

PART 1 *Getting From Here to There*

INTRODUCTION

A New Schoolyard Paradigm

Leaves crunch under the feet of small children as they run from the schoolyard's playground into the nearby wetland habitat. The environment around them suddenly changes from asphalt and manicured grass to thick bushes, tall grass, flowing water, and a screen of trees. They have reached the wilderness—or at least a place that feels that way. The children run down dirt pathways, around large boulders, and across a wooden boardwalk that seems to float on the shallow pond. Their footsteps send ripples across the water's surface, obscuring the bottom below. All of the children are suddenly quiet as they kneel down to get a better look at the pond and begin their search for crawdads and other water creatures. "Shhhhhh..." says one child to another, "Stop moving, you're scaring them!" As the water grows calm again, the crawdads emerge from the shadows under the walkway and move about, delighting the children who point them out to each other with great enthusiasm throughout recess.¹

Imagine a schoolyard where children work on their lessons in an outdoor classroom, study rainfall patterns as water flows into their cistern, track renewable energy as it is produced by their wind turbine, and examine the local geology found in their comfortable stone amphitheater. Native plants around the schoolyard bring birds and butterflies to enrich and enliven their studies, and edible plantings offer tasty snacks to eager young foragers. A stunning mosaic, made from recycled tiles, brightens the edge of the garden where children are busy harvesting delicious raspberries. In addition to ball games and climbing structures, children play among plants in bloom, relax while nestled in shady nooks, look for small creatures in the garden, and make up creative games to play with their friends in a fort they built themselves. Does this sound like your neighborhood school? If not, it could!

This book is an invitation to participate in the profound paradigm shift that has begun to occur on school grounds

around the world. Innovative elementary, middle, and high school communities have realized that they can transform their schoolyards into vibrant ecosystems that are comfortable, fun, exciting, educational, and beautiful. These hands-on learning and play environments encourage teachers to take "field trips" without ever leaving school grounds and inspire students to explore their world, use their imaginations, and participate enthusiastically in lessons on a wide variety of subjects.

The vehicle for this profound transformation is the "ecological schoolyards" movement, which seeks to teach the principles of ecology through the design of the schoolyard landscape and to reconnect children with the natural systems in their local communities. 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.

This decentralized movement and design philosophy, also called "green schoolyards" or "sustainable schoolyards," is based on the idea that the school campus should inherently represent the environmental principles taught at the school. This idea is powerful. It teaches students about *their own* impact on the environment, shows them the connections between natural systems, and empowers them to make their schoolyard an ecological asset for their neighborhood. This is a very important, *positive* message about the relationship between humans and their environment at a time when most environmental messages we teach students are predominately negative.

The ecological schoolyard movement looks to the past as well as the future as it reshapes our school environments in ways that will prepare our children to be creative leaders of tomorrow's world—as well-schooled in the ecology of their own neighborhoods as they are in traditional academic lessons. The hands-on experiences provided by green schoolyards also help students bridge the divide between theory and practice and solidify their knowledge in both of these areas.

Many communities that build ecological schoolyards value the principles of local self-reliance and sustainable development; they see school grounds as a place to model ecologically-sensitive design practices that could be used throughout the surrounding region. To this end, they try to make their school more independent from the surrounding urban infrastructure, often incorporating energy conservation and renewable energy systems as well as onsite stormwater and wastewater treatment systems. They try to use locally-sourced, green building materials throughout the school site, treat “waste” as a reusable resource, and engage children in projects that follow local agricultural traditions. Ecological schoolyards also seek to aid local wildlife populations by using native plants, sometimes creating entire wildlife habitat zones onsite. They also celebrate local and regional cultural themes through schoolyard artwork, fostering a unique sense of place for each schoolyard.

Ecological Demonstration Projects vs. Larger Scale Environmental Repair

The scale of ecological schoolyard projects varies with their level of support from the principal and school community, the amount of funding available for building materials and supplies, and the availability of space onsite. Projects can be successful from an educational perspective whether they are small or large.

Small green schoolyard projects are typically used as teaching tools to *demonstrate* how particular ecological systems function and to make learning a hands-on process. Many schools hope that ideas introduced at this small scale will stay relevant for students as they get older, inspire them, and find their way into their worldview as adults. Small scale, demonstration level projects may include vegetable gardens in raised beds, small ponds with solar powered pump systems, container gardens with butterfly and bird habitat plantings, rain barrels and garden composting bins, or small design features made from green materials.

Some schools work on the same environmental concepts at a much larger scale. They, too, hope that students will gain a deep understanding of the topics they are presenting—but their dual mission is to also *improve the school’s environmental impact* in some way. These larger projects might include the

following: a large edible garden program that supplies a daily salad bar for the school cafeteria; a renewable energy system that powers the whole school; a large, onsite forest or meadow ecosystem planted by the students; a stormwater pond system that cleans and retains all of the runoff from school grounds; a blackwater treatment marsh that processes wastewater from the school’s toilet system; and entire school buildings and landscape features made from green building materials.

Re-Invigorating Schoolyard Play, Curriculum, and Community

The ecological schoolyard paradigm shift revisits the way our children play on school playgrounds, seeking to add diversity to the existing single-purpose designs that emphasize competitive sports and standardized play structures. In green schoolyards, these features are balanced with age-old “nature play” elements—boulders, logs, sand, mud, plants, water—that provide children with physically challenging play opportunities, while also engaging their creativity and sense of adventure. Open-ended nature play also fosters cooperative interactions among peers, and encourages self-expression and imagination. Some green schoolyards also include other opportunities for imaginative play, such as play houses and puppet theaters, as well as engaging art and music activities.

In addition to environmental and play benefits, green schoolyards offer other rewards. Teachers gain high quality teaching resources and report increased job satisfaction when using green schoolyards.² Students gain interesting learning environments for a wide variety of subjects. Green schoolyards are often more inviting and physically comfortable than traditional school grounds because they offer a variety of different microclimates to choose from—shady pockets, sunny knolls, and sheltered retreats.

Participating in green schoolyard projects often draws parents and other school community members together, strengthening neighborhood relationships and providing an improved support network for the school. Community stewardship of school grounds also relieves school district facilities staff of some of the maintenance burden. The improved care of school grounds may help neighborhood home values as well, as the curb appeal and reputation of the school improves in ways that visitors can see.³

Building Community through Participatory Schoolyard Design

Green schoolyards do not happen overnight or in a vacuum. They are the result of community collaborations that harness the talents of the school's principal, faculty, and staff, as well as students and their families. Sometimes neighbors, local businesses, government agencies, and nonprofit organizations also lend a hand.

The strongest ecological schoolyards usually arise from a participatory design process that reaches consensus about future goals and priorities for the grounds. This process, itself, is important for "building community" within the school and for rallying the group that will become long-term green schoolyard supporters. This exercise in democracy transforms these school stakeholders into stewards of the school grounds who agree to nurture and care for the enriched environment they collectively create.

Often the participatory design process is used to craft a schoolyard master plan that acts as a flexible, "living document" to guide the project's gradual implementation over a period of many years. The master plan communicates the general project goals and infrastructure placement, while allowing the specific elements in the plan to grow and change as they are implemented one project at a time, each semester. This design philosophy enables the content of the green schoolyard to keep pace with the ever-changing needs of the school community, so that it remains an important part of the school's identity as individual teachers, parents, and students come and go.

The Growing Ecological Schoolyard Movement

The blossoming of the ecological schoolyard movement in North America is buoyed by the confluence of numerous trends that have been rising in popularity over the last ten or fifteen years. These new perspectives and agendas are being adopted by educational institutions in a number of inspiring ways, which together are more than the sum of the parts. For example:

- Edible gardens are springing up at schools as hands-on nutrition education tools, in response to rising childhood obesity rates. This trend is also aided by the efforts of high profile local and national organizations, as well

as resurgence in the popularity of community gardening, farmers' markets, and fresh, organically grown foods.

- As our built environment covers more and more land and wildlife populations shrink accordingly, local and national organizations are encouraging schools to grow native plants, nurture local wildlife species, and coordinate their efforts to bring birds, butterflies, and other wild creatures back into our communities.
- Energy conservation and renewable energy generation are finding their way into school curricula, buildings, and grounds as our society recognizes the need to expand our energy options and supplies, and reduce our carbon footprint.
- As clean, fresh water becomes increasingly precious, schools are beginning to examine their own water systems, treating some of their wastewater onsite and capturing stormwater for later use.
- Green and natural building materials are growing increasingly popular as the full lifecycle of our built environment is considered. Schools are benefiting from new high-tech and age-old low-tech design solutions that make their facilities more comfortable, healthier, and climate responsive. Several national and state organizations now focus on green building standards for schools, and their rating systems are gaining clout and respect as what they promote is increasingly seen as vital, responsible design.
- An educational shift toward hands-on lessons, project-based learning, and teaching to "multiple intelligences" has made the school ground an appealing location for academic studies. Interdisciplinary outdoor lessons lend themselves to blending topics that had previously been taught separately.
- Public concern that children are spending too much time playing indoors has fostered the "nature play" movement, which encourages parents and teachers to let children spend more time exploring outdoor environments, replacing time spent in front of a computer screen with first-hand, tactile experiences.

Over the last five years or so the bond among these advocacy groups has been growing, but is not yet fully realized. This convergent evolution of ideas presents a whole new range of

possibilities for schools, and our communities as a whole. Each of these trends is backed by capable advocates who can now pool their talents to assist schools in creating multifaceted ecological schoolyards, if they choose to do so. As these concepts are increasingly practiced on a small scale on school grounds, they will demonstrate principles that are transferable to the larger context of our cities and towns. What children learn at school today, they will be able to use tomorrow to shape our society in a manner that helps us all.

Resources for Starting Your Own Green Schoolyard

North America is not the only home for the ecological schoolyards movement. In other places around the world, many of these ideas have long been standard practice. We have much to learn from exemplary school grounds in Europe, Japan, Australia, and elsewhere. Because there are now so many schools around the world engaged in re-envisioning their school grounds, there is no reason for an individual school to find its way through this transformation process completely on its own.

One of my favorite printed resources is a manual by Evergreen, a Canadian organization, called *All Hands in the Dirt*. This step-by-step guide describes how to gather community support for a schoolyard project and get it off the ground successfully. Evergreen also offers many other useful, well-researched publications. Learning through Landscapes, a British organization, offers numerous materials on how to green school grounds and enrich curricula. In the United States, the National Gardening Association is a wealth of information about starting gardens at school, and the National Wildlife Federation is a central resource for wildlife habitat ideas. Each of these organizations has also published helpful guidebooks and/or curriculum and resource guides for teachers and school communities. Many of them are available online or can be purchased through the organizations' websites. A list of these and other excellent resources is included at the end of this book.

About this Book

This book explores the topic of ecological schoolyard transformation in detail, visiting urban, suburban, and rural schools along the way. It is grounded in schoolyard examples from

California because that is my "local place," but a wide range of other schools I, or my colleagues, have visited over the last ten years are included, as well as my own ongoing research.

All green schoolyards are living projects that change with the seasons and the needs of their ever-shifting communities of students, teachers, and families. The projects presented in these pages are described as they were when my colleagues and I visited each site—and may have since changed. Such evolution is the natural course of these projects. They remain valuable examples for this book as they appear on these pages, since they demonstrate innovative project ideas, useful design concepts, and the wisdom of their school communities.

Many existing books already cover detailed curriculum lessons for teachers at every grade level, so I have chosen to emphasize only the curriculum concepts that are directly connected to the physical design of the schoolyard landscape. The complex regulatory framework that governs compliance with playground standards and municipal regulations is not covered here since regulations often vary by city, state, region, and country, and change frequently.

Part 1 of this book covers the general rationale for creating ecological schoolyards, the participatory process I use when working with schools to design green schoolyards, design guidelines to help you learn from other schools' successes and challenges, and maintenance strategies to consider from the beginning of the project. Part 2 dives deeply into schoolyard ecology with case studies that address schoolyard wildlife habitats, water and energy systems, food gardens, building material choices, and curriculum connections. Part 3 focuses on the recreational aspects of green schoolyards, including imaginative play ideas, unusual climbing structures and active play areas, and elements that foster art and music play. Part 4 describes the infrastructure that makes ecological schoolyards function more smoothly and compatibly with combined educational and recreational uses. It details examples of outdoor classroom spaces, pathways, signage and other elements that help clarify the use of space in the schoolyard. Part 5 of the book contains some closing thoughts as well as references and resources to help you transform your own asphalt into ecosystems.

I wish you great success on your exciting journey of schoolyard transformation. May your path be a smooth and rewarding one.