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## **EARLY CHILDHOOD DEVELOPMENT AND EDUCATION THROUGH NATURE-CHILD INTERACTIONS: A CONCEPTUAL PAPER**

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### **Abstract**

The present paper addresses following research questions:

RQ1: How does nature or nature-based activities help children's cognitive development?

RQ2: How does nature or nature-based activities help children's social and prosocial behavior development?

RQ3: How does nature or nature-based activities enhance children's learning abilities?

To address these research questions, this paper will explore how nature helps young children's cognitive, social, prosocial behavior development through primary and secondary existing literature sources (Fraenkel, Wallen, & Hyun, 2012). This paper will also touch on how teachers influence children's learning objectives through guiding children's learning activities during nature-based activities. The present paper tends to explore child development through peer-child and child-teacher interactions throughout nature-based activities through the lens of Vygotsky's (1978) Socio-Cultural Theory.

**Key Words:** Nature and Child, Child Development, Early Childhood Education,

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### **Introduction**

Young children are naturally curious about their environment and the people around them. They often ask questions to figure out the new situations they encounter. Children come to preschool settings with experiences and skills that need to be acknowledged and guided toward new learning opportunities; their imaginative and exploratory skills should be taken seriously by teachers (Curtis & Carter, 2005). Classroom environments (schools to an extent) should provide many opportunities for children to develop their social interactions, encourage social and cognitive competence development, and promote positive climate and trust (Weinstein & David, 1987). The environment can strongly influence the learning processes of children (Pianta, La Paro, & Hamre, 2008).

Nature is one of the best possible classroom environments for young children, because it provides abundant opportunities for children to develop cognitively, socially, and physically in healthy ways (Kahn, 2002). Faber Taylor and Kuo (2006) argued that outdoor activities in natural environments have an important role in children's social and cognitive development, particularly interactions with adults. Consistent with that,

Kellert (2005) claimed that the natural world prominently helps children to cultivate their capacity for learning by providing many highly stimulating and engaging opportunities to structure their knowledge. Kellert (2005) also explains the importance of nature for young children by saying that “The young children continually confronts opportunities to assign names and categories to basic and nearly ubiquitous features of his or her life, including trees, bushes, plants, flowers, birds, mammals, habitats, and landscapes” (p.68).

Interactions between children and teacher have a critical role in the preschool children’s learning environments (Downer et al., 2010; Hännikäinen & Rasku-Puttonen, 2010). Preschool learning environments are mostly designed to motivate children’s learning by allowing children to imagine and play (Hännikäinen et al., 2010). Preschool children voluntarily approach teachers to establish bonds with them, and, in turn, teachers in preschool settings tend to provide emotionally supportive, learning-friendly, and child-centered classroom environments to facilitate children’s learning abilities and processes. Classroom emotional support (e.g., teacher sensitivity, positive climate), the teacher’s behavior management skills, and the teacher’s instructional support (e.g., providing of feedback, language support) are related to preschool children’s social skills development, literacy development, and language development (Dobbs-Oates, Kaderavek, & Justice, 2011; Mashburn et al., 2008; Pianta, et al., 2008).

Consistent with the previous statement, Howes and Ritchie (2002) pointed out that the Vygotskian concept of Zone of Proximal Development occurs when combining diverse environment, teachers who scaffold children’s capacity for learning by enhancing individual or group activities through social interactions; in this way, children have more cognitive competence as well. Positive teacher-child interactions through social interaction in a natural environment help children to develop prosocial behaviors through teacher’s direction via questions or constructive responses to children’s questions. Besides teacher’s scaffolding, early experiences with peers through engagement in social pretend play and positive social interaction among peers and teachers helps children learn to live, share, cooperate, and help each other; these experiences cultivate children’s prosocial behavior (Spivak & Howes, 2011).

### **1.a Nature and Children in Today**

Parents are inclined to limit children’s freedom of mobility more than previous generation, in part due to fear of traffic and crime, as well as parents’ work schedules (Hillman, Adams, & Whitelegg, 1990). There is evidence that the extent of nature experience in childhood is associated with adult conservation behaviors and attitudes, as well as propensity to spend time outdoors (Allen & Ferrand, 1999; Bailie, 2012; Chawla, 1998; Thompson, Aspinall, & Montarzine, 2008). Consistent with that, Louv (2008) conceptualized a term called Nature deficit disorder as “the human costs of alienation from nature, among them: diminished use of the senses, attention difficulties, and higher rates of physical and emotional illnesses” (p. 36). It is clear that adults and children have alienated themselves from nature for the last two or three decades.

However, there have been some hope-inspiring movements, particularly in the preschool years; several preschool authorities in the world have been trying to establish nature-based learning environments or include nature in their classroom-learning environment to get children tuned in to nature. Biophilia is defined as “the innate tendency to focus on life and lifelike processes” (Wilson, 1984, p. 1). Kellert (1993) extends Biophilia concept by stating:

The Biophilia Hypothesis boldly asserts the existence of a biologically based, inherent human need to affiliate with life and lifelike processes...The human need for nature is linked...to the influence of the natural world on our emotional, cognitive, aesthetic, and even spiritual development...The biophilia notion, therefore, powerfully asserts that much of the human search for a coherent and fulfilling existence is intimately dependent upon our relationship to nature. (p. 42-43)

### **The Present Paper**

Throughout the present paper, following research questions will be addressed:

RQ1: How does nature or nature-based activities help children's cognitive development?

RQ2: How does nature or nature-based activities help children's social and prosocial behavior development?

RQ3: How does nature or nature-based activities enhance children's learning abilities?

To address these research questions, this paper will explore how nature helps young children's cognitive, social, prosocial behavior development through primary and secondary existing literature sources (Fraenkel, Wallen, & Hyun, 2012). This paper will also touch on how teachers influence children's learning objectives through guiding children's learning activities during nature-based activities. The present paper tends to explore child development through peer-child and child-teacher interactions throughout nature-based activities through the lens of Vygotsky's (1978) Socio-Cultural Theory.

Vygotsky stresses that play has an important role in child's social interaction: a child observes, discovers, and realizes his/her environment through play (Vygotsky, 1978).

In the Sociocultural Theory, there are two main processes in children's cultural development: Social and individual (Vygotsky, 1978). Social process is interpersonal, whereas individual process is intrapersonal. Children socially interact with peers and teachers through play in early ages; social interactions help children to develop actual life facets and intra-psychological discussion that influences children's creative and critical thinking (Kozulin, 1987). Vygotsky (1978) elucidated that children's socializations occur through guidance of adults and peers who are more competent. He describes that guidance process as Zone of Proximal Development (ZPD). The ZPD elevates children's existing developed potential to a more developed level by interactions of children with peers and adults (Vygotsky, 1978). In the ZPD, adult modeling through cooperative activities (aka guided participation, especially between child-mother and teacher-mother) helps children to solve problems and learn new knowledge (Rogoff, 1990).

## **2. Nature/Nature-based Activities and Children's Cognitive Development**

Young children start asking many questions to parents, or any adult around them to satisfy their curiosity. Sometimes parents have a hard time answering their young child's questions due to "complexity of

question,” such as “why can’t my little cat talk to me?” Parents should take children’s questions more seriously; questions increase children’s knowledge, spark their curiosity, and teach them how to think perceptively (Shelov, Hannemann, Rome, Sanders, & Reiseberg, 1991). Gopnik (2009) argued for the traditional perspective (i.e., Piaget, Freud) on children’s counterfactual skills (that children are limited to distinguish reality from fantasy); however, cognitive scientists recently discovered that this traditional perspective is questionable, and even very young children can consider possibilities, and distinguish reality from fantasy (see Alison Gopnik, 2009, for examples). Young children are naturally sparked to explore around them and question incidents that occur around them, in this way they feed their natural curiosity.

As children are curious about their immediate environment, nature provides substantial opportunities for them to develop cognitive skills. Several researchers have investigated the relationship between cognitive development and nature (e.g., Kuo, Bacaicoa, & Sullivan, 1998; Taylor, Wiley, & Sullivan, 1998; Wells, 2000). Wells (2000) through a longitudinal study, found that children who lived in houses surrounded by and provided more greenness had the highest levels of cognitive functioning. In addition, Taylor et al. (1998) observed the behavior of a first group of children who lived in urban area, with less greenness and trees around them, and a second group of children who lived in greener environment. They found that children in green places had more chance to have outdoor activities and access to play. In regards to that, they discussed that a green environment is critical for children’s social and cognitive development. Kahn (1999) suggested that having experiences with nature in early ages could provide significant impacts on cognitive development. Interacting with nature even in passive way was found to reduce stress, increase relaxation, and improve cognitive functioning (Baillie, 2012; Kaplan, 1973).

Some research has also shown that interacting with nature and nature-based activities develops attention skills (see Cimprich, 1990; Faber Taylor, Kuo, & Sullivan, 2001; Hartig, Mang, & Evans, 1991; Grahn, Martensson, Lindblad, Nilsson, & Ekman, 1997; Wells, 2000, for review). Green, natural environments help children with ADD develop attention functioning (Faber Taylor et al., 2001). Hartig et al (1991) found that people who hiked in natural settings performed highest on proofreading activities, which needs attention skills, than people who hiked in urban settings and people who only had relaxation for 40 minutes. In addition to that, Cimprich (1990) found that people who participated in nature-based activities showed consistently better attentional focusing than people who did not. Grahn et al (1997) compared two groups of children in Sweden; the first group of children attended nature based-preschools where children had outdoor activities regardless of weather conditions. The second group of children attended regular urban-based preschool where children had activities in man-made playgrounds. They found that children in nature-based preschools had better motor coordination skills and attention concentration abilities. Research suggests that children develop their cognitive and attentional functioning abilities through interacting with nature or nature-based activities.

### **3. Nature/Nature-based Activities and Children’s Social/Prosocial Development**

Children in early ages tend to interact with their environment, peers, and adults around them through play. Children develop social skills through interacting with peers via structured and unstructured play activities (Brown, 2009). Social relationships provide many benefits, including caring for oneself, and regulation of emotional control in interactions with peers (Cohen, 2001). Early experiences with peers through engagement in social pretend play, positive social interaction among peers and teachers help children learn to

live, share, cooperate, and also help each other; these experiences cultivate children's prosocial behavior (Spivak & Howes, 2011).

Prosocial behavior is defined as "actions that are intended to aid or benefit another person or group of people without the actor's anticipation of external rewards" (Mussen & Eisenberg-Berg, 1977, p.3). In general empathy, sharing, caring, helping, comforting, and cooperation are predominant prosocial behaviors that are expected from children. Coplan and Arbeau (2009) suggested that during the preschool period children demonstrate important advances in social-emotional competence. For example, preschoolers tend to exhibit increasing levels of helping, sharing, and other prosocial behaviors with peers (Eisenberg, Fabes, & Spinrad, 2006). Peer interactions during play and in other interactions and other contexts provide opportunities for children to practice, develop, and demonstrate prosocial behavior in early childhood (Acar & Torquati, 2012). In addition to that, children's play in natural environments helps children to develop their cognitive skills. Children learn and engage with their world within play at very early ages (Milteer & Ginsburg, 2011)

Nature or nature-based activities provide abundant opportunities for children to create play-like environment. Children through this play-like environment interact with each other and the nature as well. David Krathwohl and colleagues revealed five stages in emotional maturation (as cited in Kellert, 2005). One of the stages is valuing which means "the child's ability to attribute worth or importance to information, ideas, and situations, reflecting a clear and consistent set of preferences and commitments" (Kellert, 2005, p.70). Consistent with that statement, as children develop their knowledge about nature and other beings through interacting with nature, they develop prosocial behaviors towards nature (Thompson et al., 2008). Besides developing prosocial behaviors towards nature, children also develop prosocial behaviors towards peers through pretend-play and other nature-based activities (Acar & Torquati, 2012).

Cheng and Monroe (2012) suggest that witnessing a creature (animal or plant) being damaged may foster empathy and the motivation to take care of the creature and nature. Poresky (1990) found that young children who had a close relationship with strong attachment to their pet scored higher on a measure of empathy than children who had a weak relationship to their pet. This evidence suggests that children may learn empathy for animals by staying in connection with them in nature-based activities such as hiking and exploring in nature. It is suggested that having experiences with nature increases caring about nature and commitment to protecting it (Schultz, 2002). Coley, Kuo, and Sullivan (1997) found that natural settings provide important opportunities for young people and adults in terms of use of spaces. They also pointed out that natural settings and greener environments promote social interactions among people. It has been discussed that natural environments help children and adults to establish social interactions; therefore, in urban areas people may not get in touch with one another due to lack of natural settings, whereas people in greener and natural settings may go out and interact with one another freely (Louv, 2008; Kellert, 2005).

Acar and Torquati (2012), through running observations, found that children in nature-based preschools had many opportunities such as instrumental materials and natural settings to interact with peers and promote prosocial behaviors through pretend play. Overall, outdoor activities in natural settings provide abundant opportunities for children to develop social and prosocial behaviors towards nature and peers.

#### **4. Nature as Classroom**

As children question their environment and incidents around them, they develop new knowledge or scaffold their previous gained knowledge. Gaining new or restructuring previous knowledge helps children to develop new concepts of new learning and incidents. Nature provides diverse opportunities for children to develop new concepts through interacting with nature by either teacher-directed or self-directed activities. For example, the North American child learns to understand how snow falls instead of rain at certain temperatures, butterflies fly in the day and moths at night, and to identify the living features of many animals in nature by observing and interacting with nature (Kellert, 2005). In addition to that, Schulz and Baraff Bonawitz (2007) found that children's spontaneous exploratory play helped children's causality development. Additionally, the exploratory play of very young children reflects their scientific inquiry skills. Children in nature activities have opportunities to develop scientific inquiry skills such as questioning about weather events, animal classifications, or plant names.

Some researchers (Hovland, Gapp, & Theis, 2011; Howes & Ritchie, 2002; Pianta, 1999) have also emphasized the teachers' role in cognitive and social development of young children. Teachers' guidance in outdoor play activities helps children to scaffold their conceptual knowledge development; teachers help children in learning contexts via guiding their learning processes or redirecting misbehaviors (Trawick-Smith & Dziurgot, 2011). The quality of teacher-child interactions depends on both child and teacher (Pianta, 1999); for instance, a child's spontaneous interaction with a teacher helps the teacher to understand the child's feelings. Acar and Torquati (2012) observed teachers' guidance via questions or prompting of appropriate behaviors to promote children's prosocial behavior demonstration in nature-based outdoor activities. Zucker, Justice, Pianta, and Kadaravek (2010) found that teachers' inferential questioning is associated with children's receptive and expressive vocabulary outcomes. Alike previous findings Lee, Kinzie, and Whittaker (2012) found that open-ended questions asked by teachers in pre-k science activities had a positive impact on children's vocabulary, language use, and complex structure use in their verbalizations. Teachers maintain and keep cooperative learning activities of young children under control even during children's self-directed play activities (Pianta, 1999). Teachers maintain control of cooperative learning activities by providing materials, scaffolding competences, or guiding children's learning objectives (Tarim, 2009).

#### **5. CONCLUSION**

Nature and nature-based activities help children to develop cognitive functioning abilities, and social and prosocial skills towards nature and peers. Nature is a broad classroom that provides abundant opportunities for children to develop their inquiry, hands-on, scientific, and questioning skills. Therefore, children may faster develop these skills in early grades. Parents and childcare providers should keep children tuned with nature in early childhood to enhance their social and cognitive development. Acar and Torquati (2012) provided several take home points for parents, teachers, and childcare provider (p.8)

- Nature is waiting for children outside; parents, teachers, and childcare providers should take advantage of the nature to use it as a tool or classroom for children
- Parents, even in urban areas, should take their children to the natural places for couple of times in a week to get children touched with the nature



- Teachers, parents, and other adults can mediate children's meaning-making about nature
- Adults can model respect for nature, and convey value for diverse life forms
- Children learn how to develop prosocial behaviors towards the nature, animals through nature-based activities
  - Children learn how to cooperate, share, help to each other through peer interactions within play in the nature
  - Nature sparks children's social-emotional and cognitive skills
  - Children develop intra-inter personal interactions through nature-based activities.
  - Nature-based activities in nature spark children's discovery and inquiry skills
  - Parents, caregiver, or teachers can provide seasonal nature-based activities for preschool-aged children to keep them tuned with nature.

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