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As Temperatures Rise, a Push to Revamp Schools' Outdoor Spaces

Nature offers a different approach to playgrounds and schoolyards in the era of climate change.

The new Colene Hoose Elementary School playground in Normal, Illinois, was designed to feature natural elements.  (Courtesy of Bienenstock Natural Playgrounds)

With trees to climb, prairie grass to run through and boulders to jump off, the new playground at Colene Hoose Elementary School in Normal, Illinois, isn't slated to be your normal schoolyard.

"There's an archetype in our heads when we think of a playground," says Adam Bienenstock, whose company, Bienenstock Natural Playgrounds, built the school's new outdoor space. "The difference between this place is that every aspect of this space is a place for kids to play."

For years, many U.S. schoolyards have been asphalt- or cement-covered spaces devoid of trees and greenery. But as temperatures increase and climate change-fueled heat waves become more frequent, people in a growing number of U.S. communities – including Normal, Los Angeles, New York City and

elsewhere – are rethinking what these outdoor spaces look like, working to make them more nature-friendly and resilient, yet also engaging for children.

Instead of blacktop, steel, rubber and plastic, schools and their partners are installing trees and other greenery, boulders, decomposed granite, and structures made out of natural materials like wood and rope.

“We’ve taken measurements where the air temperature is 67 degrees and the black rubber was 162 degrees,” says Sharon Danks, CEO and founder of Green Schoolyards America, a nonprofit that works to create environmentally friendly schoolyards and collaborated on the Colene Hoose Elementary School project.

High heat isn’t the only reason schoolyards are getting greener. Research points to the various ways access to nature can benefit people, indicating its potential to lower heart rate, blood pressure and stress. High levels of childhood green space have been associated with a lower risk of developing various psychiatric disorders, and greenness has been linked to progress in working memory and attention among schoolchildren.

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Yet of the more than 90,000 public schoolyards in the U.S, most are not green spaces, according to nonprofit The Trust for Public Land.

For Chris Weiss, a teacher at New York City’s Stephen A. Halsey junior high and adviser for the school’s Green Team, transforming a 25-by-105-foot weed-filled garden into a nature-based project for students has been eye-opening. Each year, students can reinvent the space, most recently creating a food forest in the middle of Queens where they learn how to grow, harvest and prepare healthy food.

Over the years, Weiss has witnessed firsthand how allowing students to get their hands dirty outside and helping them learn they have the ability to grow and cultivate something can fuel their enthusiasm about changing other parts of their lives. He says he’s seen students go from getting sent to his in-school suspension program to getting straight As.

“I didn’t understand how powerful it would be,” Weiss says. “It completely changed students’ mentality.”

Still, being outside can take a toll, especially in a changing climate. Recent research from The Trust for Public Land found that 1.1 million public school students attended school in extreme heat islands, where average temperatures were 10 degrees or warmer than the surrounding town or city. More than 4 million students attended school in severe heat islands, where temperatures were higher by 7 degrees or more.

Overall, 36% of approximately 51 million public school students attended class in areas where the average temperature was at least 1.25 degrees warmer than the surrounding town or city, meeting the lowest criteria for a heat island.

That’s where the materials used to form a playground can help make a difference.

“When you build out of wood, you reduce the heat island effect, you change the temperature of a space,” Bienenstock says, “so we build out of logs, ropes and boulders with grade changes to different surfaces.”

Bienenstock’s company almost always plants trees at a site as well. In Normal, they planted more than 180 trees – including some older ones – to provide a canopy of tree cover.

Fifty years ago, Washington Elementary in [Berkeley, California](#), took a similar approach and had students plant trees around their play structures. Today, those mature trees provide shade for the structures, which are made out of conventional materials, and students can eat outside on many days thanks to the tree cover. The school is now a model for the [California Schoolyard Forest System](#), an initiative that Green Schoolyards America and its partners hope can be replicated across the U.S.

Key goals of the effort are “for schools to have a certain amount of canopy cover related for hands-on, nature-based learning and to improve the environment as a whole that children are exposed to while they’re at school,” says Julia Gowin, an urban forestry supervisor at the California Department of Forestry and Fire Protection, known as CAL FIRE, who is co-leading the initiative with Green Schoolyards.

Collaborators hope to plant enough trees by 2030 to eventually cover at least 30% of a school’s property in the areas used by children during the day. Supporting the effort, officials are awarding [\\$117 million](#) in state grant funding aimed at improving nature-based infrastructure and green space at schools.

“One of our big goals is to have some really good model projects that inspire others to do the same. There are over 10,000 K-12 public schools in California and this funding is going to touch less than 1%, so we really have a lot more work to do,” says Walter Passmore, state urban forester at CAL FIRE who is overseeing the grant program with Gowin.

Indeed, money is something many schools are in short supply of. In New York City, Weiss and his students operate the garden on a shoestring budget thanks to grants, donations and a lot of repurposing of materials. In [Illinois](#), the transformed schoolyard at Colene Hoose – set for a grand opening in September – was made possible with a \$5 million gift from the Jobson Family Foundation, tied to school alumnus Charlie Jobson. It was designed by landscape architect [Helle Nebelong](#).

“My hope is that the park will connect the kids to the historical landscape of Illinois and encourage them to be guardians of nature as they grow into adulthood,” Jobson says.

Federal legislation could help on the resource front. In May, Democratic Sen. Martin Heinrich of New Mexico reintroduced the [Living Schoolyards Act](#). If passed, the measure would set up a grant program to provide resources for schools nationwide to rethink their outdoor spaces.

Heinrich also introduced a living schoolyards bill last year, and though it did not make it out of committee, a spokesperson for the senator says “it is our hope this legislation is considered by the full Senate and adopted into law.

“The senator’s goal in re-introducing this legislation is to underscore the importance of these types of outdoor spaces,” the spokesperson says. He “believes that every child deserves an outdoor space that allows them to learn, play and grow, and this legislation is our opportunity to extend healthier and greener spaces to children in [New Mexico](#) and across the country.”

One of the hopes of the Colene Hoose project in Illinois is that other schools could take inspiration from it to transform portions of their own space, whether by planting trees, switching rubber ground surfaces out for wood chips, or replacing plastic play structures with natural elements like logs or boulders.

These types of transitions also can help expand the framework for student learning.

“We have to change the way we think about learning and being active on a school campus,” Gowin says. “When kids play in nature, they’re more active. They’re playing together more, they interact, they move, they climb. There’s all these things that are (beneficial from) nature-based learning and being active.”

Tags: children's health, elementary school, K-12 education