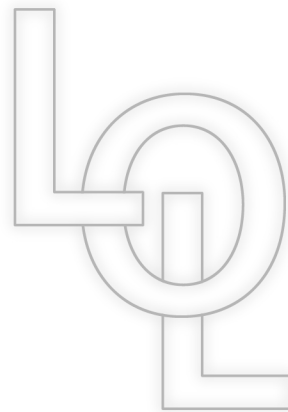


# Landscapes of Learning | Annotated Bibliography



## FOREWORD TO THE ANNOTATED BIBLIOGRAPHY

The Landscape Architecture/Regional & Community Planning graduates of 2012 are the first class to participate in a collaborative studio process leading to completion of their individual master's reports. Seven of these graduates chose to work under the topic Landscapes of Learning. The interests of the group were broad: biophilia, access to nature for children, childhood development and special needs, ecological interpretation, participatory design, public play spaces, and landform as art. The common conversation centered around big questions: How can all children have access to nature for learning through play? What creates a rich, outdoor environment for all kinds of children and young adults?

The 2012 Landscapes of Learning studio became a forum for these questions. Seven master of landscape architecture and master of regional and community planning students selected the studio for their final year's projects. The graduate student researchers conceived of their bond as a colloquium, where each shared information freely to raise the expertise of all.

Though each student defined his or her own project, all projects engaged the community of Manhattan, Kansas (the setting for Kansas State University); and all projects questioned what we as future landscape architects and planners assume about landscapes for children. In nine months' time, a diverse set of projects took shape to address a range of questions:

If we assume access to nature to be beneficial to children, are some children denied access due to socioeconomic status and its impact upon housing choice?  
Jonathan Knight, Wichita, Kansas

In a neighborhood with no parks, can an oversized middle school property serve a joint use for school and neighbors?  
Shuang Hao, Manhattan, Kansas/Suihua, China

How can an elementary school in a flood plain landscape meet diverse schoolyard needs while also interpreting the hydrologic cycle for children?  
Laura Weatherholt, Tulsa, Oklahoma

How can a schoolyard be designed to be a therapeutic environment for all children, with an emphasis on benefiting those children with autism?  
Chelsey King, St. Peters, Missouri

How can planners and landscape architects improve community participatory design methods for determining what children need and desire in a school landscape?  
Kweku Addo-Atuah, Accra, Ghana

Contemporary schoolyards often lack creative expression. How can humanities research serve as evidence for the design of a functional schoolyard that is also a sculptural work of art?

Rebecca Melvin, Seattle, Washington

In the temperate Midwest, interiorscapes are seldom a feature of public schools. How should an interiorscape be designed to integrate the natural and built environment within an existing highschool?

Sukaina Fakhraldeen, Kuwait

Listing these questions reveals the range of scales at which the researchers are addressing landscapes of learning: from city planning to interior scale. The projects also exhibit a great variety in conceptual approach: from personal and poetic design driven by humanities knowledge to participatory design process including nearly one hundred students.

The annotated bibliography on the following pages begins with a literature map grouping references by sub-topic and showing interrelationship between texts. The diagram is followed by a complete list of references and annotated entries, arranged by sub-topic. The bibliography addresses only the resources common to all group members. The bibliography is not intended to be exhaustive; its strength lies in connecting literature on schoolyards to related themes in child development, landscape architecture and planning. Further resources are included in each individual report.

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**Assistant Professor Katie Kingery-Page**

Major Professor to the Landscapes of Learning Students  
Department of Landscape Architecture/Regional & Community Planning  
Kansas State University  
April, 2012

Green Nature/Human Nature: The Meaning of Plants in Our Lives  
Charles A. Lewis

Children, Learning, & School Design: A First National Invitational Conference for Architects & Educators  
Elizabeth Herbert & Anne Meek

The Nature Principle: Human Restoration and the End of Nature-Deficit Disorder  
Richard Louv

Healing Gardens for Children  
Robin C. Moore

Form & Fabric in Landscape Architecture: A Visual Introduction  
C. Dee

Affordances & the Perception of Landscape: An Inquiry into Environmental Perception & Aesthetics  
Harry Heft

Design Philosophy  
Marni Barnes & Clare Cooper Marcus

Children's Outdoor Play & Learning Environments: Returning to Nature  
Randy White & Vicki Stoecklin

The Scholarship of Trans-disciplinary Action Research  
Victoria Chanse & Susan Thering

The Cultural Landscape  
Salter

Effects of Gardens on Health Outcomes: Theory & Research  
Roger Ulrich

Biophilia, Biophobia, and Natural Landscape  
Roger Ulrich

Restorative Gardens: The Healing Landscape  
Nancy Gerlach-Spriggs, Richard Enoch Kaufman, & Sam Bass Warner, Jr.

The Biophilia Hypothesis and Life in the 21st Century: Increasing Mental Health or Increasing Pathology?  
E. Gullone

Play Therapy in Elementary Schools  
Pedro J. Blanco & Dee C. Ray

Experiential Learning: Experience as the Source for Learning & Development  
David Kolb

Asphalt to Ecosystems: Design Ideas for Schoolyard Transformation  
S. G. Danks

Place- and Community-based Education in Schools  
Gregory Smith

Design for Learning: Values, Qualities, and Processes of Enriching School Landscapes  
Julie Johnson

Optimal Learning Environments: Societal Expectations, Learning Goals, & the Role of School Designer  
Bukky Akinsanmi

Neighborhood Space  
Randolph Hester

**Human-Environment Interaction**  
How people are engaged by the landscape

**Design Metrics**  
Standards that measure quality; pre-determined characteristics of design

**Environmental Stewardship**  
Responding to a responsibility to respect and protect the environment

**Cultural Geography**  
Historical perspective of how people affect their environment and vice-versa

**Health & Wellness**  
How the physical environment affects the quality of life of the users

**Biophilia**  
How the physical environment affects the quality of life of the users

**Environmental Psychology**  
How the physical environment affects cognitive processes and emotions

**Experiential Learning**  
Learning through the process of interacting

**Ecological Design**  
Design with regard for natural processes

**Green Spaces**  
Public or private open spaces

**School Environment**  
Educational landscapes; educational facility

The Received View of Play & the Subculture of Infants  
Herrington

Historical & Cultural Perspectives on Healing Gardens  
Clare Cooper Marcus & Marni Barnes

Children's Experiences with Vegetation  
H.R. Harvey

Nature Big & Small: Landscape Planning in the Wilds of Los Angeles  
Marcia McNally

Biophilia, Health, & Well-being  
J. Heerwagen

Children & Nature: Psychological, Sociocultural, & Evolutionary Investigations  
Kahn & Kellert

Form, Meaning & Expression in Landscape Architecture  
Laurie Olin

The Site as Project: Lessons from Land Art & Conceptual Art  
Hogue

Landscapes for Learning: Creating Outdoor Environments for Children & Youth  
Sharon Stine

The Experiential Playground Daubeneay Primary School  
H. Coppard

Sensory Integration & Contact with Nature: Designing Outdoor Inclusive Environments  
Nilda Cosco & Robin Moore

Ecological Education in Action: In Weaving Education, Culture, & the Environment  
Gregory Smith & Dilafurz Williams

Child Development and Access to Nature: A New Direction for Environmental Inequality Research  
S. Strife & L. Downey

The Biophilia Hypothesis  
Kellert & Wilson

Restorative Urban Open Space  
Kevin Thwaites, E. Helleur, & I. M. Simkins

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Kevin Thwaites & Ian Simkins

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Rissotto, A. & Giuliani, M.V

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Hines & Moore

Service Learning in an Urban Context: Implications for Planning & Design Education  
Ann Forsyth, Henry Lu, & Patricia McGirr

Performing on the Landscape versus Doing Landscape: Preambulatory Practice, Sight, & the Sense of Belonging  
Olwig

Children's Experiences with Vegetation  
H.R. Harvey

Coping with ADD: The Surprising Connection to Green Play Settings  
Taylor Faber, F.E. Kuo, & W. C. Sullivan

Biophilia  
Edward O. Wilson

Restorative Urban Open Space  
Kevin Thwaites, E. Helleur, & I. M. Simkins

Natural Learning  
Robin Moore & Herb H. Wong

The Passionate Mind of Maxine Greene: I am....Not Yet  
William Pinar

Natural Resource Conservation, Management, for a Sustainable Future  
Daniel Chiras & John Reganold

Effect of Exposure to Natural Environment on Health and Inequalities: An Observational Population Study  
R. Mitchell & F. Popham

Last Child in the Woods: Saving our Children from Nature-Deficit Disorder  
Richard Louv

Restorative Urban Open Space  
Kevin Thwaites, E. Helleur, & I. M. Simkins

A Sense of Place  
Ruth Wilson

Playing Naturally  
Martin Maudsley

Using Behaviour Mapping to Investigate Healthy Outdoor Environments for Children and Families  
Robin C. Moore & Nilda Cosco

Effect of Exposure to Natural Environment on Health and Inequalities: An Observational Population Study  
R. Mitchell & F. Popham

Last Child in the Woods: Saving our Children from Nature-Deficit Disorder  
Richard Louv

A Child's Garden: 60 Ideas to Make Any Garden Come Alive for Children  
Molly Dannenmaier

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Landscapes of Learning  
Sub-topic

# Human-Environment Interaction

**Annotated Bibliography :: By Topic**

Landscapes of Learning	<p><b>Design Philosophy</b>  <i>Marni Barnes and Clare Cooper Marcus</i></p>
	<p>Barnes, Marni and Clare Cooper Marcus. 1999. Design philosophy. In <i>Healing gardens: Therapeutic benefits and design recommendations</i>, ed. Clare Cooper Marcus and Marni Barnes, 87-114. New York: Wiley.</p>
	<p>Keywords: Restorative/healing Landscapes; Human-Environment Interaction</p>
	<p>Compiled by: Chelsey King</p>
	<p>Barnes and Marcus pose the question “do landscape architects know enough to shape such gardens so that they can really help patients heal?” (87). The authors use this chapter to discuss the approaches for landscape design and how these approaches help or hinder the outcome of a healing landscape. They emphasize the importance of designers being intentional with designs and the “symbolic representation” that might be associated with the design of a landscape, as these affect the perception of the landscape.</p> <p>The authors discuss three different perspectives that landscape architects often approach design form. These three perspectives include “traditional approaches”, “botanical/ecological approaches” and “people-oriented approaches” (92). The traditional approaches look at what have been done and bring them forward into new designs, adapting them to meet the needs. For example, ideas of Labyrinths and Japanese gardens are often brought into the design of modern restorative gardens, because these are already established as being “healing”. The second approach is based on sustainability and harmony with nature. This approach likely does not intrude as greatly on the surrounding ecosystems, and therefore creates a healthier environment for the users to experience (102). The final approach is the people-oriented approach which focuses on the relationship between users and environment, and the needs of the users. When designing, landscape architects typically work across these three perspectives.</p> <p>The authors stress that it is important to think of the healing landscape being designed as both a process and a place, with emphasis on the users and being designed based on the knowledge gained from prior research. Barnes and Marcus conclude their chapter by concluding that “whatever approach is applied to the design, it must serve the user and his or her healing experience” (113). It is important to keep the goal in mind as the site is designed, so that the landscape will have the greatest potential to become the healing landscape that is desired.</p>
	<p><b>Take Home Point:</b> Landscape architects need to design intentionally in order for their designs to reach their full potential of what they were designed to be.</p>

## The Experimental Playground

*Hattie Coppard*

Coppard, H. (2004). The experimental playground daubeney primary school, hackney, london. *Green Places*, (5), 34-36.

Keywords: Experimental; Elementary School; Public Art; Design Process

Compiled by: Rebecca Melvin

Hackney Primary School in Hackney Wick, London took on a project to re-envision and re-inspire their playground through a one-week experimental laboratory. They patterned ground surfaces, covered and re-textured existing structures, experimented with light, re-positioned and situated playground elements, so forth and so on. The teachers, students and parent volunteers worked alongside each other on the weeklong project. "The lessons learned from this project have been immense, revealing how much of what we adults see in a playground is not the same as what the children do" (35). Through the process "we have become more convinced that the starting point for design should be through experience and this has shaped our work for the future" (36), said Lucy McMenemy, coordinator of the Hackney Wick Public Art Programme.

**Take Home Point:** True experience and validated research should precede impetus for design, rather than projected or assumed experience. This participatory charette demonstrates that one cannot necessarily predetermine how a child might choose to interact with or experience a space, therefore involving children in the design process can be helpful.

## **Service Learning in an Urban Context: Implications for Planning and Design Education**

*Ann Forsyth, Henry Lu, and Patricia McGirr*

Forsyth, Ann, Henry Lu, and Patricia McGirr. 2000. Service learning in an urban context: Implications for planning and design education. *Journal of Architectural and Planning Research* 17, n.3 (Autumn): 236-59.

**Keywords:** Service Learning

**Compiled by:** Sukaina Fakhraldeen

Service learning is an interdisciplinary approach to problem solving that can be beneficial to both academia and the community. It combines “university outreach with experiential education [...as] a means for program to make education more relevant to both students and outside constituencies” (Forsyth, 236). Here the authors explore the potential constraints and opportunities of service learning on three groups; students, faculty, and outside communities, exploring the implications of service learning in professional programs. The authors’ aim is to look at how service learning can be applied in class settings and projects while helping to solve important public problems; and/or address major social issues. They pose the following question in the hopes that their research will address this issue; “can service learning deliver on its promise of educational and community benefits?” (Forsyth, 250).

Service learning, also referred to as experiential learning or public service, provides people with access to major services and resources. This approach to problem solving is similar to that of a “hands-on experience” where students, for instance, would have to reach out to the communities and engage them throughout the process in order to achieve the desired design outcome. Listening to what the community has to say creates/provides a better understanding of what it is they actually need vs. want. Forsyth reinforces this by stating that “learning to listen is an important lesson for future professionals” (Forsyth, 251). When it comes to schools, the research indicated that the goal here was to not only leave a positive ‘impact’ and presence within the community, but also develop social skills in students. This in turn allows students to realize the “rewards of a long-term commitment to serving others” (Forsyth, 240). Service learning is about integrating research and teaching simultaneously and balancing professional practice skills and socially useful work.

**Take Home Point:** This research provided an interdisciplinary basis for my research in terms of how to go about incorporating the users’, my audience, into the design process in such a way that is beneficial to all: community and the professionals.

## The Received View of Play and the Subculture of Infants

*Susan Herrington*

Herrington, Susan. 1997. The Received View of Play and the Subculture of Infants. *Landscape Journal* 16 (2) (Fall): 149-60.

Keywords: Children; Infant; Play; Perspective; Natural Material

Compiled by: Rebecca Melvin

Herrington addresses several questions in her article. Namely, "What do outdoor play apparatuses really offer children, particularly young children who are increasingly placed in corporate, commercial and institutional settings?" (149). Such a question must be broken down before it can be answered comprehensively. First, Herrington examines how the current, rather disconnected, playground model came to represent outdoor play. She writes, "there is the assumption that play takes place upon the land with play structures placed onto the land" (150). Formalized play environments became a part of the urban American landscape around the turn of the century as a response to a "need to improve the physical fitness of children" (150). No American wants to be perceived as soft, therefore, as the country industrialized, children were kicked out of the streets and formalized urban play environments were born.

Research suggests that toddlers and infants are society's most neglected age group. Children of this age group learn significantly through tactile experience. Play equipment manufacturers promote their products as facilitating tactile play. "Rather than depending on equipment to give play its constitution, landscape architects need to collaborate with early childhood specialists so that landscapes for children can express and support the many facets of human development" (151).

The Infant Garden at UC Davis is essentially a carefully designed laboratory where the researchers observed infants. Rather than creating a child's play space based on what either a teacher or designer thinks a child needs or desires, the Infant Garden was developed by gathering empirical data through observation in combination with "the fundamental theories of early social-emotional and sensorimotor development" and translating this data into landscape forms, textures and images (153). The interactions of nine infants in the garden were observed and recorded by a selection of researchers for defined intervals across a period of time. Findings suggest that vegetation in the landscape provide the infants more than aesthetic value, rather, "the leaves, twigs, flowers, and pine cones seem to become a part of the infants' play experience, exploration, and their world" (157). In concluding, Herrington poses a provoking comment, "by studying the landscapes of play we can begin to understand what our culture is; in re-thinking these landscapes we can entertain what culture could be" (158). Perhaps our culture deserves to be at least slightly discredited because of the values that we project upon our children even as they are infants. Herrington asks, "Is it better to build an environment of olfactory memories of the smell of pine trees after rain or the smell of rubber baking in the sun? (158)

**Take Home Point:** This article provides a remarkable precedent for the value of interaction with natural materials on early-childhood development.

## Children’s Outdoor Play and Learning Environments: Returning to Nature

*Randy White and Vicki Stoecklin*

White, Randy and Vicki Stoecklin. 1998. Children’s outdoor play and learning environments: Returning to nature. Retrieved September 7, 2011 from <http://www.whitehutchinson.com/children/articles/outdoor.shtml>.

Keywords: Children’s Landscapes; Experiential Learning

Compiled by: Chelsey King

White Hutchinson, the firm this article is associated with, designs play gardens and natural playgrounds for children. White and Stoecklin highlight the importance of considering children when designing a landscape geared towards them. Adults think differently about play than children do, and often this is not considered in the design process. The authors point out that “outdoor spaces designed by children would not only be fully naturalized with plants, trees, flowers, water, dirt, sand, mud, animals, and insects, but also would be rich with a wide variety of play opportunities of every imaginable type”. Many of the playgrounds are manufactured and do not provide opportunity for children to experience the natural environment. One issue the authors bring up with how childhood has changed is the shift towards more structured and supervised lives, where they are enrolled in more sports and extracurricular activities that leave little time for free play.

White and Stoecklin emphasize that “environmental education needs to start at an early age with hands-on experience with nature.” Experiences that children have when they are able to interact with nature increases the well-being of the children. The authors provide information on how the firm thinks about landscapes for children, what they call “discovery play gardens”, advising that these gardens provide openness, variety, wilderness, and “opportunities for manipulation, exploration, and experimentation” in order to fully engage and immerse children in play.

**Take Home Point:** White and Stoecklin provide insight for designing landscapes for children that emphasize learning and experience. Through their association with a firm that focuses on designing natural “discovery play gardens”, they are able to provide excellent information for design considerations.

Landscapes of Learning  
Sub-topic

# Design Metrics & Heuristics

## The Scholarship of Transdisciplinary Action Research: Toward a New Paradigm for the Planning and Design Professions

*Victoria Chanse and Susan Thering*

Landscape Journal: Design, Planning and Management of the Land 30:1 (2011).  
 Chanse, Victoria & Thering, Susan. "The Scholarship of Transdisciplinary Action Research: Toward a New Paradigm for the Planning and Design Professions."  
 Landscape Journal: Design, Planning and Management of the Land 30:1 (2011): 6-18.

Keywords: Participatory Design; Human-Environment Interaction

Compiled by: Kweku Addo-Atuah

In this article, Chanse and Thering explore the plural or participatory design approach in landscape architectural planning and design in the context of environmental sustainability. They note that practitioners define plural design as "the design of public spaces using participatory methods that do not necessarily address issues of civil rights and environmental justice. They quote Randy Hester on the importance of local participation in promoting sustainable practices, "local participation is best situated to help reform unsustainable behavior because it represents the local part of thinking globally and acting locally" (Chanse & Thering 2011, 7).

Although Chanse and Thering present several strategic concepts in linking plural design and sustainability, including The Get Meta challenge, the strategy that stood out to me was the Stay Grounded challenge. This strategy focused on three facets: principles, people and place. The first facet urges academic practitioners to "iteratively check their decisions about process...against the ethics, codes and principles...at the core of landscape planning, design disciplines and the imperatives of sustainability when project scale and complexity increases" ((Chanse & Thering 2011, 8). The second facet recognizes that while "sustaining trusting relationships are essential for long-term success, as the scale of the project increases, so do the conflicting priorities of professionals, academics, and community groups" (Chanse & Thering 2011, 8). The third facet insists for an "appropriate response to the confluence of history, culture politics, geographic location and bioregional characteristics" (Chanse & Thering 2011, 8).

This article has reiterated the critical importance of local participation in key decision-making. Although difficulties arise when project scale and complexity increases, planners and designers must not shy from plural design as combined efforts with community members helps ensure longer-lasting solutions.

**Take Home Point:** Plural or participatory design must operate with three (3) facets: principles, people and place. Respect professional code of ethics, keep in mind the varying priorities of people and try to mitigate conflicts and place emphasis on responding to site context, history and geography.



## **Sensory Integration and Contact with Nature: Designing Outdoor Inclusive Environments**

*Nilda Cosco and Robin Moore*

Cosco, Nilda and Robin Moore. 2009. Sensory integration and contact with nature: Designing outdoor inclusive environments. In *NAMTA Journal* 34(2):158-177.

Keywords: Design Recommendations; Restorative/healing Landscapes; Human-Environment Interaction; Children’s Landscapes; Experiential Learning

Compiled by: Chelsey King

Cosco and Moore discuss the importance of designing environments that accommodates children with a range of abilities and the importance of experiencing nature in their daily lives. The authors back up the idea that children’s landscapes can be therapeutic due to their support of health, attention, harmony, and the feeling of being alive. Cosco and Moore provide information emphasizing the importance of school landscapes serving as an extension of the classroom that stimulates the senses, include children of all abilities, and instill a sense of stewardship in the children at a young age.

The authors support creating outdoor environments that cater to children with special needs or disabilities. They recognize that while, in order to meet the needs of the children, there are more considerations in order to accommodate these needs, but they can be designed to provide opportunities for learning and play for children of all abilities. The best way to design for children is to design for sensory and interactive experiences such as trees to climb in, hills to roll down, and different textures to feel.

To conclude, Cosco and Moore provide some design recommendations from a previous article. These recommendations include creating a space that is comfortable to experience year-round, visually connecting outdoor space to interior spaces, considering the abilities of the users; including their abilities and possible impairments, designing areas for children to release stress, and many other considerations that lead to well-designed landscapes for children with a range of needs. The authors do an excellent job of providing information on how landscapes can be therapeutically beneficial to users of all abilities, and important aspects for designers to consider when challenged with designing a positive and engaging landscape for children.

**Take Home Point:** Landscapes that are experience by children have the potential to become therapeutic or healing environments. Schoolyards and other landscapes can accommodate children of all needs, without segregating children by their abilities.

## Form and Fabric in Landscape Architecture: A Visual Introduction

*Catherine Dee*

Dee, Catherine. 2001. Form and fabric in landscape architecture: A visual introduction. Oxon: Spon Press.

Keywords: Topography; Landform

Compiled by: Rebecca Melvin

“The intention is to encourage designers to make connections between experience and design”(2). The book is divided into seven morphological sections to be incorporated into the design process. The sections are as follows; landscape fabric, spaces, paths, edges, foci, thresholds, and detail.

“Responsiveness... to people, to nature and to place.” p14

“Landscape design can be seen as a process of adding other layers of form and meaning that integrate or juxtapose to older layer and meanings” (15).

When successfully integrated, “In wholeness, the sum of the landscape forms and elements is greater than the parts” (20).

Understanding the user group is critical to design of any space. “Public spaces need to function for many different uses and users” (36).

Topographic Spaces (p54-61)

Flatness and degree of intervention: used for purposes of utility

Cut and fill: maintain balance for economic feasibility

Bowls and hollows

Mounds and mounts: “there is pleasure and security in occupying a raised position”(58).

Plateaus: “enables a journey of anticipation”

Terraces: used as a linking device between architecture and the landscape

Subterranean spaces: “places of both fear and attraction...urban threat or spiritual significance.”

Vegetation spaces (62-68)

Plants can be used as structural element to define space and for environmental reasons to encourage biodiversity.

Paths (81-114): “linking forms that create networks of circulation in the landscape” (82)

Factors that affect the quality of the kinetic experience of landscape along and through a path include sequencing, and points of arrival and departure. Spaces are strategically places to promote variety in the experience.

Site organization is often largely determined by path orientation and form (90). Path spaces are defined by degree of enclosure and situation within the landscape. Dee divides path spaces into four categories;

[Topographic Paths / Built Paths / Vegetated Paths / Water Paths]

Edges (115-143)

"Edges are interlocking forms or places of transition that enclose and separate different spaces. Thinking about edges as physical and conceptual entities within landscapes provides the opportunity to be integrative, complex, rich and subtle in the design of spatial transitions. Edges 'knit' the fabric of the landscape together and connect landscape to architecture and vice versa" (115).

Notoriously under-appreciated in design; "This neglect may be due in part to binary thinking that categorizes mass and space as opposites and negates the possibility of designing hybrid spaces that are neither mass nor space but are both simultaneously" (117).

Topographic Edges(128): Spurred edges, stacked edges, banks, ridges, ditches, steps as edges, cliffs and chasms.

Foci (144-168)

Focus: "a form or centralized group of forms (often vertical) that contrast(s) with the surrounding landscape; a form that marks a place of spiritual, cultural or social significance attracting people and becoming a destination or gathering point" (145).

"As we get close to landscape elements they create different impressions, and our appreciation of them changes. Being able to touch, manipulate and interact with the landscape at an immediate scale is a very important part of landscape experience and appreciation. ...Children have a particularly close physical relationship with landscape surfaces and elements, not only because they are closer to the ground but because they learn about environments by touching and tasting" (190).

**Take Home Point:** Dee presents a detailed framework (in text and images) for organizing and understanding landscape spaces and elements, in part and as a whole. The definitions and descriptions provided, particularly in respect to topographic spaces, edges and thresholds, will be critical to my exploration of landforms.

## **Affordances and the Perception of Landscape: An Inquiry into Environmental Perception and Aesthetics**

*Harry Heft*

Heft, Harry. 2010. Affordances and the perception of landscape: An inquiry into environmental perception and aesthetics. In *Innovative approaches to researching landscape and health*, ed. Catharine Ward Thompson, Peter Aspinall, and Simon Bell, 9-32. New York: Routledge.

Keywords: Design Considerations; Human-Environment Interaction; Perception

Compiled by: Chelsey King

Heft's chapter in *Innovative Approaches to Researching Landscape and Health* relates to environmental design and the perception of landscapes. Heft states his thesis of the chapters as "the way that environmental psychologists and designers think about processes of perceiving has a direct bearing on how they think about the visual experience of landscape, and in turn how they approach landscape perception research and aesthetics" (2010).

He discusses previous studies on the perception of landscapes and cites many of the findings from these studies. Specifically, Heft discusses the Kaplan's and their study rooted in cognitive psychology relating to present properties, such as what is seen, versus suggested or inferred properties, for example legibility or mystery (2010). He criticizes that the studies take an approach where the landscape is perceived by an observer rather than an engaged user.

Importance is placed on the difference between viewing a landscape and experiencing a landscape and how the viewer's perception differs based on active or passive engagement. Relating to the perception of landscape, Heft discusses affordances, which are the opportunities present within a landscape to engage the user and influence the perception of the landscape. He concludes that perception leads to exploration and action.

Heft's chapter defines and describes information that becomes important to consider when thinking about landscapes and how users will connect with the environment that they perceive. He places importance on paying attention to how landscapes might be perceived by the users, and how perception varies whether the user is viewing the space from the exterior or engaging directly with the space.

**Take Home Point:** As designers, it is necessary for us to consider how users will perceive the landscape, both through passive and active engagement.

## Introduction: Historical and Cultural Perspective on Healing Gardens

*Clare Cooper Marcus and Marni Barnes*

Marcus, Clare Cooper and Marni Barnes. 1999. Introduction: Historical and cultural perspective on healing gardens. In *Healing gardens: Therapeutic benefits and design recommendations*, ed. Clare Cooper Marcus and Marni Barnes, 1-26. New York: Wiley.

Keywords: Restorative/Healing Landscapes; Design Considerations; Human-Environment Interaction

Compiled by: Chelsey King

In this introduction to the book *Healing Gardens*, the authors provide an overview of healing gardens, their history, and support for nature being healing. Healing and gardens are defined by the authors, shaping the way the words are used throughout the following compilations from various authors. Healing is described as “relief from physical symptoms”, “stress reduction” and “improvement to the overall sense of well-being” (3). Gardens are defined by the authors as being “any green outdoor space within a healthcare setting that is designed for use” (4). While the compilation relates directly to healing environments in healthcare settings, the findings and information presented can be translated into a variety of landscapes.

The authors proceed to describe a typical healing environment with the elements from nature that are considered to have beneficial effects, including trees, water, flowers, wildlife, and rocks. Spatial qualities should include places for social encounters, places to wander and walk, spaces where you can feel secluded from those around you, and choice for seating arrangement. Marcus and Barnes recognize the limitations of the existing research and studies, stating that they are not definitive, but rather suggestive. Thus, while improvements can be measured based on time spent experiencing nature, it is difficult to isolate those benefits to be directly from nature versus other means of healing.

The authors provide a wealth of information on the history, benefits, and design of healing landscapes. While recognizing the difficulty of proving the actual benefits of nature, Marcus and Barnes are able to provide substantial information to explain the benefits and design considerations that can help to maximize the healing capabilities of a landscape or garden

**Take Home Point:** Nature has the ability to facilitate healing in healthcare facilities and settings beyond the healthcare realm. Nature has repeatedly been viewed as a positive influence on health and well-being.

Landscapes of Learning  
Sub-topic

# Environmental Stewardship

## Natural Resource Conservation

*Daniel Chiras and John Reganold*

**There are no sources in the current document.**

Keywords: Resource Management; Nature; Education; Sustainability

Compiled by: Laura Weatherholt

This text describes the complex issues of resource management: its history, practices, theories, and approaches on how to proceed into the future. This text also describes how the increasing population, resource consumption and resulting pollution are the main problems we face, with all other issues stemming from these problems. The goal of this book is to prepare the readers for creating a sustainable future. It covers all topics from vegetation and soils to wildlife management and waste management. Its comprehensive coverage covered issues at local, regional, national, and global scales. They try to get the readers to “adopt an attitude that seeks cooperation with, rather than domination of, nature.” The text explains that in order to do this it will require dramatic changes in the way we live our lives and conduct commerce. “The Earth is the source of all goods and services and the sink for all of our wastes. What we do to the environment we do to ourselves.”

**Take Home Point:** This text has helped me gain a more broad and thorough understanding of the issues facing our natural resources and those that this project is focusing on. The lessons taught in this text will be conveyed in the design. Through this reading and project, I hope to take active steps to reduce our impact on the environment.

## Children's experience with vegetation

Harvey, H.R.

Full Citation: Harvey, H. R. 1989. Children's experiences with vegetation. *Children's Environments Quarterly* 6 (Spring): 36-43.

Keywords: vegetation, methodology, survey, socio-economic factors, race  
 Prepared by: Jonathan Knight

### Summary:

Harvey posits that "early contact with vegetation may play a part in the formation of their environmental dispositions". Environmental dispositions, in this case, refers to a child's environmental ethic and attitude towards conservation. A survey was given to 845 eight to eleven year old children. They were divided by gender, age, and socio-economic status.

A survey was given to 995 school age children from 21 junior high schools from inner city to rural locations. At each school, two classrooms were selected for participation: 8-9 year old room and a 10-11 year old room.

Status differences (i.e. socioeconomic differences) were classified as follows: combining weights of the children's types of home (single-family, semi-detached, terraced, flat), class composition of school's neighborhood (middle-class, mixed social composition, and working-class).

**Take Home Point:** The research gives one possible way to classify socio-economic status based on home and neighborhood characteristics.



**Using Behaviour Mapping to Investigate Healthy Outdoor Environments for Children and Families: Conceptual Framework, Procedures and Applications**  
*Robin C. Moore and Nilda G. Cosco*

Moore, Robin C. and Nilda G. Cosco. 2010. Using behaviour mapping to investigate healthy outdoor environments for children and families: Conceptual framework, procedures, and applications. In Innovative approaches to researching landscape and health, ed. Catharine Ward Thompson, Peter Aspinall, and Simon Bell , 9-32. New York: Routledge

Keywords: Human-Environment Interaction; Schoolyard Design; Experiential Learning; Children’s Landscapes

Compiled by: Chelsey King

Moore and Cosco look at ways to evaluate spaces that children occupy outside of the home environment using behavioral mapping, specifically using neighborhood parks, childcare centers, and a museum as examples. They evaluated each space on the way it was used by children, and the qualities the spaces possessed that made it a healthy environment. Some of these include the community engagement with the space, scientific learning, art, diversity, exploration, and active play. Moore and Cosco evaluate the spaces based on their “functional parts” that make up the space, including paths, gathering spaces, climbing areas, gardens, etc. (41). Included in the chapter are composite behavior maps that illustrate the authors’ findings for how children use the spaces.

As part of their research, Moore and Cosco consider community design and how, when designed to support health, it can ultimately influence the children who live in these communities. Through evaluating the different spaces frequented by children, Moore and Cosco acknowledge key considerations that can be implemented in other landscapes that are geared towards children.

**Take Home Point:** Different spaces designed for children can be designed to be beneficial to their health and help to expand their learning.

## Performing on the Landscape Versus Doing Landscape: Preambulatory Practice, Sight, and the Sense of Belonging

*Kenneth R. Olwig*

Olwig, K. (2008). Performing on the landscape versus doing landscape: Perambulatory practice, sight and the sense of belonging. In T. Ingold, & J. L. Vergunst (Eds.), *Anthropological studies of creativity and perception; variation: Anthropological studies of creativity and perception*. (pp. 81-91). Aldershot, England ; Burlington, VT: Ashgate.

Keywords:

Compiled by: Rebecca Melvin

Olwig cites two ways of seeing; binocular vision and monocular perspective. Binocular vision encompasses the idea of “movement and knowledge gained from a coordinated use of the senses in carrying out various tasks,” generating a sense of belonging within the landscape and a place of action and of living. Monocular perspective involves a view of spaces from a fixed and distant point, away from the body, engendering a sense of ownership as if looking over a staged performance (81).

A difference exists between the way landscapes are viewed as places of belonging and ownership. “These two very different modes of perception create the basis for contrasting senses of belonging in regard to the land, and hence of what it means to say that Scotland is the land of the Scots, or Jutland is the land of the Jutes. One can belong to the land of the land can belong to you” (84). In the same way, a man who walks the same path every day begins, over time, to feel a connection and attachment to the land over which he travels. In the majority of modern societal systems, landscape has become a commodity that can be purchased and traded the same as any other good. In this mindset landscape becomes almost synonymous with scenery(88). Historically the words, landscape and scenery represent two different ideas. Landscape, referred to the real space in which people lived and worked, whereas, scenery was a sensory pleasing artistic representation of a space (83). Today, the two words have grown closer in meaning. For instance, the way in which we think about land a good to be bought and sold renders it part of a scenic ideal.

**Take Home Point:** Throughout history, landscape has been viewed, thought, and written about from many different perspectives. The author should be careful in the assumed operation that s/he attaches to the word landscape.

# **Ecological Education in Action: On Weaving Education, Culture and the Environment**

*Edited by Gregory A. Smith & Dilafruz Williams*

Smith, Gregory A. & Williams, Dilafruz, ed. 1999. Ecological Education in Action: On Weaving Education, Culture and the Environment. Albany, NY: State University of New York Press.

Keywords: Experiential Learning; Human-Environment Interaction; School Environment; Environmental Stewardship

Compiled by: Kweku Addo-Atuah

"Placing educational settings beyond and out of the classroom can initially engender children's relationship to nature; schoolyard gardens a source of student learning"

- (Smith & Williams 1999, 7)

In this book, Smith and Williams define seven (7) key principles aimed at "helping us re-conceptualize the relationship between education and the environment as well as the purpose of education itself - acculturation and socialization" (Smith & Williams 1999, 16).

The authors seek to encourage readers to "develop a personal affinity with the earth through practical experiences out-of-doors and through the practice of an ethic of care" (Smith & Williams 1999, 7). They urge "grounding learning through the study of local knowledge and investigation in persuading students to learn about the phenomena and events surrounding them" (Smith & Williams 1999, 8). Smith & Williams lament the growing social isolation of individuals and families and attempt to correct this by fostering within children, a "sense of obligation, responsibility and support to each other and the community" (Smith & Williams 1999, 9).

Smith & Williams implore teachers and adults to involve children in projects such as restoration of community resources. The authors believe this leads to feelings of "sense of purpose in contributing to the livelihood of a community while learning skills such as plant growth/cultivation" (Smith & Williams 1999, 9-10). The authors also encourage "service-learning projects involving children and adults by organizing and maintaining facilities such as a community-supported farm" (Smith & Williams 1999, 10). Smith & Williams emphasize the importance of including children and students in key decision-making - "let voices be heard in decisions that affect their lives" ((Smith & Williams 1999, 11). Lastly, the authors promote a new thinking "emphasizing broader, cultural awareness in ways that enhance or detract from creating socially, ecologically sustainable cultures" ((Smith & Williams 1999, 11).

**Take Home Point:** "Listening" is an essential component in a participatory process in the planning/design fields. Practitioners must also be flexible enough to "adapt their processes and change tasks" to help negate pitfalls or stalemates.

Landscapes of Learning  
Sub-topic

# Cultural Geography

## The Cultural Landscape

*Christopher L. Salter*

Salter, C. L. (1971). *The Cultural Landscape*. Belmont: Calif., Duxbury Press.

Keywords: Cultural Geography

Compiled by: Rebecca Melvin

Salter divides his book into four sections; the Mobility of Man, Husbandry of the Earth, The Organization of Space, and The Contemporary Cultural Landscape.

### The Mobility of Man

Salter discusses what has motivated people to move around, and explore the globe, through out history in our present time. He also looks at consequences and benefits of a globalizing society.

"Perhaps the most stunning characteristic of myth-stimulated migration, however, is the inertia which it has overcome in prompting man to move-an act which for most of man's history has been discouraged by tradition." (Salter 2)

"Very well, Bright Improvement has arrived, you see, with her civilization and her Waterbury, and her umbrella, and her third-quality profanity, and her humanizing-not destroying machinery, and her hundred-and-eighty-death-rate and everything is going along just as handsome!" (Twain 23)

"...has had a few years of schooling, if his imagination has been excited by newspapers and the radio, if he feels a need to break from his traditional ways, if he wants to be modern, there is only one place he can go- the city. And he will go there even if it does not make economic sense to do so." (Meisler 37)

### Husbandry of The Earth

The effect on the earth of the man's increasing mobility is far-reaching. Across the globe the ways by which men act as stewards, farm the land, abuse, learn from, and rely upon the land is molded by increasing technology and transfer of knowledge.

"...to call attention to examples of man's cultural choice transcending the determinants of the physical landscape" (Salter 65)

"When there were several bands of musicians, it sounded as if all the village was a vast bellows, and all the building expanded and collapsed alternately with a din. But sometimes it was a really noble and inspiring strain that reached these woods, and the trumpet that sings of fame, and I felt as if I could spit a Mexican with a good relish, -for why should we always stand for trifles?-- and looked round for a woodchuck or a skunk to exercise my chivalry upon. These martial strains seemed as far away as Palestine, and reminded me of a march of crusaders in the horizon, with a slight tantivy and tremulous motion of the elm tops which overhang the village. This

was one of the great days; though the sky had from my clearing only the same everlasting great look that it wears daily, and I saw no difference in it." (Thoreau 69)  
"Ancient poetry and mythology suggest, at least, that husbandry was once a sacred art; it is pursued with irreverent haste and heedlessness by us, our object being to have large farms and large crops merely. We have no festival, nor procession, nor ceremony, nor Thanksgiving, by which the farmer expresses a sense of the sacredness of his calling, or is reminded of its sacred origin. It is the premium and the feast which tempt him. He sacrifices not to Ceres and the Terrestrial Jove, but to the infernal Plutus rather. By avarice and selfishness, and a groveling habit, from which none of us is free, of regarding the soil as property chiefly, the landscape is deformed, husbandry is degraded with us and the farmer leads the meanest of lives. He knows Nature but as a robber. Cato says that the profits of agriculture are particularly pious or just () and...." (Thoreau 71)

#### The Organization of Space

The driving factors which cause man to make a mark upon of the earth and first, productivity, and second, a need to feel ownership. In this way, man has a fundamental need to organize the landscape according to his own devices. How we choose to view the landscape, be it architecturally, socially, subjectively, or regionally drives our means of organization upon the landscape.

"The whole town seemed to be frying in oil. There was a stifling smell of hot oil everywhere. The steam-engines shone with it, the dresses of the Hands were soiled with it, the mills throughout their many stories oozed and tricked it. The atmosphere of those Fairy palaces was the breath of the simoon; and their inhabitants, wasting with heat, toiled languidly in the desert. But no temperature made the melancholy mad elephants more mad or more sane." (Dickens 217)

#### The Contemporary Cultural Landscape

In this section Salter raises some questions regarding the future as the cultural landscape continues to be modified and projected upon. Modifications of the earth continue to grow in scale and magnitude. The significance of these changes affects the entirety of the human race, whether acknowledged and accepted, or not.

" The whole art of townscape is built on a fundamental principal-which can be a political and philosophical principal too- of the "is-ness" of parts: that each city has its own specific character and that to give visible form and identity, this character must be expressed in shape and patter." (Nairn 225)

"townscape relies on two things: relationship and identity" (Nairn 226)

"the complete fragmentation of the whole manmade environment in this way is not a liberation of life, but an explosion..." (Nairn 227).

**Take Home Point:** Humans have been projecting their cultural values upon the physical landscape and allowing those values to manifest in physical form through organization and modification of the landscape for centuries.

Landscapes of Learning  
Sub-topic

# Health & Wellness

**Coping with ADD: the surprising connection to green play settings**

*Faber Taylor, Kuo, Sullivan*

Full Citation: Faber Taylor A., Kuo F. E., and Sullivan, W.C. 2001. Coping with add : The surprising connection to green play settings. *Environment and Behavior* 33 (1) (January 2001): 54-77 (accessed October 10, 2011).

Keywords: ADD, restorative environments, mental health, green spaces  
 Prepared by: Jonathan Knight

Summary:

This is one of the earliest studies to explore the potential for contact with nature to have a positive effect in reducing the impact of ADD in young. The study tested two hypotheses:

- 1) Attention deficit symptoms will be more manageable after activities in green settings than after activities in other settings;
- 2) The greener a child’s everyday environment, the more manageable their attention deficit symptoms will be in general.

The results were positive. Results indicate that children with ADD function better after activities in green areas and that the “greener” a child’s play area, the less severe his or her attention deficit symptoms. Thus, “contact with nature may support attentional functioning in a population of children who desperately need attentional support” (Faber Taylor, 54).

**Take Home Point:** This groundbreaking study shows that special populations with behavioral and cognitive problems are affected positively by nature. This further supports the claim that all children are affected positively by green play.



**Restorative Gardens: The Healing Landscape**

*Nancy Gerlach-Spriggs, Richard Enoch Kaufman, and Sam Bass Warner, Jr.*

Gerlach-Spriggs, Nancy, Richard Enoch Kaufman, and Sam Bass Warner, Jr. 1998. Restorative gardens: The healing landscape. New Haven: Yale University Press.

Keywords: Restorative Landscapes

Compiled by: Chelsey King

Gerlach-Spriggs, Kaufman, and Warner’s book provides a history of restorative gardens and case studies of various institutional restorative landscapes. The authors describe a restorative garden as being a place for the healthy and the sick where well-being is improved for all through social interaction, contemplation, and relaxation (7). Throughout history, nature was viewed as a healing environment. The most common restorative gardens were and are still related to hospitals and institutions.

The authors state the primary issue of therapeutic or restorative landscapes is the lack of hard evidence that directly proves that nature is healing. It is generally accepted and observed, however, that interaction with nature makes most people “feel better”. Research by the Kaplan’s is presented by the authors, relating to the increase of stress and fatigue due to “directed attention”. In this research, “recovery from this fatigue can be facilitated by the restorative experience” (36). They have found that contact with nature has the greatest influence on reducing stress and fatigue.

While restorative landscapes have often been associated with healthcare and institutions, the authors of this book provide insight for the influence nature has on the restorative process. Through presenting the history of restorative landscapes, the knowledge base relating to the restorative qualities, and the applications of these landscapes helps to build understanding for how people interact and experience restorative landscapes.

**Take Home Point:** Landscapes and contact with nature have been considered restorative environments throughout history. Restorative landscapes should be experienced by all, not just those with illnesses.

## Green Nature/Human Nature: The Meaning of Plants in our Lives

*Charles A. Lewis*

Lewis, Charles A. 1996. *Green Nature/Human Nature: The Meaning of Plants in Our Lives*. Chicago: University of Illinois Press.

Keywords: Human-Environment Interaction; Health and Wellness

Compiled by: Sukaina Fakhraldeen

Lewis examines the people-plant relationship in order to understand how the presence of green affects people, particularly at a psychological level. He traces “the history of our relationship with plants, from the time when they formed nurturing context our emergence as a successful species to their ambiguous status today in much of the inhabited world” (Lewis, 121). Lewis, after much research, emphasizes that acknowledging the power of the human to plant connection we begin to understand how nature influences people, of all ages and backgrounds, both physically and psychologically; our well-being. This powerful connection and interaction is evident “in the behavior of city-dwellers who seek relief from urban stress by frequenting parks or fleeing to weekend retreats in the country” (Lewis, xviii). This in turn stresses Lewis’ point about how “contact with green nature is essential to [our] well-being and offers peace and assurance” (xviii) in a contemporary, technological world. Having a hint of green in our built environment indicates renewal and hope, and brings life to our bland materials such as concrete, asphalt, and the like. Thus, it is important to incorporate nature in various settings including work, learning, and play contexts.

The built environment greatly affects our relationship with nature, where the “physical condition of a community, its buildings, streets, and vacant spaces, makes an enormous difference in the way members of the community feel about themselves” (Lewis, 54). With school settings, Lewis emphasizes how important it is for children to interact and connect with nature at an early age. He states that by establishing this connection at an early age children will come to develop an appreciation for and to nature at an early stage, and continue to do so as they grow; for “what we see often tells us what we are” (Lewis, 54). It is not enough for us to rely on the information gained by the media about nature programs, “only personal experience fully opens young minds to an appreciation and feeling of stewardship for nature” (Lewis, 70).

**Take Home Point:** It is Lewis’ exploration on the importance of acknowledging the people-plant relationship and the benefits that come along with that provided the basis for my research in terms of further exploring and incorporating nature indoors in order to create richer spaces

## Nature Big and Small: Landscape Planning in the Wilds of Los Angeles

*Marcia J. McNally*

Landscape Journal: Design, Planning and Management of the Land 30:1 (2011).  
 McNally, Marcia J. " Nature Big and Small: Landscape Planning in the Wilds of Los Angeles." Landscape Journal: Design, Planning and Management of the Land 30:1 (2011): 19-34.

Keywords: Participatory Design; Human-Environment Interaction

Compiled by: Kweku Addo-Atuah

In this article, Marcia J. McNally summarizes her work relationship with Randolph Hester in nearly 30 years in a variety of "planning and design projects at every conceivable scale" (McNally 2011, 19). The project that McNally listed in detail was the contract by the City of Los Angeles Department of Recreation and Parks to develop a master plan for Runyon Canyon Park in 1985. Although McNally's and Hester's "participatory approach originally focused on "designing small spaces close to home with the people who live there," (Hester 1982, 135) it has evolved into an iterative approach based on "listening" (McNally 2011, 19-20).

To help them develop the master plan, Hester and McNally undertook a 11-step process, including such elements as "listening; citizen input/interviews; citizen hands-on site analysis and evaluation criteria" (McNally 2011, 20). While each of these steps were useful in helping complete the project, McNally's emphasis on "listening" proved absolutely essential. The duo define listening as identifying stakeholders, "who is involved, who should be involved, engagement with the site and address concerns and visions." This allows for a "dialogue between consultants and local community and help the former understand the social and environmental terrain rapidly and extensively" (McNally 2011, 20). McNally suggests "relying heavily on local, place-based scholarship and prevailing wisdom on issues such as neighborhood planning norms" (McNally 2011, 32). The following concluding statements stood out: "design and planning work best when we can find the unit with which people identify" and "scale changes the level of intimacy between the designer and everyday people" (McNally 2011, 32).

**Take Home Point:** "Listening" is an essential component in a participatory process in the planning/design fields. Practitioners must also be flexible enough to "adapt their processes and change tasks" to help negate pitfalls or stalemates.

## Healing Gardens for Children

*Robin C. Moore*

Moore, Robin C. 1999. Healing gardens for children. In *Healing gardens: Therapeutic benefits and design recommendations*, ed. Clare Cooper Marcus and Marni Barnes, 323-384. New York: Wiley.

Keywords: Restorative/healing Landscapes; Human-Environment Interaction; Children's Landscapes

Compiled by: Chelsey King

Moore is a leading researcher in the design of landscapes for children. In this chapter, he focuses on the design of healing landscapes specific to children. He emphasizes that an important element in healing landscapes for children is play. He states that "through playful interactions with people, natural objects, and materials, the child learns in a special boundless way that stimulates the development of mind, body, and spirit" and that "garden settings are especially satisfying because they are diverse, constantly changing, multisensory, and alive" (323). Healing landscapes for children can engage the children in various ways, stimulating them and providing them with an escape from the stressors around them.

Moore discusses healing gardens for children not only in healthcare settings, but also in play settings such as adventure gardens, and children's farms. Key information that Moore provides are the "five basic assumptions of child development, play, and the outdoor environment" (326). The list provides guidelines for how different aspects can be incorporated into children's landscapes and also into healing gardens for children. A key statement from Moore is "every type of institution dealing with children could offer similar outdoor natural settings, allowing children to escape into their own private world" (329). This chapter provides insight into how landscapes can be designed so they have healing or restorative benefits on children.

**Take Home Point:** Healing landscapes for children maximize the opportunities for children to interact with the environment in various ways. Beyond healthcare settings, landscapes can be designed for children with varying abilities and have restorative effects on the well-being of the children.

## **Childhood development and access to nature: A new direction for environmental inequality research**

*Strife & Downey*

Full Citation: Strife, S. & Downey, L. 2009. Childhood development and access to nature: A new direction for environmental inequality research. *Organization Environment* 22 (1) (2 April 2009): 99-122.

Keywords: childhood, children, access, nature, inequality, race, class, income, environmental psychology, environmental justice, benefits of nature

Compiled by: Jonathan Knight

### Summary:

This article provides three things:

- 1) A summary of current research findings from the environmental health, environmental education, and environmental psychology literature with regards to the cognitive, emotional, and physical importance of children's exposure to nature.
- 2) Summarizes the few existing studies that examined class- and race-based inequalities in children's exposure to the natural world and industrial environmental hazards.
- 3) Offers directions and possible questions of inquiry for future empirical literature.

### **Take Home Point:**

Another article that provides a good summary of "benefits" to nature for children. This article provides evidence for the cognitive, emotional, and physical importance of children's connection to nature. It analyzes gaps in the research and future research inquiry areas.

## Effects of Gardens on Health Outcomes: Theory and Research

*Roger S. Ulrich*

Ulrich, Roger. 1999. Effects of gardens on health outcomes: Theory and research. In *Healing gardens: Therapeutic benefits and design recommendations*, ed. Clare Cooper Marcus and Marni Barnes, 27-86. New York: Wiley.

Keywords: Restorative/healing Landscapes; Human-Environment Interaction

Compiled by: Chelsey King

Roger Ulrich is one of the key researchers for the effect views and interaction with nature has on health. Ulrich’s research focuses primarily on the impact of gardens in the healthcare realm, and this article outlines many of his theories and findings through his research. With much of his research focusing on the benefits visually experiencing nature has on health, Ulrich focuses more in this chapter on the passive engagement of gardens rather than active engagement.

Studying effects of nature on stress provides a concrete base on which research can be conducted to study the effects of nature on well-being. Stress is identified by Ulrich as one of the major things affecting the well-being of patients and people. He states that “gardens are needed that effectively foster coping and restoration in persons who range from being anxious to depressed, and from overexcited to under-stimulated”, all of which stem from stress (35). Going beyond the healthcare realm, Ulrich discusses the influence nature has on the well-being and stress reduction of non-patients in public environments, including parks and gardens.

Ulrich highlights the importance of gardens on health based on measurable stress reduction. By providing information on how gardens can be restorative and healing, Ulrich also informs his readers how viewing nature can be restorative for people who are not in healthcare settings. He places importance on designing gardens to be healing places, emphasizing that simply being a “garden” does not create a healing environment.

**Take Home Point:** Well-designed landscapes can have healing effects on those who view the landscape, not just on those who are actively participating with the landscape. Healing effects of gardens go beyond the healthcare realm and can have many of the same benefits in the public realm if designed conscientiously.

**Effect of exposure to natural environment on health inequalities: an observational population study**

*Mitchell, R. & Popham, F.*

Full Citation:

Mitchell, R. & Popham, F. 2008. Effect of exposure to natural environment on health inequalities: An observational population study. *Lancet* 372 (November 8, 2008): 1655-60.

Keywords: socioeconomic inequality, income, mortality, effect of green spaces,

Summary:

Mitchell & Popham used mortality records for those under the retirement age (defined as 55) to determine whether poorer people had worse health problems. "We postulated that income-related inequality in health would be less pronounced in populations with greater exposure to green space, since access to such areas can modify pathways through which low socioeconomic position can lead to disease."

They reported that populations living near natural environments had less income-related health inequality than groups living away from green space. Populations that are exposed to the greenest environments also have lowest levels of health inequality related to income deprivation. Physical environments that promote good health might be important to reduce socioeconomic health inequalities.

**Take Home Point:** In summary, Mitchell and Popham (2008) supports the idea that access to green space is associated with better health for the poorer half of the population. In addition, this paper calls for greener infrastructure and community planning as green space "levels the playing field" in health inequality.

Landscapes of Learning  
Sub-topic

# Biophilia



**The biophilia hypothesis and life in the 21<sup>st</sup> century: increasing mental health or increasing pathology?**

*Eleonora Gullone*

Full Citation: Gullone, E. 2000. The biophilia hypothesis and life in the 21st century: Increasing mental health or increasing pathology? *Journal of Happiness Studies* 1 : 293-321.

Keywords: mental health, biophilia, natural environment, evolution  
 Prepared by: Jonathan Knight

Summary:

Gullon provides an extensive literature review in support of the biophilia hypothesis. Gullone’s review comes in two area: research demonstrating increased psychological well-being upon exposure to natural features and environments and the strength and prevalence of phobic responses to stimuli of evolutionary significance (such as snakes and spiders) and near absence of such responses to potentially dangerous human-made stimuli. (such as hand-guns and grenades). This could be explained by the extremely rapid process of change and progress that has occurred post World War II. Gallone proposes that we may be in the midst of significant adverse outcomes for the human psychological state and the resulting happiness.

He concludes, like others, by saying that there is still only casual evidence to support the biophilia hypothesis and that more work needs to be done to substantiate the biophilia hypothesis. However, he concludes “there is substantial evidence to suggest that, as a species, our modern lifestyle may have strayed too far from that to which we have adapted. There is also support for the proposal that including elements of nature or of our species’ ancient life style into our modern lifestyle may serve to enhance our psychological well-being” (Gullone, 2000).

**Take Home Point:** The work provides further evidence of the biophilia hypothesis and its effects on psychological well-being and happiness. The paper provides a large body of scientific literature “proving” the biophilia hypothesis and is helpful in tracing key works and authors for more examination.

## Biophilia, Health, and Well-Being

*J. Heerwagen*

Full Citation: Heerwagen, J. n.d. *Biophilia, health, and well-being*. Restorative Commons. United State Department of Agriculture.

Keywords: biophilia, mental health, psychology, happiness  
 Prepared By: Jonathan Knight

Heerwagen surveys the biophilia literature cited from previous biophilia exploration. This research provides a basis for “proving” Wilson’s original biophilia hypothesis. Although much of the literature is the same, she also cites other benefits on a person’s psyche from nature including sunlight, outdoor green space in public housing, and gardens and gardening.

Heerwagen also asseses the qualities and attributes of nature in the emerging principles of biophilic design:

Heraclitean Motion: Nature is always moving. Smooth, slow motions like branches whispering in the wind are soothing compared to fast, julting motions like those before a thundestrom.

Change and Resilience: Natural habitats show cycles of birth, death, and regeneration. Heerwagen says “the use of recycled elements and the natural aging of materials can create this impression of resilience in built environments “(cited in Heerwagen; Krebs, 1985).

Variations on a Theme: Natural elements have form that humans find beautiful. Use the principles of rhyiming.

Discovered Complexity: Living organisms have complex design not apparent at first glance. Spaces should be complex, yet navigatable.

Multi-Sensory: Nature has smells, sights, sounds. Touching is also important in nature. We should build our environments towards “emotion-centered” design grounded in the links between sensory perception and emotional responses to artifacts.

**Take Home Point:** Heerwagen provides a breadth of background literature related to biophilia. She begins to posit ways for designers and cities to more readily link the natural environment to our built environment. These are key inclinations on how we can transform the planning and design of the built environment for a better connection with and better access to nature.

## The Biophilia Hypothesis

*Stephene Kellert & Edward Wilson*

Full Citation: Kellert, S. R., and E. O. Wilson. 1993. *The biophilia hypothesis*. Washington, D.C: Island Press.

Keywords: biophilia, genetics, environmental psychology, experiential learning, urban versus nature preferences, values placed on nature

Compiled by: Jonathan Knight

Summary: These three chapter describe the empirical literature and evidence for the biophilia hypothesis. It is a more substantiated and tested book full of theoretical and empirical studies “proving” the biophilia hypothesis. (see Wilson, 1984)

Chapter 1 outlines biophilia and its relationship to conservation ethics. He briefly describes the relationship of nature to genetics and evolution, outlining probably reasons for nature-affinity.

Chapter 2 looks at nine fundamental aspects of humans’ presumably biological basis for valuing and affiliating with the natural world. The values most important to LOL are the naturalistic, Ecologistic-Scientific, Aesthetic, Symbolic, and Humanistic. He provides a basic understanding, through empirical evidence, how these theories play out.

Chapter 3 examines “biophobia”, biophilia, and natural landscapes. It includes a VAST array of empirical literature supporting the biophilia hypothesis and the relationship, preferences, and values that humans have with the natural world.

### Take Home Point:

This work (and these three chapters, in particular) substantiates the biophilia hypothesis made by Wilson in 1984 with a large body of social science literature showing some evidence that humans have genetically, through evolution, come to benefit from and unconsciously be drawn to nature.

**Last Child in the Woods**  
*Richard Louv*

Louv, R. (2006). *Last Child in the Woods: Saving Our Children from Nature-deficit Disorder*. Chapel Hill, NC: Algonquin of Chapel Hill.

biophilia, hypothesis, experiential learning, nature, evolution, mental health

Compiled by: Jonathan Knight

*Last Child in the Woods* is the seminal work on the subject “nature-deficit disorder” coined in this book. The book is compiled from personal interviews by the author and a large number of academic studies. It is a compilation of research from many disciplines including education, psychology, biology, sociology, and design disciplines. It is an aggregation of separate bodies of literature into one term—“nature-deficit disorder”. He lays and explains the work and gives his reasons behind why he believes such a “disorder” exists.

Nature-deficit disorder is the alleged trend that children spend less time outdoors resulting in a wide range of behavioral and health problems like ADD, ADHD, obesity, poor performance in school, anti-social behavior, and depression. Louv cites parental fears, restricted access to natural areas, and the “lure of the screen” as reasons for nature-deficit disorder (preference towards movies, TV, and computers for recreation time).

Louv spends much of the book explaining exactly what nature offers children: emotional well-being, spiritual sense of perspective, observation skills, cognitive abilities, creativity, healthy risk taking, observation skills, balanced sense of humility, stress management, increased attention, lowered depression. Nature primarily involves all of the senses. Louv contrasts it with television and computers which are mainly dual-sensory, appealing only to the eyes and ears.

Nature-deficit disorder is not a clinical diagnosis and is not recognized by any medical manuals for mental disorders.

*Last Child in the Woods* may be the most important book for Landscapes of Learning. It is an aggregation of a large body of social science research. It cites (informally) a broad and extensive set of literature relating to experiential learning, learning styles, examples of school programs and after-school programs, psychology, design initiatives, biology research, preference studies, etc. etc. It is full of personal and professional opinions on the topic.

## The Nature Principle: Human Restoration and the End of Nature-Deficit Disorder

*Richard Louv*

Louv, Richard. 2011. *The Nature Principle: Human Restoration and the End of Nature-deficit Disorder*. Chapel Hill, North Carolina: Algonquin Books of Chapel Hill

Keywords:

Compiled by: Shuang Hao

Louv points out that because our society focuses and emphasizes technology, connections to nature have faded. This in turn causes nature-deficit disorder. He argues that we must create a reunion to nature: “Every day, our relationship with nature, or the lack of it, influences our lives. This has always been true. But in the twenty-first century, our survival-or-thrival will require a transformative framework for that relationship, a reunion of humans with the rest of nature” (Louv 2011. 3). He suggested seven concepts to achieve this transformation:

- 1) With more technology, more nature is needed to achieve natural balance.
- 2) Nature can help heal our minds and bodies, improving our health.
- 3) Combining technology and nature experience will increase our thinking ability and productivity, followed by the emergence of hybrid minds.
- 4) Bringing more life into cities making cities to alive.
- 5) In addition to human history and regional and personal identity, natural history is also important to achieve a purposeful place.
- 6) Sustainability is not the goal; we must go one step beyond sustainability to create a biophilic environment in individual backyards, workplaces, neighborhoods, and towns.
- 7) Conservation is not enough; we must create natural habits and in this way, connect to nature. In doing so, humans will become high performance and have stronger bonds to nature and other humans.

**Take Home Point:** Louv suggests a variety of principles to enhance a connection to nature in everyday life.

## Biophilia

*Edward O. Wilson*

Wilson, E. O. (1984). *Biophilia*. Cambridge, MA: Harvard UP.

biophilia, hypothesis, experiential learning, nature, evolution, mental health

Compiled by: Jonathan Knight

*Biophilia* is the seminal work on this research subject. Coined by Wilson in an earlier 1970s New York Times article, *Biophilia* expands the use and further defines its meaning. Biophilia means “the innate tendency of human beings to focus on life and lifelike processes” and “connections that human beings subconsciously seek with the rest of life”. Wilson argues that humans are evolutionarily connected to other living systems through thousands of years of coexistence. “Life of any kind is infinitely more interesting than almost any conceivable variety of inanimate matter” (p. 84). We are innately, genetically based, or “hard-wired” to be close to other species.

Wilson links evolution and biophillia throughout the book. As Wilson explains, “the more habitats I have explored, the more I have felt that certain common features subliminally attract and hold my attention. Is it unreasonable to suppose that the human mind is primed to respond most strongly to some narrowly defined qualities that had the greatest impact on survival in the past?” (p. 106) Wilson also presents evidence that humans are intrinsically more favorable of certain environments over others. He calls our preference the “savanna gestalt” – a mix of the Africa savanna, topographic relief (hills, mountains, plateaus), and lakes and rivers. “When people are confined to crowded cities or featureless land, they go to considerable lengths to recreate an intermediate terrain, something that can be called the svanna gestalt” (p. 111).

*Biophilia* is an exploration through many of Wilson’s own experiences as a biologist and researcher, traveling the world to study exotic and rare bugs. The book is an entertaining look at his own argument through his experiences for why biophilia exists, but the end of many chapters presents quite plainly the arguments for why biophilia exists.

Although it could never be proven for certain, the biophilia hypothesis seems reasonable and intuitive.

**Take Home Point:** *Biophilia* by Edward O. Wilson is the seminal work on the topic. He presents, through his keen observations, experiences, and stories a basis for why the biophilia hypothesis is thought to be true.

Landscapes of Learning  
Sub-topic

# Environmental Psychology

## **Play Therapy in Elementary Schools. A Best Practice for Improving Academic Achievement**

*Pedro J. Blanco and Dee C. Ray*

Blanco, Pedro J. and Dee C. Ray. 2011. Play therapy in elementary schools: A best practice for improving academic achievement. In *Journal of Counseling and Development*, 235.

Keywords: Play-therapy

Compiled by: Chelsey King

Blanco and Ray's article focuses on play therapy in the classroom. The information presented, however, can be related to the landscape of the schoolyard. They call attention to the fact that since the No Child Left Behind Act (2001), there is less attention paid to the mental health of students in favor of more attention to getting higher test scores. They infer that there is more pressure placed on students now than in the past, and therefore that increases the stress placed on children. Play therapy provides children with special needs the opportunity to work with a trained counselor and materials that encourage play in order for the child to "fully express and explore self through the child's natural medium of expression- play". Play therapy benefits the child through providing an atmosphere where the child is able to express their emotions and feelings while allowing the child to solve problems and gain responsibility.

Blanco and Ray bring up behavioral issues such as attention-deficit/hyperactivity disorder and aggression that are addressed by play therapy that can be resolved not only in the classroom environment, but also in the outdoor schoolyard. By placing more emphasis on the academic achievement of students, there is a lack of attention to children's social and emotional needs. One of the major issues with schools in the United States is that emphasis is placed on the standardized tests. By evaluating play therapy for students struggling in schools, the authors were able to measure the success of play therapy in the school system.

**Take Home Point:** Schools can provide opportunities for children to be designed to be "fully accepting of each child" to help meet the needs and help each student with varying needs.



**Children and Nature: Psychological, Sociocultural, and Evolutionary Investigations.**

*Peter Kahn*

Kahn, Peter H., & Stephen R. Kellert, ed. 2002. Children and Nature: Psychological, Sociocultural, and Evolutionary Investigations. Cambridge, Mass: MIT Press.

Keywords: Experiential Learning; Environmental Psychology; Human-Environment Interaction; Biophilia

Compiled by: Kweku Addo-Atuah

In this book, Kahn and Kellert discuss the natural development of children and their relationships to nature through contact, be it "direct, indirect or symbolic" (Kahn & Kellert 2002, 118-119). The authors begin their discussion by drawing similarities between young animals in their natural habitats and young children in their home environments. Each of the two species expands its knowledge of their environment through "exploration, adaptation, direct perception and ably supported by the social structure around them" (Kahn & Kellert, 20). These "emotionally tinged investigations help "lead to discovery and learning" (Kahn & Kellert 2002, 21). The authors note that to truly "engage children in learning/discovery" and "allow them to comprehend the workings of the environment they play within," spaces must allow for high degrees of "visual perception, observation and acuity" (Kahn & Kellert 2002, 44).

Kahn and Kellert posit that children's affiliations with nature manifests in five ways: "physical conception, sensorial conception, experiential conception, relational conception and compositional conception." These conceptions include "actions with or against nature, emotions attributed to particular environments and relationship between children and nature" (Kahn & Kellert 2002, 100). The authors note that those seeking to connect children with nature must recognize the three critical stages in childhood development: 3-6, 6-12 and 13-17. At 3-6, children's first real contact revolves around "play in the family garden with their puppies in tow" (Kahn & Kellert 2002, 250). The second stage - buoyed by increased mobility - is the period where "natural curiosity and exploration" within the youth flourishes; these feelings manifest themselves physically in the "making of forts or dens" (Kahn & Kellert 2002, 251). At 13-17, the youth become "highly cognizant and appreciative of natural processes such as ecosystems," a stage where professionals can "engage the youth in activities such as helping design community open spaces"(Kahn & Kellert 2002, 251-252).

Although Kahn and Kellert present strong arguments and findings, there are instances or sections where more focused discussion proves necessary. In the section

in which they praise video games for helping to cultivate "spatial visualization and mental rotational skills in children," including examples or guidelines on how to incorporate these components into design would have strengthened their position. Lastly, by failing to provide any techniques to guide professionals in youth engagement on community projects, they merely present a claim without sufficient recommendations.

**Take Home Point:** Creating vibrant open spaces for children requires areas that support high levels of spatial visualization features that cultivate natural curiosity, physical and cognitive growth.

## Restorative Urban Open Space: Exploring the Spatial Configuration of Human Emotional Fulfillment in Urban Open Space

*Kevin Thwaites, E. Helleur, and I.M. Simkins*

Kevin Thwaites, E. Helleur, and I.M. Simkins. 2005. Restorative urban open space: Exploring the spatial configuration of human emotional fulfillment in urban open space, *Landscape Research*, 30:4, 525-547.

Keywords: Restorative Landscapes; Public Space Design

Compiled by: Chelsey King

Therapeutic landscapes are consistently associated with healthcare facilities. Thwaites et al. focuses on how the healing benefits of therapeutic landscapes of healthcare facilities can be brought into the public realm, in order to improve the quality of life for people suffering from everyday stress and fatigue. Well-designed spaces in urban environments can have restorative benefits on the people who utilize the space.

Providing spaces that enact feelings of “being away, extent, fascination, and compatibility” in the urban environment have a restorative benefit on the users (529). The importance of restorative spaces in the urban fabric comes from the ability to facilitate social interaction and to provide an escape from the stress and headaches of urban life by “combining mental and physical worlds: allowing the mind to wander” (545).

This article provides a new insight to the field of healing, restorative environments. Typically thought of as environments only available in healthcare facilities, Thwaites et al. provides research and information that opens the restorative environment to the public in order to enhance the lives of users.

**Take Home Point:** Healing environments are important in the lives of all people, not only those in healthcare facilities, and it is possible to incorporate aspects from healing gardens into public settings to benefit the larger population.

Landscapes of Learning  
Sub-topic

# Experiential Learning

## A Child's Garden

*Molly Dannenmaier*

Keywords: Children; Play; Education; Design; Nature

Compiled by: Laura Weatherholt

This text focuses on the child's experience during outdoor play and the parts of landscapes that evoke different feelings, inquiries, and emotions. She states that children need a place where they can run, play, climb, and freely experience "natural materials and bodily sensations". She tries to capture what they really do, as opposed to what adults think they do. Dannenmaier breaks their experiences into nine parts that outlines how children relate to nature: water, creatures, refuges, dirt, heights, movement, make-believe, nurture, and learning. Within each topic, she dives deeper into why each of these entices children to go outside.

*Water:* She notes that children have the ability to find water anywhere and it can be included in the garden in many forms, providing a soothing, inviting feature. *Creatures:* Whether it is wild visitors or a family pet, environmentally sensitive landscapes make the perfect home for the creatures children find so intriguing. *Refuges:* One activity that she deems as being universal is the creation of refuges-caves, forts, nests, all offer comfort and the perfect setting for hide and seek. *Dirt:* Though not the favorite of adults, the "loose parts" of nature—dirt, sand, sticks, and stones – are favorites for creating outdoor worlds from their imaginations. *Heights:* Climbing is one of the most alluring of all activities and as such, should be addressed safely while pushing beyond prefabricated climbing structures. *Movement:* One thing children excel at is moving. Providing space to accommodate space to twirling, dancing, running, jumping, sliding, and swinging allows children to be active in whatever way makes them happiest. *Make-believe:* No matter where they are, children can make up imaginary worlds, but being somewhere designed to enhance imaginative play can open doors into even more worlds within their imagination. *Nurture:* Nurture takes the form of caring for something other than themselves and in the garden; plants offer much opportunity for nurturing with the right guidance. *Learning:* Though learning takes place throughout the garden and play, spaces that merge fact and fancy capture their imaginations while teaching them about things in the real world.

**Take Home Point:** This text breaks down its information into well-defined sections that creates a framework upon which to base the design. This book uses numerous examples of built landscapes, a good source for precedent studies. This also brings up the way children play, which is a vitally important aspect to consider when designing schoolyards. Using this framework to evaluate the design against her criteria will strengthen the project.

## Experiential Learning: Experience as the Source of Learning and Development

*David Kolb*

Kolb, David. 1984. *Experiential Learning: Experience as the Source of Learning and Development*. Englewood Cliffs, NJ: Prentice Hall, Inc.

Keywords: experiential learning, childhood development

Compiled by: Shuang Hao

In this book, Kolb clarifies the concept of “experiential” because it “emphasized the central role that experience plays in the learning process” (Kolb 1984. 20). He notes that “learning is the process whereby knowledge is created through the transformation of experience.” (Kolb 1984. 38) He started with three models of the experiential learning:

1) The Lewinian Model of Action Research and Laboratory Training is a circle connecting concrete experience, observations and reflections, formation of abstract concepts and generalizations, and testing implications of concepts in new situations.

2) Dewey’s Model of Learning makes the learning principle more explicit by adding feedback processes.

3) Piaget’s Model of Learning and Cognitive Development has four stages according to age.

Based on these three models, Kolb’s Experiential Learning Cycle has four elements: concrete experience (or “Do”), reflective observation (or “Observe”), abstract conceptualization (or “Think”), and active experimentation (or “Plan”). Concrete experience is the basis of reflective observation, which leads to abstract conceptualization. New implications for action from abstract conceptualization can be immediately tested in the active experimentation stage, which leads to concrete experience as creating new experiences.

Kolb also claimed that 1) Learning is best conceived as a process, not an outcome. 2) Learning is a continuous process grounded in experience. 3) Learning is a holistic process of adaptation to the world. 4) Learning involves transactions between the person and the environment. 5) Learning is the process of creating knowledge.

**Take Home Point:** Kolb outlines ways in which we learn. This can influence how to design a schoolyard or other experiential learning environment.

**Natural Learning**

*Robin Moore and Herb Wong*

Moore, Robin and Wong, Herb. 1997. Natural Learning. Berkeley, CA: MIG Communications

Keywords: child development, schoolyard, natura learning

Compiled by: Shuang Hao

The authors provide examples in this book of transforming schoolyards from asphalt to a greenspace for students, designing with nature to connect indoors and outdoors. Students were involved, hands on, from the beginning of the process, so they learned more about plants and wildlife and created a sense of place by themselves. They became stewards and wanted to learn, recording what they saw and what they did.

This helps a child develop through moving and imagining, but children also learn how to live together in the process, enhancing their social abilities. Through interaction with nature, children not only use their senses but also learn to describe what they sense. Hands-on experience with nature also improved their science and math skills. Children learn more through interacting with nature both in school and out. The skills they learn benefit their whole-life learning.

**Take Home Point:** The authors called for more natural learning. They encourage children’s environmental rights and ask adults to reconnect children to nature in post-industrial childhood. Both adults and children should contribute toward this reconnection.

**Form, Meaning, and Expression in Landscape Architecture**

*Laurie Olin*

Olin, L, (1988). Form, meaning, and expression in landscape architecture. *Landscape Journal*, 7(2), 149-168.

Keywords: Meaning; Scale; Expression; Rhetoric; Experience; Nature; Materiality; Materials; Medium; Imagery; Experimentation

Compiled by: Rebecca Melvin

In this article Olin presents a critique of the current position of landscape architecture (written in 1988). He is critical of landscapes that clearly draw inspiration in form and materiality from sources other than nature, specifically art and literature. It is his belief that the impact of work that draws inspiration from such places will be short-lived. He discusses the successes and failures of abstraction and experimentation. He writes at length about form, materiality and meaning in contemporary and historical landscapes. Olin refers directly, to Andre Le Notre, Lancelot Brown and Olmsted. He critiques the work of the three previously mentioned as well as Calvert Vaux, John Muir, Martha Schwartz, Peter Walker, SWA (work by George Hargreaves, Jim Reeves and Man Mock), Richard Haag, Lawrence Halprin and others.

**Take Home Point:** Nature need be the only inspiration for a landscape architect however, nature is not meant to be copied directly. One can emulate the logic of nature and draw inspiration from its forms but to copy it directly does a disservice to the profession and demeans the form from which it originated.



## **Experiential Landscape: An Approach to People, Place and Space**

*Kevin Thwaites and Ian Simkins*

Thwaites, Kevin & Simkins, Ian. 2007. *Experiential Landscape - An Approach to People, Place and Space*. London and New York: Routledge Taylor & Francis Group.

Keywords: Experiential Learning; Human-Environment Interaction

Compiled by: Kweku Addo-Atuah

This book by Thwaites and Simkins explores and "offers new ways of looking at the relationship between people and the open spaces they use daily". Through a "holistic approach, the book emphasizes integrating experiential and spatial dimensions of the outdoors as well as the theory of environmental design disciplines." Another important aspect of this book is its authors' focus on participatory approaches in planning and design processes.

Both authors place particular importance on engaging the users in planning and design conception of open spaces to increase the latter's continued enjoyment and interaction. Preceding this book is their 9-month study involving 68 children in 3 schools in Sheffield, England. The study, known as the Insight Method, sought to "provide a participatory framework for professionals such as landscape architects and urban designer/planners to give children a voice, who are ordinarily hidden from design and planning processes."<sup>2</sup>

This book along, with the article summarizing their doctoral research is one of the few readings I have encountered that hold children and youth engagement so paramount. Overall, this book is an excellent resource from which I can glean techniques to help facilitate meaningful engagement with Northview Elementary students as part of my master's research

**Take Home Point:** It is imperative to involve children in designing spaces intended for their "health, well-being and development."<sup>2</sup>

## A Sense of Place

*Ruth Wilson*

Wilson, Ruth. 1997. Sense of place. In *Early childhood education* 24(3):191-194.

Keywords: Human-Environment Interaction; Experiential Learning; Schoolyard Design

Compiled by: Chelsey King

Ruth Wilson discusses the influence sense of place has on the “attitudes, values, and behaviors” on the people who experience the place. Children are especially influenced by their surroundings and the sense of place that is associated with these environments. Wilson acknowledges that many educators are “well aware that children learn by interacting with their environment” but do not recognize that “not all environments are equal in terms of inviting or encouraging children to become actively engaged” (191). It is important for the environments that children spend their time in to promote self-esteem and provide opportunities for learning and exploration. Positive experiences in nature, Wilson states, “fosters a sense of wonder and enhance one’s aesthetic appreciation of the environment” (191).

Specifically, Wilson addresses sense of place within the school environment and the importance of the experience that children have there. She outlines important design considerations for providing a sense of place for the schoolyard. These include providing natural areas adjacent to the school building, creating places for children to be alone, providing areas for exploration of the environment, encourage the children to modify and create their own environments, creating habitats that are complex and diverse, and encouraging immersion in the natural environment.

Wilson addresses the importance of creating a sense of place and experience especially in environments for children. The spaces that children spend time in greatly affect their outlook, values, and behavior. By creating spaces that allow the children to actively explore and fully engage in, environmental awareness, learning, and self-confidence, among others are enhanced.

**Take Home Point:** Wilson addresses the importance of the environments that children spend time in, the sense of place, and how the sense of place affects the overall experience that children have.

Landscapes of Learning  
Sub-topic

# Ecological Design

## **Asphalt to Ecosystems: Design Ideas for Schoolyard Transformation**

*Sharon Danks*

Danks, Sharon. 2010. Asphalt to Ecosystems: Design Ideas for Schoolyard Transformation. Oakland, CA: New Village Press

Keywords:

Compiled by: Shuang Hao

“Ecological schoolyards allow classes to meet outside, enriching traditional lessons in every discipline with hands-on learning resources and living systems that students can observe and interact with on an ongoing basis” (Danks 2010. 1)

Schoolyards can provide students with green areas that serve as a curriculum opportunity to interact with nature and learn local environment. Schoolyards can also be a public place for addressing environment issues. “Schoolyards are conveniently located for use as outdoor classrooms and often function as public meeting places or parks after hours. These educational and social spaces provide good venues for the discussion and practice of ecological design concepts in which the wider community can observe and interact” (Danks 2010. 5) Schoolyards can also provide place-based learning for children as well as provide more opportunity to meet nature, including wildlife.

This book also provides design guidelines for ecological schoolyards that include how to select a site and multipurpose designs. Curriculum connection and community participation were also advised in this guideline.

**Take Home Point:** Schoolyard design can enhance curriculum and other learning opportunities.

Landscapes of Learning  
Sub-topic

# Green Spaces

**Neighborhood Space, Community Development Series  
17**

*Randolph Hester*

Hester, Randolph T. 1975. Neighborhood Space. Community Development Series 17. Stroudsburg, PA: Halsted Press.

Keywords: Environmental Psychology; Participatory Design

Compiled by: Kweku Addo-Atuah

“Two irrepressible forces underlie my work; the human desire for participatory democracy and ecological limits. There are many more democracies in the world today and resource limits are more critical, complex and misunderstood. More than any other factors, democracy and ecological limits shape public landscape design.”<sup>1</sup>

Randolph Hester defines "neighborhood space as all public (and ill-defined private outdoor space) close to home which residents consider their own because of collective responsibility, familiar association and frequent shared use." He defines the "success of a neighborhood space as one dependent on social suitability, thus reflecting the synthesized needs and wants of its residents." Hester holds dear the paramount importance of community participation in design and planning.<sup>1</sup>

According to Hester, “open spaces must take into account several considerations of its residents aside from aesthetics.” An important aspect is on the social dynamics, including “socio-economic status, life-cycle stages, sex and ethnicity” (Hester, 36).

Hester also emphasizes the “psychology/emotions of a space – how people feel at certain moments in a given public space.” He urges planners and designers to account for the “differences in interaction between people based on regional, ethnic, class and life-cycle stages” when creating public spaces (Hester 1975, 79). When it comes time for weighting user needs and desires, Hester recommends “translating the user-needs concepts into performance standards in helping reduce complexity. He defines performance standards as “projected measures anticipating how well an environment will respond to user needs” (Hester 1975, 126). Hester provides several valid techniques in measuring and identifying user needs: gaming, town meetings, observation – activity and space, activity logs and semantic differentials.

Although Hester provides excellent discussion on the value of a neighborhood space and the paramount importance of community participation, I find his argument lacking in certain aspects. Indoor spaces have clearly defined boundaries, unobstructed sightlines and limited variability in access points; thus, these spaces provide more opportunities for closer human interaction than outdoor spaces due to variability in access and sightlines. Both indoor and outdoor spaces facilitate human

capital, with the former even more necessary in less than ideal climate conditions.

**Take Home Point:** Planners and designers either must directly or indirectly engage residents when creating community open spaces; recognizing the socio-cultural dynamics of residents will increase their sense of belonging and connection.

<sup>1</sup> "Randolph Hester: Biography Perspectives Quotable Publications Link Contact." Project for Public Spaces, accessed October 20, 2011: <http://www.pps.org/articles/rhester/>.

## The Site as Project: Lessons from Land Art and Conceptual Art

*Martin Hogue*

Hogue, M. (2004). The site as project: Lessons from land art and conceptual art. *Journal of Architectural Education* 57 (3): 54-61.

Keywords: Land Art; Landscape; Conceptual Art; Site

Compiled by: Rebecca Melvin

As architects we must broaden the notion of site amongst professionals. We should come to an understanding that site and project are inextricably linked, one 'exposing' the other. Hogue's article looks to land and conceptual art projects and their understood relationship between site and project. As a result, the article discussed "the role that imagination, location, and time play in constructing the site" (54). "Although we traditionally expect the "site" to be that place which awaits intervention, for Smithson "the site is where a piece should be but isn't" (55). This is a mindset that treats the site as a project within itself. In this vein of understanding, the site exists wholly, apart from the project. If an architect were to embrace this understandings/he must accept a responsibility to see the site as preceding the project. In this way, the project is built within an existing system, rather than sat upon a location. A site is more than a found coordinate location. "It may be enriching to think of a site as the structure of action that conditions our experience of any environment" (57). Through analysis and description of several land art and conceptual art projects, Hogue demonstrates how the site can become the project. Conception of the site as a process allows the artist or architect to build with and into the site, understanding that the site is continually molded by environmental factors. Viewing the site as an open-ended process "proposes a design approach to intervene minimally, where needed, and in reference to what is already there. It invites the designer to recognize the potential of a site and tease out its qualities without overpowering them" (59).

**Take Home Point:** Hogue synthesizes and simplifies the interests and agendas of oftentimes-incongruous professions, and delivers a message for all. The article successfully applies a principal understanding of land artists- the reciprocal relationship between site and project- to the architectural understanding of site as the location upon which project is placed. A common understanding of site and project softens the boundary between land artist and architect allowing both the benefit from dialogue and shared passions.



**Playing Naturally**  
*Martin Maudsley*

Maudsley, Martin. 2008. Playing Naturally. ECOS 29 (2): 12-20

Keywords: natural play, health and well-being, biophilia

Compiled by: Shuang Hao

Maudsley started with two broad assumptions: “1) Natural environment is particularly attractive, inspiring and satisfying to children because natural environment supremely meet their play needs and desires. 2) Play is primary mechanism through which children engage, interact and connect with the natural world” (Maudsley 2008. 12). He then used three examples to show that childhood memories of interacting with nature can influence adulthood activities.

Maudsley discussed communities that designed places like wild commonlands, gardens, and school grounds to provide children natural places to play and interact with the environment.

Maudsley suggested that to plan natural places for children, two theories should be considered: affordances and field of free action. Affordances mean to incorporate local resources to create an inviting play place for children. “1) Affordances are not static but highly dynamic-different environments afford different play experiences for different children on different occasions. 2) The number of affordances increases with complexity of the environment, with diverse natural spaces providing almost limitless potential play affordances. 3) Through interacting with, manipulating and changing physical environments during their play, children create and detect new play affordances. 4) Natural spaces afford plentiful opportunities to play with feelings and emotions. Through playing with nature children can encounter and experience fear, disgust, disappointment and anger as well as delight, fascination, satisfaction and a sense of wonder. 5) Children are naturally good at discovering play affordances-they are ‘affordance connoisseurs’ – and seek to maximize the play potential of outdoor environments” (Maudsley 2008.14).

Children’s free action in nature can provide more affordance, and this free action can be empowered and mediated by adults by “1) physical access, management and design of outdoor spaces 2) cultural, societal and community attitudes towards children outdoors 3) direct interventions by parents, playworks, teachers and other adults who interact with children in outdoor settings.” All the natural materials can be used for children to explore the nature.

**Take Home Point:** Designed place should incorporate local materials to provide children natural places to play and interact with the environment.

## Learning Neighborhood Environments: The Loss of Experience in Modern World

*Rissotto, A. & Giuliani M. V.*

Rissotto, Antonella, and Giuliani, M. Vittoria. Learning Neighborhood Environments: the Loss of Experience in Modern World. in Spencer, Christopher and Blades, Mark (eds). 2006. Children and Their Environments: Learning, Using and Designing Spaces. New York : Cambridge University Press.

Keywords:

Compiled by: Shuang Hao

In the article "Learning neighborhood environments: the loss of experience in a modern world", authors Antonella Rissotto and M. Vittoria Giuliani pointed out that the automobile and other restrictions like parental fears have kept children from contact with nature.

**Take Home Point:** Social factors like parents and factors like automobile use has influenced how and where children interact with nature.

## Place- and Community- based Education in Schools

*Gregory Smith*

Smith, Gregory. 2010. Place- and Community-based Education in Schools, New York: Routledge.

Keywords: education styles

Compiled by: Shuang Hao

Smith argued that place- and community-based education is important to both schools and students. He cited place and community-based education currently as “inclusion of both the human and more-than-human, something we believe is essential if educators are to help students grapple with the messy and cross-disciplinary nature of humankind’s current dilemmas” (Smith 2010, 22), which is the gap between schools and local environment.

Using several schools as examples, Smith showed how place- and community-based education affects students’ ability to learn; test scores increased as well. Nature in the city can include cemeteries, where students can observe in the field and find answers in the classroom. Because they pay attention to what they see in the field, they have more desire to learn and learn even more through interaction with nature.

Finally, he argued that schools should incorporate community members and use the natural environment for education. This is because place- and community-based education gives young people a reason to invest themselves in learning; their social skills will shift from individual striving to mutuality and cooperation; they want to become stewards and preserve the community; and they develop the capacity for solving local problems.

**Take Home Point:** place- and community-based education is necessary in order to enhance students’ learning at schools.

Landscapes of Learning  
Sub-topic

# School Environment

## Optimal Learning Environments: Societal Expectations, Learning Goals, and the Role of School Designer

*Bukky Akinsanmi*

Akinsanmi, Bukky. Optimal Learning Environments: Societal Expectations, Learning Goals and the Role of School Designer. <http://www.designshare.com/index.php/articles/the-optimal-learning-environment-learning-theories>. Design Share. Accessed on 09/29/2011

Keywords: learning environments, schoolyard design

Compiled by: Shuang Hao

In this article, Akinsanmi notes that with the development of societal expectations, school has changed to provide the best physical learning environment. She covers four periods:

- 1) Classical antiquity (800BC-AD600): School was not formal, parents had demands and their social expectations influenced learning goals.
- 2) Middle Ages (500AD-1600AD): Government had more influence on school systems.
- 3) Modern Era (1600 AD-1900 AD): More private schools emerged because of societal needs and influences.
- 4) Post-Modern Era (1900-present): Schools changed their physical learning environments (building layout, facilities, teaching methods, and philosophies) to meet social expectations resulting from the industrial revolution.

Akinsanmi also argues, "In order to create optimal learning environments, school designers need to design with change in mind." School designers, in designing the physical learning environment, should keep societal expectations and emerging learning theories in mind and consider the future use. They will thus produce a timeless design, with a context including the "community history, heritage, values, identity, physical site, locally available materials and construction techniques."

**Take Home Point:** In this article, Akinsanmi notes that with the development of societal expectations, school has changed to provide the best physical learning environment

## **Children, Learning, and School Design: A First National Invitational Conference for Architects and Educators**

*Elizabeth Hebert and Anne Meek*

Hebert, Elizabeth and Meek, Anne. 1992. Children, Learning and School Design: A First National Invitational Conference for Architects and Educators. Winnetka, IL: Winnetka Public Schools

Keywords: participatory planning, experiential learning, schoolyard design

Compiled by: Shuang Hao

In this book, the author Steven Bingler argued that educator and architects should work collaboratively to build a better learning environment. This collaboration could strongly influence the learning process because the design will focus on experiential learning.

The author James Banning argues that the physical environment, seating position and open spaces, for example, are important to learning. He also suggests that to better understand the relationship between the school's physical environment and the learning process, experiential learning should be considered throughout the planning process, and, moreover, children should participate in the planning process. Finally, Banning also suggests that playgrounds and school bus are learning environments, and they should be designed carefully for that purpose.

Author Hebert used Crow Island as an example of a place built for children. The school design was based on an understanding of children. Hebert evaluated how children learn and how their environment can enhance and affect their learning. The whole plan and design process was a collaboration with children.

**Take Home Point:** Designers have the responsibility to design children a place, which helps them have experiential learning opportunities.

## **Go Out and Play: On Robin Moore’s Playgrounds, Nature is the Attraction**

*Susan Hines*

Hines, Susan, and Robin Moore. 2005. Go Out and Play: On Robin Moore’s playgrounds, nature is the attraction interview. *Landscape Architecture* 95 (3) (Mar.): 128,134,136.

Keywords: Playground; Experiential Learning

Compiled by: Rebecca Melvin

Robin Moore has dedicated his career as a landscape architect to asserting the importance of providing children with daily meaningful interactions with nature. He believes that the standard playground formula of asphalt blacktop and turf field does not suffice as a landscape for experiencing nature. Moore also believes that all assertions must be substantiated by research. Therefore, he has pored significant time into researching children’s experiences of playgrounds. Moore has spent countless hours observing playground interactions between children and between children and the environment. Time and again he found that children are most engaged in playground environments that allow for exploration and open-ended play sequences. When responding to observation of a particular undeveloped play area, he says, “the site was surrounded by this overgrown wasteland, and the kids would go off there and explore, bringing back all sorts of creatures they discovered. What the community viewed as an eyesore, the kids used as an additional resource” (130). Moore has also found that, more often than not, children engaged in adventure playgrounds are quicker to work together and more likely to engage with children of other age groups. It became evident to Moore that taking children off of asphalt playgrounds gave way to more constructive play (130).

Ultimately, a primary concern that stems from children not receiving adequate play environments, is that these children will grow up without any meaningful memories of time spent outdoors and in nature and will subsequently not place high value of protecting the natural environment as they become adults. Of further concern, is that children take important developmental lessons from time in nature. Distilling the play environment down to one that only allows for a certain formula of play does not allow children the sensory and experiential experience of nature that they need and desire to stimulate and challenge them.

**Take Home Point:** The modern playground is not an acceptable environment for children. Playgrounds should nourish adventure, encourage companionship and allow for endless possible play sequences. An asphalt blacktop and turf field cannot provide this environment for a child.

## Design for Learning: Values, Qualities, and Processes of Enriching School Landscapes

*Julie Johnson*

Johnson, Julie M. 2000. Design For Learning: Values, Qualities, and Processes of Enriching School Landscapes. *Landscape Architecture Technical Information Series (LATIS)* issue published by American Society of Landscape Architects (ASLA) online: <http://www.asla.org/latis1/LATIScover.htm>

**Keywords:** "*experiential learning, "participatory design, "human environment interaction" & "school environment"*

**Compiled by:** Kweku Addo - Atuah

In this article, Julie Johnson covers a plethora of essential elements related to the planning and design of successful and longstanding learning landscapes. Johnson considers school sites as vital to both child and community education, serving as "extensions of the classroom in supporting applied, active learning" (Johnson 2000, 6). An important component of Johnson's argument is pedagogy and its role in shaping and influencing *place-making* in school landscapes. Taking a cue from Moore and Wong, (1997) Johnson identifies three groups critical to participatory processes in elementary schools: *users; participants* and network of interests. Users refer to those who typically use the school (students, teachers, parents) (Johnson 2000, 31). Participants are those who may use the school while network of interest are those involved in similar endeavors seeking to share ideas" (Johnson 2000, 31).

Following the discussion on the potentials of school sites as supplementing indoor education, Johnson goes on to examine the aspects a successful schoolyard ought to possess. Using a set of criteria comprising *sensation, choices, manipulation* and *sense of place*, Johnson highlights the experiential qualities of three Seattle case studies: T.T. Minor Elementary School; Dearborn Park Elementary and Meadowbrook Pond. Sensation refers to the stimulation of human senses through interaction with environment while choice refers to the variety in activities and amenities (Johnson 200, 45). Manipulation refers to a potential user's ability to effect change on the site through interactive or movable elements such as installations or gardens. Sense of place refers to the vested interests of the users in the creation and ongoing care and maintenance of the school site (Johnson 2000, 45). Together, these case studies covered a range of issues similar to those examined in the Landscapes of Learning Master's Report Studio, including ecological stewardship, site interpretation and sculptural forms as land art.

Another component examined in Johnson article was child-participation in the planning and design of school landscapes. Using Roger Hart's typology in defining child-participation, (1992, 1997) Johnson insists that planners and landscape architects ensure that children involved in the participatory process understand the project's



scope. She notes that, "without an understanding of the context and scope of a project, children are not true participants" (Johnson 2000, 35). Johnson suggests that these professionals aspire to conduct participatory processes that at the very least, "assign tasks and inform" children and refrain from those that herald tokenism and manipulation (Johnson 2000, 34).

Another point of discussion that I found particularly interesting was Johnson's discussion on the manner in which planners and landscape architects can stimulate site interpretation. A notable example was the physical translation of ethnic and cultural diversity into an international garden in the Dearborn Park Elementary School. The designers used this garden to showcase the wide variety in plant and food type representing the cultural identities of its users. Johnson ends her incredibly insightful article by proposing four conditions critical to creating meaningful learning environments. The conditions are as follows: institutional support; community partnerships; supportive pedagogy and informed, innovative planning and design.

**Take Home Point:**

To stimulate lasting experiential qualities of learning landscapes, planners and landscape architects should strive to create spaces that offer a balance between *sensation, choice, manipulation* and *sense of place*. These are the environments that help induce ecological literacy and stewardship, along with close dialogue with teachers to coordinate site development and construction with the school curriculum.

## The Passionate Mind of Maxine Greene: “I am—not yet”

*William Pinar*

Pinar, William F. 1998. *The Passionate Mind of Maxine Greene : 'I am ... not yet'*. London: Falmer Press.

Keywords: Participatory Design; School Environment

Compiled by: Sukaina Fakhraldeen

In “The Passionate Mind of Maxine Greene,” Pinar explores Greene’s perspective on Landscapes of Learning; her experience and process of living and being present, along with her student’s experience. He states that Greene offers a different perspective on teaching, where she encourages her students to become “more intentional and aware, [confront] issues as they [emerge in their] own consciousness and [their] lives (Pinar, 30). Greene also asks her students to “[integrate their] situations carefully, and [respond] thoughtfully to what [they uncover and discover]” (Pinar, 30).

Greene, in her research, examines the different methods and systems of learning that is being employed in schools. The research indicated that some schools are promoting “behavioral objectives [...] as the most efficient way to present information to students and assess their learning” (Pinar, 29). However, Pinar disagrees with that and does not feel comfortable with this approach/system of learning. This discomfort stems from how students are treated “as passive, disembodied recipients of expert information” (Pinar, 29). He believes that the demand and persist for the schools to get “back to the basics” is not an efficient approach since it focuses on minute and neglects to address the significant issues at hand. Another problem with the “back to basics” and standardizing elements, which can be seen in several organizations such as the National Research Council that have “labored to establish national standards” (Pinar, 29), is the complete disregard to the children’s unique learning abilities; where “one size does not fit all.” With “back to basic” approach the “complex relationships among individual differences, cultural history, and social systems are ignored [causing] such alienation from self and experience created in schools” (Pinar, 30). The employment of the “scientific methods” in schools to transfer information from teacher to students in schools “places little curricular emphasis on the student as a unique, complex person” (33). Greene proposes that this approach be changed in order to incorporate and emphasize the child’s experience; both “within the school and out” (33).

**Take Home Point:** There are only a few opportunities for students to imagine and be creative, and a school environment is one of those places. “The most important function of the school is to provide an environment in which students can explore choices, raise questions and reach for alternatives in the situatedness of their lives” (33). It also provided a basis for my research in terms of understanding how to go about addressing the relationship between children and their learning abilities.

## Landscapes for Learning

*Sharon Stine*

**There are no sources in the current document.**

Keywords: Outdoor; Design; Education; Play; School

Compiled by: Laura Weatherholt

Stine begins by reminding the reader who the players are in the creation of this setting “the maker, the maintainer, and the messer”, with the focus audience being the children or the ‘messers’. In a way that is often different from the other players (teachers and designers), children experience nature through direct body-contact, that is often messy and disorderly. Meanwhile, the teacher has the role of caretaker and shaper of the class environment, and the landscape architect designs the space to support the teacher and the child, while providing a catalyst for change.

Play is also discussed, referring to it as “spontaneous activity that is child initiated and terminated” (Moore 1990) but Stine goes beyond this to include that children learn, grow, and develop through play; play is not limited to children; playing outside offers a unique experience that is non-replicable; and play environments are educational settings. With the basics established, her next point covers design element pairs that should be included within a design in order to “meet the needs of children intellectually, socially, cognitively, and physically.”

Accessible and Inaccessible-This is different for children than for adults due to their size and view of the world. Ground surfaces are easily accessible and affect their play, while access to elevation gives them a previously inaccessible vantage point.

Active and Passive-Though outside spaces are thought of as loud, active spaces, the option of an outdoor setting that allows passive, quiet, peaceful activities should be included as well. Balancing both spaces without compromising either is a difficult task.

Challenge/Risk and Repetition/Security-Being able to challenge their abilities and take new risks in a safe environment is important for growth, but also allowing for strengthening skills through repetition, which also provides a sense of security.

Hard and Soft-Children experience the physical world with their whole bodies and providing a variety of experiences both hard and soft are enriching. However, if an environment becomes primarily hard, resisting human imprint it becomes impersonal and less responsive to needs of children.

Natural and People-Built-As our society becomes technological and urban; it becomes harder for children to explore how things are made and the processes of the natural world. By exposure to a range of activities in the natural world, they can experience both nature and built environments, allowing them to learn about, value, and protect their world.

Open and Closed-Open-ended play allows discovery, creativity, exploring, and decision making without constraints. Closed activities provide feedback showing success at completing a puzzle or product made, and accomplishment from group sports.

Permanence and Change-Permanent landmarks or routines allow for a sense of place to be established, giving meaning and structure to their lives, and a sense of security. Also understanding the concept of change is important and strengthens problem-solving skills.

Private and Public-Especially in schools where children spend a lot of time together, having private spaces is important. Being able to provide this while enabling visibility for teachers is the ideal solution. Providing space for group activities is also essential. Simple and Complex- Simple activities where only one use is encouraged provide structure and direction. Complex environments offer the chance to manipulate or improvise, encouraging them to make choices and play in unpredictable ways.

Case studies of schools are also presented, highlighting how some schools are incorporating outdoor educational environments into their curriculum, both in the United States and abroad.

**Take Home Point:** This text offers a strong foundation of design elements to incorporate into the outdoor environment at the elementary school. This will help provide a program for the schoolyard and guide design choices made. It also discusses the benefits of play, strengthening the argument for outdoor educational play environments.