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Nature Playscapes as Contexts for Fostering Self-Determination

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Abstract

The physical environment plays a significant role in the development of self-determination. More specifically, natural environments in early childhood education can instill both competence and a sense of overall well-being in children. Research on self-determination in adolescence and adulthood is well-studied; however, little attention is focused on the conditions or contexts that elicit this outcome in children. Flexible, sensory-rich environments empower children to exercise preference, problem-solving, self-regulation, and engagement. The purpose of this research is to demonstrate how child-directed play within intentionally designed nature playscapes fosters self-determination. Analysis of the affordances of a 1.6 acre nature playscape, created to accommodate young children, highlights the role of open-ended play structures and loose parts. Observational video captured a diverse sample of 65 preschool children engaged in child-directed play. Descriptive vignettes portray instances of problem-solving, self-regulation, and engagement and provide a discussion point for the relationship between the affordances of natural learning environments and the development of self-determination.

Keywords: learning environments, nature playscapes, early childhood, self-determination, child-directed play, loose parts

Introduction

What is our biggest hope for children? The answer to this question greatly impacts the experiences and environments to which children are exposed and ultimately impacts the outcome of their formative years. If we embrace the vision that children can grow into competent and confident adults able to contribute to a more peaceable, healthy society, it is vital to identify optimal contexts that support this development.

The present research emerged from a larger study researching preschoolers' informal science learning within an intentionally designed nature playscape (Carr and Maltbie, in preparation). Nature playscapes, or natural playgrounds, are designed to connect children with nature in a safe, yet unstructured outdoor play environment. Observing young children at play in this setting, it became evident that they were exercising the skills and attitudes associated with the development of self-determination, namely choice-making, problem-solving, self-regulation, and engagement (Palmer et al. 2012).

Self-determination theory (Deci and Ryan 1985; Ryan and Deci 2000) suggests that we are born with a natural, innate need to explore the world around us. It is through this internal and highly personal motivation that we learn. Ryan and Deci (2000) identified competence, autonomy, and relatedness, or self-determination, as the psychological foundation for a high quality of life. The inclination towards growth, integration, social development and well-being is driven by intrinsic motivation—the internal, personal desire to engage in a behavior without the influence of external rewards, force or conformity (Carlton and Winsler 1998; Deci et al. 1991)

When applied to the realm of education, self-determination promotes invested, authentic learning that builds confidence and empowerment. These outcomes are a result of intrinsically motivated learning (Deci et al. 1991). An orientation towards self-determination will lead educators away from direct instruction towards a more student-driven model, promoting greater independence and engagement.

More specifically, self-determination theory holds that individual, social, and environmental conditions, or contexts, influence children's development (Carlton and Winsler 1998; Erwin and Brown 2003; Ryan and Deci 2000). These domains are highly interrelated. Abery and Stancliffe (1996) note that efforts to become self-determined can be undermined by the people and institutions that play a role in daily experience. For this reason it is important to identify contexts that support rather than hinder this development.

This paper explores the influence of the physical environment on the foundational skills and attitudes related to self-determination. In addition to the growing body of literature on the developmental phase of self-determination, the salient concepts of play, environmental psychology, and early learning environments are synthesized in relation to this fundamental outcome. A closer examination of the affordances of the nature playscape, paired with vignettes of play experiences, present evidence that play in nature, and more specifically play within an intentionally designed

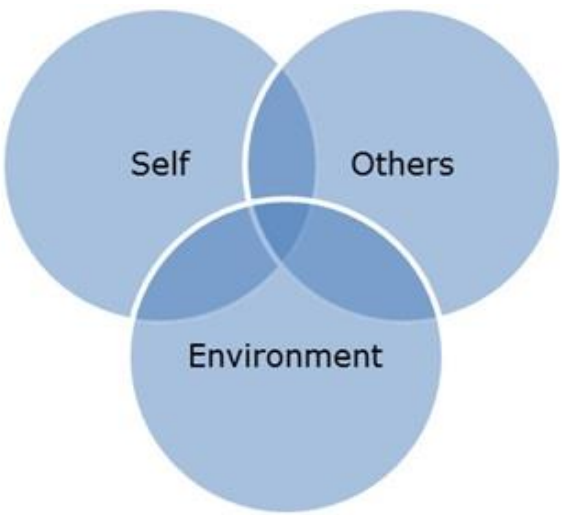
nature playscape, provides an optimal context for fostering self-determination in young children.

The Development of Self-Determination

Competence, relatedness, and autonomy can be recognized in children by skilled observers who are well-versed in child development. Caretakers who position their practice towards the goal of self-determination can promote skills (problem-solving, choice-making) and attitudes (empowerment, independence) that encourage self-determination (Abery and Zajac 1996; Doll et al. 1996; Erwin and Brown 2003). Strategies such as designing responsive environments, modeling skills and attitudes related to self-determination, and providing opportunities for practice will aid in fostering this development (Wall and Datillo 1995).

The three domains of self, others, and environment can be specified in relation to early childhood education as the child, the adult, and the immediate learning environment (Erwin and Brown 2003). This framework provides a model for assessing the specific contexts of an early care and education environment (Figure 1). It is the responsibility of both practitioners and families to provide opportunities for independence within dynamic, responsive environments. Attributes of responsive environments have been studied in educational settings for many years, resulting in a set of best practices to which early childhood education is held accountable (Copple and Bredekamp 2009).

Figure 1. Relationship between self, others and the environment



Building on these best practices, the Early Childhood Foundations Model for Self-Determination formalizes the proposition that skills and attitudes related to self-determination can be developed in early childhood (Palmer et al. 2012). This model requires the acquisition and integration of choice-making and problem solving, self-regulation, and engagement. *Choice* is closely related to autonomy, as it requires an indication of preference. Young children gain a sense of control and ownership when given the opportunity to make choices throughout daily routines, which in

turn helps them recognize the various outcomes of their decisions. *Problem-solving* is the capacity to identify available choices and resources to generate solutions. *Self-regulation* refers to the ability to regulate emotions, behaviors, and attention and is seen as a vital attribute of healthy emotional-social development. *Engagement,* or focused attention, is a critical trait of self-determination because it assumes a level of intrinsic motivation to actively and meaningfully participate in a task. These skills are interactive and reciprocal in nature. The Early Childhood Foundations Model for Self-Determination also applies the domains of self, others and environment—and more specifically, it represents the moderating effects of the physical and social environment on choice-making, problem-solving, self-regulation and engagement (Palmer et al. 2012).

Learning through Play

Through play, we make connections—between others, our environment, and ourselves. Children act out their experiences and make sense of the world through play. Piaget (1963) recognized play as an opportunity to practice and consolidate newly acquired knowledge contributing to cognitive development. Vygotsky (1967) extended this understanding by proposing that play is how children scaffold their learning and make meaning intellectually as well as socially and emotionally. Free play provides an intrinsically driven venue for children to learn in this way. (Johnson, Christie and Yawkey 1999)

It is the responsibility of adults (parents, teachers, and the greater community) to ensure that children's right to free play is protected. This is achieved by providing time, access, and freedom to play. Appropriate levels of independence, with minimal adult intervention, will maximize opportunities for risk-taking, experimentation, and collaboration with peers. Intentionally designed playscapes provide a safe, yet child-directed setting for play in nature. Caretaker fear is a self-imposed inhibitor to children's outdoor experiences (Freeman and Tranter 2011; Louv 2008; Luken, Carr and Brown 2011). Nature playscapes encourage children to consider their choices according to a shared control with adults.

The freedom and power to act independently with access to secure adults is ideal for the development and learning that occurs through play (Johnson, Christie and Yawkey 1999). According to Abery and Zajac (1996) an organizational structure with a child-directed orientation "allows children to solve their own problems, assess their own competencies, and provides a considerable degree of freedom within adult-set limits with respect to what children do, when they do it, and the manner in which it is accomplished" (177). The physical environment and the organizational structure influence one another and consequently impact the type of play in which children participate.

The Physical Environment and Play

Current best practice for young children recognizes the impact of early experiences and socio-cultural influences on both cumulative and delayed development (Copple and Bredekamp 2009). It is widely accepted that the social environment mediates early learning. However, much less attention has been given to how the physical environment participates in this process. As seen in the literature on self-

determination (Erwin and Brown 2003; Palmer et al. 2013; Ryan and Deci 2000) and environmental psychology (Augustin 2009; Bell et al. 2001; Kopec 2012; Wapner and Demick 2002), the physical environment contributes greatly to behavioral and learning outcomes.

The design of the playscape should be seen as an occasion to intentionally arrange and direct activity towards optimal developmental and learning outcomes (Carr and Luken 2014; Cook et al. 1996). The physical environment serves as the "third teacher," communicating both implicit and explicit messages while serving as a space to build complex relationships that mediate social, emotional, and cognitive development (Edwards, Gandini and Forman 1998).

Materials are an integral element of the physical space. Wachs (1985) describes four dimensions of materials that should be considered with young children: availability, variety, complexity, and responsivity. Play objects provide different functions, or types of use, and consequently have differing effects on the type of play and learning outcomes (Curtis and Carter 2003).

Play materials that encourage experimentation and investigation in non-prescribed ways are critical for creativity and self-expression. Natural materials (rocks, sticks, leaves), recognized as a type of "loose parts," are the primary play objects in a nature playscape. Nicholson's (1972) theory of loose parts suggests a direct proportionality between the number and kind of variables in an environment and the creativity and inventiveness that ensues. Maxwell, Mitchell and Evans (2008) found that the addition of man-made loose parts to the play environment resulted in an increase in both constructive and dramatic play. Brown (2003) suggests that in natural environments such as playscapes, the malleability of the plant materials adds to the complexity of the environment, which children need for sensory explorations and to nourish their ongoing development, which is flexible and adaptable to the influences of external stimuli.

The Affordances of Outdoor Play Environments

Nature playscapes can be evaluated based on the affordances they provide the users (Heft 1999). The term *affordance* describes the functional dimensions or the possibilities provided by the environment. These affordances are a strong indicator for behaviors (Bell et al. 2001; Gibson 1979). For example, an open field affords running and game playing. The same concept can be applied to the contexts (elements or objects) within an environment (i.e., a chair affords sitting and a ball affords kicking or throwing). In playscapes, the flexibility of natural loose parts afford a variety of behaviors.

Although outdoor environments have yet to be fully embraced for their learning potential, they clearly afford opportunities for functional, constructive, dramatic, and physical play (Carr and Luken 2014; Frost 2010; Luken, Carr and Brown 2011). Play in nature also fosters inquiry skills such as observing, wondering, questioning, exploring, investigating, and reflecting (Chalufour and Worth 2003). These are skills that are also relevant to problem-solving, self-regulation and engagement. A natural environment activates all of the senses and is therefore synonymous with

an enriched environment that provides optimal stimulation for play and learning (Fjørtoft 2001).

The intent of this study is to illuminate the correlation between play, the environment, and development; more specifically, it explores how the affordances of a nature playscape contribute to the development of children's self-determination. The belief that child-directed free play within a nature playscape affords opportunities for choice-making and problem-solving, self-regulation and engagement is the basis of the following examination.

Methods

Influenced by grounded theory, this study uses a constructivist approach to evaluate the interrelated contexts impacting the development of self-determination in young children within a nature playscape (Bogdan and Biklen 1998; Glesne 1999; Strauss and Corbin 1998). The Foundations for Self-Determination Model set forth by Palmer et al. (2012) frames our understanding of the developmental phase of self-determination. Choice-making, problem-solving, self-regulation, and engagement are identified as relevant precursors for self-determination, mediated by the individual, others and the environment. Opportunities to exercise these skills are found in play. Johnson, Christie and Yawkey (1999) describe play as an intrinsically motivated behavior influenced by the environment and the organizational structure of the play environment (i.e., child-directed). Looking to the field of environmental psychology we gain an understanding of context and the interplay of the human-environment relationship (Wapner and Demick 2002). Moore and Wong (1997) guide our view of intentionally designed nature playscapes as places for hands-on, child-centered exploration.

Participants and Setting

Collaboration between an urban university and a privately run nature center led to the development of a 1.6 acre nature playscape in the Greater Cincinnati area (Figure 2).[1] The playscape, situated within the larger nature center, was designed specifically for young children and reflects the natural landscape of the region. Table 1 below describes the specific features of the playscape.

[1] Landscape Architects: Rachel Robinson Design Landscape Architecture, LLC and GroundWork Design Cincinnati LLC

Figure 2. Cincinnati Nature Center playscape

A diverse sample of 65 children from two blended Head Start and tuition-based programs were the participants for this research. Program 1 is a university-affiliated development and research center located in an urban setting. Program 2 reaches a rural community and is part of a larger, private, not-for-profit organization that serves children and families from prenatal care through adolescence. The researcher chose two multi-aged classrooms, consisting of 3–5-year-old preschoolers, from each program. The classrooms were selected based on travel logistics and teacher willingness. The two programs visited the playscape separately.

Data Collection

The larger mixed-methods study conducted multiple collection measures including a curriculum-based assessment, behavior mapping, teacher focus groups and audio and video observation. These data were collected over the course of 18 months and were divided into spring 2012, fall 2012, and spring 2013 data collection periods. The current study utilizes the spring 2013 video data collected by the first author. Children were observed during free play on the playscape. No more than 34 children were observed at any one time. Both schools participated in three, one-hour sessions at the nature center playscape, for a total of six hours of data collection.

A guiding protocol was followed for all video observation. Three videographers spaced themselves throughout the playscape within specifically outlined zones, making sure all areas of the playscape were scanned for child play. Unless separate play experiences were occurring simultaneously in the same area, videographers were spread across different locations. Videographers were instructed to hone in on instances of engaged play. These could be independent or group interaction, but the child or children videotaped were to be immersed in an

activity resembling inquiry, exploration, or free play. Observations continued for the duration of the engaged play. Cues to end observation included the child discontinuing the play scenario, choosing a different activity, or choosing a new area of interest. Researchers familiarized themselves with the students and teachers prior to data collection, so that the children were comfortable with the presence of these adults. Videographers were trained to be discreet in their collection measures, making efforts not to disrupt or alter the play.

Data Analysis

In line with grounded theory, analysis begins at the time of data collection (Strauss and Corbin 1998). Video analysis was influenced by a series of coding processes that the researcher developed and refined for all data collection measures over the course of data collection. Types of play (functional, constructive, dramatic, and games with rules) and inquiry skills (observation and representation) were two such categories.

The larger study looked at preschoolers engaged in play to identify moments of informal science learning. For the current study, the researcher analyzed the same video data for instances of choice-making and problem-solving, self-regulation and engagement—which accordingly are dynamic and interrelated (Palmer et al. 2012). Video analyses also identified affordances within the playscape, noting children's interactions with particular areas, materials and play structures.

The researcher chose and recorded the engaged play and therefore witnessed the observation first-hand. Following data collection, the video was uploaded onto a computer and coded for date, location and pre-school program. The researcher then completed an online survey providing immediate researcher-specific insight associated with the visit. Subsequently, a researcher watched the video in its entirety and summarized in the form of analytic files. These files documented the clip number, the length of the clip, number of participants, and provided a running record of each observation. After all video clips were documented, the researcher coded them for instances of choice-making and problem-solving, self-regulation, and engagement. It should be noted once again that these skills do not stand alone, but influence one another. From the coding process, the researcher highlighted relevant video summaries and developed descriptive vignettes from them. Care was taken to ensure the vignettes chosen reflected the gender and race diversity present in these classrooms. Approximately 4.75 hours of video data were analyzed, with a total of 152 minutes from Program 1 and 134 minutes from Program 2. Both programs are represented in the findings.

Findings

In this section, the affordances of the nature playscape are described in detail. Vignettes are then used to illustrate the child-environment interaction. The discussion following each vignette attempts to delineate the relationship between the environmental affordances and the observed behaviors with regard to choice-making, problem-solving, self-regulation, and engagement.

Affordances of the Nature Playscape

The nature center playscape was developed to engage children in a secure yet unstructured natural environment. Designed with the criteria for child-centered outdoor educational settings presented in Moore and Wong (1997) the playscape features a circular path, secondary and tertiary paths, and pockets of play spaces that contain a variety of plants and natural loose parts.

Table 1 describes the unique features of the playscape. The affordances of the space work together to create an environment that promotes play and open exploration.

Table 1. Features of the nature playscape

A	**The Creek** (*Upper/Lower Falls, Bridge)* is composed of stone, logs and dirt and emulates a naturally occurring creek bed. The bridge provides a birds-eye view of the playscape, allowing for observation.
B	**Landscape** (*Meadow, Woods, Wetlands, Sumac Grove)* variety affords different types of play and movement—hills for rolling, flat patches for running, natural growth for exploring and creating new pathways. The topography reflects the natural environment found in the Cincinnati region.
C	**The Entry** acts as a landmark and a meeting space. A large map displays permanent features of the site, helping children orient, navigate, and make plans for their play within the playscape.
D	**Pathways/Trails** help children confidently explore the playscape and develop mental maps of their surroundings.
E	**The Perimeter Boundary** uses discreet materials such as netting and logs to secure the playscape from the greater nature center without visually interrupting the natural environment.
F	**Gravel Pit/Sand Pit** areas provide opportunities for digging, collecting, manipulating, and representing and encourage a variety of play.
G	**Loose Parts** occur naturally throughout the playscape. Sticks, rocks, soil, plants, and water are abundantly available and are the predominant play objects.
H	**Play Structures** (*Forts, Teepee)* are made from natural materials and are flexible enough for functional, dramatic and constructive play. Optimal for use with large loose parts such as logs.
I	**Semi-enclosed Spaces** (*Cave, Tunnel, Hollow Logs)* throughout the playscape offer privacy or hiding places. Children can partake in imaginary play in child-sized spaces.

The map (Figure 3) of the playscape denotes the location of the affordances within the playscape.

Figure 3. Map of the playscape

The nature center's stakeholders designed their playscape to emulate the natural elements in the surrounding 1,025 acre nature center. The vegetation is not highly manicured—which provides children with a sense of being in a purely wild space. In relation to preference, problem-solving, self-regulation and engagement, three features are especially worth noting: natural loose parts, play structures (including semi-enclosed spaces), and the perimeter boundary. Table 2 shows how these features aid in the development of self-determination. They provide the context for the ensuing vignettes.

Table 2. Playscape elements that foster self-determination

Playscape Feature	Relationship to the Development of Self-Determination
Loose Parts	Loose parts have no predetermined use, meaning they can be used in a multitude of ways. Loose parts act as tools for functional play, (e.g., digging with a stick, creating piles of gravel) as well as building materials or props for more complex constructive or dramatic play. Natural loose parts provide availability, variety, complexity and responsivity (Wachs 1985). Natural environments can afford a wide range of materials allowing children to easily follow their play schemes. The quantity and variety allow children to problem-solve within their play and the complexity and responsivity of loose parts engage children according to their personal developmental levels. For example, a stick can be used for the functional play of a toddler or the game play of a preschooler.
Play Structures	Similar to loose parts, open-ended play structures (and semi-enclosed spaces) allow for a variety of play at varying levels. Play structures on the playscape include log "forts" that have no permanent roof, small caves, a tunnel, a stone sculpture and a teepee. These structures often intermingle with loose parts such as long branches for construction. The structures offer an element of risk-taking such as climbing and balancing, and provide optimal settings for problem-solving and collaboration. The caves and tunnel also afford a place of security and a child-sized, semi-enclosed space ideal for dramatic play or as an area to take a break or be alone.
Perimeter Boundary	The perimeter boundary is perhaps the most important feature of the playscape, as it affords children the opportunity to explore within boundaries. Although the perimeter boundary is not directly referenced in the vignettes, the importance of this feature was evident through teacher focus groups conducted as part of the larger study. Adults' fears often places restrictions on children's desire to interact with nature freely (Louv 2008). The fence-line provides the necessary security, while allowing children to move about the entire playscape without adult direction or direct supervision.

Vignettes

The vignettes were selected according to the Foundations for the Development of Self-Determination Model set forth by Palmer et al. (2012), which includes choice-making, problem-solving, self-regulation, and engagement. The names of children have been changed for confidentiality.

Vignette One: The following vignette observes Tatiana, Jada and Deborah navigating through the playscape and the various play scenarios that ensue (Figure 4).

Figure 4. Child with a stick navigating through the playscape

Tatiana and Jada, both with a stick in hand, are hiding behind a large rock in the meadow. As they leave the secrecy of the tall grass, their sticks transform into writing tools on the gravel pathway. As the two make marks in the gravel, a play scenario begins to emerge. Tatiana says to Jada, 'Will you help me with my map?' She points to a different spot and says, 'We're here.' They decide to go to 'grandma's house' and run off traversing rocks and grass and all the while dragging their sticks behind them. As they reach a patch of woods, Tatiana turns and states, 'We're just figuring out our way… do you know which way Jada? We have to go to the woods first. Grandma and Grandpa are calling!' The girls continue on until they find the area that Tatiana was looking for. The girls trade their sticks for different ones they find laying on the ground. Jada then discovers a hollow tree stump. 'Look!' she exclaims. They look inside and prod with their sticks. 'Let's touch.' says Tatiana as she reaches her hand down into the hole. She then decides to bury the sticks using the sand at the bottom of the hollow tree. Jada holds up a smaller stick and shows it to Tatiana who suggests, 'Let's bury this stick. Take your gloves off and let's bury this stick together. Let's bury all the sticks that are in here. Dig, dig, dig, dig a spot where you want it to go.' As they are busy burying the sticks, Deborah approaches and asks, 'What's inside there?' Tatiana informs her saying, 'Sticks. And we are going to bury

> *all of them.' Deborah asks if she may 'bury' and joins in the play by looking for sticks. Tatiana suggests that they are sticks for the 'birdies.' Deborah extends this scenario and says, 'We can make a nest for the birdies right here!' From across the way Jada beckons them to join her at a small circular structure of tree stumps. 'Come in here!' she yells to them. Tatiana and Jada join her by climbing up on top of the stumps. 'How do you like our seats?' says Tatiana. Jada is still holding on to her stick as she sits atop the tree stump when Tatiana calls to Deborah, 'Come and have some lunch! Who wants a turkey fish sandwich? I have three of them.' Jada takes a stick from Tatiana and Deborah declines, pointing to the pine branch she is holding. 'I already have food. This is my food.' The pretend play continues with sticks and branches transforming into pasta, chocolate milk and mashed potatoes. The girls pretend to nibble the branches and leave often only to return hands full of more 'food.'*

This play sequence demonstrates the interrelated nature of preference, problem-solving, self-regulation and engagement. The freedom of the playscape allows the girls to move from place to place without restriction, making it possible for them to follow their various play schemes. In this one observation, loose parts are being used in a multitude of ways. More specifically, sticks are used for functional, constructive and dramatic play. Interestingly, the girls carry a stick with them at all times to be transformed on a whim to meet their moment-to-moment play needs. Within a 20-minute scenario, the stick is a drawing tool, a walking stick, a tool for poking, prodding and stirring, an object to be buried, and a dramatic play prop.

This vignette portrays the potential of open-ended materials to elicit creativity, problem-solving, persistence and engagement. Because sticks are readily available as play objects, it is possible for others to easily join in group play. Deborah picks up a stick and she is instantly sharing "turkey-fish sandwiches" with her peers. It is the artifact, in this case the availability of sticks, which draws children into the play scenario. When children are confident that they can source the needed materials or come up with solutions for their play, self-regulation is positively reinforced. Again, the flexibility and availability of loose parts aids in this development. In addition, the space affords child-directed play, allowing children the opportunity to experiment and explore materials that in other settings may be considered dangerous or threatening. When children interact in environments that communicate trust and respect for their abilities, they are more likely to trust and respect their environment (Edwards, Gandini and Forman 1998). The reciprocal respect between child and environment serves as a signifier for self-regulated behavior. Adult restrictions, whether as a safety precaution or a behavior limitation, take away valuable opportunities to promote self-regulation. Children are more likely to demonstrate independence and self-awareness when they have the freedom to engage with materials of their choosing.

It is also worth noting the different developmental levels represented in this observation. Jada, the youngest of the three girls, participates in functional play such as discovering a hole, finding sticks and making lines in the gravel. Tatiana

then extends the functional actions of her peer into more complex dramatic play, for example, making marks in the gravel evolves into the creation of a map that shows them the way to their grandparent's house in the woods. The open-ended nature of the playscape allows for materials to be used in infinite ways that meet the needs of the specific player, which enables children of varying abilities to interact with one another in the same setting.

Vignette Two: This vignette observes Martavis, Gabriel and Eric playing at a tree fort in the woods (Figure 5). The fort is a log cabin-style (horizontal logs) structure and has no permanent covering. During this visit, long, sturdy branches have been laid across the top opening creating a "roof."

Figure 5. Child engaged in house building at the tree fort

Martavis, Gabriel and Eric are gathered at the tree fort. Martavis has climbed up the fort, sitting upon the thick branches that stretch across the structure. He holds two sticks in one hand and one in the other. 'We're working on this… we're working on the roof.' Gabriel clarifies that it is a house. Martavis holds up a stick and identifies it as a hammer. He points out the attributes of other sticks and provides a monologue of their uses. 'This is a hammer… this stick is a hammer and this stick helps us grab… it has this little hook right here. The spiky ones we sometimes use like that (pokes stick downward), then the points that are sticking out of it, we use like that. And then this one is our grabber (stick with a curved end) and it grabs the big logs that are kind of heavy like this one. If we don't want to

> *use the tiny logs we just grab it like that. And if there's a bump on the house and if we want to take it off, we just grab it around and then it comes off, and if we want this off, we can just hammer it off.' While Martavis demonstrates the different uses for his various sticks, Gabriel and Eric are climbing up and jumping down off the structure, using their own sticks in a hammering motion. Martavis climbs down and goes looking for other materials to use. Eric brings back more logs and says, 'Guys, I got some brand new sticks.' He carries a log above his head and tosses it near the fort. There is a pile of logs that Eric wants to move, but they are heavy, so he says, 'I'm gonna need their help.' Eric calls for Martavis who is standing in patch of daffodils. Martavis comes running back carrying flowers and enthusiastically says, 'Dude, this is what we can decorate with!'*

Similar to the previous observation, sticks are used to represent many things, demonstrating how an extremely simple material can have high complexity. There is no predetermined use, so there are infinite ways the sticks can be used. Sticks are able to be held with one hand and carried independently making them optimal as a play prop. Logs, or larger branches, afford constructive play and often times rely on social problem-solving to move and manipulate. The availability of materials aids in self-regulation skills, because children are able to source the materials they need. The sticks, with their different shapes and sizes, spark creative thinking within this dramatic play scenario. Each stick affords a different utility, which allowed for more complex thinking about tools than say a plastic play tool kit would. Loose parts spark the question, "What can I do with this object?" As suggested by Johnson, Christie and Yawkey (1999) when these children played, they ignored the reality of the object and instead assigned it the necessary role to complete their play. The level of engagement is evident in this self-directed, intrinsically motivated play scenario. This vignette is also an example of how children are active agents of their own socialization, providing insight into the processes of children's friendships (Corsaro 2003).

Vignette Three: This vignette takes place at the second fort structure in the woods. Vertical logs of various heights are set in a circular formation with no permanent top closure (Figure 6). On this particular visit, the structure remains open at the top. Keller and David are using the structure to climb and balance. A teacher, Karen, is present in this vignette and her teaching style should be noted.

Figure 6. Children climbing on the vertical structure

'I'm way taller than everyone!' Keller exclaims after successfully climbing onto the top of the log circle. To share his achievement with the others in the fort he calls out, 'Hey, look at me!' Pointing to various logs, he explains how he climbed to this spot and then steps up to a higher platform. 'I'm even getting taller!' At this point, David who had been playing inside the log circle takes notice. Keller verbally retraces his steps to guide David atop the logs and then declares, 'I'm the king of the world!' David wants to climb up and asks Karen, the teacher, for assistance, to which she responds, 'He got up there himself. He found a way to climb. You need to find a way to get up there. What else is down there that could help you climb up?' Keller also calls out to Karen for help, but quickly regains confidence in his own abilities. He carefully navigates his footing and Karen recognizes his efforts saying, 'It looks like you're figuring it out.' In the meantime David has figured out how to stand on a shorter tree stump to get him on top of the log structure. He tells Keller he wants to join him on the tall log and Keller becomes protective of his space—territorially announcing that he may not share his log. David points to the log beside Keller indicating that is where he would like to stand, which satisfies Keller who then helps him devise a plan to get there. 'Yeah, you can step right there, there or there… but not here.' Karen restates his message, saying, 'But not the same one as you, because there's not enough space.' David and Keller proudly announce that they are very tall standing atop the logs. 'I'm bigger now!' exclaims David. 'Me too, I'm bigger… I

> *stepped on here, here and here.' They stand smiling—looking out across the woods.*

This vignette demonstrates both skills and attitudes related to self-determination. The two children show persistence in achieving the task of climbing and moving from one stump to another. This persistence signifies engagement as well as self-regulation. They are intrinsically motivated to accomplish their goal because it is a task set forth by their personal desire. Problem-solving skills are required to navigate the climbing process, which is evident when David finds a stump to climb on after his first attempt to climb up was unsuccessful. David self-regulates his need for help when encouraged to seek out a solution on his own. The two boys demonstrate appropriate conflict resolution when Keller sets boundaries about his space on the log. The confidence gained from this experience is evident in their exclamations and explanations about their experience.

The affordances of the playscape are perceptible in this scenario. The open-ended log structure, at other times utilized for dramatic or constructive play, can also be interacted with in a functional manner. The various log heights engage the children in gross motor skills and present an optimal navigational challenge. The availability of loose parts makes it possible to problem-solve with greater independence and evaluate the affordance of various loose parts to best meet the play needs. For example, the variety of tree stumps and branches David had at his disposal afforded a solution for climbing onto the tree fort.

The teaching style represented in this vignette supports child-directed play and self-determination. Karen encourages the children to look for solutions. She offers the minimum assistance necessary to guide the child-driven efforts, which encourages appropriate self-regulation when they encounter a roadblock in their play. By verbally recognizing the child's accomplishments, she helps build confidence and competence. It is important to note that she is not using excessive praise, but instead points out the skills that the child is exercising. This type of encouragement provides authentic feedback.

The teaching style upholds a child-centered structure by encouraging the children to have confidence in their problem-solving skills and personal abilities. Even when they encounter difficulty, the teacher does not directly intervene, but gently guides them to find solutions and self-regulate within peer play. This vignette portrays the intermingling effects of the physical and social environments and demonstrates how both dimensions combine to play an integral role in mediating behavioral and learning outcomes.

Conclusion

Play is an intrinsically motivated behavior. During child-directed free play, children acquire and practice skills and attitudes related to self-determination. Children deserve the right to learn in this way. It is the responsibility of adults to uphold this right by providing time for play in secure, yet unstructured environments. Intentionally designed nature playscapes provide opportunities for children to reconnect with the natural world. The availability and variety of natural loose parts

and open-ended play structures, paired with appropriate perimeter boundaries, affords play across age and developmental levels.

By analyzing the affordances of a nature playscape and providing descriptive vignettes, it is evident that environments that are intentionally designed for child-directed play in nature encourage choice-making, problem-solving, self-regulation and engagement. In the three vignettes shared above, playscape affordances were key features for promoting self-determination. Specifically, loose parts were used as multiple artifacts in play and the open-ended play structures challenged children's physical boundaries while providing opportunities to display courage through a determined effort to succeed. Although the physical environment directly influences behavior and learning, how children interact with the environment hinges on the beliefs, attitudes and guidance techniques of the caregiver. Future research should consider in greater detail the effects of teaching and intervention strategies on self-determination within a nature playscape.

Self-determination is a valuable human goal, as it promotes both competence and overall well-being. Because self-determination is recognized as a developmental process, it is necessary to consider the role of early childhood in relation to this outcome. Children are born with an innate drive to explore the world around them. Over time, experiences and environments can diminish the desire and/or opportunity to learn in this way. If our hope is to raise competent and confident children, we must consider the impact of the social and built environment on this development. According to Abery and Stancliffe (1996), very little effort has been dedicated to the enhancement of children's self-determination by way of intervention in the physical environment. By identifying optimal contexts, designers and educators can begin to incorporate these strategies into the design of the physical environment.

Moving in the direction of a more innovative learning construct for the 21st century, schools that focus on self-determination as a goal of education will equip students not only with skills related to competence and achievement, but with feelings of empowerment and overall well-being. By embracing environments such as the nature playscape, we will guide children towards a self-determined adulthood.

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References

Abery, B. and R. Stancliffe (1996). "The Ecology of Self-Determination." In Sands, D. and M. Wehmeyer, eds. *Self-Determination across the Lifespan: Independence and Choice for People with Disabilities.* Baltimore, MD: Paul H. Brookes Publishing Co., 111-145.

Abery, B. and R. Zajac (1996). "Self-Determination as a Goal of Early Childhood and Elementary Education." In Sands, D. and M. Wehmeyer, eds. *Self-Determination across the Lifespan: Independence and Choice for People with Disabilities.* Baltimore, MD: Paul H. Brookes Publishing Co., 169-196.

Augustin, S. (2009). *Place Advantage: Applied Psychology for Interior Architecture*. Hoboken, NJ: Wiley & Sons.

Bell, P.A., T.C. Greene, J.D. Fisher, and A. Baum (2001). *Environmental Psychology, 5th ed*. Fort Worth, TX: Harcourt College.

Bogdan, R.C. and S.K. Biklen (1998). *Qualitative Research for Education: An Introduction to Theory and Methods*, *3rd ed.* Boston, MA: Allyn and Bacon.

Brown, F. (2003). "Complex Flexibility: The Role of Playwork in Child Development." In Brown, F. ed. *Playwork: Theory and Practice.* Buckingham, UK: Open University Press.

Carlton, M.P. and A. Winsler (1998). "Fostering Intrinsic Motivation in Early Childhood Classrooms." *Early Childhood Education Journal* 25(3): 159-166.

Carr, V.W. and E. Luken (2014). "Playscapes: A Pedagogical Paradigm for Play and Learning." *The International Journal of Play* 3(1): 69-83.

Carr, V.W. and C. Maltbie (In Preparation). "Researching Preschooler's Informal Science Learning in Playscapes: From Conundrum to Conclusions."

Chalufour, I. and K. Worth (2003). *Discovering Nature with Young Children*. St. Paul, MN: Redleaf Press.

Cook, C., M. Brotherson, C. Weigel-Garrey and I. Mize (1996). "Homes to Support the Self-Determination of Children." In Sands, D.J. and M.L. Wehmeyer, eds. *Self-Determination across the Lifespan: Independence and Choice for People with Disabilities*. Baltimore, MD: Paul H. Brookes Publishing, 91-110.

Copple, C. and S. Bredekamp (2009). *Developmentally Appropriate Practice in Early Childhood Programs Serving Children from Birth through Age 8*. Washington, D.C.: National Association for the Education of Young Children.

Corsaro, W.A. *We're Friends, Right? Inside Kids' Culture*. Washington, D.C.: Joseph Henry Press.

Curtis, D. and M. Carter (2003). *Designs for Living and Learning: Transforming Early Childhood Environments*. St. Paul: Redleaf Press.

Deci, E.L. and R.M. Ryan (1985). *Intrinsic Motivation and Self-Determination in Human Behavior.* New York: Plenum.

Deci, E.L., R. Vallerand, L. Pelletier and R. Ryan (1991). "Motivation and Education: The Self-Determination Perspective." *Educational Psychologist* 26(3): 325-346.

Doll, B., D. Sands, M. Wehmeyer and S. Palmer (1996). "Promoting the Development and Acquisition of Self-Determined Behavior." In Sands, D.J. and M.A. Wehmeyer, eds. *Self-Determination across the Lifespan: Independence and Choice for People with Disabilities*. Baltimore, MD: Paul H. Brookes Publishing, 65-90.

Edwards, C.P., L. Gandini and G.E. Forman (1998). *The Hundred Languages of Children: The Reggio Emilia Approach—Advanced Reflections*. Greenwich, CT: Ablex Publishing.

Erwin, E.J. and F. Brown (2003). "From Theory to Practice: A Contextual Framework for Understanding Self-Determination in Early Childhood Environments." *Infants and Young Children* 16(1): 77-87.

Fjørtoft, I. (2001). "The Natural Environment as a Playground for Children: The Impact of Outdoor Play Activities in Pre-Primary School Children." *Early Childhood Education Journal* 29(2): 111-117.

Freeman, C. and P. Tranter (2011). *Children and Their Urban Environment: Changing Worlds*. London: Earthscan.

Frost, J.L. (2010). *A History of Children's Play and Play Environments: Toward a Contemporary Child-Saving Movement*. New York: Routledge.

Gibson, J.J. (1979). *The Ecological Approach to Visual Perception*. Boston: Houghton Mifflin.

Glesne, V. (1999). *Becoming Qualitative Researchers: An Introduction, 2nd ed.* New York: Addison Wesley Longman, Inc.

Heft, H. (1999). "Affordances of Children's Environments." In Nasar, J. and W. Preiser, eds. *Directions in Person-Environments Research and Practice*. Aldershot, UK: Ashgate Publishing, 44-63.

Johnson, J.E., J.F. Christie and T.D. Yawkey (1999). *Play and Early Childhood Development*. New York: Longman.

Kopec, D.A. (2012). *Environmental Psychology for Design, 2nd ed*. New York: Fairchild.

Louv, R. (2008). *Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder*. Chapel Hill, NC: Algonquin Books of Chapel Hill.

Luken, E., V. Carr and R. Brown (2011). "Playscapes: Designs for Play, Exploration, and Science Inquiry." *Children, Youth and Environments* 21(2): 325-337. Available from: http://www.jstor.org/action/showPublication?journalCode=chilyoutenvi.

Maxwell, L.E., M.R. Mitchell and G.W. Evans (2008). "Effects of Play Equipment and Loose Parts on Preschool Children's Outdoor Play Behavior: An Observational Study and Design Intervention." *Children, Youth and Environments* 18(2): 36-63. Available from: http://www.jstor.org/action/showPublication?journalCode=chilyoutenvi.

Moore, R.C. and H.H. Wong (1997). *Natural Learning: The Life of an Environmental Schoolyard.* Berkeley, CA: MIG Communications.

Nicholson, S. (1972). "The Theory of Loose Parts: An Important Principle for Design Methodology." *Studies in Design Education Craft & Technology* 4(2): 5-14. Available from: http://jil.lboro.ac.uk/ojs/index.php/SDEC/article/view/1204.

Palmer, S.B., J. Summers, M. Brotherson, E.J. Erwin, S.P. Maude, V. Stroup-Rentier, and S.J. Haines (2012). "Foundations for Self-Determination in Early Childhood: An Inclusive Model for Children with Disabilities." *Topics in Early Childhood Special Education* 33(1): 38-47. Retrieved from: http://tec.sagepub.com/content/33/1/38.

Piaget, J. (1963). *The Psychology of Intelligence*. New York: Humanities Press.

Ryan, R.M. and E.L. Deci (2000). "Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being." *American Psychologist* 55(1): 68-78.

Strauss, A. and J. Corbin (1998). *Basics of Qualitative Research, 2nd ed.* Thousand Oaks, CA: Sage Publications.

Vygotsky, L.S. (1967). "Play and Its Role in the Mental Development of the Child." *Journal of Russian and East European Psychology* 5(3): 6-18.

Wachs, T.D. (1985). "Toys as an Aspect of the Physical Environment: Constraints and Nature of Relationship to Development." *Topics in Early Childhood Special Education* 5(3): 31-46.

Wall, M.E and J. Dattilo (1995). "Creating Option-Rich Learning Environments: Facilitating Self-Determination." *The Journal of Special Education* 29(3): 276-294.

Wapner, S. and J. Demick (2002). "The Increasing Contexts of Context in the Study of Environment Behavior Relations." In Bechtel, B. and A. Churchman , eds. *Handbook of Environmental Psychology.* New York: Wiley and Sons, 3-11.