WHITE PAPER

ASSOCIATION FOR LEARNING ENVIRONMENTS
Enhancing the Educational Experience

Outdoor Learning

Leave the Classroom Behind

SPECIAL COVID-19 ISSUE

White Paper for the Association for Learning Environments

By Prakash Nair, AIA

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Association for Learning Environments
Outdoor Learning – Leave the Classroom Behind

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Introduction

As of this writing, almost all 76 million school-age children in the United States are locked out of school with prospects of returning in a fulltime capacity anytime soon dimming by the day. There is a common misconception that, as one of COVID-19's worst-hit countries, the U.S. is holding back children from returning even as other countries have reopened their schools. The reality is that almost a billion students in 143 countries will not be returning to school this fall.[1]

With COVID-19 seemingly here to stay, and pressure mounting for schools to reopen, there is now a serious move to take learning outside, as a way to maximize the number of students who can be in school at the same time. Social distancing is easier outside where space is not as much of a concern as it is within the confines of a classroom. It is likely that outdoor learning, until very recently a novelty, will soon become quite widespread.

There are many reasons behind the push to reopen schools and bring more children back. These must be balanced against the risk of propagating the virus as millions of students return to class. For example, New York City has decided that schools will not reopen if Coronavirus infection rates exceed 3%. Assuming that such safety parameters for community spread of the virus are met, and when schools do reopen, they can still do so only partially. Most schools will not be able to bring all students back on opening day because of the need for social distancing in the classroom and common areas occupied by students. Thus it is logical to ask how the problem of inadequate space might be mitigated by using outdoor areas for learning.

> *"The reality is that almost a billion students in **143 countries** will not be returning to school this fall.*

Outdoor Learning is Not New

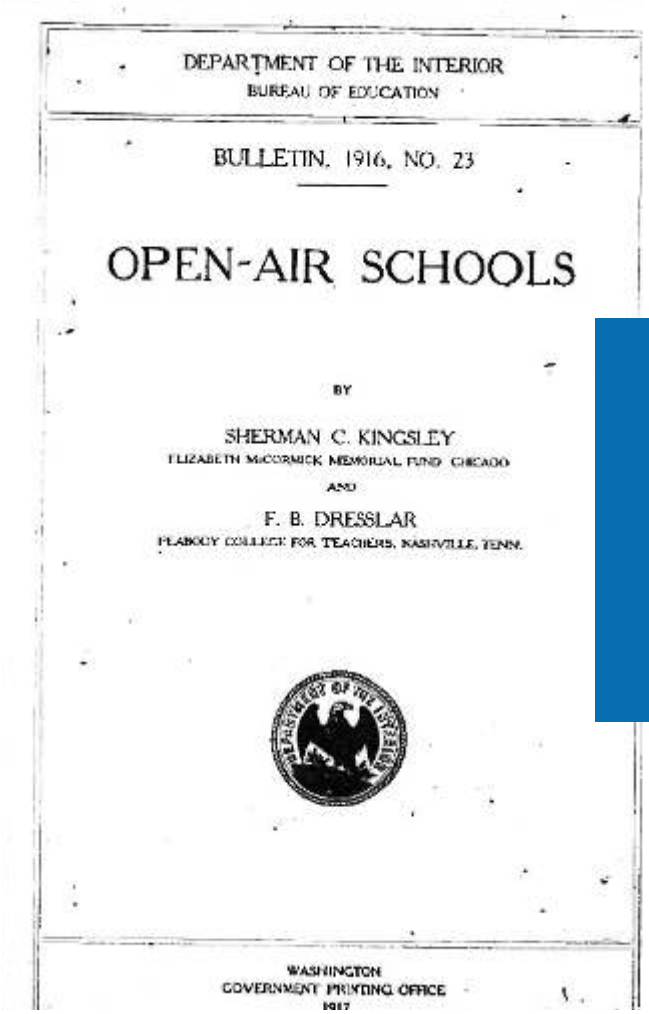
FIGURE 1

A "classroom on a ferry". This is how New York City responded to the tuberculosis pandemic in the early 1900's. This model of outdoor learning actually "worked" insofar as none of the children got sick. This model of simply taking indoor furniture outside so that the teacher could continue to hold court to a passive and captive student audience is no longer applicable in today's world and, yet, that is what many are schools now considering due to COVID-19 – to use the outdoors to do exactly what they had been doing indoors. This paper argues strongly against such an approach.

Bureau of Charities, via Library of Congress

The subsequent New England winter was especially unforgiving, but children stayed warm in wearable blankets known as 'Eskimo sitting bags' and with heated soapstones placed at their feet. The experiment was a success by nearly every measure — none of the children got sick. Within two years there were 65 open-air schools around the country either set up along the lines of the Providence model or simply held outside. In New York, the private school Horace Mann conducted classes on the roof; another school in the city took shape on an abandoned ferry."[2]

With "open-air" schools proliferating everywhere, the US Department of the Interior put out a bulletin on the subject in 1916.[3]



DEPARTMENT OF THE INTERIOR
BUREAU OF EDUCATION

BULLETIN, 1916, NO. 23

OPEN-AIR SCHOOLS

BY

SHERMAN C. KINGSLEY
ELIZABETH McCORMICK MEMORIAL FUND CHICAGO
AND
F. B. DRESSLAR
PEABODY COLLEGE FOR TEACHERS, NASHVILLE, TENN.

WASHINGTON
GOVERNMENT PRINTING OFFICE
1917

FIGURE 2

The previous Open-Air Schools initiative was backed by the US Department of the Interior. This 280-page manual was written as a guide for schools who wanted to take learning outdoors. At that time, the focus was still on "outdoor classrooms" which is also something this paper recommends against.

> *"Forest Schools" fully embrace the idea of outdoor learning for younger children.*

Since then, while outdoor learning has been celebrated at many schools, it has not caught on in a big way. Today, only a few schools have the outdoors as the central tenet of their learning philosophy. "Forest Schools" fully embrace the idea of outdoor learning for younger children. Rain or Shine Mamma is a group that promotes forest schools with two great books on the subject.[4] They note, "Researchers studying forest schools have found that outdoors, children hone their motor skills, engage in more creative play, have fewer conflicts, stay healthier, learn to be more independent and develop a compassion for nature and wildlife that is likely to last a lifetime.

The first U.S. forest school, Cedarsong Nature School, started in 2006. Today nature-based preschools in this country number in the hundreds. This growth is encouraging to all of us who care about raising children who are connected with nature!"[5]

Beyond school, the outdoors is a booming business. An entire industry (summer camps) has been built to take advantage of outdoor activities and, because of that, schools may not face as much resistance from parents to outdoor learning as they may have in the past.

Don't Simply Take the Classroom Outside

In spite of overwhelming evidence that being outdoors is good for children, outdoor areas in schools remain woefully underutilized. Even in the most crowded schools, during most of the school day, the outdoors are windswept deserts with hardly a student in sight. For ease of maintenance, much of the outdoor areas are paved, especially in urban areas most in need of green spaces.

It is tempting to see all the unused outdoor areas simply as an answer to the space crunch that schools are experiencing and use them to quickly provide more teaching areas. In other words, create more "outdoor classrooms." This bland approach that looks single-mindedly at the logistical challenge of "housing" more students is one that has its advocates, because it presents what is seemingly a low-hanging-fruit option.

A Fast Company article that makes a strong argument for outdoor learning falls prey to a distressing, but seemingly universal, mindset that real learning cannot happen unless students are sorted by age and confined to a classroom under the watchful eye of one adult who then orchestrates their every move.[6] The image (Figure Three) they chose to highlight outdoor learning could just as easily have been used to discuss indoor schooling in the 1950s.

FIGURE 3

This is the photo that Fast Company chose as its marquee image to showcase national efforts to take learning outdoors. It reinforces a shortsighted idea that outdoor learning is simply a stopgap measure in which classrooms are, literally, moved outdoors until children can be safely brought indoors again after COVID-19.

Photo: Morning Brew/Unsplash

FIGURE 4

Contrast this photo with Figure 3. What's good about it is the environment. Children have nature views, shade, and are breathing fresh air. A drum circle like this one in Florida teaches a skill while keep students active and engaged. This is much preferred to just taking a "class" outside so students can be lectured to.

The prevalence of the mistaken belief about bringing classrooms outside is reinforced in this article in the New York Daily News titled, *How to create outdoor classrooms: Maximize use of schoolyards to get in-person teaching to as many students as possible.*[7] This piece was written by the City's comptroller in what was undoubtedly a well-meaning but misguided attempt to commandeer outdoor spaces to increase teaching – as opposed to learning. The article notes that New York City has 29.5 million square feet of outdoor yard and physical education spaces at its 1,575 schools, "which would allow students to stay outside but still maintain easy access to bathrooms, handwashing stations and cafeterias." It ends with this call for action, "Education is the foundation of a healthy, equitable, and thriving city. Let's meet this moment with boldness and creativity." Unfortunately, there is nothing bold or creative about throwing kids outside into makeshift classrooms so that they can be taught the same boring content in spaces that are likely to be even more uncomfortable than the prison-like boxes within the school building itself. This may sound like a harsh assessment, but a rushed solution that could adversely affect the life of over one million children should not be sugar-coated. While this approach of grabbing whatever space is available to bring back more students may have had its place in 1907 during the height of the tuberculosis pandemic, we do have better options today.

> *.. there is nothing bold or creative about throwing kids outside into makeshift classrooms.*

So what's wrong with classrooms? That question is answered very simply – classrooms are obsolete. I wrote about this in Education Week a few years ago in which I noted, "The classroom is a relic, left over from the Industrial Revolution, which required a large workforce with very basic skills. Classroom-based education lags far behind when measured against its ability to deliver the creative and agile workforce that the 21st century demands."[8]

Outdoor Spaces are Therapeutic

Contrast the New York City proposal with what Green Schoolyards America is advocating. Their recent whitepaper on the subject of outdoor learning is titled, *A Proposal to Engage School Grounds and Parks as Strategic, Cost-Effective Tools for Improving Academic, Mental and Physical Wellbeing as Schools Reopen*.[9] According to Green Schoolyards, "Outdoor Spaces are Therapeutic. Students and staff may return to school with stress and trauma associated with isolation, uncertainty, and illness. To ease the burden, nature-rich outdoor areas identified and developed on or near each campus can provide quiet, reflective spaces to unwind and relax." Green Schoolyards is not opposed to the idea of "Outdoor Classrooms" but they would do it in a "nature-rich" environment, and that makes all the difference. Theirs is an approach of housing students outside as part of a holistic solution to student wellbeing as opposed to those who are simply looking for extra space so more students can attend school.

FIGURE 5

At most schools, such areas between buildings are left barren and untended. Here, at Corbett Prep School in Tampa, Florida, every available part of the outdoors is used to connect children with nature and encourage outdoor activities. It is a strategy that would also work well on tight urban sites.

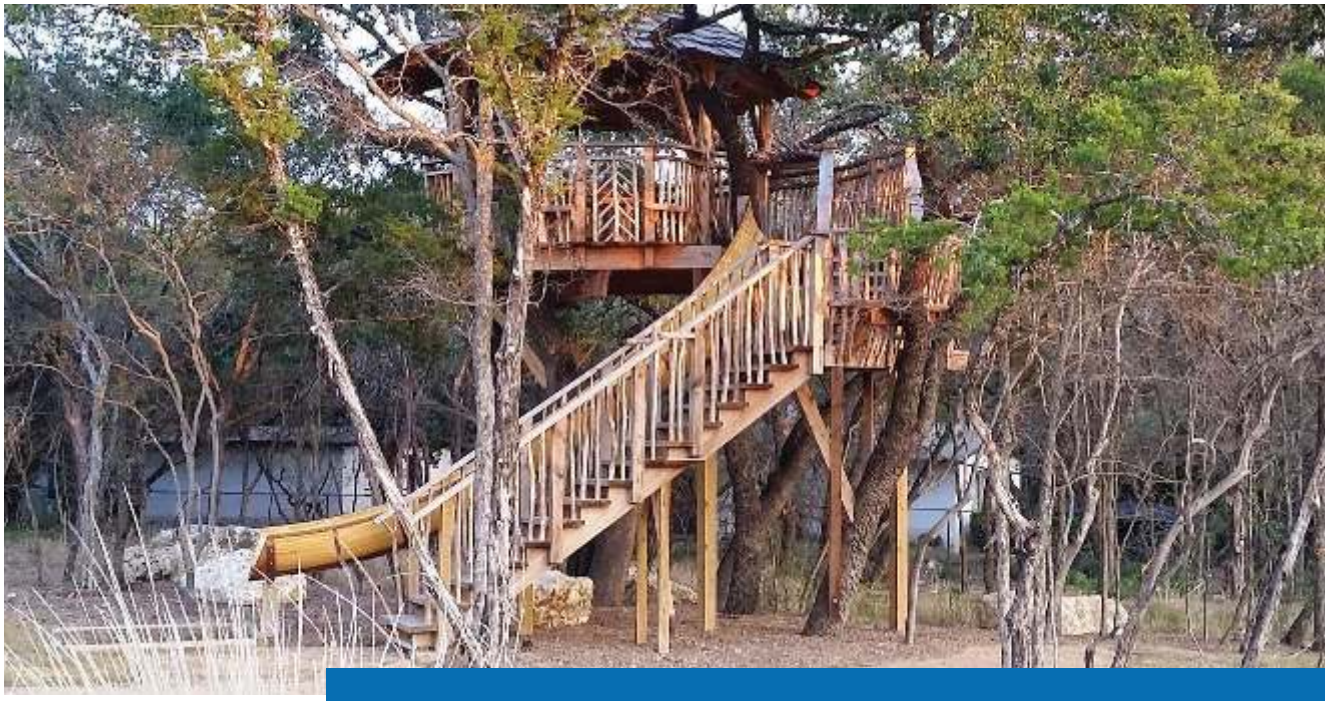


FIGURE 6

This treehouse at Anne Frank Inspire Academy in San Antonio, Texas, by famed treehouse master Pete Nelson makes an otherwise nondescript small school site special and has the potential to create many happy memories for the students who study here.
Photo: Prakash Nair

The Green Schoolyards white paper lists several reasons why the use of outdoor learning can mitigate the negative impacts of COVID-19 on:

1. Equity: Not everyone has benefited in the same way from online learning. The children most in need of help tended to be the ones who got it the least, and this trend will continue without serious interventions

2. Learning: Even for those students who successfully made the switch to the online model, disrupted schedules, distractions and the unavailability of face-to-face coaching have adversely affected their learning

3. Physical Health: With most of their time spent in front of a computer screen, student stuck at home have had far fewer opportunities for physical fitness than they would have had at school

4. Mental Health: As with the equity issue above, students who most need the structure and caring provided by the adults and their friends at school miss out the most when school is not in session

5. Economic Health: Many parents are unable to work and take care of young children who would otherwise have been in school. This is a significant segment of the population whose financial struggles carry over into the economy at large

6. Education Workforce: The education sector employs many tens of thousands of teachers, administrators and staff. Even though a majority of teachers may be able to retain their jobs until schools reopen, many others not considered "essential" will lose their jobs and contribute to the overall decline of the national economy.

Will Older Students Be Deprived of a Quality Education Outdoors?

There is a prevalent belief that older students cannot afford the luxury of puttering around outside when they have to be doing "serious" work inside with teachers. Before we look at how the serious work that high schoolers need to do may be better accomplished outside, let us dispel the myth that they are getting a lot of benefit from their indoor classroom setting.

"Classrooms are based on the erroneous assumption that efficient delivery of content is the same as effective learning. Environmental scientists have published dozens of studies that show a close correlation between human productivity and space design. This research clearly demonstrates that students and teachers do better when they have variety, flexibility, and comfort in their environment—the very qualities that classrooms lack."[10] Content knowledge that is disproportionately emphasized during high school can be more easily acquired online. In the online world, high-schoolers can learn at their own pace from their own classroom teacher or choose from among hundreds of content specialists, colleges and universities who offer free online courses. For all the in-person experiences that older students need, the outdoors provides a much better alternative than classroom learning. This includes things like research, learning with mobile technologies, team collaboration, cooperative learning, one-on-one time with the instructor, hands-on learning and environmental projects.

> *"Classrooms are based on the erroneous assumption that efficient delivery of content is the same as effective learning.*

Outdoor Learning Fights Nature Deficit Disorder[11]

In an influential New York Times Opinion piece, Timothy Egan credits Richard Louv with coining the term "Nature Deficit Disorder" and cites Louv's 2005 book, Last Child in the Woods, which says that "kids who do play outside are less likely to get sick, to be stressed or become aggressive, and are more adaptable to life's unpredictable turns."

My recommendation that learning spaces should be connected visually and physically to nature is supported by Kaplan and Kaplan's Attention Restoration Theory. This theory provides a framework for identifying environments with "soft fascinations" that are restorative and beneficial for cognitive performance. Soft fascinations are scenes or objects that one can observe with effortless attention, for example, leaves rustling in the wind, water running over pebbles in a creek or clouds slowly moving in the sky.[12]

> *"Soft fascinations are scenes or objects that one can observe with effortless attention.*

Outdoor Learning in Urban Areas

Even though children in urban areas are more likely than suburban or rural children to suffer from nature deficit disorder, urban schools tend to have fewer opportunities for sending students outdoors, in communion with nature. Many urban sites are so highly built up that they leave little room for green areas and restful outdoor zones. However, with a little imagination, underutilized areas can be converted at minimal expense to serve outdoor learning activities.

My advice to urban schools is to think small, as in a small vegetable patch, a small fishpond, a small seating and reading area, or a small fountain. Where there is, literally, no room on the site to locate outdoor learning activities, consider using an available verandah or balcony or the roof of the school building for learning activities. Rooftop learning may include vegetable gardens, weather stations, and canopied areas for individual and group seating for activities such as reading, research, independent study, and team collaboration.

FIGURE 7

This verandah adjacent to the art room at DSB International School in Mumbai, India, set in a dense urban area shows that outdoor learning in a green setting is possible almost anywhere with some imaginative design.

> *My advice to urban schools is to think small, as in a small vegetable patch, a small fishpond, a small seating and reading area, or a small fountain.*

FIGURE 8

Here at St. Martin de Porres High School in Cleveland, Ohio, an urban garden is maintained by the students for the benefit of the community.

What Does The Research Say?

Those who vigorously demand that children return to school ignore the reality that the design of traditional school buildings goes counter to everything we know about child development, social and emotional growth and personal identity. All these needs are subsumed by the institutional goals of efficient management of children and delivery of content. The classroom is the result of this unhealthy focus on efficiency, but the opportunities to find balance by going outdoors was always there. With COVID-19 bringing outdoor learning to the forefront of discussions regarding school reopening, questions will be asked about its efficacy and whether we are shortchanging children's learning by taking them out of the classroom.

Keeping aside the benefits of bringing children safely back to school already discussed in this paper, let us look at what the research is saying about outdoor learning. Overwhelmingly, the evidence supports the incorporation of outdoor learning as an integral part of every student's school day. Here is what we know:

1. Children with symptoms of ADHD are better able to concentrate after contact with nature[13]
2. Play in a diverse natural environment reduces or eliminates bullying[14]
3. Nature helps children develop powers of observation and creativity and instills a sense of peace and being at one with the world[15]
4. Early experiences with the natural world have been positively linked with the development of imagination and the sense of wonder[16,17]
5. Wonder is an important motivator for lifelong learning[18]
6. Children who play in nature have more positive feelings about each other[19]
7. A decrease in children's time spent outdoors is contributing to an increase in myopia in developed countries[20]
8. Outdoor environments are important to children's development of independence and autonomy[21]

> *"Overwhelmingly, the evidence supports the incorporation of outdoor learning as an integral part of every student's school day.*

FIGURE 9

This is a generously-sized vegetable garden at Learning Gate Community School in Lutz, Florida, where students do most of the planting and tending. A substantial part of every student's day at this school is spent outdoors and this was true even before the COVID-19 pandemic.

Does Outdoor Learning Support Proven Educational Strategies?

There are a few educational strategies that many of the most progressive schools and school districts in the U.S. and around the world have endorsed in principle and, to a lesser extent, in practice. It should come as no surprise to anyone that gains in these areas have been hard fought. Consequently, a fair question that should be asked of any change being forced upon educators by COVID-19 is if it will endanger the progress that has been made to date. In this paper, I will show that outdoor learning poses no threat to educational progress. In fact, should it emerge as a central theme in education, outdoor learning would have the potential to enhance, accelerate and more equitably distribute the benefits of a relevant, well-rounded education to all students.

The list below includes five key strategies championed by progressive educators everywhere in public, private and parochial schools and discusses how they are all enhanced when children are permitted to learn outside.

FIGURE 10

If an outdoor classroom is essential, then a green amphitheater like this one at Swarthmore College is an elegant solution, since it can permit social distancing and allow for many more modes of learning, such as music, dance and performance, student presentations and quiet reading. It is also a healthy, comfortable and inspiring space with lots of fresh air. Compare this to a traditional indoor classroom!

Photo: Swarthmore College

Student-Centered Learning: The four elements of student-centered learning include **1)** Personalization: It is obviously easier to personalize learning in an environment where students don't have to all be doing the same thing at the same time – easier outside than in a classroom; **2)** Individual Mastery: Whereas in the classroom, students have fewer ways in which to demonstrate their understanding of and aptitude for a subject, the outdoors provides a richer palette of learning modalities to enable students to demonstrate their in-depth grasp of a subject or topic; **3)** Anytime Anywhere Learning: The traditional school building puts mobile technology into the hands of stationary students. With more space to move around, students will use technology when, where and as needed to make learning truly anytime anywhere and; **4)** Student Ownership and Agency: The space limitations imposed by classrooms force teachers to standardize lessons in ways that leave little room for individual preferences. Outside, students have room to spread out and do different things. Having outdoor space available for learning means a broader scope and inspiration for individual students' customized short-term and long-term projects.

Technology Integration: The use of technology can be supported in outdoor spaces by providing subject matter for photography and video narrative that is very limited in a classroom setting. With the increasing range and bandwidth offered by wireless networks along with reduced costs, shaded outdoor areas adjacent to indoor areas can be used to work with mobile technologies like laptops, tablets and smart phones. Outdoor learning also exposes students to technologies they would not be able to use within a classroom such as survey instruments, water and soil testing equipment, and even some older "technologies" like sundials and weather vanes.

Flexible Scheduling: Not being at the mercy of a fixed schedule means that a student who is passionate about a particular project is not always forced to interrupt his or her work because the bell has rung at the end of the 50-minute period. Outdoor settings are much better for hands-on projects that are not as time-bound as fixed subjects offered at fixed times. Flexible scheduling that is based on students moving on only after having achieved mastery as opposed to simply having served time in class is more practical in hands-on settings like the outdoors.

Teacher Collaboration: The creative use of a permeable indoor-outdoor space can allow two teachers to work together, for instance where one teacher is working outside with a small group of students, conferencing or providing seminar-style instruction, while the other supervises students at work indoors. Beyond that, with hands-on learning more easily done outdoors, two or more teachers can create interdisciplinary projects and work collaboratively throughout the semester.

> *Space limitations imposed by classrooms force teachers to standardize lessons in ways that leave little room for individual preferences.*

A Positive School Climate: Functional and beautiful outdoor spaces can help foster a positive school climate because they help students relax and reflect. Robin C. Moore's 1996 study revealed that children who play in nature have more positive feelings about each other.[22] So re-vegetating and enhancing the campus's natural features can be important for social and emotional development.[23]

Connection to the Environment: Today, more than ever, connecting to the environment is an important educational goal. This goal is most strongly supported by functional outdoor learning spaces. Connecting indoor spaces to the outdoors is just one way to make children more aware of their natural environment. Preserving and enhancing the campus's natural features including topography, watercourses, trees and shrubs, is another. These are only meaningful to students if they have a hand in the upkeep and maintenance of the school's outside environment. This can be effectively done by incorporating environmental studies into the curriculum as opposed to being presented as an after-school, extracurricular activity.

Designing Outdoor Play Areas

Outdoor play has been one of the most unfortunate casualties of COVID-19. For many children, schools had provided their only access to outdoor play and, during the pandemic, play has been replaced by time in front of a computer, phone or television screen. We intuitively know that all human beings have an intrinsic desire to play, but why is it important?

Play is important because it's how we've evolved to learn. It is also increasingly important because of rising rates of obesity among children. A 2012 survey of children by the Heart Foundation of Australia found that the kinds of play features children want are not overly manicured, instead they're a little scruffy. "Hills to roll, run and slide down, boulders and tunnels to scramble around, branches and leaves with which to build tree houses and cubbies, water features and community art. "They also want to be challenged by their play areas sometimes, to be a little bit frightened" according to a spokeswoman for the Heart Foundation. "They want to be able to build and construct things, so we need to provide moveable parts, debris, to not blow all the fallen leaves and twigs away with a blower but rather plant trees that drop their leaves."[24] It's quite a different picture from the ubiquitous, plastic-molded, slippery slide and monkey bars that you'll find in most playgrounds.

> *Play is important because it's how we've evolved to learn.*

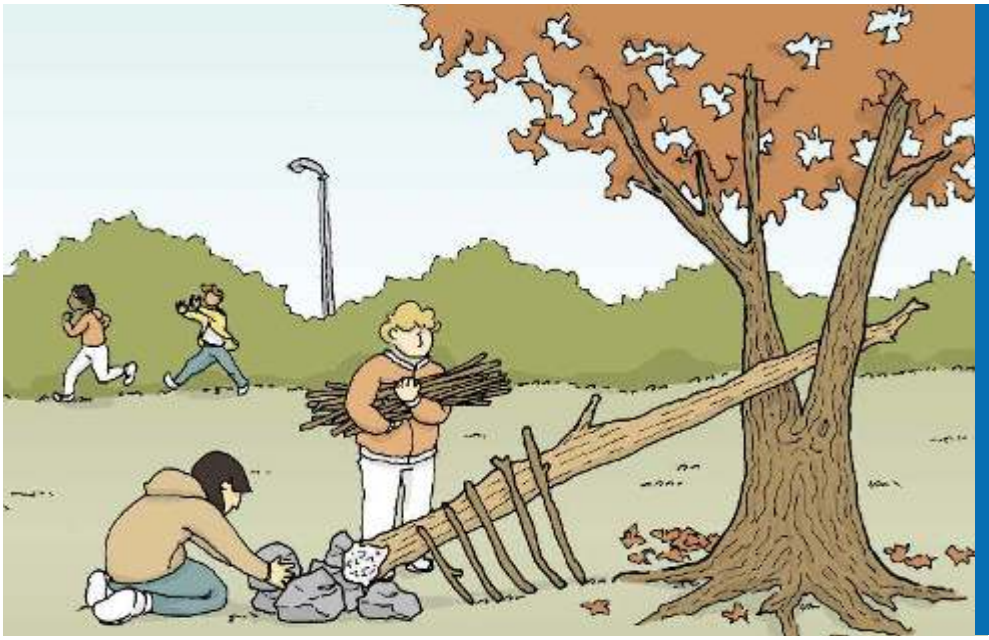


FIGURE 11

Designing for Play: An unstructured area with an assortment of natural elements inspires more creative play than a structured playground does.

Play spaces should pose open-ended questions. They should prompt imaginative responses. They should foster a connection between the players and the natural environment. If you are keen to invest in improving your school's play spaces, before jumping to choose a ready-made climbing gym from a catalog, consider how much better you could build it from scratch. There is great inspiration to be found online – several bloggers collect pictures and reviews of outstanding play spaces from around the world. Employ a professional designer if you can, but more importantly have students participate in the design process, and have your professional designer work alongside the students.

How Should Areas for Fieldwork be Designed?

School design needs to support current education literature on project and experiential learning that argues for the importance of hands-on, active, lifelong learning. "Fieldwork" is a word used to describe the firsthand collection of data through sensory observation in an urban, rural or natural environment. It could be as simple as two-year-olds feeling the difference between sand, mud and snow on their fingers, or five-year-olds counting the number of trees on the campus, or by ten-year-olds filming the nesting habits of a bird. In other words, fieldwork is very important and schools need to be designed to support it.

Design for fieldwork on campus largely means maintaining and enhancing the special features of the campus's natural environment. Water courses are a wonderful asset for fieldwork and can be re-vegetated to provide a habitat for native birds and animals. Wooded areas are all too often demolished to make way for development, but they make great learning places. In fact, proponents of the (German) Waldschule (Forest School) movement specifically seek out forests in which to base outdoor classrooms. Don't be intimidated by the word "forest." On many smaller urban sites, a small grove of trees can support its own ecosystem that is worth studying.

FIGURE 12

Designing for Fieldwork: Woods and ponds to explore and study wildlife are of more interest to students than large stretches of asphalt or grass.

Even without these kinds of environments on campus, a school may be able to take advantage of adjacent and nearby public parks, and sites can be chosen for new school developments that take this into account.

In the early childhood years, outdoor fieldwork looks very much like play, as toddlers and preschoolers are given time and space to freely explore and observe, using all their senses, the qualities of the natural environment. Through the elementary years, inquiry-based study of the natural environment can begin with the children's developing understanding of the observable art and science present outdoors. School designers who understand that such activities can be a valuable piece of every child's education will be able to work closely with educators to design suitable outdoor learning environments.

Students in the Environment Club at Scott Creek Primary School in Adelaide, Australia, have developed a nature discovery trail in an adjacent forest (or bushland, as it's referred to locally), for other students as well as members of the local community. Each station on the trail explores an element of the bushland, sharing facts about the location and explaining the group's revegetation project.

Fieldwork tends to be quite active, not sedentary, and as such can be supported in all but the most hostile climates, on all but the hottest or coldest 10% of days.

> *"Fieldwork" is a word used to describe the firsthand collection of data through sensory observation in an urban, rural or natural environment.*

Make Room for The Garden[25]

> *"All schools should make an attempt to have a kitchen garden.*

Adults lament the fact that so much of our children's time is spent in front of a screen — these include phones, tablets, computers, and TV. This has come at the price of them spending more and more time indoors. By and large, schooling is also an indoor activity, but we recommend that every effort be made to move learning activities outdoors. One natural fit for an outdoor activity is gardening. All schools should make an attempt to have a kitchen garden. Where land and weather permit, schools can also lead efforts to build and maintain community gardens.

This is an activity that students tend to enjoy. It also comes with numerous ancillary benefits such as breathing fresh air, becoming more environmentally conscious, becoming more likely to eat healthy, organic fruits and vegetables, becoming more aware of good health and nutrition, being more physically active and learning about the benefits of teamwork and community building. Look for partnerships with local organizations to help your school start a vegetable garden. In the words of a Montreal-based organic gardening group, "Imagine your schoolyard transformed, filled with fruit trees, berries and perennial vegetables. Transform your underused space into a positive space to connect and learn about plants and nature.

Children get to learn about nature, all while learning to care for the plants and each other. They discover where food comes from, how it grows and taste the fruit of their labors. Treat their sweet tooth to the real sweets of nature, strawberries, raspberries, and blueberries. Plant a fruit tree in your school yard. Integrate the garden into your cafeteria, into your biology class, or gym class, make healthy living and eating a visible priority at your school."[26]

FIGURE 13

Collingwood College in Melbourne, Australia, pioneered the Stephanie Alexander Kitchen Garden Project where children can plant, grow, harvest, cook and eat organic foods.

In a similar vein, Growing Together, an Oakland, CA-based nonprofit organization, provides support for underserved communities and schools using organic gardening as a tool for education, healthy living, and community building.[27]

Taking Care of Animals[28]

FIGURE 14

Taking care of animals in school can be a good thing for students. It teaches them empathy, responsibility and discipline, and the bonding with animals that children naturally enjoy.

Photo: Joni Mulvaney

Outdoor areas may be suitable at many locations for maintaining a chicken coop or even managing a small petting zoo. There are various ways in which taking care of animals in school can be a good thing for students. It teaches them empathy, responsibility, and discipline, and the bonding with animals that children naturally enjoy.

Despite their obvious benefits and the great affinity that children tend to have with animals, programs where children get to work with or take care of animals is the exception rather than the rule. The Ballarat Grammar School Farm Program is one worthy of emulating. Here, students spend most of their 4th grade year working on an active farm. This program shows how much of the learning that we believe can only happen in a classroom is actually better delivered in nature where students are breathing fresh air, learning valuable life skills, being more active physically and taking care of animals.

> *"There are various ways in which taking care of animals in school can be a good thing for students.*

How About the Weather?

> *"Weather is not a deal-breaker when it comes to outdoor learning.*

Weather is not a deal-breaker when it comes to outdoor learning. Of course, most of what is being described in this paper would be easier and more logical at times when the weather is pleasant --- which is the case for most of the school year in many parts of the United States and around the world. However, other than when there is an extreme weather emergency such as a storm or blizzard, threat of tornadoes, a deep freeze, or unusually hot temperatures, outdoor learning should not be a problem. Some adverse weather conditions can be mitigated with measures such as providing shade structures and ensuring that all children wear appropriate clothing.

FIGURE 15

Outdoor learning is an integral part of each student's school day at the International School of Dusseldorf, Germany. At this school, students go out every day regardless of the weather to participate in a wide variety of engaging learning activities. ISD subscribes to the philosophy that "there is no such thing as bad weather, only bad clothing."

Photo: Prakash Nair

FIGURE 16

Here is a picture that shows why "there is no such thing as bad weather only bad clothing." Children playing on a snowy day at Watson School, Canada. Photo © Watson School, Canada.

Outdoor Structures – Short and Medium Term Solutions

The downside to some of the solutions presented here like tents, domes and inflatables is that they do not provide the same level of acoustic comfort or climate control that are possible in indoor areas. That is why schools looking for spaces to house activities that would normally be conducted indoors like quiet study, lectures, collaborative work and presentations, may be better off using existing gymnasiums, cafeterias and libraries. The temporary outdoor spaces would then be more appropriately used for the noisier activities like eating and sports.

Shade Trees: Setting up a learning activity under the shade of an existing tree is the least expensive solution for taking learning outside. If there is a dearth of trees on existing school grounds, it is never too late to plant some. Schools are likely to be around a long time and certain species of trees grow fast enough to provide good shade within a few years.

Awnings: A simple way to extend learning into areas immediately adjacent to the school building is to strategically install awnings in locations that would remain in shade during most of the school day. Awnings expand learning spaces significantly and are suitable for a wide variety of outdoor activities from art and science projects to outdoor eating.

Tents: Many schools are used to the idea of erecting tents outdoors for short-term gatherings like graduations. The advantage of tents are 1) Speed and ease of installation; 2) Relatively low cost; 3) Versatility – can be used for a variety of learning and social activities; 4) Can be spread over a generous footprint providing substantial added usable area. If tents are used, it is important that they are sufficiently open as to allow abundant daylight. Translucent materials would also work well to daylight the space without glare.

Sheds: Sheds have the same advantages as tents but they are a bit more permanent and can be heated and cooled. They are more expensive to build and also take longer to install. Sheds may also need special building permits.

Traditional Greenhouses: These are basically glass sheds with a specific purpose. Tents and sheds are more about utilizing the outdoors to extend available semi-indoor spaces. On the other hand, greenhouses could more logically be considered an active outdoor space since they allow students to be working with natural elements in a fully daylit environment even in adverse weather conditions. Greenhouses are about "bringing the outdoors in" and represent a desirable use of outdoor areas.

Geodesic Domes: Geodesic domes provide an elegant lightweight building system that allows larger footprints to be enclosed without obstructions than traditional sheds. They are also more attractive and can be used either as a greenhouse or for any other kind of outdoor learning activity.

Inflatable Structures: These structures are more suitable for active use because of their poor acoustic quality. They tend to be used in more extreme climates that require heating in the winter while keeping out rain and snow.

How Much Money is Needed?

> *"The key is to adopt the least interventionist approach to take advantage of outdoor settings.*

This paper provides a wide range of suggestions with differing budget needs for the use of outdoor learning areas. The key is to adopt the least interventionist approach to take advantage of outdoor settings while providing great places for teaching and learning.

Any solution that entails the installation of a temporary or semi-permanent structure such as a tent, shed, dome or inflatable will cost money. Costs are also impacted by the extent to which efforts are made to "condition" inside air. With COVID-19, the best solution is to use as much fresh air as possible with passive heating and cooling. It would be prohibitively expensive to install a forced air heating or cooling system that will need to have all the safeguards in place so as not to spread viruses like COVID-19. Without such technologies in place, the virus could travel via the air handling system across the entire enclosed space and vastly increase the possibilities for infecting large numbers of occupants.

A New Curriculum to Take Learning Outside?

The simple answer to this question is yes! Outdoor learning expands opportunities to implement a more student-centered and hands-on curriculum. To understand, let us look at the three kinds of curriculum. They are: **1)** Subject centered; **2)** Learner Centered and; **3)** Problem centered.

Most classroom-based schools prefer the subject-centered curriculum model because of the relative ease with which it can be delivered. The physical constraints presented by different teachers in different rooms, the lack of adequate space within classrooms and the regimented ringing of the bell makes it very difficult to implement a true learner-centered or problem-centered curriculum. Further exploration of these three curriculum types within the context of what any particular school may be doing is an important pre-condition to taking learning outside.[29,30]

FIGURE 17

Chess as Outdoor Theater. Integrating math, social learning, focus, and being active outside. Kneeler Design, Victoria, Australia.

Photo: Silvi Glattauer

FIGURE 18

Designing for "inside goes outside": A variety of outdoor seating options encourages students to read and study in the fresh air and sunshine.

FIGURE 19

Creating outdoor learning experiences does not need to represent a great expenditure of funds as seen by this modest renovation at Hillel Academy, Tampa, Florida, in which a simple wood trellis provides shade and a quiet place to study between two buildings.

FIGURE 20

This image, also from Hillel Academy, shows an even less expensive option of simply installing a lightweight "sail" to bring shade to a deck adjacent to a learning commons.

How About Professional Development?

Schools learned the hard way with online learning. A vast majority of teachers (83%) found the transition from in-person to online teaching difficult. Given the speed at which COVID-19 led to school closures it is understandable that everyone, including teachers, was caught off guard. Even if schools had the resources, there simply wasn't enough time to reexamine the curriculum and offer teachers the help they needed to move all teaching and learning online.

The same is true with outdoor learning. The thesis of this paper that the outdoors provides many rich opportunities for learning requiring a rethinking of both pedagogy and curriculum. It follows that teachers will need appropriate professional development to transition properly to a model in which students move freely between indoor and outdoor spaces.

> *"Given the speed at which COVID-19 led to school closures, it is understandable that everyone, including teachers, were caught off-guard.*

Professional development efforts should focus on how outdoor learning experiences can support a student-centered, and problem-centered approach to learning. Training should help teachers with; **1)** Working as a team; **2)** Tailoring work for students so that it can be personalized; **3)** Creating an assessment system that measures process and progress and also soft skills like social and collaboration skills; **4)** Encouraging the design and deployment of interdisciplinary projects and problems; **5)** Looking at the particular characteristics of each outdoor locale that is available in order to create assignments and activities that maximize that particular location's learning potential; **6)** Ensuring that students are partners in the process having a say in what, how and where they learn.

> *"Professional development efforts should focus on how outdoor learning experiences can support a student-centered and problem-centered approach to learning.*

Building Partnerships

> *"The good news is that schools don't need to do all this on their own.*

The good news is that schools don't need to do all this on their own. This is a perfect time to partner with available public, private and community organizations who may have good experiences with outdoor learning.

Larger towns and cities will have more opportunities to find local partners, but even small towns can benefit from regional and national initiatives. A great example of this is the National COVID-19 Outdoor Learning Initiative[31] led by Green Schoolyard America in partnership "with three other organizations in the San Francisco Bay Area, the San Mateo County Office of Education, the Lawrence Hall of Science museum in Berkeley, and the environmental education nonprofit Ten Strands."[32]

Outdoor Learning – During and After COVID-19

> *Enforcing social distancing, particularly for the younger grades, will be very difficult for teachers.*

As of this writing, the pressing issue for schools is logistical – how to bring children and teachers back safely in the midst of a pandemic. That is the primary lens through which outdoor learning opportunities is likely to be viewed.

Social Distancing Hard to Do in Schools: Enforcing social distancing, particularly for the younger grades, will be very difficult for teachers. No teacher wants to be cast in the role of a "warden" constantly monitoring children and making sure they do not get close to each other. From a practical standpoint, this is nearly impossible to sustain for any length of time. Yes, the outdoors provides more opportunities to maintain social distance but, even here, teachers will have to severely limit what children can do. The end result will be more overt teaching and less student participation.

This problem can be addressed (both indoors and outdoors) by selecting the "bubble" or cohort option where groups of students are kept together at all times and do not mingle with other cohorts. With the cohort system, different groups of students can occupy different sections of the outdoor learning areas so that they do not come in contact with each other. Under this system, social distancing would be unnecessary and school as we know it can continue unimpeded. Cohort-based groupings actually make the imperative for outdoor learning even more urgent, because, otherwise the temptation would be to keep groups of students trapped in their classrooms all day so as to prevent them from coming into contact with students from other groups. This would put enormous strain on both teachers and students and wont be tenable in the long run either.

At the start of this paper we saw how this kind a single-minded focus on logistics as opposed to what is good for children will result in solutions that provide, at best, a band-aid fix as "classrooms", literally, move outside as was the case with the previous pandemic in the early 1900s.

We can do better. Yes, it may take a little longer to come up with the right solutions but the learning benefits will be substantial. More important, changes to the way in which our children are educated that incorporate rich outdoor learning experiences can and should continue beyond COVID-19. To cash-starved communities who are grappling with the challenges of growing enrollment and inadequate space, outdoor learning can provide much-needed extra space at very low cost. The good news is that, far from being a compromise, this approach will actually enhance learning at all levels. That is why every school and school district, regardless of its financial resources, should make outdoor learning an integral part of its curriculum.

> *Cohort-based groupings actually make the imperative for outdoor learning even more urgent.*

Where to Start?

A good place to start would be to distribute copies of this paper to the wider school community to build support for outdoor learning. The various resources listed at the end of this paper can help build the case to take learning outside.

With everything else they have to worry about, educators shouldn't have to figure out exactly how to make this happen. That is why the process should be led by a professional architect or landscape architect with impeccable educational credentials. They should be teamed up with an internal Outdoor Learning Leadership Team (no more than 10 to 12 people) including representatives from educational leaders, Board members, teachers, students, parents, and benefactors from local business and community organizations.

> *"With everything else they have to worry about, educators shouldn't have to figure out exactly how to make this happen.*

The process itself will have these essential steps:

Discovery: Through a series of remote meetings and workshops and at least one or two in-person visits, the following information will be collected: a) What is the current situation with regard to plans for reopening school(s); b) what are the available resources and opportunities for outdoor learning; c) what are the community's aspirations and educational priorities; and d) What is the available budget and how much can be raised in the short, medium and longer (two-to-five-year term)?

Open Space Efficacy Assessment[33]: Today, there are several sophisticated space assessment tools that can be used to provide a quick summary regarding the potential of each school's outdoor learning opportunities. These tools can be fully customized to meet each school's specific situation. The purpose of the assessment is to create a "gap analysis" between what exists today and what it will take to achieve the educational institution's educational goals.

Assessments will provide both a qualitative review of the outdoor spaces that are available as well as a numeric "score" between 0% to 100% for each school to indicate the current quality of its outdoor learning potential. Naturally, most schools that have not already incorporated outdoor learning as an integral part of its curriculum will score low on this measure. The good news is that as efforts get underway to take advantage of the available opportunities – some without the expenditure of any funds at all – the outdoor learning score will go up. Naturally, as the school begins to implement its strategic plan (below), it will start to see dramatic improvements in the outdoor learning assessment score – thus providing a concrete measure and reassurance to all stakeholders about the success of their efforts.

Strategic Plan: This will vary based on whether or not the effort is for a single school or a district-wide initiative. The strategic plan will flow naturally from the results of the Discovery and Assessment steps noted above. It will provide all the information needed to implement the decisions made by the educational leadership team.

School-Based Master Plans: This is the "design" of the outdoor learning initiative. It will include two parts – the physical elements that will be addressed at each school and the educational components such as changes to the curriculum and professional development plan. The Master Plan will also include a schedule for the changes and a phasing plan assuming that some of the more expensive elements of the plan may take longer to build and deliver.

Implementation: This step includes the actual work needed to make selected outdoor areas available for use as planned. The extent of work needed including any temporary structures and landscaping will depend upon the decisions memorialized in the strategic plan.

Post Occupancy Assessment: The same assessment tools used to benchmark the school site at the start of the process will be used periodically to measure progress as each phase of the project is completed. This measure will serve as a formative tool to continuously improve teaching and learning in the selected outdoor areas.

Conclusion

COVID-19 has been a nightmare for entire societies that are in disarray and schools have been among the hardest hit insofar as they are, rightfully, more cautious about reopening. At first, there was hope that it would all be over by the summer of 2020 and things, including education, could return to normal by the fall. Indeed, a few countries have returned to some semblance of life before the pandemic. In the United States, the day when full victory from the pandemic can be declared maybe many months or even a year or more away. Even after a full return to normalcy, the social and emotional scars are likely to take a long time to heal fully. That is all the more reason why outdoor learning initiatives such as those described in this paper are important. This can be the real and lasting legacy that future generations of children living healthy, balanced lives and fully enjoying the outdoors will remember when they look back at the COVID-19 pandemic of 2020.

> *"This can be the real and lasting legacy that future generations of children living healthy, balanced lives and fully enjoying the outdoors will remember.*

About the Author

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Prakash Nair is a world-renowned architect, futurist and the Founding President & CEO of Education Design International. Over the past 20 years, Prakash and his colleagues have worked on the development of innovative schools in 52 countries on six continents. Prakash has won many international awards including the A4LE MacConnell Award. This is the highest honor worldwide for school design.

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About A4LE
(The Association for Learning Environments)

The Association for Learning Environments is a professional 501 (c)(3) non-profit association whose sole mission is improving the places where children learn.

History:
The Association for Learning Environments was first established in 1921 as the National Council on Schoolhouse Construction (NCSC) then becoming Council of Education Facility Planners International (CEFPI) in 1971. It took its current name in 2015.

Mission: Leading innovation at the intersection of learning and place.

Vision: A world in which place is a catalyst for inspired learning. Connected professionals imagining, promoting, and realizing that vision.

FIGURE 21

At the American school of Bombay, on a tight urban site, the narrow area between the building and the fence has been appropriated for play-based learning for very young children. Most schools have opportunities to turn unused spaces into effective, functional areas for active learning.

Endnotes

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FIGURE 22

At the American Embassy School in New Delhi, India, an interior courtyard has been transformed into a learning terrace whose micro-climate is moderated by shade and lots of greenery.

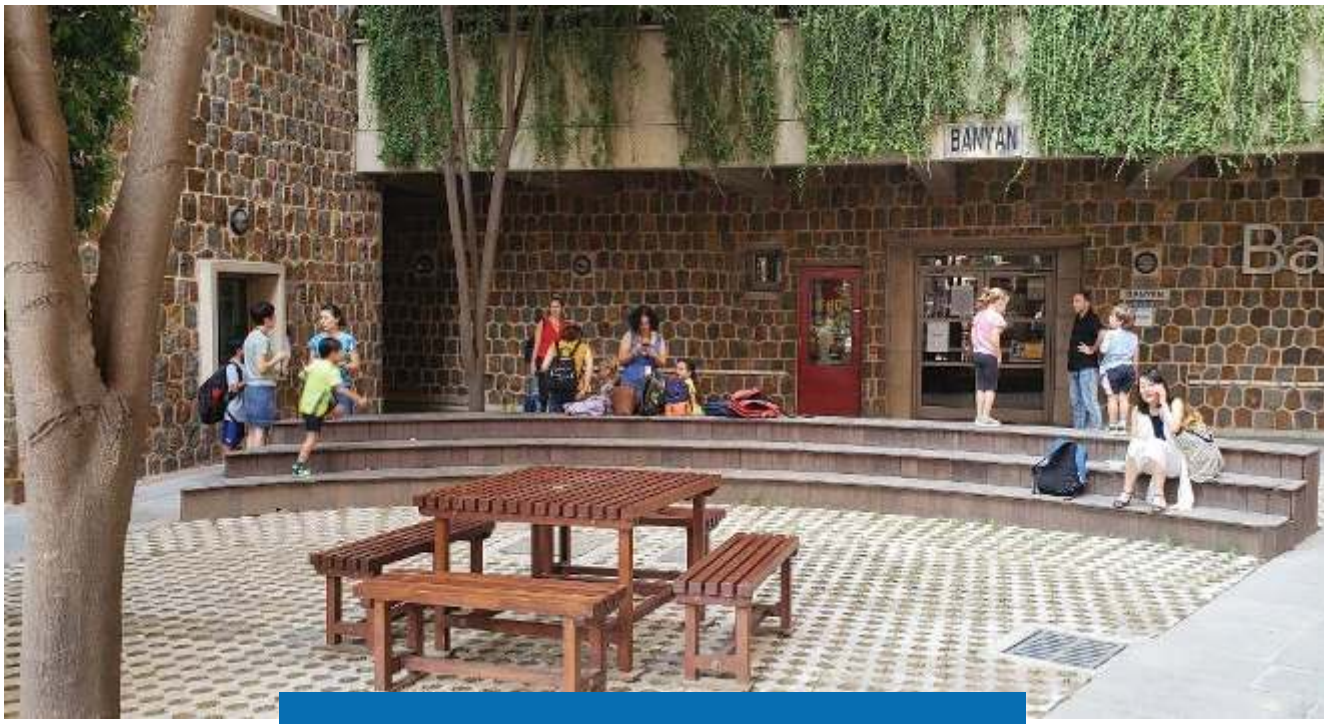


FIGURE 23/24

While green amphitheaters are the most desirable, more modest ones like these paved examples can also work if they are adequately shaded.

FIGURE 25

Among the many ways in which outdoor areas can be used, a logical one is for casual eating. As with most other outdoor activities, shaded areas work best for outdoor eating.

FIGURE 26

There are no real limits on the learning activities that can be conducted outside. Here is an example from Riverside School in India of students doing an outdoor art project.

FIGURE 27

Table surfaces that can be easily cleaned are more suitable for outdoor projects. This example also shows how inter-age pairings are easier to do outside of the typical indoor classroom format.

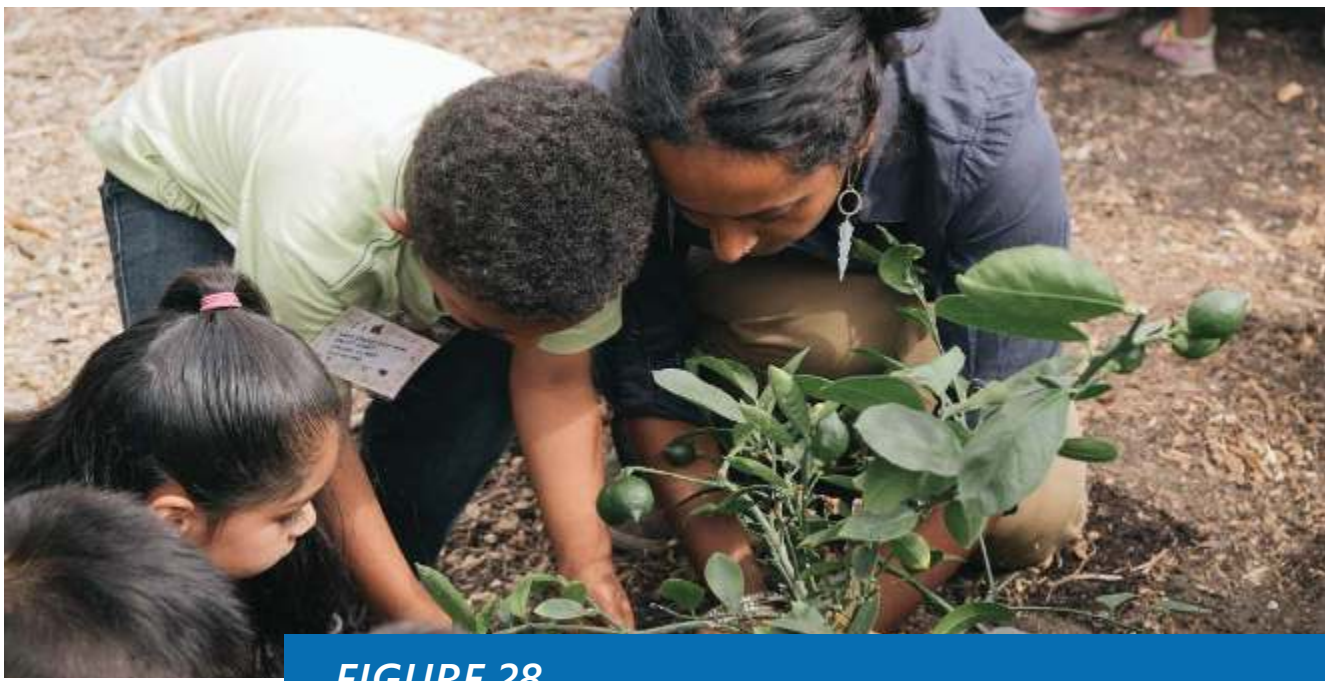


FIGURE 28

Gardening with children has many benefits. It connects them with nature and helps them breathe fresh air, gets them interested in fruits and vegetables making them more likely to eat them, gets them away from the computer screen, involves physical activity and makes them more environmentally conscious. This picture shows children participating in a tree-planting event sponsored by Growing Together in California.
Photo © Jason Clary. Growing Together: Mallika Nair, Founder.

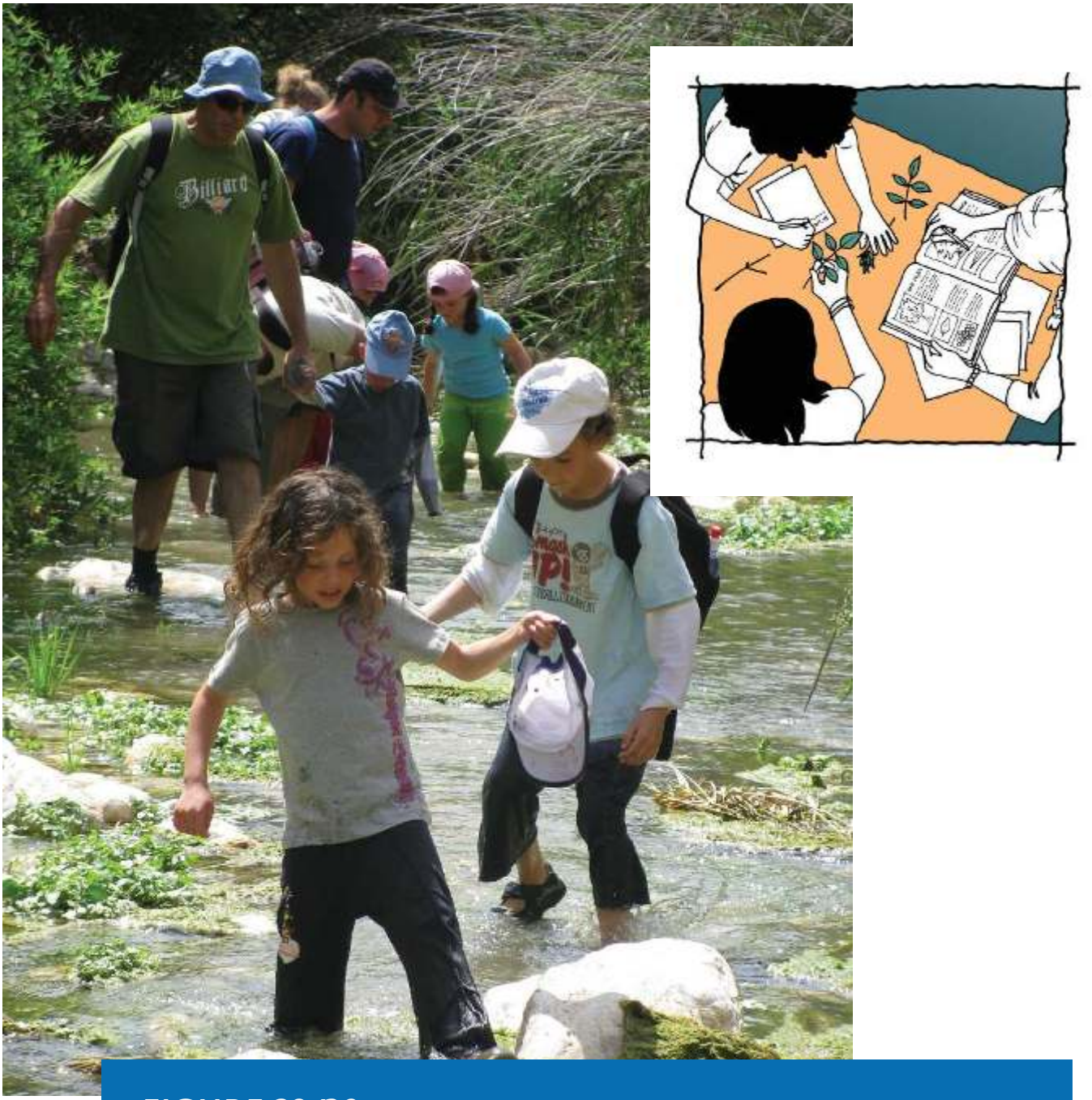


FIGURE 29/30

The theoretical work done in the school attains greater meaning when it is based on real-world experiences. Hiking in nature is as authentic as it gets. There are numerous opportunities for students of all ages to acquire a variety of useful skills on a nature walk including teamwork, observation, endurance, and learning about the natural world that is far removed from the screens on their digital gadgets.

FIGURE 31

Simple seating arrangements such as the one pictured here are easy to incorporate as part of any school renovation project. Outdoor areas tend to get used a lot more when children have places to sit.

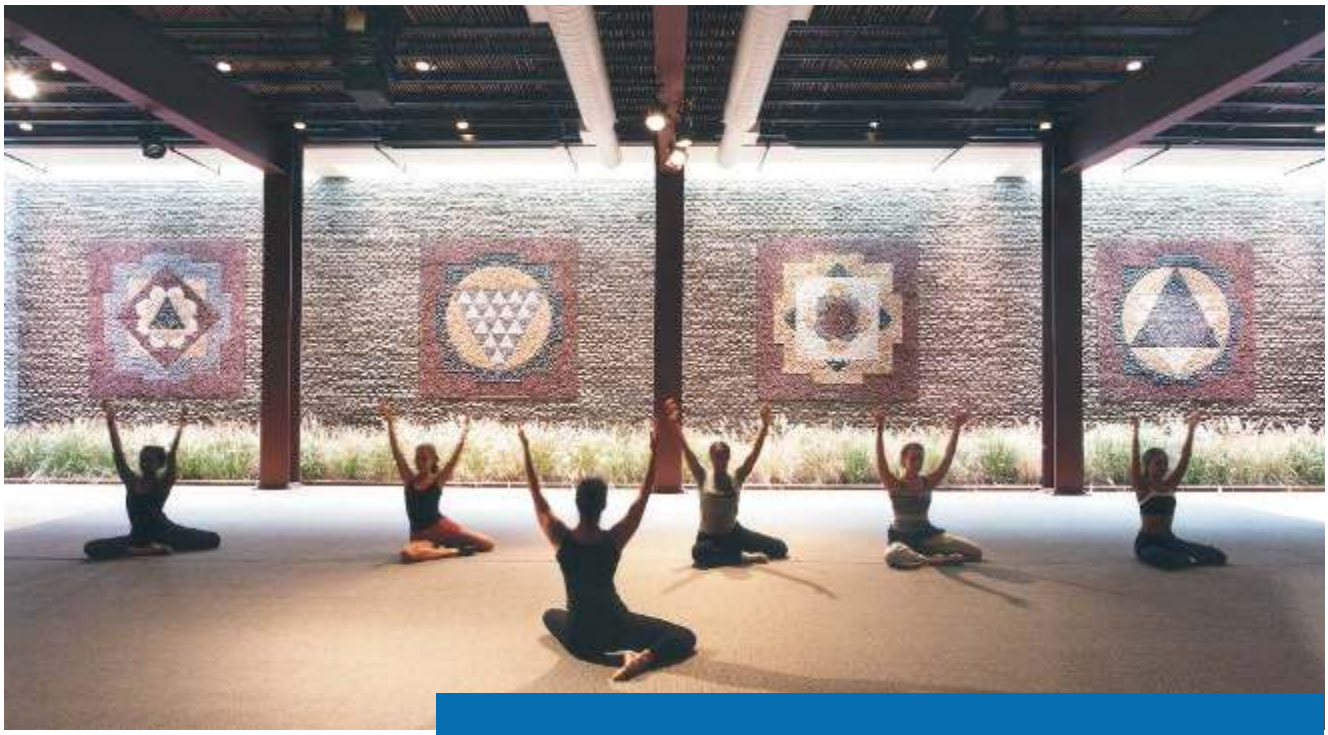


FIGURE 32

Sometimes the simplest places are also the most appealing, like this space that can be used for a variety of physical fitness activities including dance, yoga and aerobics.

Photo: Peter Aaron/Esto

FIGURE 33

Graduation Ceremony at Tampa Prep High School in Tampa, Florida. Social distancing and the requirement that all attendees wear masks made this ceremony held in the school's soccer field possible. Many such adjustments are being made by schools as they learn to live safely with COVID-19.

FIGURE 34

This outdoor café works because it is under a lightweight awning. Shade structures like this are easy to create and can be quickly installed to increase the amount of outdoor space that is available for use during most of the school day.

FIGURE 35

At NIST International School in Bangkok, Thailand, in the background a shade structure is visible that provides protection from driving winds and rain, which is important in a tropical country like Thailand.

FIGURE 36

This is the play area at NIST below the shade structure which is open on all sides to allow it to be sufficiently daylit and more comfortable than the areas under direct sun.

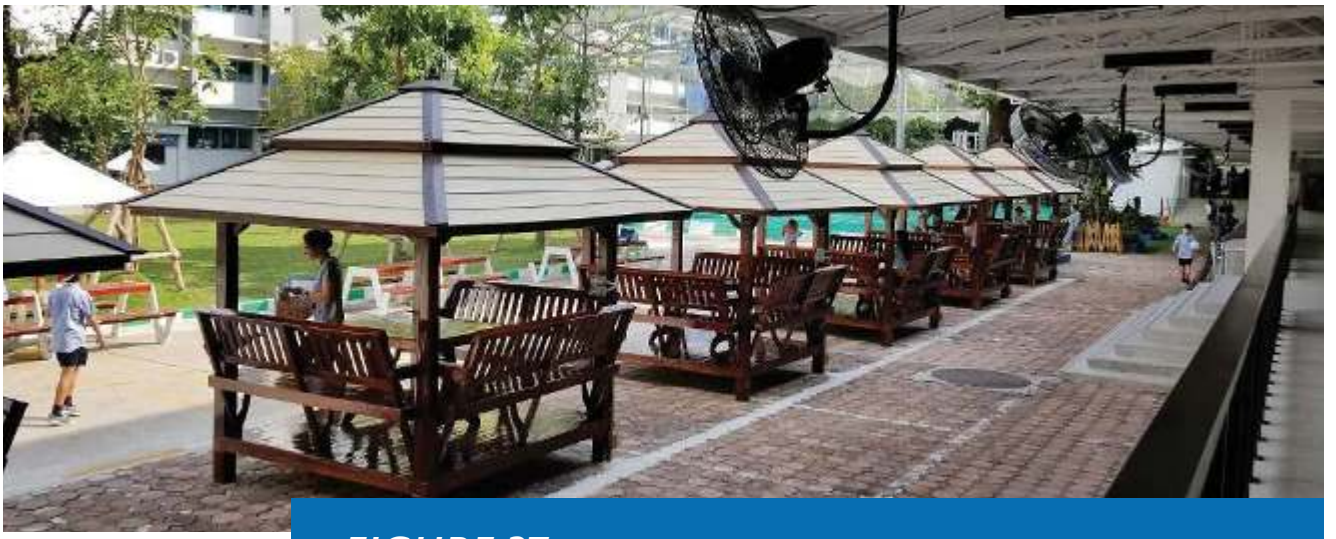


FIGURE 37

Outdoor spaces that may have been uninhabitable due to heat and humidity are used here to create family-style groupings of students in small gazebos. Fans keep the air moving and allow such spaces to be used all day long.

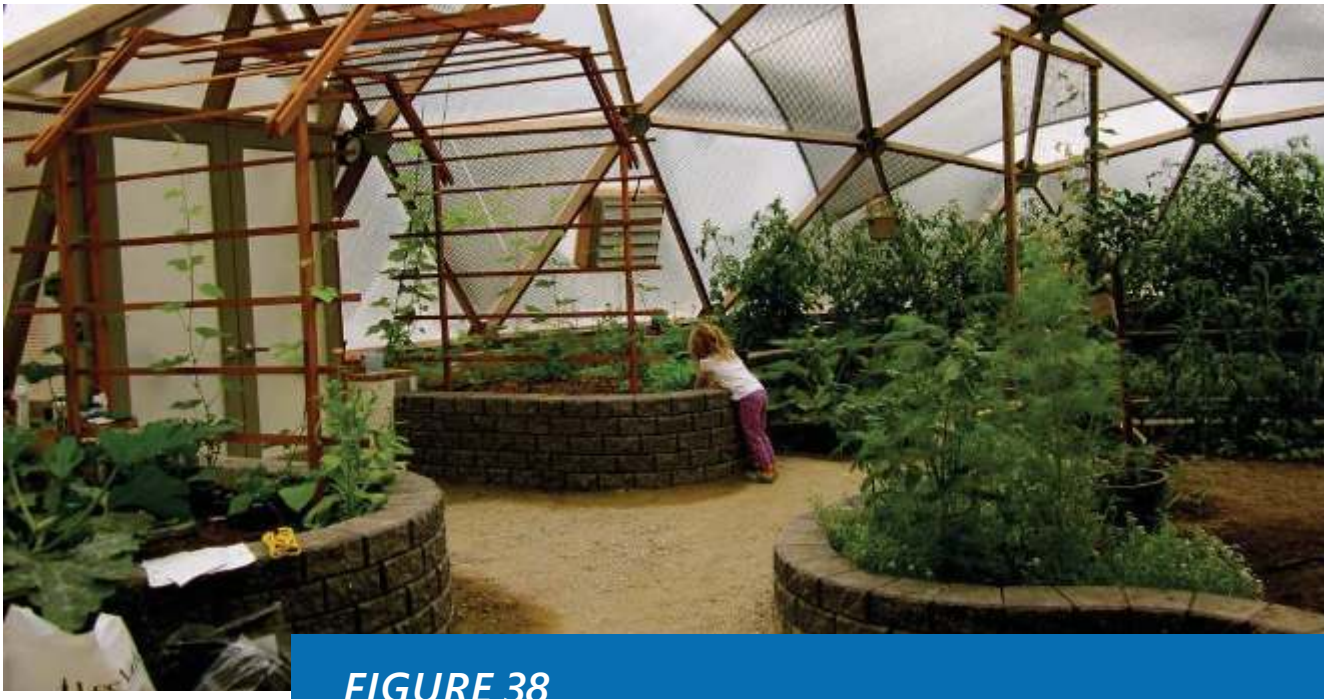


FIGURE 38

This is a greenhouse built as a geodesic dome in British Columbia, Canada. It is a quick way to cover an area to make it habitable all year and a fun place for children to learn in. The geodesic dome itself is a fascinating engineering subject for study.

Photo: Donna Hausken

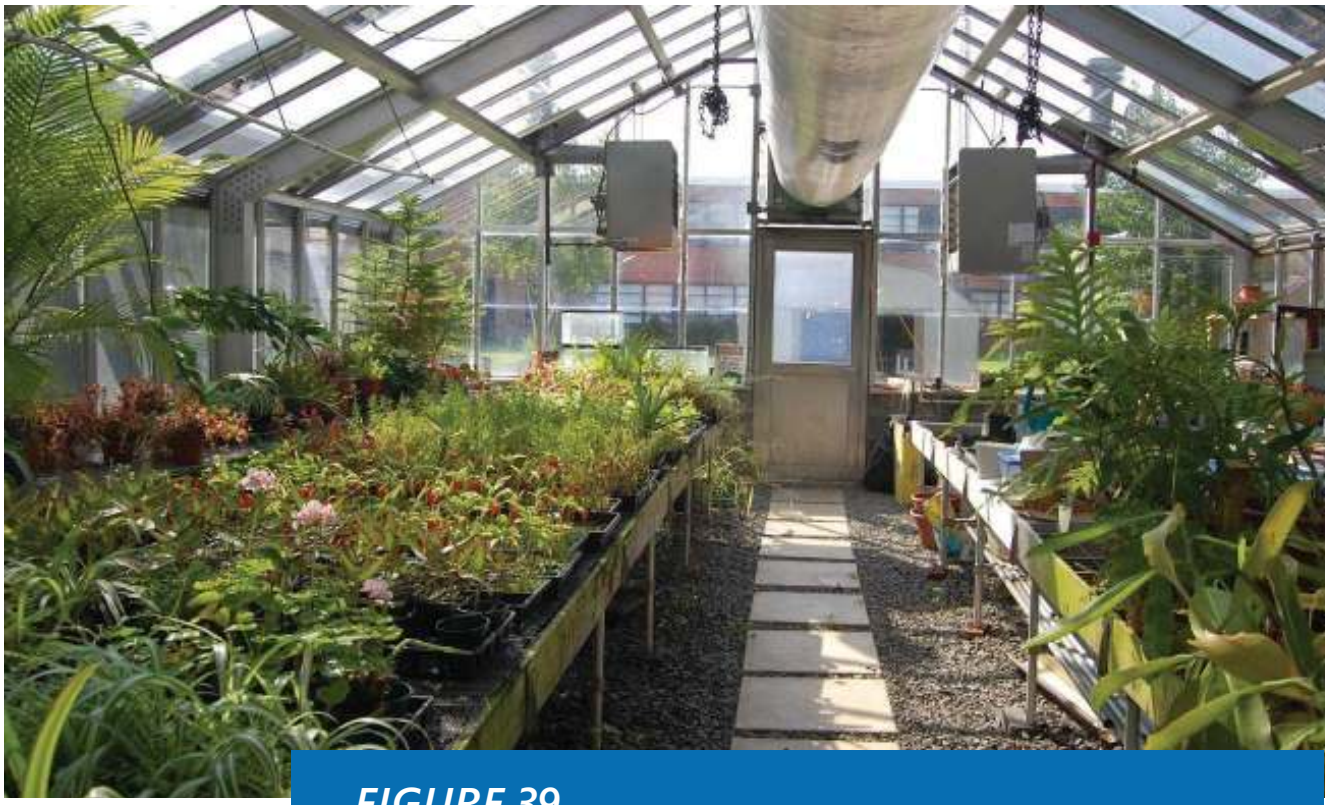


FIGURE 39

The beauty of the greenhouse is that it is a space for year-round use. It is a great way to get children to put their technology aside and be active outside working with natural materials. Greenhouses like this one are relatively inexpensive and can be installed quickly, making good use of previously unutilized outdoor areas.

FIGURE 40

Small outdoor sheds like this are healthy to be out in, attractive and easy to build. They are also great places for children to meet in small groups with an adult to work on hands-on assignments. We do not recommend simply using such places as typical "outdoor classrooms."

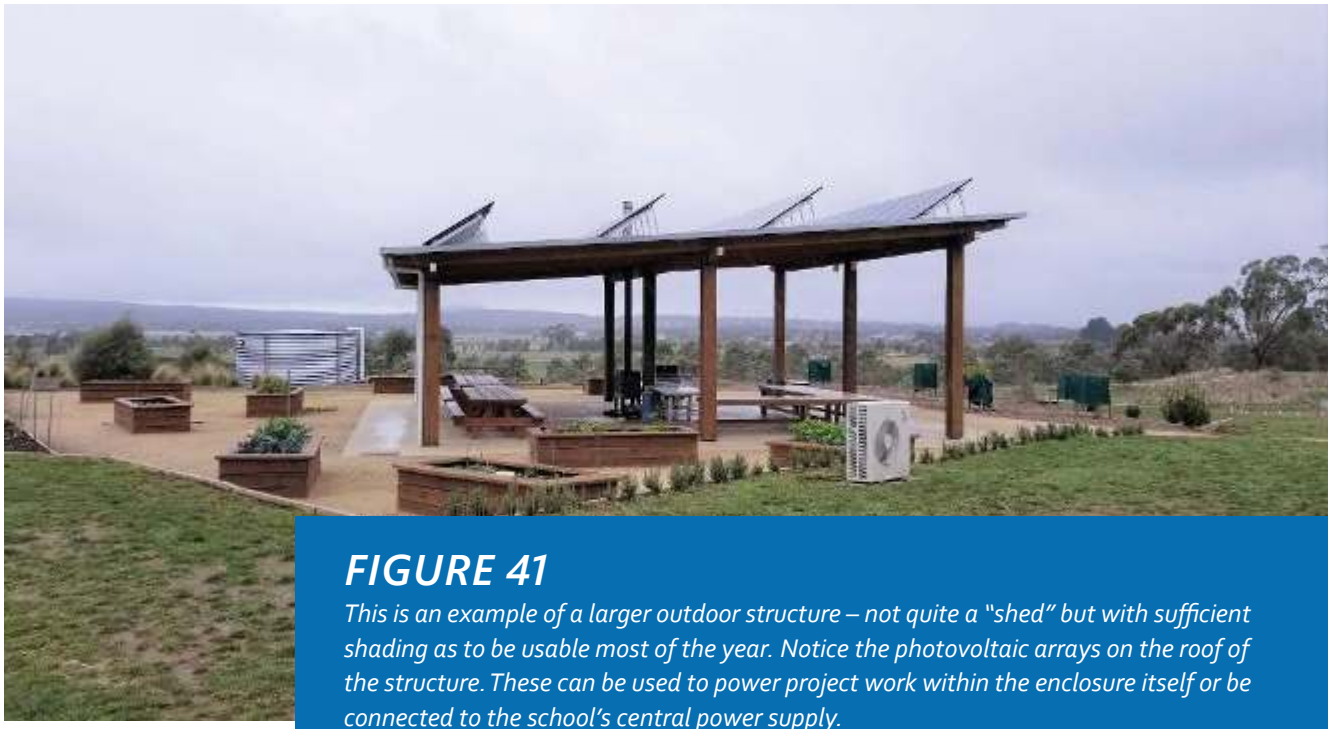


FIGURE 41

This is an example of a larger outdoor structure – not quite a "shed" but with sufficient shading as to be usable most of the year. Notice the photovoltaic arrays on the roof of the structure. These can be used to power project work within the enclosure itself or be connected to the school's central power supply.
Ballarat Grammar School, Victoria, Australia. Photo: Roni Zimmer Doctori

FIGURE 42

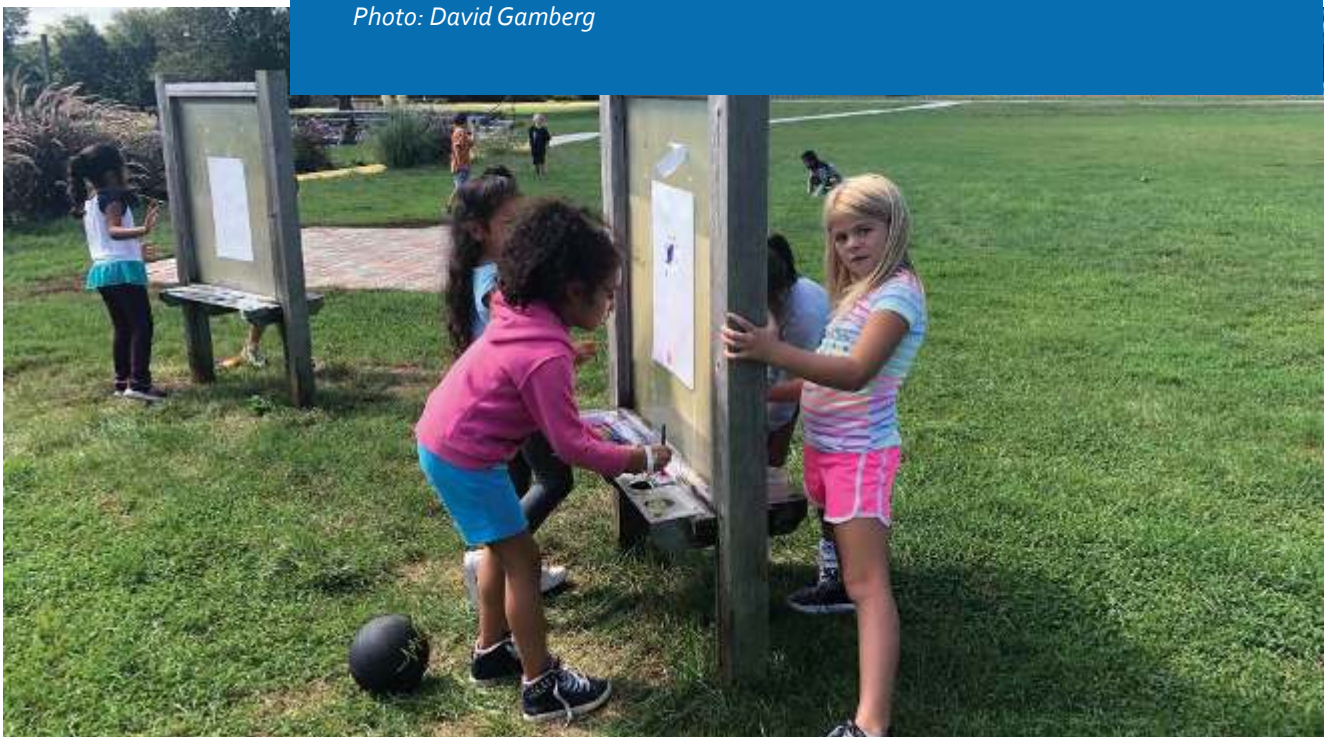
Mother Goose brought to life! Child-friendly interactive sculpture in Southold Elementary School, Southold Union Free School District (UFSD), New York.
Photo: David Gamberg

FIGURE 43

Watching a Shakespeare performance in the amphitheater. This amphitheater also serves as the venue for the school's outdoor movie night.
Photo: David Gamberg

FIGURE 44 AND FIGURE 45

Can schools take formal art class outside? Yes! It doesn't take much to convert an open area into an instant art studio at Southold Elementary School. Art is a good subject to take outside because it is a more inspiring setting for creative work.
Photo: David Gamberg



HAPPY OUTDOOR LEARNING!

ARCHITECTURE, LANDSCAPE ARCHITECTURE, EDUCATION, SCHOOL REFORM

With COVID-19 seemingly here to stay, there is now a serious move to take learning outside to maximize school capacity. Social distancing is easier outside than within the confines of a classroom. It is likely that outdoor learning, until very recently a novelty, will soon become quite widespread.

This white paper is the most comprehensive treatise on the subject of Outdoor Learning presented from the perspective of educators, architects, neurologists and environmental scientists.

Author & Collaborators

Prakash Nair, AIA, is a futurist, a major voice for change in education and the Founding President & CEO of Education Design International, a leading planning and architecture firm focused on transforming education by design, with consultations in 52 countries on six continents. He is the recipient of the A4LE MacConnell Award and has written three books, including *Blueprint for Tomorrow* published by Harvard Education Press. Prakash's passion for a new approach to education has resulted in the creation of dozens of innovative schools worldwide.

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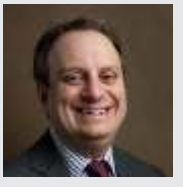

Dr. Gary Stager, is a Senior Education Consultant with Education Design International. He is an internationally-recognized educator, speaker and consultant, and has helped learners of all ages on six continents. He is the author of the best-selling book, *Invent to Learn*.

ASSOCIATION FOR LEARNING ENVIRONMENTS
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The Association for Learning Environments is a professional non-profit association whose sole mission is improving the places where children learn.

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