compagni di giochi “usa i maniglioni” (delle radici che spuntano fuori dal terreno). Arrivati sulla cima della collinetta l’obiettivo del gioco si inverte: scivolare giù dal burrone “come se fosse uno scivolo” (Fieldnotes ALGQ_day 2_17042018, p. 2).
The little girl I. (5 years old) stated that the word forest made her thoughts to “go and play games with friends” (Interview with I. 5 years old: ALGQ_day 3_18042018). Younger children or those who just started to attend the preschool were often spending time alone or with the company of an adult, while older children tended at least to play in groups of two children.

A. (5 years old) told me about the game they were playing at a den in the forest and referring to the little house where her play was location stated “Tomorrow we have to do another one with (she mentioned other two children) L. and G. because the house had felt down” (Fieldnotes ALGQ_day 5_20042018, p. 2)\(^{18}\).

The two subsequent excerpts are a good example of an interaction between 2 children playing with mud and an interaction between a child and the educator after the child was able to capture a newt he in the forest, respectively.

T. (5 years old) asks the playmate if she had some mud by her eye. The little boy (5 years old) says “yes”. Then she asks him to help her clean it from the mud (Fieldnotes SNBRdG_day 3_11042018, p. 2)\(^{19}\).

G (9 years old) on of the children who owns a butterfly net, had used to capture a newt. Then he asks for S. one of the educators, exhorting her to observe with him the newt he captured (Fieldnotes SNBRdG_day 1_09042018, p. 3)\(^{20}\).

The children’s need to be connected to other children and to the educators is also evident in their drawings as represented in Figure 15 and Figure 16.

\(^{18}\) “Domani dobbiamo farne un’altra con (nomia altri due bambini) L. e G. perché è crollata” (Fieldnotes ALGQ_day 5_20042018, p. 2).

\(^{19}\) T. (5 anni). chiede al compagno di gioco se ha del fango vicino all’occhio. Lui (5 anni) risponde di sì. Allora lei chiede se lui può aiutarla a pulirlo dal fango (Fieldnotes SNBRdG_day 3_11042018, p. 2).

\(^{20}\) G. uno dei bambini possiede un retino che utilizza per catturare un tritone. Chiama S., una delle educatrici e la esorta di osservare il tritone catturato (Fieldnotes SNBRdG_day 1_09042018, p. 3).
Discovery and Experimentation

Another theme emerged from the data is children longing for Discovery and Experimentation of the Forest. This theme is acted by children throughout their questions, statements, and actions related to situations in the forest that are unknown or new to them. Children want to find out what happened in the forest, by investigating themselves and collecting and creating relevant material. One good example of this attitude is the following incident that happened to a group of children. G. (9 years old), S. (4 years old), A. (5 years old), N. (4 years old), and two educators were having a stroll along a mountain trail. Due to the rain of the night before, a little water stream was running on it.

Despite the fact that the trail has its destination down to the valley, the stream suddenly turns left. The children who are walking ahead of adults decide to not follow the trail but to follow the little stream to figure out where it goes. After few meters after the deviation point, they discover that the little stream disappeared. “It
has been absorbed by the soil” D., the educator, explains to them. He adds “the water does not have enough pressure and there are no channels that afford the water to flow”. After that, A, S. and G. with good energy and with the aid of their feet or sticks they start to prolongate the water channel to help the water to flow. G. holds in his hands a long and narrow stick that use to “remake the stream”. N. places a stick perpendicularly to the water flow, creating a dam. The other children build other dams upstream. Then, when they notice that the dams reduce the water flow, they ask A. to help them to destroy them (Fieldnotes SNBRdG_day 5_13042018, p. 2)²¹.

Nature Education

Children’s experience in the forest was mediated by nature education. This theme included behaviors like educators’ instructions, questions and statements about nature addressed to children. Some examples of activities that children performed guided by educators were: learn how to recognize plants and trees, eating from nature, hearing birds sing, pick up leaves, encountering life and death, discovering animals and their traces. The two following excerpts are explicative of children’s experience of hearing birds sing and recognizing trees:

As soon the children got off the school, they enter the public park of their small village. There, the teachers exhorted them to “close the words in their mouth with two turns of the key to listening to the birds singing”. The teacher A. encourages them to listen to the sing of a chaffinch, a blackbird, and a sparrow. Then, once the children are back in school, they have to hang on a special board (Figure 17) some cards with pictures and names of the birds they have seen heard or seen during the session in the woods (Fieldnotes ALGQ_day 1_16042018, p. 2)²².

²¹ Nonostante il sentiero continui verso valle, ma il torrente curva improvvisamente verso sinistra. I bambini che camminano davanti agli adulti decidono di non seguire il sentiero ma di seguire il torrentello per vedere fino dove porta. Dopo pochi metri dal punto di deviazione, i bambini scoprono che il torrentello è scomparso. “E’ assorbito dal terreno” spiega loro D. l’educatore. “L’acqua non ha abbastanza pressione e sul terreno non ci si sono formati i canali che permetterebbe all’acqua di scorrere”. Così A., S. e G. si mettono di buona lena e con l’ausilio dei loro piedi o di bastoni cominciano ad allungare il canale per aiutare l’acqua e scorrere. G. ha in mano un bastone lungo e di piccola circonferenza che usa per “ripassare il torrente”. N. posiziona un bastone perpendicolarmente alla direzione in cui l’acqua scorre, creando una diga. I bambini costruiscono poi delle dighe più a monte. Poi notando che lo scorrere dell’acqua viene ridotto dalla costruzione delle loro dighe, chiedono ad A. di aiutarli a distruggerle (Fieldnotes SNBRdG_day 5_13042018, p. 2)

²² Non appena usciti dalla scuola, i bambini si trovano nel parco pubblico dell loro paese. Qui le maestre li esortano a “chiudere le parole nella bocca, facendo due giri di chiave per ascoltare il canto degli uccellini”. La maestra A. li esorta ad ascoltare il suono del fringuello, del merlo, del passerotto. Infatti rientrati a scuola i bambini
Figure 17. The board where children have to hang the pictures of birds they encountered in the forest.

Children’s attention during the walk is caught by the trees with white flowers. In the public park in front of the school, the teachers repeated to the children that the trees with the white flowers are cherry-trees, encouraging them to look for more on the way (Fieldnotes ALGQ_day 1_16042018, p. 2)\textsuperscript{23}.

Furthermore, the following incident is a good example of how children learn how to eat from nature:

Some children gather around the educator S. who makes them eat the yellow primroses. S. says that “they are tasty and sweet” (Fieldnotes SNBRdG_day 4_12042018, p. 2)\textsuperscript{24}.

dovranno appendere sulla apposita lavagna, i cartellini con i nomi e le figure degli uccellini che hanno visto o sentito durante l’escursione nel bosco (Fieldnotes ALGQ_day 1_16042018 p. 2).

\textsuperscript{23} L’attenzione dei bambini durante il percorso è anche attirata dagli alberi coi fiori bianchi. Nel giardino pubblico di fronte alla scuola le maestre avevano infatti ripetuto loro che gli alberi con i fiori bianchi sono gli alberi di ciliegio, esortando loro a individuarne altri durante il cammino.(Fieldnotes ALGQ_day 1_16042018, p2).

\textsuperscript{24} Alcuni bambini si radunano vicino all’educatrice S. che fa loro mangiare le primule gialle. S. dice “sono buone dolci” (Fieldnotes SNBRdG_day 4_1204201, p. 28).
Concerns for Nature

Another result emerging from the data was the children’s sense of care for the natural world and its elements. Children were concerned by the fact that flora and fauna in the forest could be destroyed or damaged by human or natural factors. One example of this children attitude in the subsequent incident happened to a small group of children playing by some fir trees:

A small group of children T. (4 years old), A. (3 years old) G. (3 years old), and L. (4 years old) had chosen some fir trees as the location for their play. A. holds in his hands a small flashlight, that he calls “the fire that can burn the trees”. In fact, he goes around pointing the trees trunks with the flashlight. T. is complaining about the fact that the trees are getting burned and therefore she states: “It is forbidden to burn the trees”. G. holds in his hands a plastic hacksaw and simulate the act of cut the trunk of one of the two trees. After a while, he states: “Here you go, now the tree is cured”. Then he moves by another tree to heal it as well. T. is holding a flute and she starts to blow in it the trot around the tree to put the fire out. G. puts his hands on the bark of the tree and find a little stone in it. He grabs it to take it away and say: “Go away, go away, otherwise the tree hurts”. The whole group moves by another tree. G. gets the attention of T. and states “the tree hurts, there is black blood”. He repeats the sentence “There is black blood” many times, loudly (Fieldnotes SNBRdG_day 3_11042018, p1).

Another example of how children’s show their care for nature happened when a small group of them was playing by a wooden den in the forest:

L. (4 years old) is walking by the entrance of the little house as looking for something. In fact, he asks: “where is my rifle?” (he refers to a wooden stick). In the meantime, G. (5 years old) and A. (4 years old) are still playing to “builders or

25 Un piccolo gruppo di bambini (T., A., G. e L.) designano due alberi di abete come location del loro gioco. A. tiene in mano una piccola torcia a led, che lui chiama “il fuoco che puoi bruciare gli alberi”. Infatti se ne va in giro puntando la torcia sui tronchi degli alberi. T. si lamenta per il fatto che gli alberi vengono bruciati, infatti esclama: “E`vietato accendere gli alberi”. G. tiene in mano un piccolo seghetto in plastica e simula l’atto di tagliare il tronco di uno dei due alberi. Poco dopo il bambino afferma: “Ecco ora l’albero è curato”. Poi si sposta affianco ad un altro albero per curarlo. T. ha recuperato un flauto, inizia a soffiare dentro e a trotterellare attorno all’albero per spegnere l’incendio. G. passa le mani sulla corteccia dell’albero, vi trova un piccolo sasso incastrato. Lo afferra e tenta di estrarlo e dice “via, via se no l’albero si fa male”. L’intero gruppo si muove di fianco ad un altro albero. G. ri chiama l’attenzione di T. e afferma: “L’albero si fa male c’è sangue nero”. Ripete la frase “c’è sangue nero” varie volte ad alta voce.(Fieldnotes SNBRdG_day 3_11042018, p. 1).
“destroyers of the house” game. G. says “Here you go, I took a piece away”. L. tells him “Do not demolish!”. F. (4 years old) comes close to them and says “I am a ranger” and tells G. “but you hurt the house, do not demolish it!” (Fieldnotes ALGQ_day 5_20042018, p. 2).

The concerns children have for nature are also present in their drawings. In the subsequent ones the children represented the litter in the woods (Figure 18) and a scene was a fake action that could potentially harm a tree (Figure 19).

Figure 18. All the litter of the big woods (Tutta la sporcizia del bosco grande).

Figure 19. The teacher and I who pretend to cut a tree with a chainsaw at the Meadow of the Sun (Io con la maestra che fa finta di tagliare un albero con la motosega al Prato del Sole).
Learnings connected to the Classroom or Curriculum

Children from both school settings, performing play activities in the forest had the occasion to learn and practice learning contents connected to the mainstream school curriculum. They developed numeracy skills (for example they learned how to count) and natural science knowledge (for example they learned the name of plants and animals).

The theme Learning Connected to the Classroom or Curriculum and the related examples such numeracy and natural science learnings are evident in the two subsequent excerpts. In the first one, T. (5 years old) is playing with the mud and building sludges with A. (5 years old). She says: “We count the sludges: 1, 2 and, 3”. After they built the last one she says: “now we have to build a fourth one” (Fieldnotes SNBRdG_day 3_11042018, p. 2)27. The learnings children can get in the forest about natural science are well explained by G. (9 years old) response to one of my question during my interview with him:

“S: What do you learn when you are in the forest?
G: I learn how to recognize the insects and salamanders”. (Interview G. (9 years old) SNBRdG_day 5_13042018, p3)28.

The two following figures represent names of the animal that children learned about and therefore included in their drawings (Figure 20 and 21):

Figure 20. A spider (Un ragno).

27 “Contiamo le poltiglie, 1, 2 e 3”. A. afferma dopo aver costruito l’ultima dice: “ora ne dobbiamo fare una quarta”. La fanno e poi afferma “Ora ne dobbiamo fare una quinta”(Fieldnotes SNBRdG_day 3_11042018, p. 2).
28 “S: Che cosa impari quando sei nella foresta?
G: Imparo a riconoscere gli insetti e le salamandre.” (Intervista com G. (9 anni) SNBRdG_day 5_13042018, p. 3)
Figure 21. Hedgehogs (Ricci).
Chapter 6: Discussion

The study was conducted in two Italian preschools: a kindergarten outdoor oriented and a Forest School. The data were gathered as participant observation during the schools’ outdoor sessions, as well as from interviews with the children, and material collection (children’s drawings and pictures from the locations). Although this was a small-scale study, the findings describe different ways in which children represent, interact and use the outdoor educational space of a forest.

The current data are partly replicating the findings of another study of Harris (2017), where the author was interviewing the forest school practitioners in the UK with the aim of gain their perception of the outdoor learning process occurring in the forest schools. She was able to identify nineteen themes in her data. Seven out of twelve themes I individuated in my data overlap with and enrich those of Harris. These are Nature Education, Nature Engagement, Imagination, Relationship with the Woods, Relationships with Others, Learnings Connected to the Curriculum and, Discovery and Experimentation. This overlap of themes is relevant, indicating that children and practitioners seem to share representations of how the space of a forest is represented and used. Taking into account the theme Learnings Connected to the Curriculum, the practitioners agreed on the fact informal learning at forest school boost children classroom learnings. In fact, my data supported some incidents where learning goals connected with the formal school curriculum were showed by children, such as numeracy skills and natural science knowledge. As regards the theme Relationship with others, the children’s behavior was characterized by a tendency to work and play with other children, as already pointed out in Harris paper, but also by their necessity to interact with adults, as pointed out in the current data. According to the present data, the request of adults’ intervention happened when needed or called upon by children (e.g., in case of support needed in performing a task or just for sharing an experience with a grown-up person). The latter theme is connected with the Discovery and Experimentation theme where practitioners described children as able to try out new activities, while the current data underline the children tendency of actively experiencing the forest and its nature as if it was a mystery that needs to be solved (e.g., children following the stream path to figure out where it was going). Another related theme is the children’s ability to use their Imagination in the forest because it seems to be a setting able to stimulate children’s imagination and creativity. In fact, children were often busy in plays and games created and imagined by them. The Nature Engagement attitude underlined by the practitioners in Harris study (2015) is also matching with the current data. In fact, children
express their interest and engagement with nature. This latter theme is also connected to the *Nature Education*, where teachers teach children about the natural environment as revealed both in the current study and Harris ones. The last replicated theme is the *Relationship with the Woods*. The teachers in Harris’ paper (2017) talk about it in terms of how this theme implies the possibility for children to return and access again a site and become familiar and attached to it. Other than that, the present study’s results also showed the children’s tendency to address the forest as if they were addressing another human being, independently or after adults’ guidance.

The other five main themes emerged from my data analysis are *Type of Place Attended, Responsibility and Risk, Emotional Responses, Affordances and, Concerns for Nature*. These replicates and extended the findings of another recent work from Norðdahl and Einarsdóttir (2015). The authors were focused on children’s views and preferences regarding their school playground in Iceland. A first common result was that children in both studies were pleased to find places that they could make their own both in the school playground in the case of the Icelandic study or in the forest, in the case of the current project. In fact, the Italian children liked a lot to invent and give names to their own places. “The Woods with the Small Traps” is an example. The Norðdahl and Einarsdóttir’s (2015) results showed that children had positive *emotional responses* while they were spending time outside the classroom. This is consistent with a similar finding in the current study: the Italian children showed both positive or negative emotional responses on being in the forest. For example, they expressed joy and amusement for the time spent outdoors, but also emotions and feelings as disgust and being uncomfortable. This is coherent with previous findings on the role of the forest school setting that can promote affective restoration in children, helping them to manage difficult behavior such as anger (Roe, & Aspinall, 2011). This process is defined by Cole and colleagues (2004) as Emotional Regulation (ER). The need for children to physically challenge themselves while having an adult a secure base is emerged both in Norðdahl and Einarsdóttir’s paper (2015) and in the current data. According to the present findings, the theme *Responsibility and Risk* is well-represented by the fact that children are free to take their own risk, if their well-being is not in danger, in that case, an adult’s intervention is required. The fact that children care, respect and want to take action to protect nature was already evident in the Norðdahl and Einarsdóttir’s paper (2015). However, the current data is showing that children integrate the theme *concerns for nature* even in their plays and games. Some examples of this are children imagining that a tree had blood on it and take an action to heal it or a child assuming the role of a ranger to protect a den built by other children. The Icelandic study and the current work are both focused
on investigating the affordance of what children want to do in their playground and in the forest, respectively. The present study integrates the previous finding because it focuses on the affordances (Gibson, 1979) of the environment of the forest. The children’s ability to interact with the environment is based both on children’s awareness of their possibilities to interact with that environment and by the features of the environment itself.

The available literature on the use of outdoor learning spaces like forests has already highlighted several benefits for children who spend time in such outdoor environments. These positive outcomes for children can be summarized as greater social interaction (Moore, 1986), concentration and self-discipline (Taylor & Sullivan, 2001), motor fitness (Fjørtoft, 2001), creativity and imagination (Moore & Wong, 1997; Taylor, et al., 1998; Fjørtoft 2000) awareness reasoning and observational skills (Pyle, 2002), independence and autonomy (Bartlett, 1996).

A comparison between these positive effects and the results of the present thesis project, reveals that some outcomes match with the representation of how children use, give meaning and relate with the educational space of a forest. To give some examples, the themes Relationship with the Woods and Relationships with Others reflect the findings from Moore (1986) on an increased social interaction ability in children. The theme Imagination also enhances the previous findings on children’s’ creativity and imagination (Moore & Wong, 1997; Taylor, et al., 1998; Fjørtoft 2000). The theme Responsibility and Risk is a further data in support of the independence and autonomy positive outcome (Bartlett, 1996). However, some themes do not have a correspondence with the already investigated advantages of attending forests, as outdoor learning spaces. The following themes, Type of Place Attended, Nature Engagement, Nature Education, Concerns for Nature emphasize that for young children another crucial element of their experience in the informal educational space of a forest, the education space itself. As previously mentioned in this thesis dissertation the children’s view of the outdoor learning space of a forest, has not been the main focus of interest of scholar community. In spite of this, these data highlight the fact that this aspect has to be furtherly investigated. The available academic work on how children’s bond with the natural world and how they behave and experience in it is scarce (e.g. see Chawla, 2003; Sobel, 1996).

It has to be highlighted that knowing more about how children connect, bond and take actions in outdoor educational space as forests or woodland areas is a prerequisite for the development of environmental attitudes. Related findings can be retrieved on a previous work where older children (8-11 years old) showed attitudes of concern towards nature, after attending a Forest School venue (Turtle et al., 2015) or the study of the association between childhood
experiences in nature and care for the natural world (Chawla, 2007). Furthermore, the current thesis project, therefore contributes, on the thin theory and research on children’s experiences of nature. In fact, according to the present findings Emotional Responses, Affordances, Discovery and Experimentation seem to play a huge part in how children’s experience nature.

**Limitations and future research**

The following section will explain the limitations of the study I conducted on children’s perspectives on the outdoor environments, such as the forest or woodland settings that they experience as a part of the Forest School’s educational approach. The final part of the current section will focus on further research that could be carried out on the topic in the future.

The first limitation of the current project relates to the nature of the study itself, which is exploratory, highlighting a new topic. The findings of the study are encouraging and offer a glimpse on children’s perception of the forest as educational space. In fact, on this topic, very little was known before. However, the findings are limited in their application to other populations and settings. The data were collected from two schools, one kindergarten outdoor oriented school and one labeled as a Forest School. The features of the schools were the reasons why they were selected as sites where to carry on the research.

The second limitation refers to the fact that the data collected were setting specific, and that brings into question the possibility to transfer the current findings to other settings or to a larger population. Moreover, the young children who participated in the study were Italian. In fact, as cited in a recent paper the Forest School “as a form of outdoor education is culturally, socially and historically situated” (Leather, 2018, p. 1).

The third limitation relates to the research method utilized. Qualitative ethnographic methods have been employed. By combining participant observations on sites, informal conversational interviews or semi-structured interviews, walks and talk with children, and collection of drawings, both a broad overview and a specific and detailed picture of children’s perspectives on the outdoor environments (such as the forest or woodland settings) was retrieved. The results might seem promising in terms of contribution to the limited state of knowledge of the topic. However, it has to be taken into account the fact that “in educational research where changes in student’s knowledge, attitudes, and actions are not always punctuated but instead emerge along a continuum over time” (Jagger, 2009, p. 144).

Another critical point was the use of ethnographic research methods such as children informal interview or walk and talk with such young children (aged 3 to 6). A few of them were really young, and their communication and verbal language skills and abilities were not
fully developed. Furthermore, children were often totally absorbed and involved in the activities or games they were performing in the forest at that moment. It was, therefore, difficult for me as a researcher to intervene in that activity flow and break it with my questions. Moreover, the time available for conducting the fieldwork was really limited (5 days in each school setting), clearly not long enough to create the right prerequisite to converse easily with the children.

Given the exploratory nature of the present study and the novelty of topic examined, the children’s own views regarding their experience of the forest as an educational space, it is important to continue to study this area.

First of all, is desirable that further research involves a larger sample (more than two school settings). Due to the situated nature of the topic investigated, it is also preferable that future studies will be carried out in different cultural settings. These conditions are prerequisites for exploring the possibility of transfer from the current results to other settings or to a larger population.

Secondly, in order to track the changes of children’s perspectives over time, longitudinal studies are needed (Bryman, 2012). Furthermore, future studies should enroll a control group design (for example children attending a mainstream kindergarten), which would make possible to compare and contrast the data obtained from conventional curricula with those obtained in an outdoor-oriented kindergarten or in a Forest school.

Finally, to fully illuminate the research question on how children experience, use and make sense of the educational space of a forest and to create an ideal atmosphere of trust and to facilitate the interview phase with children, future research might be carried out for longer period of time, for example carrying out fieldwork all the year round and creating times and places to talk with children on the topic.

Implications and recommendation for Forest School practitioners or educators and parents

The current section will be focusing on how the findings of this thesis project are useful to educators and parents’ awareness and understanding of young children’s perception, experience, and awareness about the outdoor educational spaces, such as the forest or woodland settings, attended by the young ones as a part of the Forest School’s educational approach. In fact, the study allowed children to voice their views of the educational space of a forest, with the aim to enlighten educators and parents to their thoughts, knowledge, and understanding of the forest or woodland environment attended.
The current study extends the already known related to the benefits of being outdoors for children which promote, as already mentioned in the introductory chapter, a greater social interaction (Moore, 1986), concentration and self-discipline (Taylor & Sullivan, 2001), motor fitness (Fjørtoft, 2001), creativity and imagination (Moore & Wong, 1997; Taylor, *et al.*, 1998; Fjørtoft 2000) awareness reasoning and observational skills (Pyle, 2002), independence and autonomy (Bartlett, 1996). In fact, the present work ensures to teachers, educators, and parents a rich description of the rationale behind the children experience in the forest. The above-mentioned elements are found even in the children’s perspective. However, the practitioners and parents ‘communities have to be aware that young children do not make sense as the woodland environment as solely a place where elements like risk and responsibility, imagination, positive and negative emotions, learning and education, discovery relationship with others dominate. Moreover, it is also a place that affords them to engage, to be concerned and to relate to nature. Not to mention that these results hopefully could lead the pupils to become environmentally responsible adults, accordingly to Chawla’s model (2007).

To conclude, educators and families’ communities have, therefore, to adjust their teaching and parenting behavior accordingly to the young children’s lasting and meaningful connection with the forest.
Chapter 7: Conclusion

The aim of the present thesis project was to examine young children’s perspectives on the outdoor environments that they experience as a part of the Forest School’s educational approach. In particular, children’s experiences, sense-making, and understanding of the educational space of a forest has been investigated.

This study has found that the themes that represent how children use, interact and, confer a meaning to their experience in the woods are the followings: Type of Place Attended, Nature Engagement, Relationship with the Woods, Responsibility and Risk, Imagination, Emotional Responses, Affordances, Relationships with Others, Discovery and Experimentation, Nature Education, Concerns for Nature, and Learnings Connected to the Curriculum.

These themes can be explained on the base of the Delors’ pillars of the learning (1996): ‘learning to know, learning to do, learning to be, and learning to live together’. Foremost, the themes Nature Engagement, Relationship with the Woods, Relationships with Others, Concerns for Nature, seem to fall within the pillar ‘learning to live together’. Responsibility and Risk, Imagination, Emotional Responses seem to belong to the pillar ‘learning to be’. Learnings connected to the Classroom or Curriculum and Nature Education seem to fall within the pillar ‘learning to know’. Affordances, Type of Place Attended, Discovery and/Experimentation appear to belong to the pillar ‘learning to do’. In fact, the dimensions of knowing, being, doing and living together well explicate how children experience the outdoor educational environment of the forest. The current study gives its contribution to enlarging the state of art on how children and experience and interact with the forest as the educational space. This new knowledge will enrich the educators and parents’ communities interested in this educational approach, increasing their awareness on how children use this kind of educational space. The forest is not just a place for learning about nature and its elements and living beings beyond school curriculum contents or a place where the children’s imagination can create fantastic worlds, that can be attended alone or with the company of a friend or an adult. The unique characteristics of this educational space are the fact that it affords children to interact with it through their body movements or tools, to be happy or sad in it, to develop a sense of security and protection and ownership of the secret spots they have explored and bonded with.

To conclude, a natural progression of the current dissertation project focused on children’s perspectives on the outdoor educational space of a forest, would be to further investigate the implication of the elements that characterize children’s viewpoints on it. As
regards this aspect, Kellert (2002) had already underlined that experience in nature foster the
cognitive, affective and social development of children. It would be, therefore, interesting to
investigate the role of the resources (e.g. cognitive, emotional, social, environmental attitudes)
developed by children in the outdoor educational space of a forest are strictly intertwined with
this particular setting or are also available in more a conventional school setting.
Reference List


Jørgensen, K. A. (2014). What is going on out there? -What does it mean for children's experiences when the kindergarten is moving their everyday activities into the nature-landscapes and its places (Doctoral dissertation), Retrieved from GUPEA. (http://hdl.handle.net/2077/37251).


Wales, & Dillon, J. (2005). *Engaging and learning with the outdoors: The final report of the outdoor classroom in a rural context action research project*. Slough: NFER.


Appendixes

Appendix I. Interview guide

A possible battery of question that I might use for the focus groups with children interviews might look like the following:

1. What do you think when you hear the word "forest"?
2. What things can you find when you are in the forest?
3. What do you usually do when you are in the forest?
4. Which things do you prefer to do\textsuperscript{29} when you are in the forest and with who? What do you not like? What do you want to do again? Why?
5. What do you prefer to do when you are at home and with who? What do you not like? What do you want to do again? Why?
6. What do you prefer to do when you are at school and with who? What do you not like? What do you want to do again? Why?
7. What do you learn when you are in the forest?
8. What do you learn when you are at home?
9. What do you learn when you are at school?
10. Which places (in the forest) are those do you like going with your friends? Why?
11. Which places do you visit when you are playing with your friends? When you are alone?
12. How do you feel in the forest?
13. Which places or locations do you like the most?
14. Can you show me a special/important/secret place or meeting point for you? How does it make you feel? What do you like to do there? What do you think about when you are there?
15. Are there any scary/dangerous places for you and why? What do you like to do there? What do you think of when you are there?
16. Can you remember something happy/scary that happened in the forest?

I think these questions might be useful to gain the children’s thoughts, representations, feelings and meanings about what the place forest is and what they do there. This battery of question will be of course implemented based on my observations fieldnotes.

\textsuperscript{29} Activities: plays and maybe traditional, fantasy and, team games
Appendix II. Consent form

Consent form: Italian version

MODULO DI CONSENSO PER L’INTERVISTA E OSSERVAZIONE DEI MINORI

Oggetto: consenso alla partecipazione di minori al progetto di tesi “Percezione dei bambini dello spazio educativo Scuola nel bosco” nell’ambito del Master in Educazione Ambientale all’Aperto e Vita all’Aperto, Università di Linköping, Svezia

Gentili genitori,

parteciperò alle attività svolte presso la scuola ______________________________ come parte di una ricerca che sto conducendo ai fini della realizzazione della mia tesi. Sto frequentando il Master in Educazione Ambientale all’Aperto e Vita all’Aperto, presso l’Università di Linköping in Svezia.

Potete controllare la veridicità di quanto da me affermato, contattando il mio supervisore di tesi, Dr. Thomas Karlsson, i cui contatti sono:

Thomas Karlsson
Professore Associato
PhD, Docente
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L’obiettivo del mio progetto tesi è di esplorare il punto di vista dei bambini, frequentanti una scuola nel bosco, riguardo le loro esperienze all’aperto all’interno di questo particolare approccio educativo. In particolare il mio focus di interesse è capire come i bambini esperiscano l’ambiente bosco attraverso i cinque sensi (vista, udito, tatto, olfatto e gusto), quali sensazioni, emozioni, rappresentazioni, idee, aspettative e ricordi emergono in loro durante il tempo trascorso all’aperto in questo ambiente.

Questo mio interesse nasce da una mia constatazione riguardo una certa mancanza di ricerca condotta in questo campo che consideri come priorità e principale punto di interesse il punto di vista dei bambini. In campo educativo sono state recentemente condotte molte ricerche riguardanti i benefici, per i bambini, del trascorrere tempo e svolgere attività all’aperto. Tuttavia ciò che non è stato preso in considerazione è la voce dei bambini.

L’importanza di poter cogliere il punto di vista del bambino in questa sua esperienza dello e nello spazio educativo bosco è cruciale sotto molteplici aspetti. Il mio auguro è che il mio progetto tesi possa fornire materiale di approfondimento e riflessione per gli educatori e professionisti che si occupano di educazione all’aperto, nonché la comunità scientifica di riferimento ed i genitori, arricchendoli con la rappresentazione dell’esperienza educativa espressa in prima persona dal bambino.

Nel periodo compreso tra il __/04/2018 e il __/04/2018 sarò presente durante le attività all’aperto svolte presso la scuola, osservando le interazioni tra i bambini e lo spazio educativo bosco. Le osservazioni verranno da me registrate su un quaderno in forma cartacea e successivamente trascritte al computer. In qualsiasi documento formale sarà garantito l’anonimato di ciascuno bambino e adulto presente durante le attività osservate.

Durante il medesimo periodo, intraprenderò, sempre all’aperto, delle brevi interviste semi-strutturate o conversazioni informali coi bambini coi bambini (la cui durata sarà variabile e la
partecipazione su base volontaria), con l’obiettivo di approfondire con loro particolari esperienze, vissuti ed eventi avvenute all’aperto.
Oltre a osservazioni ed interviste, durante il periodo trascorso nella scuola avrò la necessità di raccogliere altro materiale (disegni, diari e fotografie dell’ambiente bosco) di documentazione della visione dei bambini della loro esperienza nel bosco.
Tutta la documentazione sarà trattata da me in modo strettamente confidenziale. Io sarò l’unica persona ad accedere alla stessa.
Nel caso abbiate la necessità di ricevere ulteriori chiarimenti e spiegazioni riguardo al mio progetto tesi, non esitate a contattarmi al seguente indirizzo e-mail: silco480@student.liu.se
Prego cortesemente di compilare, firmare e restituire il seguente modulo di consenso:

Io, _____________________________, (nome del genitore) do il permesso perché mio figlio/a _____________________________ (nome del bambino/a) partecipi alle attività di osservazione e interviste riguardanti la sua esperienza nel bosco, materiale che sarà utilizzato nell’ambito del progetto tesi “Percezione dei bambini dello spazio educativo Scuola nel bosco”.
Firma del genitore o tutore: _____________________________
Consent form: English translation

CONSENT FORM FOR INTERVIEWING AND OBSERVING CHILDREN

Object: consent notice to children’s participation to the thesis project “Children’s perception of the educational space Forest School” I am conducting to fulfill the requirements for a Master’s in Environmental Outdoor Education and Outdoor Life, Linköping University, Sweden.

Dear Parents,
I will join the preschool’s activities that will take place by the school___________________ as a part of a research that I am carrying out as part of my final dissertation project, required by the Master’s in Environmental Outdoor Education and Outdoor Life, which I am attending at Linköping University in Sweden.

My credentials can be confirmed by contacting my thesis’ supervisor, Dr. Thomas Karlsson whom contacts are:

Thomas Karlsson
Associate Professor
PhD, Senior Lecturer
Department of Behavioral Science and Education
Linköping University, Sweden
Email: Thomas.karlsson@liu.se
Phone: +46 013 28 58 94

The aim of my thesis project is to explore the viewpoint of children attending a Forest School, as regards their outdoor experiences in this particular education approach.

More precisely, my focus of interest is getting to know how children experience the environment woods using the five sense (sight, hear, touch, smell, and taste), which sensations, emotions, representations, ideas, expectations and memories they can get during the time spend in this space.

This interest comes from the lack of research in this area that focuses on children’s viewpoint. In educational research, recent works focused on the beneficial effects on children coming from the time spent outdoors. However, the children’s voice has not been taken into account.

The relevance of gaining the child point of view of and in his/her experience in the educational space woods is wide. I wish that my thesis project could offer reflection material both to educators and professions who deal with outdoor education and to the scientific community and parents, enriching them with the education experience expressed first-hand from the child

During the period of time from __/04/2018 to __/04/2018 I will attend the preschool activities, observing the interaction between children and the education space woods. I will first write my observation’s notes in a notebook and subsequently, I will transcribe them in a digital format on my computer. In any formal writing, the anonymity of each child and adults attending the preschool activates will be guaranteed.

During the same period of time, while the outdoor activities are performed, I will perform semi-structured interview or have informal conversations with children (whose length and the participation is based on the children assent) aimed to get their voice about particular experiences, anecdotes happened outdoor.

The observations and interviews will happen only under the parent’s signature of the present contest of voluntary participation of children to the project. Before the interview/conversation
will be individually asked children their approval. The interviews/informal conversations will be recorded on an audio recording device first, and then digitally transcribed on my computer. The anonymity of participants will be guaranteed in any formal writing. At any time, it will be possible withdraw the consent and stop the participation to the project, without feeling obligated to provide any explanation or excuse.

Other than observations and interview, during the time I will spend at school, I will need to collect other material (drawings, diaries, pictures of the environment woods) as documentation of children’s viewpoint of their experience in the woods. All the documentation will be treated confidentially and I will be the only person that will have access to it.

If you have any additional questions this thesis project please feel free to contact me via email: silco480@student.liu.se

Please, fill in, sign and return the following permission notice:

----------------------------------------------------------------------------------------------------------------

I, ______________________________, (name of the parent) give permission for my son/daughter ______________________________ (child name) to be observed and interviewed about his/her experience in the woods, in order to create data for the thesis project “Children’s perception of the educational space Forest School”.

Signature of the parent or guardian: _______________________
Date and location: _______________________

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Appendix III. Reference system for fieldnotes and interviews

The following one shows an example of fieldnotes extract and the reference system I used to refer to them, including

The teacher A., following the children’s request, takes a small notebook out. It is children’s herbarium. A small girl, C. (3 years old) brings to the teacher a leaf from a plant and ask her “What is it?”. A. responds: “It’s a prickly plant”. After that, the small girl goes to search for many other leaves of different shape and colors to be inserted in the herbarium. A small group of children ahead is observing what they call “small worms”. The teacher and I respond that “those are not insects but plants. They are pollens of hornbeam” (Fieldnotes ALGQ_day 1_16042018, p. 2)\(^\text{30}\).

Legend:

Fieldnotes = the extract is taken from my fieldnotes
Interview with = the extract is taken from my interviews
ALGQ_ = the second school site
SNBRdG = the first school site
day 1_16042018 = the fieldwork day number and the date
p. 2 = page number.

\(^{30}\)La maestra A., su richiesta di un bambini sfodera un piccolo quaderno. E’ il loro erbario. C. una bambina di 3 anni le porta una foglia di una pianta e le chiede “che cosa è”? A. risponde ”è un rovo”. A quel punto la bimba parte alla ricerca di altre piante con foglie di forme e colori diversi dalla precedente e li porta alla maestra da inserire nell’erbario.Un gruppetto di bambini poco più avanti sta osservando invece quelli che loro definiscono “vermicelli”. Io e la maestra A. rispondiamo loro “non sono insetti, ma sono delle piante” (sono i pollini del carpino). (Fieldnotes ALGQ_day 1_16042018, p. 2).