MAY 2015 / VOL 105 NO 5
US $7 / CAN $9

LANDSCAPE ARCHITECTURE MAGAZINE

THE MAGAZINE OF THE AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS

RISE UP

Jamaica Bay, and elsewhere, in the stormy future

—

STUDIO ON SITE

Tokyo has more trees than it might

—

ALL ARE WELCOME

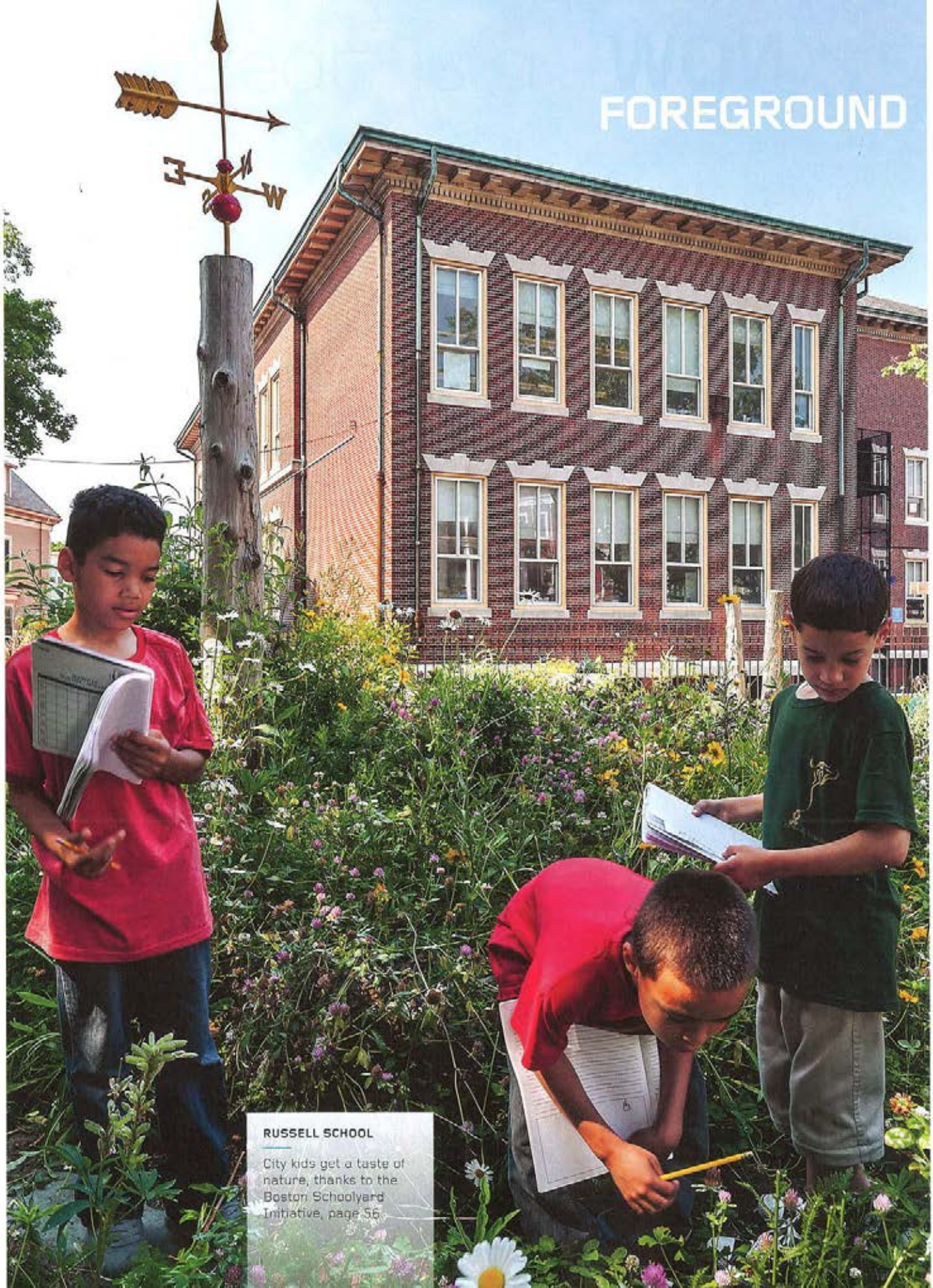
A Vancouver park has it down

—

RICHARD HAAG

An obscured force in the Northwest

FOREGROUND



RUSSELL SCHOOL

City kids get a taste of nature, thanks to the Boston Schoolyard Initiative, page 56.

CHRISTIAN PHILLIPS PHOTOGRAPHY

JUST ADD NATURE

HOW DESIGNERS OF BOSTON'S OUTDOOR CLASSROOMS ARRIVED AT A "KIT OF PARTS" THAT REALLY WORKS.

BY JANE ROY BROWN

ABOVE
Children at the Russell Elementary School study science in an outdoor classroom designed by Klopfer Martin Design Group.

"Ms. Thompson, what's a log?" The question came from a kindergartener in a Boston elementary school in 2006, after his teacher (not her real name) read a story to the class about a possum hiding in a hollow log.

As shocking as the question may sound, teachers all over the country have fielded similar ones for years. By 2005, when Richard Louv's *Last Child in the Woods* launched the term "nature-deficit disorder" into everyday use, generations of kids in some city neighborhoods had had no experience of woods, never mind logs.

Last Child in the Woods has sent all kinds of communities scrambling to offer some experience of nature to their children, and many of them have focused, logically enough, on schoolyards. As more landscape architects join the push to transform crumbling asphalt schoolyards into landscapes for play and learning, they might do worse than to take a page from the Boston Schoolyard Initiative (BSI).

Formed in 1995 by the city of Boston, the Boston Public Schools, and a group of private supporters called the Boston Schoolyard Funders Collaborative, the initiative, by the time it ended, had transformed every feasible elementary and K–8 schoolyard throughout the city—88 in all. Thirty-two of these redesigned schoolyards contain a new model of outdoor classroom. When BSI wrapped up in 2013, it had employed 20 landscape architecture firms, plus artists, horticulturists, and other professionals. Capital costs for the schoolyard renovations ranged between $250,000 and $350,000 per project, depending on the size of the school and the site-specific challenges. (The schools varied in size from 125 to more than 700 students.) Kristin Metz, BSI's former director of education, explains that all the renovations included teaching and learning components, but as a result of what the BSI team learned along the way, the projects completed after 2008 all received a more clearly delineated outdoor classroom, with costs ranging from $70,000 to $100,000, depending on the site-specific variables.

CHRISTIAN PHILLIPS PHOTOGRAPHY

RIGHT
Layouts of actual outdoor classrooms by Klopfer Martin show the variety available with a kit-of-parts design approach.

Those who've participated in the program say other achievements were equally valuable: developing a model of collaboration among administrators, educators, and designers, and capturing a deep base of experiential knowledge from that process. Metz, who now consults on designing for outdoor teaching and learning, says that more often than not, that knowledge was gleaned through deliberate trial and error, with the occasional joyous "aha!" and countless quiet epiphanies.

For instance, a hummock of dirt in a sea of pavement can be transformative, as Kaki Martin, ASLA, discovered. "For a child who walks on flat concrete every day, any bit of topography can shift his perspective," says Martin, a principal with Klopfer Martin Design Group, who led her firm in designing nine outdoor classrooms with BSI and helped refine the new design elements. (Klopfer Martin won a 2014 Boston Society of Landscape Architects Honor Award for its work on these projects.)

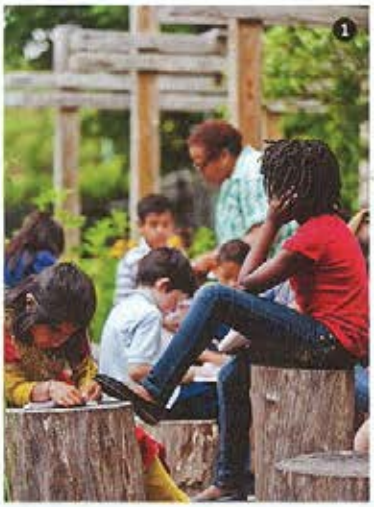
But in most cases, the learning experiences for the BSI team and the consulting landscape architects unfolded, iteration after painstaking iteration. During the first five years of BSI, schoolyard design began with teaching elements—a ring of stones or a concrete amphitheater, worktables, garden beds, and diverse shrubs and trees—dispersed throughout a spiffed-up play area.

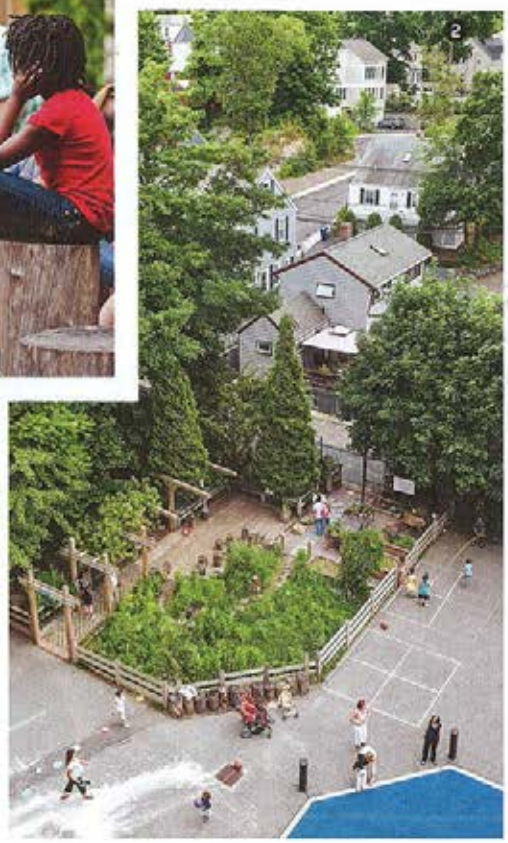
"From the beginning, the goal was to make the whole schoolyard a learning environment, building play structures and painting graphics on the asphalt," explains Ross Miller, a Boston-based environmental artist and designer who served as an outdoor classroom consultant for BSI throughout. "Then, landscape architects started including trees and shrubs in groupings throughout the schoolyard. These were quickly destroyed by active use during recess, and the remaining feature was often an amphitheater or a semicircle of stones, so that became the prevailing notion of an outdoor classroom."

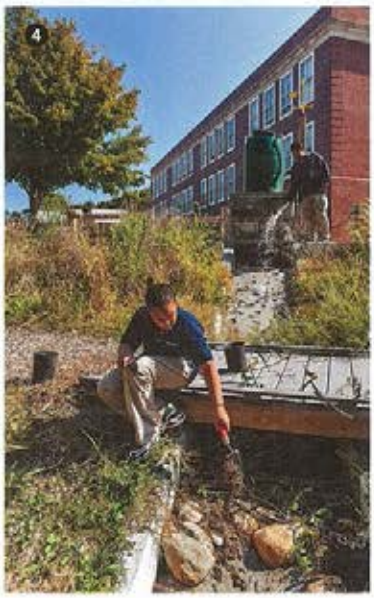
But BSI staff discovered that teachers, despite their initial enthusiasm, were not using the teaching elements in the schoolyards, even the amphitheaters. This came as a surprise to the designers, who, after all, had taken their cues from teachers and community members. So, about five years into the initiative, BSI hired Metz to figure out why.

"The turning point came when we started to look seriously at what and how teachers were teaching in the traditional classroom," Metz says. "Only

KLOPFER MARTIN DESIGN GROUP







CLOCKWISE FROM TOP LEFT
Learning in the rough: Outdoor classrooms by Klopfer Martin at Winship Elementary (1–3) and Young Achievers School (4).

then did we learn how to design an outdoor space that truly supported *teachers'* needs." She says this proved to be crucial in Massachusetts's high-stakes testing climate, as did her role as an intermediary who could articulate the teachers' needs to designers.

Among the things Metz learned in working with teachers over time was that they often did not recognize the teaching elements for what they were, largely because they were scattered throughout the schoolyard. As for the amphitheaters or semicircles, they worked well for group activities but did not accommodate hands-on investigation or individual or small-group study. Teachers also worried about how to manage their classes outdoors, and, specifically, that children with attention-deficit and similar disorders would get overstimulated and act out. (They later observed that children with attention-deficit disorder, as do most other kids, usually calm down in these spaces.)

Metz also worked with teachers to develop outdoor teaching guides for required subjects, starting with science. To test the ideas she had gathered during her research, BSI launched a three-year pilot project on outdoor classroom design at nine schoolyards. "We wanted to try building these more deliberately designed learning spaces," she says.

During this pilot phase, Miller served as the designer on most of the sites, working with contractors on a design/build basis. This allowed him to keep costs down and experiment while interacting with teachers. For example, Miller had placed logs and small rocks in some

CHRISTIAN PHILLIPS PHOTOGRAPHY

CLOCKWISE FROM TOP RIGHT
Seating logs, planters, and fence at the Conley School (1), (2); gate at the Mendell School (3). Both outdoor classrooms by Klopfer Martin.

BELOW RIGHT
At the Henderson School, students of all abilities enjoy color-drenched light from a pergola by Klopfer Martin.

outdoor classrooms, and Metz led teachers through scavenger hunts in which they had to turn over a stone or a log, examine what they found there, and return it to its original position and report the results.

One goal of the pilot phase was to figure out how to include plants, both woody and herbaceous, in the outdoor classrooms. Teachers had identified plants as important teaching elements, but keeping them alive at the redesigned schoolyards had been a challenge. So, during the pilot phase, BSI focused on strategies to physically protect plants as well as to identify species that would survive with little maintenance. To that end, BSI brought in Peter Del Tredici, a senior research scientist at Harvard University's Arnold Arboretum and the author of a book on urban weeds, to choose perennials and self-seeding annuals that would provide low-maintenance habitat for birds and insects in "urban meadows" in the outdoor classrooms. Del Tredici experimented with species including black-eyed Susan, *Artemisia*, milkweed, *Echinacea*, and self-containing grasses such as *Miscanthus*.

Urban meadows became one of several "standard areas and identifying features" that Miller tested in the pilot sites and compiled in a kit of parts that could be flexibly configured at any scale. Primary in this category is a perimeter fence with a lockable gate to define and protect the classroom—especially the plants—within the larger schoolyard. The gate became a point of emphasis in the design, Miller says, because it also marks a symbolic transition from play to learning.

The category also comprises a landform such as a berm or rain garden,

CHRISTIAN PHILLIPS PHOTOGRAPHY

"THE TEACHERS WANTED THE STUDENTS TO EXPERIENCE VARIETY EVERYWHERE."

—ROSS MILLER

TOP
Kaki Martin, ASLA, of Klopfer Martin says that logs and stones coax children to use their bodies in flexible ways, even when sitting.

ABOVE
The schoolyard at the Mason School before it was transformed by Klopfer Martin.

a full-class gathering space with seating, individual and group seating (such as logs, stones, or stumps), a "sample woodland" of diverse trees and shrubs, primary and secondary paths, a lab area with worktables and storage, and a vertical armature to support thermometers, solar panels, weather vanes, and pulleys. The path systems proved invaluable in structuring the transitions to varied experiences but also in protecting the plants. "We found, for example, that secondary stepping-stone paths into the meadow were important to keep the young plants from being trampled in the spring," Miller says.

The planting configurations run counter to the training of most landscape architects, who typically plant in clumps or drifts of the same species for aesthetic effect, rather than a group of single specimens, as in the sample woodlands. And most designers would not conceive of adjacent meadow and woodland zones in an area as small as 1,200 square feet. But, as with the other parts in the kit, the planting-area design results from years of experimenting with site conditions as well as teaching needs. "This is experiential design, and the teachers wanted the students to experience variety everywhere," Miller says.

Metz adds that in the earlier schoolyards, designers had tried to meet this goal by increasing the number and diversity of plants, but these required care that no one at the schools was available to do. Although some landscape architects used native plants to reduce maintenance, not even these, especially woodland species, could tolerate the heavy foot traffic and aridity of these sites. "So, while some species are not native to this area, they are capable of thriving without human intervention," Metz says. The term "sample woodland" stresses the intention to represent forest tree species, but not to replicate a forest ecosystem.

For both the meadow and woodland areas, BSI developed a suggested plant list to meet these practical requirements (see *schoolyards.org/research.resources.html*) and also support a range of topics for science lessons, from insect habitats to seed structure. Miller, working with landscape architects after the pilot phase, observed that they tend to favor particular plants and hold strong opinions about plants in general. As a result, some viewed the BSI's plant list as a constraint at first. "But after we explained the educational rationale, the designers worked creatively within those constraints," Miller says.

A second category of parts, "elements and teaching tools," contains the materials teachers use for hands-on learning: natural matter to investigate (pebbles, sand, soil), scientific tools (wind instruments, thermometers,

KLOPFER MARTIN DESIGN GROUP

BSI SELECTED PLANT LIST

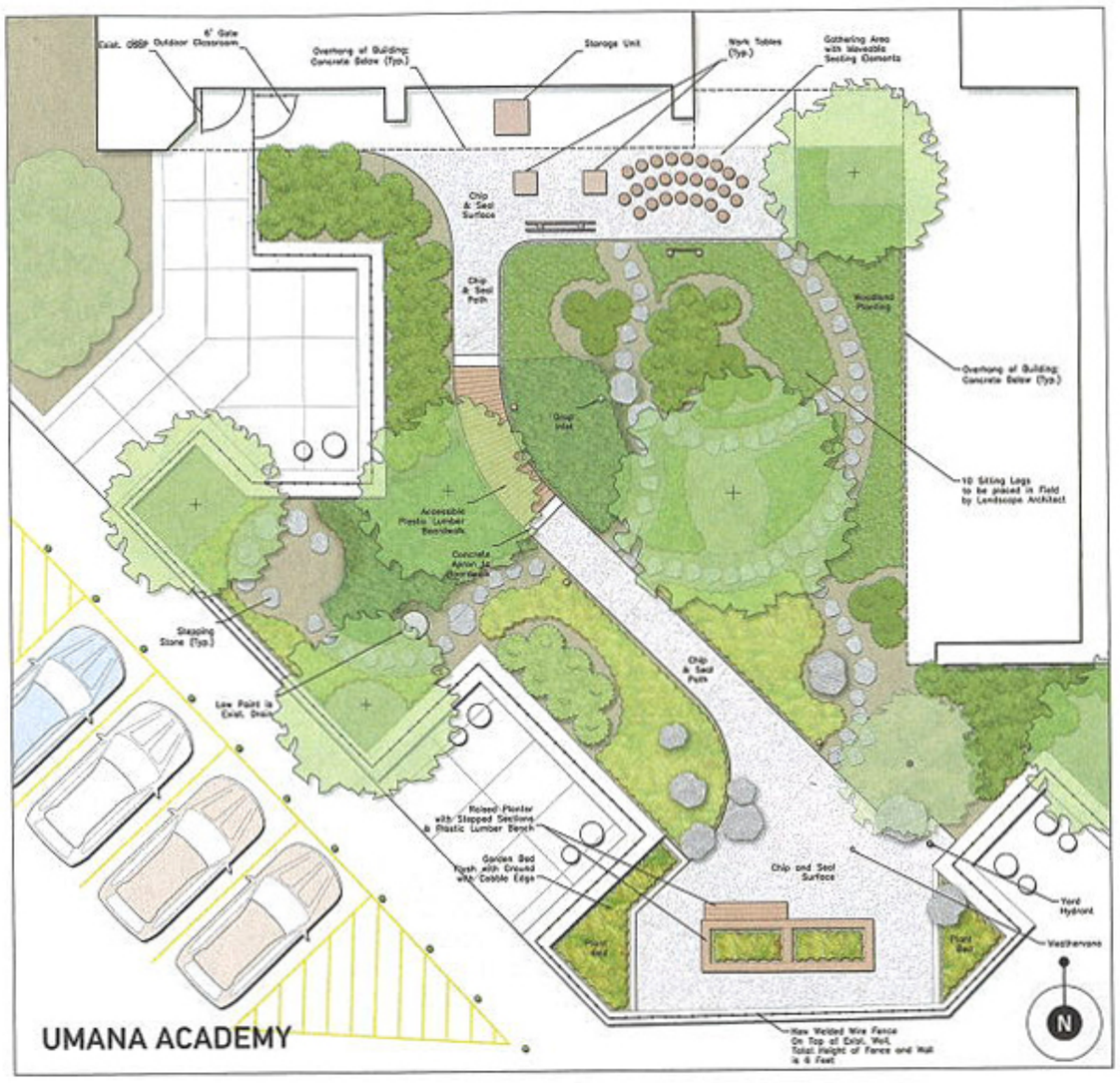
GRASSES AND SEDUM
Miscanthus sinensis (Maiden grass)
Panicum virgatum (Switchgrass)
Pennisetum alopecuroides (Dwarf fountain grass)
Schizachyrium scoparium (Little bluestem)
***Sedum* x 'Autumn Joy'** (Autumn Joy stonecrop)

WOODLAND PLANTING
Acer griseum (Paperbark maple)
Hamamelis vernalis (Ozark witch hazel)
Hamamelis virginiana (American witch hazel)
Ilex opaca (American holly)
Koelreuteria paniculata (Panicled golden rain tree)
***Pieris* x 'Brouwer's Beauty'** (Brouwer's Beauty andromeda)

URBAN MEADOW
Arctium minus (Lesser burdock)
Asclepias syriaca (Common milkweed)
Daucus carota (Queen Anne's lace)
Echinacea purpurea (Purple coneflower)
Rudbeckia hirta (Black-eyed Susan)
Symphyotrichum pilosum (Hairy aster)

SCHOOLYARD TREES
Cornus kousa (Kousa dogwood)
Ginkgo biloba (Ginkgo)
Gleditsia triacanthos (Honey locust)
***Pinus strobus* 'Fastigiata'** (Columnar Eastern white pine)
Quercus palustris (Pin oak)
Tilia cordata (Little leaf linden)

RIGHT
CBA Landscape Architects of Cambridge, Massachusetts, turned an irregular space next to a parking lot into a parklike outdoor classroom in East Boston.



rain gauges, rulers, sundials, levels, pulleys), animal habitat (fallen logs and flat stones), signage (site map, plant labels, student displays), raised planters for edible and experimental gardens, a writing surface such as a chalkboard or whiteboard, work surfaces (tables, rocks, or stumps), a compost bin and leaf cage, and a water source.

The components of the two categories appear in a workbook published on the BSI website, *schoolyards.org*, as the *Outdoor Classroom Design Guide*. Incorporating these standard areas and features, designers could apply their creative problem-solving skills to arrange and embellish them as the site required. BSI never specified or required a minimum number of components in either category. "Most outdoor classrooms had most of the areas and elements identified in the *Design Guide*, but at differing levels of sophistication, size, and cost," says Metz.

"The elements can be scaled up or down to fit," says Martin, explaining that her outdoor classrooms were typically a mere 1,000 to 2,000 square feet. "This approach also means that initial conditions on a site don't affect the design's success or failure." At an inclusion school, where students of all abilities benefited from a variety of sensory enrichment, Martin's creative adaptations included turning the armature component into a pergola topped with slats of colored Plexiglas. Her design of sliding glass windows in the raised planters lets kids observe root growth. The innovation was so popular that BSI included it as a permanent feature.

Clara Batchelor, ASLA, principal and founder of CBA Landscape Architects, which built 12 BSI schoolyard projects between 2002 and 2013, says, "The kit of parts approach really does not hold back creativity. Each site is so different that you can really design it differently." Her projects' themed details included a green roof on the storage shed, a porthole-shaped gate at a school near Boston Harbor, and a bridge over a dry streambed used to catch stormwater.

David Warner, ASLA, president of Warner Larson Landscape Architects, which completed four BSI schoolyards with outdoor classrooms, explored school-specific themes. For a maritime-themed Oliver Hazard Perry schoolyard near Boston Harbor, Warner Larson built the storage shed as a lighthouse, with seating rows that curve in the shape of a ship's bow, among other details. (This project won a 2012 Merit Award from the Boston Society of Landscape Architects.) And at the Thomas A. Edison Middle School, named for the inventor, Warner Larson built

BELOW
A harborside location inspired marine-themed details in this outdoor classroom designed by Warner Larson Landscape Architects.

OLIVER HAZARD PERRY SCHOOLYARD

1 OUTDOOR CLASSROOM

2 WOODLAND

3 MEADOW

4 DRY STREAMBED

5 THOMPSON ISLAND

6 CUSTOM BOAT PLAY STRUCTURE

7 SPECTACLE ISLAND

8 SHADED SEATING

9 GEORGE'S ISLAND

the shed of translucent panels with a solar-powered light inside, so at night the building becomes a light bulb, one of several discovery-themed touches. Though students who do not live in the immediate neighborhood don't see the symbolic light bulb in the evening, the elements—a solar panel, LED light fixture, green roof, and rainwater demonstration—are visible during the day. "And who knows, some kids may be inspired to come by in the evening to witness the light coming on," says Warner.

Children do seem to relish the playful learning environments. "I remember two boys prowling in tall grasses in one of the urban meadows," Martin says. "They were parting the grass like explorers, and they called to their friends, 'Look! We're in the jungle!'"

By several accounts, BSI's collaborative culture facilitated success in both process and outcome. "The staff encouraged very open and transparent communication," says Warner. "They started their conversations by saying, 'We don't believe we've figured everything out yet.' They kept an open-mindedness throughout all our discussions."

Metz emphasizes the creative benefits of working with teachers and designers on iterations of an idea. She also points out that the BSI team viewed the outdoor classroom design kit not as a done deal, but as a continual work in progress. "Because the process was shared, it deepened and pushed the design. You can build beautiful spaces, but without this kind of collaboration between designers and teachers, they will never be as educationally rigorous or engaging as these are." ●

JANE ROY BROWN IS A CONTRIBUTING EDITOR WHO LIVES IN WESTERN MASSACHUSETTS.

WARNER LARSON LANDSCAPE ARCHITECTS, LEFT; JULIO CEDANO PHOTOGRAPHY, RIGHT