

DESIGNING FOR PRESCHOOLERS: THE ENGAGEMENT OF NATURAL SPACES FOR PLAY

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Table of Contents

3 Abstract

4 Introduction

Background

The Site

Nature

How Would This Project Enhance the Current Play Experience at Jowonio?

How would such engagements enhance the current vocabulary of playgrounds?

10 Literature Review

Introduction

Play and Child Development

Pedagogical Goals for Child Development

Outdoor Play and the Benefits of Nature

Current trends/why not?

18 Methods

Develop a framework for analyzing play areas

Inventory and Analysis

Design Response

Assessment/Evaluation of Final Design Proposal

24 Results

36 Discussion

41 Appendix A: Playground Analysis Criteria

42 Appendix B: Site Plan

43 Appendix C: Entrance Corridor

44 Appendix D: Black Cherry Grove

45 Appendix E: Black Cherry Grove Section

46 Appendix F: Ramble in the Brambles

47 Works Cited

Abstract

Eleanor Stephens, December 15, 2006.

Designing for Preschoolers: The Engagement of Natural Spaces for Play

This project examines how to design play areas at child care centers, for young children (18 months to age 5), in unstructured, 'natural' spaces. Engagements with nature have been shown to be critical to child development, yet the typical outdoor experience at child care settings consists of primarily equipment-based playgrounds. There is a trend towards solving this problem by designing natural elements into playgrounds. This project suggests that there are many un-utilized landscapes that would provide children with the ability to engage nature, with a richer experience than could be designed for on a typical playground. By combining research on child development, play, nature, and playgrounds, a framework for analyzing the qualities of a play environment was developed. The framework was utilized to evaluate the existing play area as well as the unstructured areas at Jowonio, a child care institution in Syracuse, New York. A proposed design of multiple engagements with the natural landscape surrounding the school was developed, and analyzed using the proposed framework.

Introduction

How do you design areas for play in existing unstructured, natural spaces, for young children, age 5 and under? Research is available on how to incorporate natural elements into existing playgrounds, but little on how to design play areas in existing natural spaces. This project focuses on the potential of expanding current pre-school experience in an outdoor playground area to include more natural land areas. I will explore the potential of less structured, 'natural' spaces for young children's play (age 5 and under), culminating in a schematic design that includes 3 to 5 engagements with the Jowonio landscape. This design will illustrate and describe conceptual approaches to expanding the existing landscape, followed by an initial assessment of the approaches in terms of their outputs and potential outcomes.

Background

Studies suggest that children are spending less time playing outdoors than previous generations. Nevertheless, there are numerous indications that experiences with nature are important to human health and well being, and that a lack these types of interactions can have negative impacts on physical, emotional and spiritual health(Cobb 1977; Ulrich 1984; T. Hartig 1991; Kaplan 1995; Moore 1997; Wells 2000; A. Faber Taylor 2001; Williams 2001; Wells 2003; Fjortoft 2004; Louv 2005). Studies are also finding that incorporating education with experiences in outdoor environments increases performance in virtually all subjects, as well as problem solving and creativity(2002; Sobel 2004).

Young children learn from interactions and engagements in their environment. Unstructured, natural environments are tremendous resources, providing topography, sensory materials, and physical as well as sensory experiences. Incorporating play areas into 'natural' landscapes could provide opportunities for learning about the environment, and for

experiencing sensations that are impossible to design for, due to the complexity, variety, and change inherent in nature.

There is a growing response to this phenomenon, in schools. Educators, and people involved with the well being of children, are seeking ways to provide children with access to nature. With school aged children (5+) there is a movement towards experiential, nature-based education, including trips to nature preserves, the “greening school grounds” movement, and outdoor classrooms. With younger children, in childcare settings, the focus is on integrating natural elements into the playground. This project suggests that we might design access for these children, enhancing and expanding the opportunities for engagement in nature.

If nature provides a richness and level of complexity that is impossible to duplicate, why are many childcare institutions ignoring the resource of already existing “wild” spaces? Why not design a play area in a location that is already rich in natural elements, rather than trying to impart this richness into a playground where it has already been removed? This study suggests that by incorporating areas for play in environments with inherent complexity, rich spaces supportive of child development can be created.

The Site

Jowonio is a school for children from birth to age 5, with a high degree of inclusion of children with special needs. They have a high teacher to student ratio, with at least one teacher in each class having a masters degree or higher in child



The wheelchair accessible play structure in the existing play area

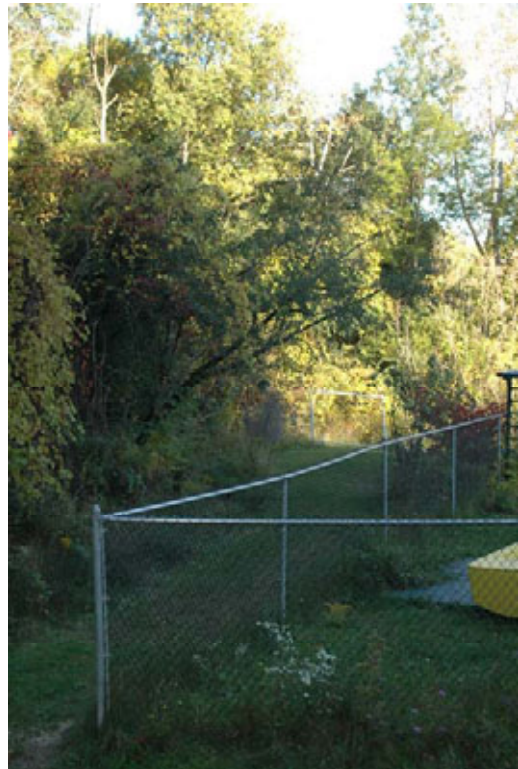
education. There is a strong focus on providing experiences for the social, physical and cognitive development of children, through play, games, and activities. The weekly curriculum is communicated to parents via a schedule, and includes purposes as well as activities, for example: Ivory snow paint- art/sensory, where does it go? - sorting/classifying, grocery store- pretend play. The institution is very focused on the excellence of their program, frequently writing grant proposals, and testing new ideas. Their playground, for example, is the testing site for a new “wooden carpet” technology, a treatment for wood chips that remains soft and flexible, but is stable enough for wheelchair accessibility, developed by the Army Corp of Engineers. They have been examining the possibilities for providing access to the unused, wooded portions of their site, and are very receptive to potential ideas for development.

Nature

Nature is a word with many connotations. For the purposes of this project, it is defined in terms of the landscape of the site being studied.

Behind the school is a fenced-in playground, and there are plans for an adjacent amphitheatre and bike path. Surrounding the playground is grassy slope, and a swath of wooded hillsides.

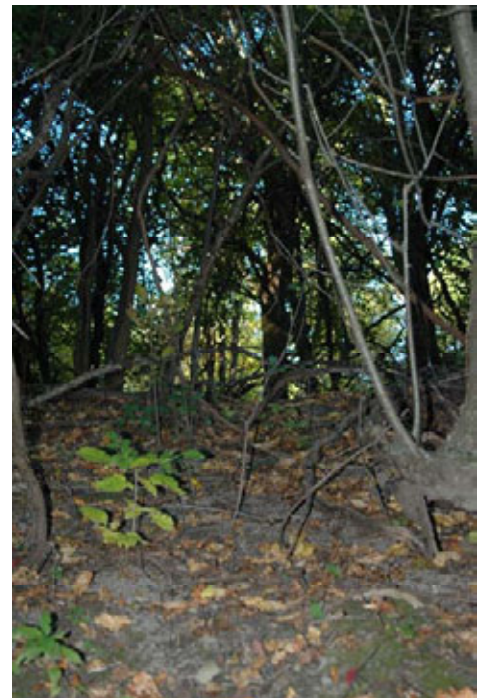
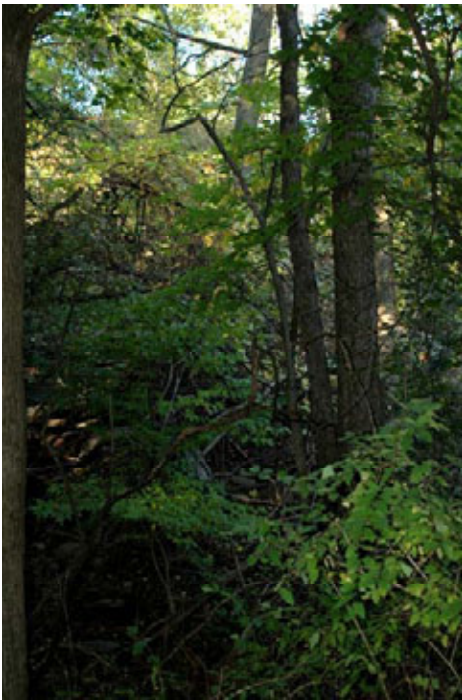
The hillside and woods are what this project is defining as a natural landscape. The site is not nature in the pristine, and “removed-from-the-hands



The woods surrounding the fenced-in play area at Jowonio

-of-man” sense, rather the landscape was shaped as a result of human development. It is a leftover space, where succession was allowed to take over. The space is nature in the sense that it is an unstructured green space, managed by ecological processes, with complexity and continual change.

Some images of the undeveloped portions of the site:





The landscape has playful forms, built-in: A series of natural tunnels, found at Jowonio, inviting children in, out and under

How would this project enhance the current play experience at Jowonio?

Young children learn through interactions with their environment. The landscape surrounding the Jowonio school and playground is a potential resource, rich in terms of the complexity and variety of new experiences and sensations. As a setting or backdrop, the varying topography and plant communities provide seemingly endless variety, and there is no shortage

of props and loose parts to be found with the abundance of sticks, rocks and plant parts. Even something so simple as the ground surface is rich with soil, insects, and bits of detritus to be explored. As an addition to their existing play yard, these engagements with the larger landscape would provide opportunities for learning about the environment and for experiencing a wide variety of sensations, often challenging to incorporate into more ‘designed’ sites.

How would such engagements enhance the current vocabulary of playgrounds?

Play area engagements with the environment would demonstrate that nature and playgrounds do not have to be separate spaces. By expanding the settings for play areas to include unmanaged, natural areas, there would be an increase in the possibilities for play activities. As no two natural landscapes are exactly alike, utilizing these spaces as play areas would significantly diversify play area typologies.

As an educational benefit, by placing play in a natural environment, children will learn about their environment through their play experiences. There would also be the potential for children to develop a connection with their landscape.

Currently there is a trend to insert natural elements into playgrounds. This project would demonstrate that play areas can be sited in natural areas, providing access to nature, with a richer experience.

Literature review

Introduction

Scholarship on early childhood development is remarkably extensive and diverse. For the purposes of this project, I have built on this foundation while focusing on the role of play and nature in the development of children between the ages of 18 months and 5 years old.

Research has demonstrated in a variety of ways the importance of play in the development of young children. Engagement with nature has been described as critical for the healthy cognitive and physical development of children of all ages. Playground design has attempted to address this research by bringing elements from nature into the formal playground. However, by suggesting that play areas can be brought into natural landscapes by designing areas to encourage engagements in these landscapes, this project applies the research in a distinctly different way.

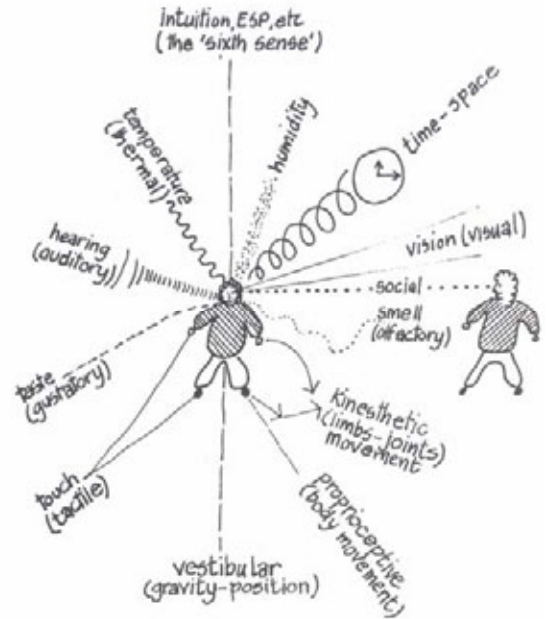
Drawing on the work of play area designers, educators, developmental psychologists, and others, this project attempts to describe an alternative paradigm of play area design for the youngest of our active children. It is vital that educators should access the rich potential of natural landscapes to provide young children with opportunities to engage in nature, and the following discussion of the literature and research supports this work.

Play and Child Development

There are countless definitions and descriptions of the word play. Play is voluntary and self initiated, freedom and self-expression. Play is the action through which children learn, and is crucial to the cognitive, psychological and physiological development of children. For this project, the following definition of play will be used:

“Play is behavior that is intrinsically motivated, freely chosen, process-oriented, and pleasurable.”

With young children, it is impossible to differentiate play and learning, as play is the child's way of interacting with the world. Developmental theorists such as Piaget (1952), Werner (1949), and Montessori (1965), have believed that young children learn through active interactions with the environment and other people, through a process of exploration and testing, and learning from the feedback of their actions. Learning is predominately through their



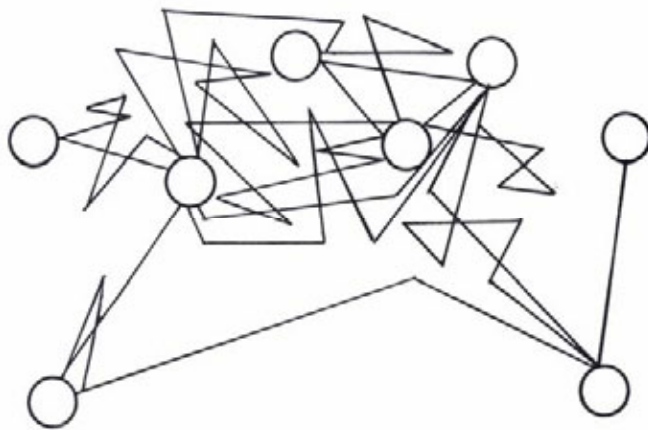
senses and through the ability to move their bodies through space. To stimulate development, environments for children should “encourage complete movement and exercise of all limbs and

“The Human Sense Machine: Learning begins with experience which comes via our senses... The number of physiologically identifiable sense-mechanisms that actually exist is an ongoing debate; whatever the number, there certainly appear to be more than the proverbial five.” (Robin C. Moore 1997)

all aspects of mobility and be sensorarily rich and varied (Olds 1987).” The more diversity of experiences, the more knowledge and understanding of the world a child is able to gain. In *Magical Child*, Joseph Chilton Pearce (1977) eloquently describes the importance of experiences on child development:

“Through interaction, intelligence grows in its ability to interact. We are designed to grow and be strengthened by every event, no matter how mundane or awesome. The flow of nature and seasons, people, extreme contrasts, apparent catastrophes, pleasantries – all are... opportunities for learning, leading to greater ability to

interact... with anything and everything possible. If there is anything intelligence cannot interact with, intelligence is to that extent crippled... The first ten years or so are designed for acquiring a full dimensional knowledge of the world as it is... Intellectual growth is an increase in ability to interact, which means a coordinated flow of the mind-brain-body with the experience at hand... Development can take place only on the foundation given by the child's actual body movements, making sensory contact with the world of things and processes... Without a full-dimensional world view structured in the formative years, no earth matrix can form, no knowledge of physical survival can develop, and no basis for abstraction and creativity can arise."



"Young children's play involves a lot of movement and spatial exploration. This drawing shows the movement patterns of an 18 month old child over a period of seven minutes in a space with 8 play stations" (Hendricks 2001)

Pedagogical Goals for Child Development

The importance of the environments of child care centers on the development of children has been widely studied (Nicholson 1971; Moore 1987; Olds 1987; Prescott 1987; Weinstein 1987). Goals of childhood educational centers generally focus on three main categories of child development: cognitive, psychological, and physiological. Cognitive, or intellectual development involves language, symbolism, mathematical relationships, and scientific

principles. Psychological development includes social skills (sharing, assuming responsibility, cooperating), experiencing emotions such as pleasure and handling strong feelings such as anger. Physiological development deals with large and small motor development and coordination. Some of the variables in a child's development are dependent on time and growth, however, experience and social interaction are dependent on external factors and a child's environment, and as such, can be structured to some degree so that there are interactions with others and upon certain things. If so, then children's environments should be designed to provide the best possible quality of experiences, or play. The degree to which an environment is supportive of different types of play is directly dependent on its complexity and variety (Stine 1997).

Developmental theorists have identified stages that children progress through in terms of the types of play in which they engage. Parten (1932) described the developmental stages of the social aspects of play, applicable for children roughly ages 2 to 5, as unoccupied behavior, onlooker behavior, solitary play, parallel play, associative play, and cooperative play. Unoccupied behavior involves simple observations of others without interaction. Onlooker behavior is when children really begin to watch others play, and perhaps talk, but still without playing together. Solitary play is when children play completely independently from each other, while parallel play is when children play with similar objects, beside each other, without playing together. Associative play is playing with others, and involves sharing, without collaborating. Cooperative play is when children start to collaborate and play in groups with roles. Others have identified developmental stages with the content dimension, which is how and what children play with. Smilansky (1968) describes the different types of play that children learn as: Functional play (infants/toddlers) simple use of movements and senses, Constructive play (3 1/2) working towards a goal, Sociodramatic play- children assume roles and use language to pretend, and Games with rules (age 6/7).

When the social dimension of play is combined with the content dimension of play, there are many permutations. For example, sociodramatic, solitary play is much different from sociodramatic, cooperative play. Then, when environmental resources are factored in, play choices grow even further. However, environments with more complexity and variety have more possibilities for different types of play. The environments most supportive of development provide the widest choices for play. In a study of environmental quality in childcare centers by Anita Rui Olds (1987), the optimum setting supports at least 5 types of play: “gross motor play; structured play (manipulatives, puzzles and toys, constructing); quiet play (reading, hiding, resting, listening); discovery play (water, sand, paint, clay); and dramatic play (kitchen and house props, dress-up, dolls). Supports for discovery and dramatic play merit special consideration.”

Outdoor Play and the Benefits of Nature

Research has shown that outdoor environments stimulate all types of development more readily than indoor (Olds 1987; Robin C. Moore 1997). “Playing outside is an intrinsic need because it provides a uniqueness of experience that cannot be offered elsewhere. Play environments are educational settings (Stine 1997).” They support experiences that indoor environments cannot, providing greater freedom to run, shout, and manipulate the environment in ways that can be “messy.” A study of environments in childcare centers, by Elizabeth Prescott (1987), highlighted key elements contributing to quality. Complexity is important, yet often, childcare settings and traditional playgrounds are lacking the complexity found in naturally occurring places such as homes, neighborhoods, and outdoor settings. Also, they found that it is important to “imbue physical settings for children with the sense of being in nature,” because

natural things have three unique qualities: “their unending diversity, the fact that they are not created by people, and their feeling of timelessness.

Leland G. Shaw suggests elements to be examined as guidelines for designing a playground: Sense of place, unified environment, variety of spaces, key places, system of pathways, three-dimensional juxtaposition of parts, nonobjective environment, variety of surface finishes, and loose parts. Sharon Stine suggests 9 pairs of words that describe the basic design dimensions needed in a successful outdoor play environment: Accessible and inaccessible, active and passive, challenge/risk and repetition/security, hard and soft, natural and people built, open and closed, permanence and change, private and public, and simple and complex. She writes that outdoor spaces for play should have characteristics of each element to fulfill the needs of children and stimulate play.

If complexity and variety are key to quality outdoor environments, then nature as a play environment would support unique interactions. Many studies have highlighted the benefits and importance of play experiences with nature, including place attachment, physical, psychological, and spiritual health, developmental benefits, and experiences with complexity that is impossible to duplicate (Cobb 1977; Marcus 1978; Hart 1979; Hester 1979; Olds 1987; Moore 1990; T. Hartig 1991; Moore 1992; Brett 1993; Chawla 1994; Kaplan 1995; Moore 1997; Rivkin 1997; Moore 1997; Stine 1997; Herrington 1998; Wells 2000; A. Faber Taylor 2001; Hendricks 2001; Littlejohn 2001; Wells 2003; Fjortoft 2004; Sobel 2004).

Natural spaces have an inherent complexity that is impossible to duplicate. There are opportunities for manipulation and exploration built-in, (theory of affordances- nature affords more versatile play). Natural spaces hold importance in memories of childhood. Natural spaces are often preferred over those which are man-made. Research has shown emotional, physical,

social and developmental benefits to exposure to nature. There is also evidence to suggest that a lack of exposure to nature can be detrimental to health.

The design of traditional playgrounds has often centered upon play equipment, designed purely for physical interaction. Better playground design incorporates elements designed to engage children in other types of play, and stimulate their senses. Natural elements are often incorporated. In a study by Susan Herrington and Ken Studtmann (1998), simple landscape elements were introduced into primarily equipment based spaces. They found that this encouraged different types of development and enabled children to develop a sense of place in their playground.

Ingunn Fjortoft (2004) found that when natural spaces themselves were used as a play space in Norway, children experienced more physical development, and had less absences due to sickness compared to children who played on a more traditional type of playground.

Current trends/why not?

Currently, there are many movements to incorporate education and nature. With school age children (age 5 and up), there is a movement to use the outdoor environment as a classroom, and towards “greening school grounds.” However, with pre-school age children (age 5 and under), the trend is to make “natural” insertions into playgrounds, rather than to utilize existing natural areas for play. This discrepancy may be due to a number of factors.

Childcare centers have a responsibility to parents and children to provide a safe environment. In any outdoor



before



after

The environmental schoolyard, before and after. Berkeley, CA (Robin C. Moore 1997)

space, teachers must have visibility of children, and the ability to contain them in a space. Perhaps natural spaces are viewed as unsafe because of a lack of visibility, and conversely, their openness. Natural spaces also have objects and surfaces that could potentially be hazardous to children with limited motor skills. A possible reason for the lack of nature-play spaces for young children could be simply a lack of knowledge on how to design or utilize such a space.

Young children (5 and under) have different abilities and needs than older children. They learn through direct experience with their environment, so it seems that the best environment for their education would be as rich and varied as possible. They are more limited in their physical abilities, but their physical development is aided in the challenge of new activities, and repetition of those that are comfortable.

Research is available on how to incorporate natural elements into existing playgrounds, but little on how to design playgrounds in existing natural spaces. My question is how do you design a nature play space for young children (age 5 and younger). This study suggests that by editing a natural space to remove hazards, provide enclosure and visibility, while exposing elements for potential play/interaction and adding other elements of quality children's environments, a rich play environment supportive of development could be created.

Methods

The goal of this project was to explore the potential of design to encourage engagement of children in natural areas. The relationships between the research on play, the proposed design and its potential for play were explored. For the purposes of this project, as derived from the literature review, the optimum play area must be fun, must have multiple opportunities for different types of engagements (support child development), be safe, and accommodate the needs of children and adults.

Goal 1: Develop a framework for analyzing play areas

Method 1: Literature review

The literature review focused on texts on child development, play and playgrounds, and the relationships between children and nature. In researching potential types of engagement in play, including physical, social and cognitive, guiding questions included: What are the different categories (types) of play, and how do they engage children, and on what level? and What forms support each of these types of play? As the literature was reviewed, information was gathered that might help frame these questions in ways to inform the design of a play environment.

A second goal of the literature review was to develop a comprehensive framework for analyzing play environments by combining the research on levels of engagements in play with other dimensions of design, such as spatial relationships and safety recommendations. In the texts, there are numerous lists of design recommendations for playgrounds supportive of child development (Olds 1987; Prescott 1987; Robin C. Moore 1992; Arlene Brett 1993; Stine 1997). To develop a comprehensive description of the potential qualities of a play area the numerous lists of design recommendations for playgrounds, as well as recommendations found

individually in texts were combined into a single, larger list, and analyzed for overlap and discrepancies (Appendix A). The list became a resource throughout the project guiding and informing the process and the evaluations.

Goal 2: Inventory and Analysis of Existing and Planned Play Areas at the Site

Method 1: Site visits

The purpose of site visits was to analyze the existing and planned play areas for strengths and weaknesses. The site visits involved visiting the playground to determine current potential play. A record was made of as many elements as could be identified there through photography and through lists. This information was then compared to the proposed functions. First the physical elements were cataloged, and then analyzed by comparing to the list and to information from the literature review for which functions they afford, and which types of play they support. Then the potential for physical, cognitive, and social engagement were recorded. This information was then compared to the broader list of playground elements developed during the literature review and analyzed for strengths and weaknesses.

Goal 3: Inventory and Analysis of the Unstructured (natural) Areas of the Site

To analyze the unstructured (natural) areas of the site for their potential for play, several methods were used for collecting information about site features and characteristics relating to play. This information was then compared to the broader list of playground elements developed during the literature review.

Method 1: Site visits

Site visits were performed to collect information about the physical properties of the site relating to the potential for play and engagement with nature. They involved visiting the space and walking through with different routes. Each time, elements, views and spatial relationships would be recorded with notes, photographs, sketches and maps. These documents were later used to compare to the information gathered in the literature review and to generate ideas.

Method 2: Photographic inventory and analysis

While on site, spaces and objects were photographed to record information, capture spatial characteristics and relationships, and discover potential uses for play. To do this, walks were taken on different routes through the site, and numerous digital photos were taken of views, objects, and spaces, from different angles. The goal was to capture and catalog as much of the site as possible.

These photographs were then analyzed through collage, comparison, sketching, annotation, highlighting, and formal analysis. Physical manipulation of photographs by drawing on and annotating printed copies was a primary method used to discover potential for play after visiting the site. Much of this work was done through instinct and a reliance on creativity. While unique to the time, place, and person, the process revealed trends and potential that might be applied at a larger scale.

Method 3: Sketching analysis

Sketching of spaces and objects relating to the potential for play and engagement with nature while on site was another method used for this project. In certain cases, photographs were not the best method to capture certain spatial qualities and relationships. In these cases, sketches were made in a notebook to document, clarify, and highlight these relationships.

Method 4: Active engagement

Manipulation of objects on site to discover and explore the potential for play was another method of analysis used. During site visits, objects with the potential for play were identified instinctively, and through using the literature review as a guide. These objects were then utilized and manipulated to discover ways in which they could be played with. This active engagement was documented with notes and photographs.

Method 5: Mapping

Mapping was performed to observe the connections and relationships between the locations of identified opportunities for play. This was done by documenting relationships between spaces and objects in plan view. Another part of mapping was to explore the influence of naming on the perceived character of a space.

Method 6: Interviews with constituents

Informal discussions with teachers, administrators, parents, and children were performed to identify desires, constraints, concerns, and opportunities. The information was gathered by note taking, and later compared to the purpose statement and framework of play area qualities developed during the literature review (Appendix A).

Goal 4: Synthesis of Information/Selection of Specific Sites

In this phase of the project, the information gathered during the inventory and analysis phase was synthesized to select sites for play engagements. In synthesizing the information, opportunities and constraints for potential program elements were identified. Goals for enhancing the vocabulary of play experiences at the site were identified by looking for opportunities to strengthen and diversify the experiences provided by the existing play area and to provide for unique experiences and engagements with the natural landscape.

Four major opportunities for play engagements were identified by looking for forms and objects that lent themselves to certain activities (potential for play). Then the enclosure, scale, and topography were evaluated in relationship to how they influence play. The possibilities for access and connections were considered. Opportunities for engagements with nature that the existing play area cannot provide were identified. Lastly, the proposed framework was used as a guide to evaluate potential for play, as a loose guide, rather than as a checklist.

Goal 5: Design Response

To design the four engagements in the unstructured areas, identified previously, as an extension of the existing play area, and develop a comprehensive plan, larger concepts were developed, individual sites were designed, and then a comprehensive plan for the relationships between the school, planned and existing play areas was developed.

Method 1: Concept development

Using information from the inventory and analysis phase, concepts were generated for the play area as a whole, and each engagement individually. A guiding principle was that each individual engagement should provide for different levels of engagement with nature in distinctly different ways.

Method 2: Design of individual engagements

Using research on children and nature, and children's environmental preferences, and the potential for engagements identified earlier in the project, designs were developed for each individual engagement. In designing each space, research was incorporated on children's play preferences, types of play and the different levels of engagement of each, and adult needs and preferences. It was important in this project to incorporate natural and man-made elements, to

provide opportunities for guided and self discovery, and to incorporate safety, accessibility, and encouragement.

Method 3: Develop a comprehensive plan

A plan was developed to illustrate the relationship between individual areas, and the existing area. Considered in the design were linkages between engagements and existing play areas, the overall continuity of the design, and the access and flow of people through the site.

Goal 6: Assessment/evaluation of final design proposal

The assessment and evaluation of the final proposed design was considered in several ways. The designs were compared to the initial problem statement and literature review to see if the original question had been addressed. Then, the proposed design was evaluated to see how each proposed design element could be used for play, and what the possible levels of physical, cognitive, and social engagement were for each. This was done by comparing the designed elements to their proposed functions, then evaluating the outcomes of those functions through the literature review. Other questions that were examined were as follows: How are the desired outcomes for each user group met? How is nature engaged in each of the proposed areas? Do the designed spaces support engagements that the existing play area can not? Where is there overlap in program/content? Were the weaknesses that were identified in the existing area strengthened through the proposed design?

Results

Intro

The design was developed as a series of experiences choreographed along a trail, each of which engages nature and play in a different way. The design strategy was to discover the potential for play in the existing environment, and then reveal this potential through subtractive design, rather than additive. In this way, the design took advantage of existing materials and forms, rather than creating new ones. Through literature review, it became apparent that the complexity and variety of play is directly dependent on the complexity and variety of the environment. Natural areas are inherently complex, so the challenge of this design was to reveal opportunities for play, lending organization to that complexity, without removing it.

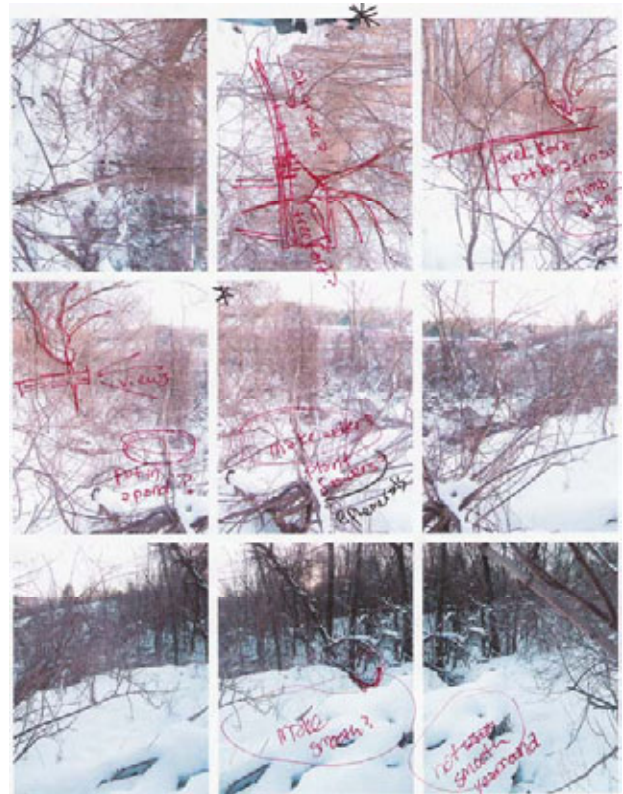
Site Analysis

The goal of the site analysis was to explore the site and find potential opportunities for play, using existing qualities of the site. To do this, background information on play was applied to the site. In the literature review, a very large number of characteristics which are beneficial to children's play environments were identified (Appendix A). However, rather than use these qualities and features as a check list, it was used as a guide, in helping to identify the potential for play in the natural environment.

A crucial method for this design was to perform numerous site visits for inventory and analysis, to collect information about the physical properties of the site relating to the potential for play and engagement with nature. While on site, photographic inventory and sketching were two primary methods. To reveal the potential for play in the existing landscape, it was important to work closely with the existing qualities of the site. Sketching of spaces and objects was used to clarify qualities that were difficult to photograph and to document opportunities and

relationships. For example, when trying to convey the shape of a space, sketching is often a much better way to convey properties such as depth, as you can draw the space from above, and exaggerate scales, while a photo is taken easiest from a specific vantage point, on the ground, and captures an exact likeness, with a two dimensional representation.

The use of photographic inventory and analysis was a very useful method, as the sheer volume of photos that one is able to capture in a short amount of time can help keep the qualities of the site visually accessible when designing. Along with cataloging the site, photographic manipulation through sketching, annotation, collage and comparison made it possible to keep the actual resources and physical relationships of the site linked closely to the design. For example, by using photographs, one could remember where the views to other portions of the site were located, in relation to the location of the tree house.



Active engagement was another method used on site. It involved manipulating objects to explore their potential uses for play. Through this method, it was possible to discover uses for objects that were not necessarily visually apparent. For example, digging under snow covered rocks, to reveal hidden spaces, and twisting vines to see how they can be used for weaving, or as props for play.

Mapping the information collected about the potential for play along with the physical qualities of the site was important in establishing connections and relationships, particularly in

determining the orientation of the path. It was useful to be able to look at the topography, locations for potential engagements, physical features of the site, and other information, together in plan view, to decide how the design would be organized.

The Trail

One of the first design decisions was to structure the engagements along a primary trail that ran through the site (Appendix B). The trail thus formed a spine/backbone, serving as a core organizing structure for the whole design. The site was analyzed for the potential for play, and these locations were mapped. A trail was established linking these engagements.



The trail was chosen over other forms such as a web or a central hub with multiple spaces radiating around it, for several reasons: (1) Topographically, a trail provided the opportunity to create an optimum path for providing access deep into the site for children with mobility disabilities.

As the site is steeply sloped, the path allows access into the other portions of the site by ascending up an old unused dirt track, to the level of a natural shelf that runs along the back of the swale at a relatively level grade, at a slope that could be made accessible for children with disabilities.

(2) The teachers and administrators at Jowonio expressed a strong desire for a path traveling through the woods, rather than simply having engagements at the edges of the wood. Teachers regularly bring children on hikes through the woods, but find it difficult in its current overgrown and tangled condition.

(3) The design approach of this project was to discover potential for play, select a range of opportunities for different types of play, and then transform those places in different ways, to enhance the experience for play. The placement of the path was an attempt to actively link as many of these opportunities for play as possible.

Entrance Corridor

Through the design of this space, the goal was to create an inviting entrance corridor, treating the path as a place, as well as a route (Appendix C). The experience of the path begins on the eastern-most end of the site. Following an old, overgrown dirt road, you enter the woods. The location next to the parking lot and at the edge of the property allows easy access to the path, via an existing entrance into the woods. By using this existing circulation route, the path can be extended across the full length of the site. The road continues up the hill until it

dead-ends at the foot of a steep hill side. The footprint of the road is planted with a dense covering of hay-scented ferns, a rugged fern, 15-30" tall.



The corridor provides three types of play spaces, a place for hiding, a place for weaving, and a place for gross motor play: (1)Hiding- The ferns provide a soft and delicate place for children to hide from one another without losing sight of the adults. Children at this age are fascinated with being hidden, yet teachers have a responsibility to keep track of them. The concept of being hidden relates to Piaget's theories on object permanence, or the knowledge that objects exist even when out of sight. In the early stages of child development, one key concept children at this age are learning is that objects still exist, even though they are no longer visible (Piaget 1952).

(2)Weaving- A tangled, thorny mass of buckthorn arches over the western edge of the path will be woven and then pulled backwards, forming a dense wall, blocking views into the rest of the site, and discouraging children from straying down the hill. This woven wall is also an example of ways in which children can manipulate the objects in nature. Although the wall here is a fixed feature it serves as a didactic example of one way in which children can manipulate nature.

On the opposite side of the road, the dead branches and some of the underbrush will be cleared from the road to the cell phone tower. By opening up this area, there is space for children to run and play games accompanied by a reassuring sense of visibility. (3)Running- As a

place for physical play and large motor movements, this area encourages gross motor skills. This space presents an opportunity for scavenger hunts. Identification, sorting and classification of objects are activities regularly practiced at this school. It is a good place to collect objects such as rocks and pinecones, as well as a place where teachers can plant non-naturally occurring objects such as seashells, for lessons on nature and what belongs vs. what doesn't.

Around the western edge of the cell phone tower, hemlocks are planted to create an edge to this side of the space. By giving the space a feeling of softness, enclosure and visibility, a space is created to welcome people into the site. The corridor becomes an entrance, then a place for play, and finally a link to nature and the natural landscape.

The Fallen Log

Within the entrance corridor, a second space has been created around a fallen log, just north of the path. An opportunity for a complex 'play structure' was found. Here, a tree that has fallen onto some branches is brought to rest low on the ground. Any brush and branches around the log are cleared away to remove hazards in the falling zone. Mulch has been spread on the ground to give the area definition, and to provide a soft place for tumbles. By taking advantage of opportunities such as a fallen log, we can engage children with a play structure that supports many different types of play; many more than a static structure could. The log, which was previously just a fallen tree in tangled brush, becomes a place to climb (gross and fine motor play), hide (social interaction, games), and pretend (imaginative play). The exposed roots provide an opportunity to explore the part of the tree that is usually hidden (learn about nature), as well as a place for imaginative exploration. As the tree rots, children can see the decomposition process in the changes taking place, as well as explore the richness in insects and fungi that facilitate this process (discovery play). This simple strategy of removing/clearing to

reveal an opportunity for play can be easily orchestrated in any existing natural area. All that is needed is an understanding of the potential in objects and spaces for play.

The Tree House

Farther down the path, on the west side of the road, one enters into the portion of the site where nature is less controlled and structured through a portal woven into the buckthorn.

The first space

encountered is the Tree House.

The Tree House provides

multiple play engagements and a

unique setting and vantage point

for play. At this point, the path

is roughly 15' above the grade

of the large swale below. From

the path, a wooden boardwalk

extends to a house in a tree

growing in the swale. The path is at a level equal to that of a house in the tree. The Tree House

is a wooden platform, with wood and cable railings for visibility into the surrounding area.

Around the trunk of the tree are benches. In the floor are cutouts with grates on them, allowing

children to peer down. Above is the canopy, close up.

This space could be used as a unique area for picnics and storytelling, or for pretend play and games. As children generally spend their time close to the ground, this change in elevation

allows them a vantage point which is usually inaccessible to them. In her book, Landscapes For



Learning, Sharon Stine notes that it is important to children's sense of space and scale to allow them this opportunity to see their play environment from a new perspective (Stine 1997).

The Tree House supports multiple play engagements, as a gathering site, as a performance site, as a place for gross motor play, and as a place to highlight issues of scale and topography.

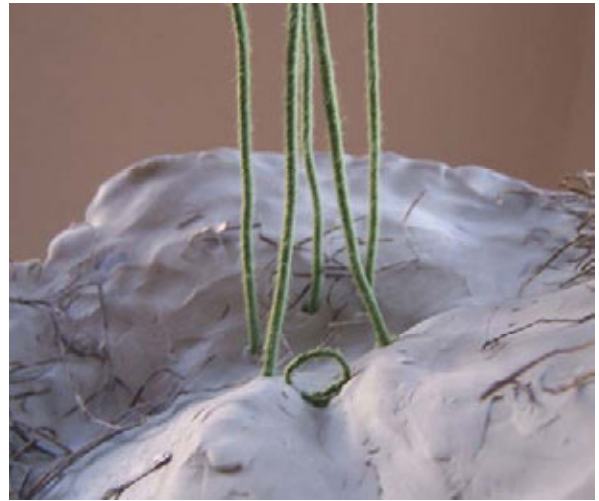
Overlook trail

As you travel past the tree house, the path moves along the edge of a moderately steep slope above the swale. The intent is to give children the dramatic feeling of being on the edge of a drop-off, and again give them a different perspective on their site. To heighten this feeling, the side of the path near the slope is cleared of brush and replanted with a foreground of low *Asarum* (Wild Ginger), while the slope on the north side of the path is left dense with brush to prevent access to a large pile of concrete on the hillside. From this path, you can see down into the swale, and across the woods to the school, playground, and town beyond. This again allows them to view the space from a different perspective, and to place themselves within the larger context of their community.

Translucent, colored glass balls are hidden in the tree tops, virtually invisible when leaves are on the trees, yet visible when the leaves have fallen. This is to give children something constant, with which to measure seasonal change, yet also relates again to Piaget's theories on object permanence.

Black Cherry Grove

The next space encountered provides a setting for storytelling and a stage for pretend play (Appendix D & E). Traveling along the Overlook Trail, a ditch diverges from the south side of the path. At the end of the ditch, a child-sized tunnel, woven of grapevines, invites children to climb through.



Through the portal, children find themselves in a narrow space nestled between two small hills, and surrounded by six tall black cherry trees. The sound of chimes in the tree tops invites one to look up, enhancing the scale of the trees. A pull cord leads to a knocker in the canopy, which allows children to ring the chimes. The grape vines and brush in and around the trees have been cleared to reveal the tall verticality of the trees, and the ground surface covered with soft wood chips. Along the western side, low benches have been placed against the slope as a place for people to sit and watch. This space provides a stage, with a sense of enclosure, and

the surrounding environment provides the props, such as sticks, leaves, vines and rocks. The proposed programming is for storytelling and as a place for pretend play, as the scale of the space is best suited for more intimate, less physical play. In designing environments for play, places for dramatic play are of importance for a child's cognitive development (Olds 1987).



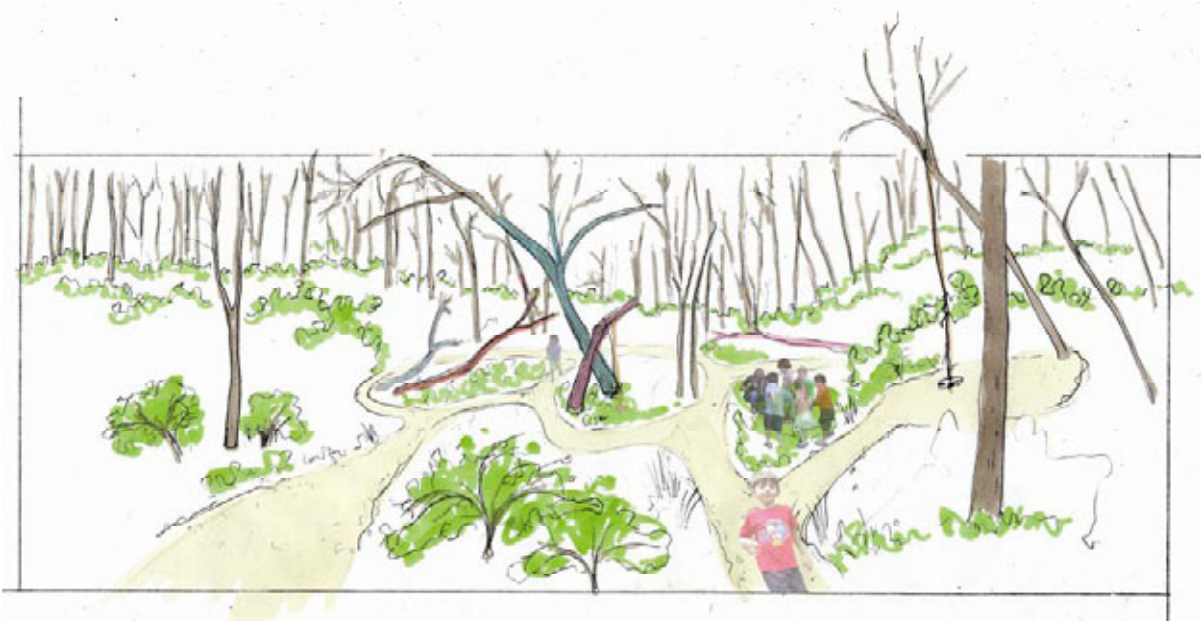
Deer Path

Connecting Black Cherry Grove and the most wild space is the Deer Path. Following existing, visible deer tracks, up, along, and down a gentle ridge, this route follows the path of least resistance topographically, and shows children signs of wildlife, such as animal footprints

and droppings. Visible signs of wildlife are an important element in engaging children with nature, because to very young children, their understanding of nature has to do with living things (Hendricks 2001). This section of the path has the least amount of human intervention, being mostly left in its existing condition. The character of the woods here is relatively open with little underbrush and even ground. The path winds around the trees. Only vegetation obstructing the path will be cleared to allow for easy mobility. This provides a place for running and walking. This path is different from the Overlook trail in that the focus becomes inward on the space and objects they can interact with, rather than outward.

Ramble in the Brambles

The last space along the trail is intended to be a discovery area, where children are encouraged to explore a larger area than any of the other sections (Appendix F). To give this wild looking space a fun identity, different from the other spaces, as you cross the hill and descend into the valley, you see that the numerous fallen logs in the valley have been painted bright colors with non-toxic acrylic or latex paint. The action of choosing colors and painting the logs provides a fun activity for children that could be done each year, or whenever the paint begins to wear off. This also provides an opportunity for teachers to explore the making of natural dyes with the children. As the path descends into the valley, it begins to split and twist, moving throughout the space, rather than directly through it. This encourages a slower pace and provides access to more of the space than a single straight path would, to encourage exploration of the vegetation and spaces it forms.



Clearing in this space is to reveal places of interest such as bushes with a shape favorable to tunneling underneath or logs for climbing over, and to improve access and mobility. The path encircles patches of ‘messy’ vegetation, making them a central focus for play, rather than a boundary, encouraging children to explore and discover ways to play with nature. Another opportunity in this space is the abundance of grapevines and fallen logs, adaptable for swinging. This space provides an opportunity for constructive play, using the materials cleared from other portions of the site, such as vines, piles of brush, and sections of logs. Weaving and building and other types of constructive play can be encouraged by beginning samples of forts, walls, and tunnels near material stock, starting a process that children can copy and adapt. This opportunity for discovering the properties of materials and malleability of the environment is important to a child’s cognitive development (Olds 1987).

Discussion

One of the challenges in designing this space was to acknowledge the lack of predictability in young children's play, and to not only allow for this, but to encourage it. Evaluating a proposed design, based on how children will use it is an interesting challenge, as children will generally find ways to play in and with a space that the designer can not anticipate. There are types of play that these designs are attempting to encourage. There, the attempt was to leave a certain degree of open ended-ness for unpredictable play. Children's play is learning; the greater the opportunity for different types of play, the greater the opportunity for increasing a child's understanding about the world. This design was an attempt to encourage children to invent their own games and use spaces in multiple ways.

The primary challenge with this design was to reveal the value of nature for play, rather than just as a setting for a playground; nature is the playground in this case. In the research, it became apparent that the value of nature for play is in its' complexity and variety. However, the potential for play in nature is often subtle. Natural objects and landscapes are rich environments for play, but they don't look like the brightly colored play landscapes that many children are accustomed to. This richness must be unlocked with the imagination, as natural objects are not coded for play the way that designed play environments are. The difficulty is to reveal the value inherent in the spaces, and not overshadow the subtle potentials of play with conventional playground design elements.

Designing this space for very young children was unique in that engagements were at a smaller scale, and were about functions. When designing for young children, functions are important, as children evaluate objects as functions, rather than forms, for example, vines provide for swinging and large piles of rocks provide for climbing. Designers tend to work in terms of formal relationships, yet when designing for children, it is important to design in terms

of activities (Hendricks 2001). This design was an attempt to reveal and create forms targeted towards the activities that young children engage. For example, for running, open spaces are provided by the trails; for dramatic play, Black Cherry Grove is a stage/backdrop, with props being found in the environment. To do this, the site analysis had to evaluate the space for play, which is different from a traditional site analysis. The focus was on finding forms, objects and spaces that would lend themselves to different types of play.

The goal of this project was to design a series of spaces to support multiple types of engagements with nature, including gross and fine motor play, cognitive engagement, discovery play, pretend play, and multiple types of social engagement. For gross motor physical engagement, spaces like the entry corridor, with the underbrush cleared out, support running, while the fallen log is a place to climb. Fine motor skills are supported with activities like weaving and painting in the Ramble in the Brambles space. Cognitive engagement can take place throughout the space. In the Entry Corridor, the tall ferns allow children to play hiding games. This is possible because children in this age group are small enough to hide in a mass that is thirty inches high, where a seven year old child would most likely be too tall. Discovery play can take place in all places on the trail, as the children are in an environment rich in complexity and variety, different from that which they experience indoors. Here they can interact with materials that are not found indoors, as well as see signs of wildlife, and experience the passage of time. Social engagement is supported with all types of play, however, by varying the sizes of spaces, such as large with the Ramble in the Brambles, with small spaces within, or medium in the case of Black Cherry Grove, children have the choice of playing together, or alone. By creating places for storytelling and games, teachers have the opportunity to use spaces to encourage cooperation and games.

There are also different settings which are suited for imaginative, pretend, and dramatic play, as they provide rich backdrops and loose parts for props. Environments that are supportive of development have complexity and variety in their opportunities for play. This landscape provides this by offering a variety of spaces supportive of multiple types of play, and complex enough that children can find multiple ways to play in each.

As well as encouraging different types of play, this design also supports different types of interactions with nature. In the entry space, nature is shaped to create a mood, to invite and welcome. At the fallen log, nature is treated as a space, an object, a play structure, and also an object for study and discovery. The tree house treats nature as a view, and changes a child's perspective on the site, by allowing them to view it from above, and from afar, and it allows them to interact with a part of nature that is usually inaccessible to young children- the tree top. The overlook trail enhances the drama of a natural feature- a drop-off- at a child's scale. In Black Cherry Grove, nature is engaged as a setting for dramatic and pretend play, and also as an area for story telling. The Ramble in the Brambles is a setting for nature to be discovered, for children to explore and choose how to engage nature. In this area, nature is also used as a material for manipulation- through constructive play with the cleared materials from the rest of the site.

By designing for play in an existing natural area, the space is able to provide experiences that are not available in the existing play area. While the existing playground consists mostly of human-made elements, with natural elements mixed in, the landscape is natural, with human elements mixed in, an important contrast. The space has a large degree of built-in complexity, with its variety of topography, messiness, and wildlife. There are opportunities to experience things not found on the playground, such as the tree top and tree roots. Ferns provide a permeable, soft, delicate place to hide in a way not found in existing playground. They are a

permeable mass that children can hide behind, walk through, and look through, as opposed to a wall with a space behind it. Constructive play is supported to a greater degree, with weaving and building with natural materials such as wood, vines, and brush. The variety of settings provides different backdrops for a wider range of imaginative types of play. This space is an opportunity to turn spaces and objects into play places, which have not been designed for play. Everything on the playground has been designed for play, yet here there are opportunities to discover uses and functions, that have not been designed for.

In terms of strengthening the experience of the existing play areas, this space provides greater opportunities for constructive play, as well as more engagement with natural elements, in the way they naturally occur. Seasonality and wildlife are also important elements that are naturally occurring in this space. Here, children have the ability to observe the changes that take place in an outdoor space over time, from the dense enclosure of summer, to the changing colors in Fall, the the bright openness of winter, and all of the new growth that occurs in Spring. However, perhaps the greatest strength of these designs is that the inherent complexity and variety of natural elements and spaces that has not been limited to explicit, one-dimensional function, has a wide range of uses that children have the opportunity to explore.

Conclusion

This project examined engagements with nature for the purposes of play and child development. My initial motivation for this project was to address the growing issue of children's disconnect from nature. This project was an attempt to demonstrate how an (under-used) landscape, available to many schools can provide a rich setting for many types of play, and one that is perhaps more engaging than those traditionally found at schools. The design strategy

used in this project has applications for other sites, by exploring a site, and finding places that have the potential for play.

In this project, nature was treated as a setting, an object, and a resource, which allowed for the creation of spaces supportive of different types of play. The advantage of siting play in an area with existing complexity and variety is that the opportunity for play already exists, and by revealing this potential, multifunctional spaces can be created with a richness that is difficult to impart by simply inserting natural elements into existing playgrounds.

In working with Jowonio, I have been fortunate enough to begin development of this project and observe the use of it. Although still in an initial phase, there is already heavy use of the space by virtually all the class rooms. Observations of the trends in usage would provide an interesting study. The first day that the trail was deemed passable, teachers led children down the trail, most of them holding hands and proceeding cautiously, yet excited. Initially, the trend was to walk the entire path, without lingering. Since then, their familiarity with the space has grown, and their pace has quickened. Their initial hesitation is no longer apparent. I have seen a pirate treasure hunt, complete with costumes, the planting of flowers, and the release of butterflies. The variety of uses for the space is seemingly limitless.

It is apparent is how this space does not replace their current playground, rather, it enhances it. Teachers will ask children if they would like to go to the playground or the trail, and often the class will split up with some going to each place. Later, it is not uncommon to see the children from the playground group on the trail looking for the trail group, while the trail group has walked to the playground looking for them. The trail and playground seem to be functioning as one system of play spaces, giving children more choices for activities.

Appendix A: Playground Analysis Criteria

Levels of engagement:

Functional play
Constructive play
Games with rules
motor skill dev
Decision making
Opportunities for learning
Opp for dramatic play
Social dev
Should be fun

Design Criteria:

Safe
Accommodate needs of children and adults
Accessibility
Safe challenge
Diversity and clarity
Graduated challenge
Flexibility
Defensible space
Supervision
Permanence
Change
Open endedness
Manipulability
Multisensory stimulation
Ambient microclimate (year round use)
Shelter
Social interaction
Design for all ages
Variety of social spaces
Variety of spatial experiences
Retreats and breakaway points
Visible completion points
Spatial orientation
Landmarks/visual identity
Multisensory clues
Scale/size/shape/enclosure/continuity
Play above the ground plane
Differentiated settings

The edge effect
Undefined places
People plant interactions
Wildlife habitats
Domestic animals
Mix of people-made and natural elements
Indoor-outdoor relationships
Ease and economy of construction

Elements/dimensions:

Accessible/inaccessible
Active/passive
Challenge-risk/repetition-security
Hard/soft
Natural/people built
Open/closed
Permanence/change
Private/public
Simple/complex
Design guidelines:
Sense of place
Unified environment
Variety of spaces
Key places
System of pathways
Three-dimensional juxtaposition of parts
Hide and reveal
Looping
Over looking
Ground hogging
Verbal communication

Nonobjective environment
Variety of surface finishes
Loose parts

How are children able to use materials
(riding, digging, running, building,
swinging)

What is the potential for active
manipulation and alternation?

Social interactions?

Appendix B: Site Plan



Appendix C: Entrance Corridor



Appendix D: Black Cherry Grove



Appendix E: Black Cherry Grove Section



Appendix F: Ramble in the Brambles



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