

## **Exploring Soil and Mud**

### **Summary**

“Knowing about nature is an intelligence of its own” (Gardener, 1999). Nature contact in everyday life provides opportunities to explore, discover, get messy and engage with the natural environment using all your senses. (Little & Wyver, 2008) Nowadays, caregivers and teachers tend to avoid outdoor messy activities and especially soil activities, as they prefer to keep children tidy and clean. Is it truly developmentally and educationally appropriate to provide children with limited opportunities to connect with nature and interact with soil? How children can benefit from their interaction with soil?

Keywords: nature contact, early years, hands-on exploration, soil/mud play, properties of soil

### **Introduction**

Early childhood is a crucial period in child’s development, as these early experiences set the foundations of their brain architecture and influence strengths and weaknesses of their capacity to learn, interact and respond to daily challenges (Kouame, 2019). Satisfying and nurturing children’s curiosity and creativity supports their holistic development. It has been reported by researchers that natural spaces and materials are essential for healthy child development as they stimulate children’s senses and limitless imaginations, and integrate informal play with formal learning (Gulay et al., 2010; Louv,2010) Nature play and especially soil and mud play is beneficial even for babies as it is not only fun, but also strengthens their immune system and supports their physical and emotional development. Soil is a simple substance that is free and available almost everywhere, and can be the source of activity, creativity and sensory fun. Hence, this paper will dig a little deeper in children’s connection with soil by examining <sup>1</sup> how children interact with soil and mud through unstructured play as well as <sup>2</sup> how they explore the properties of soil.

### **Nature – Nurture Interactions**

In developing countries children today play less in outdoor green spaces and for briefer periods; they spend a lot of time playing in attractive but more restricted indoor environments. (Louv,2010) Many parents who live next to parks, woods or fields feel insecure to let their children play in those areas, either because of their fear of strangers or because of their belief that children should play in more

structured and clean areas. According to Furedi (2001) limited opportunities to engage in nature and risky play have resulted in children being denied the chance to participate in outdoor activities that facilitate their learning and development.

According to Swedish studies children's play in structured asphalt playgrounds is more interrupted and less creative. On the other hand children's play in green, natural play areas is limitless, more imaginative and provides great opportunities for wonder and discovery in their own space and time. (Louv,2010:88)Nature inspires different kinds of creativity and art and provides different play opportunities than the built environment.

Children and nature have been always connected. The last decades there is an increasingly number of proponents of experiential or environment based – education. Children live and learn through their senses. The natural environment is the principal source of sensory stimulation. It is imperfectly perfect, filled with loose parts and possibilities, with mud, dust, sand and transcendent hands on moments (Louv,2010). Children can observe and use the natural spaces in different ways and combine with loose parts that may vary according to the season (grasses, flowers, pinecones, acorns, leaves, water, trees, plants etc.) (Reggio Children, 2014). These ordinary everyday things of the green spaces (parks, yards, fields, forests) can be modified and transformed revealing its different properties such as densities, textures, qualities and chromatic variations.

Recent scientific studies and observations have revealed that what we see as “dirt” outside is really beneficial for kids (Liu, 2015). Kids' connection with soil can play an important role in their development. Their exposure to healthy soil contributes not only to stress reduction, greater physical health and strong immune system, but also promotes their emotional development, creativity and a sense of play. (Moore, 2017) Soil is more than just “dirt”. It is a mixture of substances composed of water, air, mineral particles and organic matter such as sand, silt and clay. It is a living dynamic resource in which plants grow and many different types of animals live. Soil is teeming with life, including microorganisms, and larger animals such as insects and worms. The combination of the above substances determine the soil's properties, including color, texture, structure, porosity, density, consistence, and temperature.

As children are increasingly losing their contact with nature, they are not usually aware of properties of soil and their importance to everyday life. This broad issue of lack of public knowledge about soils could be addressed by integrating soil science into the primary curricula (Brevik et al., 2022:3). The integration of soil science in

informal and formal education will create and grow perception and awareness of soils and the significance they have in the environment and people's lives (Brevik et al., 2022:3).

### **Research Questions**

- How do children interact with soil and mud through unstructured play?
- How do children explore the properties of soil?

### **Research Approach**

A qualitative approach was adopted for the conduct of the present research study. Qualitative research may be demanding as the researcher come to grips with the complexities of the social world of early childhood, nevertheless is thoroughly worthwhile (Mac Naughton et al. 2010:155), as through its flexibility can give rise to far richer and even more unexpected data. Considering that valid information about children must start from their experiences and views (Christensen and James 2008), observations were used throughout the study as a tool for gathering research data. This data collection method enabled the researcher to use all their senses and study in depth the spontaneous behaviour of participants as well as their interaction with soil. All the observations were captured both in written and visual form as accurately and descriptively as possible what was occurring in the setting. (File et al. 2016)

### **Participants**

The sample group consisted of 3 preschool children ranging in age from 3 to 5 years old. All three participants were from my personal network and varied with respect to gender, and cultural background. Furthermore, they all had attended at least a year in nursery school and had previous experiences in green/natural environments.

### **Methodological Procedure**

The research took place in an urban green open space. During the research study the participants had access to a diverse range of materials, useful for enriching their interactions with soil, such as science tools (magnifying glass, tweezers), spades rakes, containers, water, watering can, self-sealing plastic bags, stirring tools, a piece of white fabric as well as natural materials. Apart from the natural materials all the other available resources were carefully selected based on the following criteria:

- They enhanced and supported exploration and discovery.

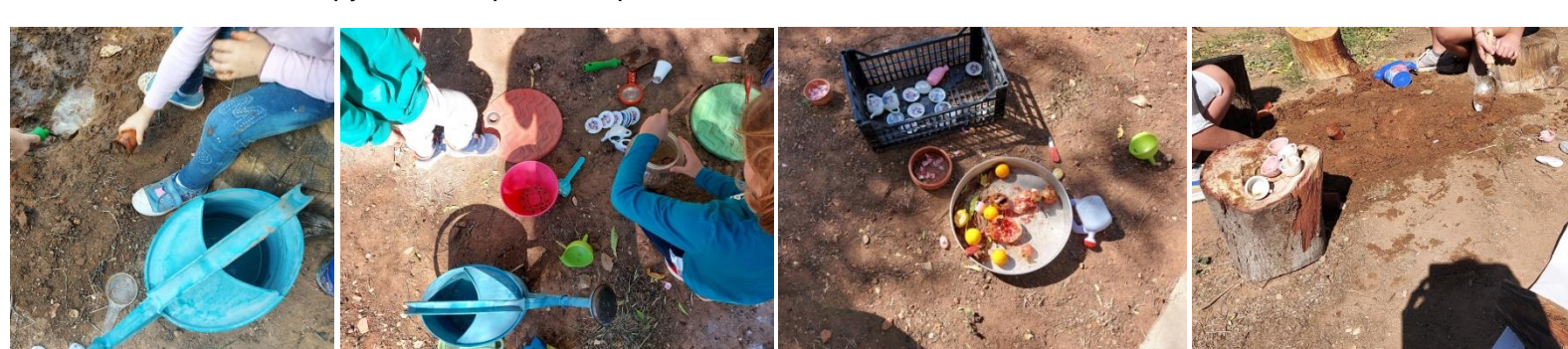
- They were appropriate for children aged three to four years.

Participants had the time, space and freedom to explore the outdoor environment. All the young participants were informed at the outset that they were free to choose their play materials, the way they would use them as well as the interest area.

## Findings

At the beginning of the study, although it was expected that the young participants would be hesitant to interact with the environment and the available resources, they didn't. More specifically, when they visited the open green space of the study they headed straight to the area with the gardening tools, and started digging the soil, using trowels, spades and little hoes. After a few minutes of digging they realized that it was hard to dig the dry soil with the available tools, and hence impossible to make deep holes and underground houses as their initial plan was. Thus, one of the participants looked around and noticed that there was a watering can next to her; she grabbed it and filled it up. When she poured water onto soil they discovered that it was much easier to work with the soil while it was wet. Thus, they decided to fill every single container and watering can with water in order to make sticky muddy soil that could be molded into various shapes and forms.

After a few minutes of experimentation, they found the perfect balance to make mud. Then, they took the spoons and started filling containers, bowls and cups with mud making drinks and food. The participants tried to find whatever they was available in the environment that could be used in order to add color and flavor to their food. They walked around the garden and they collected oranges, pomegranates and lemons. They used sticks, little rocks as well as their fingers to open them and get the juice and the seeds. While the two of the participants were shaping mud balls and making pies and drinks for their lunch, the third participant was collecting all the available sticks and wood blocks to build a barbecue so that be able to cook their food. It was really interesting how carefully he placed the blocks and managed to build a pyramid shape barbeque.



When he finished, he proudly presented his construction to the others. One of the other participants went closer, got some mud and placed it around the construction to make a stabler and stronger base.

After the completion of their imaginary restaurant play all the participants, one by one started throwing mud balls on the large drawing paper, which had been set on the ground. As they were throwing mud balls on the paper they found out that soil makes brown marks. So, they gathered around the paper, they spread mud and made irregular patterns with sweeping movements of their hands and fingers. Then, one of the participants had the idea to use more natural materials to paint with, such as the arils of the pomegranates, fruit juice and leaves. They seemed very excited painting with nature and making marks. Among all the natural materials they used, mud was more preferred as it had more intense color, in contrast to the color of the other natural objects that was faint.

Children's exploration and unstructured play continued, as two of the participants decided to go on a bug hunt. They used the magnifying glasses, the tweezers and the catching box and started walking around the garden and looking for insects. Although in the beginning they couldn't find any insects then they noticed that there was a great amount of ant hills. They were surprised of the number of the ant hills that were available in the garden as well as the texture of the soil above them, as they said it was like a powder. After observing how the ants moved in rows they tried to catch some of them with the tweezers, they also used the magnifying glasses to have a closer look at them, and observe their body parts and the way they move.

To conclude, it's worth mentioning that while participants seemed to be fully absorbed in exploring and experimenting with the available resources, they regularly stopped playing in order to wash their muddy hands, as they felt that they were dirty.

### **Discussion/ Conclusion**

When children interact with nature they feel free to use their curiosity, investigate, and find solutions trusting their own ideas. By providing opportunities for nature play and fostering naturalistic intelligence, teachers/caregivers give each child an equal chance to have a healthy start in life and set the stage for lifelong approaches to learning. (Jacobi – Vessels, 2013).

Natural settings provide so many variables and possibilities for discovery, creativity and inventiveness. During nature play children are exposed to a wide variety of

information that is not available indoors. The lack of day to day contact with natural elements makes eventually children fearful of nature in its untamed and unmanaged condition. Even children who had previous outdoor experiences felt a little uneasy to get dirty and play with mud.

It is really important to introduce soil in children's everyday life, as it can have a really positive impact to their learning and development. Creating an inspiring and interactive educational environment is critical and provides children with the opportunities to create a sense of wonder about nature and more specifically about soil and its properties. Soil is a magical material that can be used in various ways. Every child needs to be exposed to soil play at an early age, as it engages all the senses and provides so many exciting play and learning experiences. The evidence obtained from the observations revealed how spontaneous free play with soil in a natural environment can provide children with knowledge and skills that they cannot gain in a structured and clean play environment. It was really interesting to observe the way they used their senses and their previous experiences, to explore some of the basic properties of soil such as color, texture and structure, during their play. Even when the participants were looking for ants and ant hills; they were actually engaged in a more complex process of prediction and analysis of ants' characteristics and habitats. As they thoroughly observed the way ants move, carry their food and live, they taught themselves about more complicated and advanced concepts.

A limited number of studies of soil play are available in the literature. There is a need for more large-scale research studies focused on children's interactions with soil, in order to enhance our understanding of the way children benefit from being exposed to "dirt". Moreover, it would be useful for future researchers to gather background information about the young participants.

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