

A group of diverse school children, including a young girl in the foreground with dark hair and a boy with glasses behind her, are smiling and waving their hands towards the camera. The background is a soft-focus outdoor setting with green foliage.

School Grounds: Special Places for the Child and Nature in the City

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Everything Old is New Again

Both Canada and the United States have a long history of connecting urban children with nature at school, extending for well over a century. The first systematic greening of school grounds appeared in North America in the late 1880s and early 1900s, at a time when the population was becoming more urbanized. Civic organizations in places like Massachusetts and New York took an interest in making nature access more equitable

as both of those states looked for solutions to problems caused by clear-cutting and forest fires—and tied forest restoration work to conservation education delivered by schools (Gilson-Pierce, 1994). Minnesota's School Forest Law, passed in 1949, produced a legacy of more than 7,800 acres of school forests and generations of students learned conservation practices while planting and managing trees (Minnesota Department of Natural Resources, n.d.).

"Living school grounds are richly layered outdoor environments that strengthen local ecological systems while providing place-based, hands-on learning resources for children and youth of all ages. They are child-centered places that foster exploration, adventure, and a wide range of play and social opportunities, while enhancing health and well-being and engaging the community."

– Green Schoolyards America

Through the 1950s and 1960s a more homogenous school ground emerged—flat and fenced, with a combination of grass sport fields and hard surfacing along with manufactured climbing structures.

for new immigrants and low-income residents who could not afford to leave the cramped, dusty cities. They created gardens on school grounds to give children a place to interact with nature on a daily basis, develop their horticultural skills, improve their physical health, and build a strong stewardship ethic for shared public spaces (Miller, 1904, Smithsonian Gardens, n.d.). The Ministry of Education in Ontario produced a variation on this theme in 1908 by calling for school grounds that reminded city dwellers of the pleasures of rural and farming life.

From this foundation, a school gardening movement picked up steam during World War I, when the American federal government created the United States School Garden Army. This effort was designed to use children's agricultural labor, along with teacher supervision, to produce fresh food on school grounds on a large scale to help avert a looming food shortage during and after the war (Francis, 1919). "Victory gardens" were common at schools and other public spaces, including railroad right-of-ways.

Children's efforts were also harnessed for substantial environmental restoration work in Wisconsin and Minnesota in the 1920s -1950s,

The emergence of the modern environmental movement in the 1960s and 1970s focused attention on the degraded condition of our wilderness environments caused by resource extraction and pollutants. Out of that broader context emerged the first of the modern green schoolyards, which aimed to remove asphalt installed by a previous generation and replace it with a naturalized environment, designed by professionals with significant input from students and the community. The [Environmental Yard](#) at Washington Elementary School in Berkeley, California, founded in 1971 by landscape architect Robin Moore and principal Herb Wong, was one of the first modern green schoolyard prototypes in the United States. The asphalt yard was reimagined as a nature-rich, hands-on learning environment and community resource—and set an example that many others emulated (Moore and Wong, 1997). Starting in the late 1970s, the first of this new breed of local and national nonprofits started working with schools and helped them to create gardens and naturalize their grounds. [Life Lab](#), established in the U.S. in 1979, was one of the first to promote school gardens and train teachers on outdoor

instructional techniques and horticulture.

Momentum picked up greatly across North America in the 1990s as obesity was recognized as a widespread and growing problem, and nutrition education and school gardens were proposed as key solutions. The state of California stands out in this time period for its bold action to draw attention to this problem and potential solution. In 1995, the California Department of Education created the Garden in Every School initiative, which aimed to bring nutrition education and a healthy diet to the forefront of statewide education. It was later supported by the Instructional School Gardens Program, which distributed grants and technical assistance to schools across the state. This activity at the state level helped to inspire thousands of school gardens, including the [Edible Schoolyard](#), founded in 1996 in Berkeley, California, which has become an internationally renowned model for schoolyard horticulture, nutrition education, and cooking techniques.

The first research related to schoolyard greening appeared in 1998, when the State Education and Environment Roundtable (SEER) published a seminal national study by Gerald Lieberman and Linda Hoody demonstrating the effectiveness of the outdoor environment as an integrated context for learning. Their report, [Closing the Achievement Gap](#), was instrumental in helping the green schoolyard movement grow and gain respect among educators and policy makers (Lieberman and Hoody, 1998).

The 1990s were also a time when civic organizations across the U.S. and Canada were reacting to the degraded state of urban school grounds. Wendy Titman's book, [Special Places, Special People](#), influenced the growth of the United Kingdom's [Learning through Landscapes](#) organization and the broader green schoolyard movement internationally, by reinforcing the theme that the environment plays a strong role in child development and in children's perceptions of themselves and their place in the world (Titman, 1994). [Evergreen](#) formed in Canada in 1991 and began supporting school ground

greening efforts across the country. Founded in 1995, The [Boston Schoolyard Initiative](#) was one of the first in the United States to start a citywide program to renovate urban school grounds and replace a portion of their pavement with gardens and other naturalized spaces. These early examples were soon followed by organizations in other cities that helped schools create gardens and other types of outdoor classrooms in San Francisco, Ottawa, Chicago, Denver, New York, Minneapolis, Calgary, Dallas/Ft. Worth, Vancouver, Los Angeles, Washington DC, Portland, Hawaii, and elsewhere.

Where are We Now?

We have come full circle in many ways, as schools across North America are renewing a commitment to the century old ideas of improving children's mental and physical health, enhancing local ecology, and connecting children to nature on school grounds. We are also seeing renewed interest in the community-building values of collaboration and empathy, and promoting stewardship of public land.

School grounds are also being used to teach children about key environmental challenges of our time—climate change, drought, watershed management, habitat loss—in a context and scale that is accessible and meaningful to them. Our educational systems are also starting to align their national and state standards with hands-on and inquiry-based approaches to learning. Emphasis on nutrition education and obesity prevention continues to be a strong motivator for new schools making improvements to their grounds, and many communities are drawn in by the improved aesthetics of school grounds that transform bleak asphalt expanses into inviting natural landscapes. When it comes to using school grounds as a context for teaching and learning, [Green Teacher magazine](#) has been a valuable source for tools and ideas in both Canada and the U.S., and a number of organizations have supported school gardening efforts in Canada including: [Green Thumbs](#), [Growing Kids](#), [FoodShare](#), and the [Society Promoting Environmental Conservation](#).

Strong local and regional networks across both countries have been instrumental in expanding the movement and shaping its growth. Organizations such as the [International School Grounds Alliance](#), [Child in the City](#), and the [International Play Association](#) help professionals in this field share best practices across geographic and language barriers, learn from one another, speed up innovation, and scale their work. The San Francisco Green Schoolyard Alliance, described in the sidebar, is an example of how community partnerships can drive change and innovation within a school district.

Many schools across the U.S. and Canada have greened aspects of their school grounds and established routine outdoor learning. School communities have led the vast majority of these improvements, often with the collaboration of landscape architects, civic and nonprofit organizations, public agencies, and their school districts. Schools with gardens and other green schoolyard-related elements are not yet the majority, but have reached critical mass and the movement is growing. The Toronto District School Board is an example of a school district leading this change with a strong partnership model that has bridged the facilities and instructional departments and is described in the sidebar.

Despite all the efforts to date, most green

schoolyards in North America are small, demonstration size projects, supported by grassroots fundraisers, and led by a few passionate individuals. Very few schools have had the capacity to enrich their whole school site. Only a handful of school districts around Canada and the U.S. have built citywide support systems for school ground greening and integrated them into their broader sustainability programs, ecoliteracy curricula, and student mental and physical health programs.

As a field of practice, there are no widely accepted standards to evaluate and assess the success of individual green schoolyard projects, and so it remains difficult to compare and assess impact between sites or districts.

Where are We Heading?

In our own work, we have personally witnessed the evolution of the field over the last twenty years and are both deeply engaged with a shift toward larger scale projects and more systematic planning for green schoolyards at the school district and regional levels. When planning is accomplished district-wide, education and health priorities can connect with schoolyard design and management. Desirable outcomes include better and more specialized service to schools, more effective and efficient communications,

Case Study 1: Toronto, Ontario, Canada

School ground greening as part of an integrated sustainability strategy

In 2001, the Toronto District School Board (TDSB), Canada's largest school board with almost 600 schools, made a bold move to bring their individual sustainability initiatives into an integrated certification program they called [EcoSchools](#). The program began with four components that included two usual (and worthy) suspects – energy conservation and waste minimization – along with two relative newcomers, ecological literacy and school ground greening. It has since evolved to include topics such as active transportation, health and safety, and leadership. The program's success has relied on the cooperation of the board's facilities and instructional teams – two groups that previously had limited collaboration with each other. Adding the school ground greening component was bold given its complexities and TDSB teamed up with the nonprofit organization Evergreen to build it. While both groups had to stretch to make it work, the program and partnerships continue to this day. The surprise was how much school ground greening added incentives to schools to engage in the program. As a result, the School Board has made school ground greening benefits a part of their strategy to encourage schools to strive for a higher level of certification – such as free trees and mulch or access to design support. A Board staff team has also been designated to specialize in supporting school ground greening, and installation quality has dramatically improved over the years.

TDSB's EcoSchools program is an exceptional example of the power of an integrated partnership between schools, administration, and NGOs to advance sustainability and educational goals simultaneously.

and a reduction in the number of schools “going rogue.” (Schools that fail to ask permission from their district before they make large-scale changes to their grounds). There are considerable economic savings to be realized when the design and program work properly the first time.

Taking the next step in scaling the movement will have much to do with aligning existing and emerging priorities. Here is a snapshot of four that are shaping the field.

HEALTH: The children’s health lens is stronger and more urgent than ever. There is a growing awareness of the roles the built environment and city planning play in public health. A large body of research now indicates that improving the ecology of school sites and neighborhoods can improve children’s health both physically and mentally. Living school grounds also increase comfort outside by providing a wider range of microclimates, more shade, and—with organic management practices—reduced exposure to toxins.

CURRICULUM: New curriculum standards in Canada and the U.S. call for more experiential learning opportunities across subject areas. In the U.S., the Next Generation Science Standards open the door—literally and figuratively—to increased hands-on academic instruction outside,

while greater emphasis on STEM and STEAM translate well to the outdoor classroom in both countries.

EQUITY: School ground greening shows great promise for enhancing student learning and community engagement across the socio-economic spectrum. Research has shown that views of trees and other greenery, on their own, can improve test scores and decrease stress, so the lack of these elements is not only an aesthetic issue, but also one that impacts students’ health and achievement (Sullivan, 2015).

URBAN RESILIENCE/ECOLOGICAL

RESTORATION: Historically, school grounds have been left out of green city planning efforts. There are now a growing number of examples where schoolyards are considered a core component of green urban infrastructure and are supported with commensurate economic investments. School ground land has great potential to mitigate urban heat island effects with increased shade and to improve local watersheds by managing stormwater. When properly designed, school grounds provide ecosystem services, while improving children’s well-being and enriching play and learning opportunities.

Public agencies in many cities are getting involved by providing guidance and funding to schools to improve their grounds in ways

Case Study 2: San Francisco, California, United States

Taking schoolyard greening to scale through collaboration and bond funding

The green schoolyard movement in San Francisco began in the mid-1990s with edible gardens inspired by California’s “Garden in Every School” initiative. From this effort sprang a large-scale schoolyard transformation at Tule Elk Park Child Development Center that converted their asphalt-covered yard into a park-like environment for learning and play. The success of that project, in turn, catalyzed a citywide shift. In 2001, twenty-three local organizations came together to found the San Francisco Green Schoolyard Alliance (SFGSA) with a vision to transform all the city’s asphalt-covered school grounds into ecologically rich environments for children.

SFGSA member organizations worked together on a campaign that raised the profile of green schoolyards in the city and the region over the next decade. This grassroots coalition produced four public conferences, and collaborated with [San Francisco Unified School District](#) to write green schoolyards into a series of school modernization bonds that has infused San Francisco schools with more than \$19.2 million of green schoolyard funding since 2003. This funding is helping San Francisco develop green schoolyards at more than 100 schools across the city (see <http://bit.ly/SFUSDbonds>). In 2011, SFGSA changed its name to [Education Outside](#) and consolidated into a single nonprofit that now provides outdoor science education at 45 San Francisco elementary schools. Today, the school district’s green schoolyard program is growing and thriving. It has strong partnerships with many local organizations and public agencies that are helping school grounds grow to become outdoor learning and play environments that act as green infrastructure, designed to improve the well-being of children and the urban environment at the same time.

that align with their environmental goals, and often include educational materials or programs to accompany these investments. While our strongest, and oldest, examples of this type of large-scale green infrastructure planning are on school grounds in Europe and Asia, we are beginning to see significant examples emerge across North America. San Francisco, Philadelphia, Chicago, Denver, Toronto, Winnipeg, and Virginia Beach are among the cities

that are leading the way in green infrastructure improvements on school grounds.

These trends are helping to shape the path forward, and are aligning many different, but related efforts under a single banner. We see a growing emphasis placed on school grounds as a key space for public life, affording a wide range of benefits to students, communities, and natural systems.

A background image showing a schoolyard with children playing. In the foreground, a child in a blue shirt is crouching on the grass. In the background, other children are playing on a wooden structure. The image is slightly faded to allow text to be read over it.

What is the Formula for Success?

Participatory and Responsive Design

- Student and community participation in the design process
- Design that responds to a school's ecological setting and reflects the community in which it is situated
- Design that embraces the understanding that both nature and the school community change and evolve over time
- A diversity of spaces to meet the varying ages and interests of the school community
- Artistic elements made by and with students
- Plans to evaluate and refresh the site design and programming at regular intervals

Daily Play and Learning Outside

- Places to store materials that support outdoor play and learning
- All-weather clothing to support full class participation
- Summer programming on school sites
- Teacher training to support outdoor, experiential learning
- Training for recess supervisors in child development and beneficial risk
- Schoolyard play policies that encourage adventure, challenge, and wonder to flourish, along with traditional sports

Systemic Support from School Authorities

- Long-term vision, expressed in writing and as a master plan, developed through a collaboration that includes the school district's facilities and curriculum departments
- Site management plans that include student and community stewardship
- Design and installation guidelines
- Approval processes
- Access to participatory design expertise
- Incentives to green the school grounds
- Integration with other sustainability, equity, and education programs at the district and/or regional levels

Strong Networks

- Shared information and expertise among local, regional, state/province, national, and international green schoolyard organizations
- Targeted professional development and peer learning for teachers, principals, designers, facilities managers, and grounds and custodial staff
- Free online resources with case studies and tool kits to get started
- Local site tours, conferences, and working groups to engage with colleagues
- Mechanisms for organizing collective action into tangible results
- Long-term partnerships between public school districts and private and nonprofit sector organizations to support the transition to green school grounds with strong programs
- Partnerships that engage local and regional level public utilities
- Partnerships that engage state/provincial education departments or other government agencies

Creative Funding Sources

- Access infrastructure-scale funding for climate change mitigation and stormwater infiltration
- Include green schoolyards/outdoor classrooms in modernization bonds (U.S.)
- Target health funding for increased physical activity, increased shade, and pro-social behavior
- Seek education funding focused on experiential learning and parent engagement (Canada)
- Reduce costs for planting, small scale construction, and quarterly management by engaging the school community as stewards of their shared public space

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Environmental city planner, Sharon Danks (sharon@greenschoolyards.org), MLA-MCP, is founder and director of Green Schoolyards America, based in Berkeley, California. Sharon's professional work and passion is focused on transforming school grounds into vibrant public spaces that reflect and enhance local ecology, nurture children as they learn and play, and engage the community. Her current work focuses on scaling up the living schoolyard movement and integrating school ground use, design, and management with green urban infrastructure planning. Sharon has facilitated green schoolyard master planning processes for more than three-dozen schools and has shaped school districts' approaches to schoolyard greening. She is the author of the book *Asphalt to Ecosystems*. Sharon also co-founded the International School Grounds Alliance and the design firm, Bay Tree Design. In 2015, Sharon was honored to become an Ashoka Affiliate.



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