

About the Author

Richard Louv is Co-Founder and Chairman Emeritus of the [Children and Nature Network](#). He is the author of "Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder" and "The Nature Principle: Human Restoration and the End of Nature-Deficit Disorder."

By [Richard Louv](#) on September 7th, 2011

[THE MORE HIGH-TECH SCHOOLS BECOME, THE MORE THEY NEED NATURE](#)

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Want Your Kids to Get Into Harvard? Tell 'em To Go Outside.

I once met an instructor who trains young people to become the pilots of cruise ships. He described the two kinds of students he encounters. One kind grew up mainly indoors, spending hours playing video games and working on computers. These students are quick to learn the ship's electronics, a useful talent, the instructor explained. The other kind of student grew up spending a lot of time outdoors, often in nature. They, too, have a talent. "They actually know where the ship is."

He wasn't being cute. Recent studies of the human senses back that statement up. "We need people who have both ways of knowing the world," he added. In "The Nature Principle," I tell that story to describe what I call the "hybrid mind." I make the case that one goal of modern education should be to encourage such flexible thinking. Is education moving in that direction? Some schools are, but too many are putting all their eggs on one computer chip.



Almost as an article of religious faith, school districts are flooding students with computers and other Internet-connected gadgets. Yet, as the New York Times reported on Sept. 3, 2011, "to many education experts, something is not adding up." Schools are spending billions on

technology “even as they cut budgets and lay off teachers, with little proof that this approach is improving basic learning.”

Few people would deny that digital skills are needed in an increasingly digital world, but even some promoters of educational technology are expressing reservations about the size of the investment compared to the available proof of success. Tom Vander Ark, former executive director for education at the Bill and Melinda Gates Foundation and an education technology investor, admitted to the Times reporter, “The data is pretty weak. It’s very difficult when we’re pressed to come up with convincing data.”

In an online discussion last week, one educator described how her school “spent millions” on teaching technology, even as “the class sizes are growing. And our kids have 10 minutes of recess, gym once a week and no time outside.”

Meanwhile, long-proven approaches are given short shrift. Though educators have known for decades about the clear link between music education and better performance in math, in the Leave No Child Behind era, music programs were among the first to be cut from curricula. Similarly, more recent research has suggested time spent in more natural environments (whether it’s a park, a wilderness or a nature-based classroom or play space) stimulates the senses, improves the ability to learn, and helps students connect the dots of the world. Yet, in legislators’ eyes, recess, field trips, and nature experiences barely register.

Research in this area remains a frontier in the academic world, but evidence is growing. Schools that use outdoor classrooms and other forms of nature-based experiential education report significant student gains in social studies, science, language arts, and math.

Children are more likely to invent their own games in green play spaces rather than on flat playgrounds or playing fields. Green play spaces also suit a wider array of students and promote social inclusion, regardless of gender, race, class, or intellectual ability. One study found that so-called at-risk students in week-long outdoor camp settings scored significantly better on science testing than in the typical classroom. At the Human-Environment Research Laboratory at the University of Illinois, researchers have discovered that children as young as 5 show a significant reduction in the symptoms of attention deficit/hyperactivity disorder when they engaged with nature.

Cognitive and behavioral benefits accrue well beyond school boundaries. In inner-city housing projects in Chicago, investigators found that the presence of trees outside apartment buildings were predictors of certain

behaviors: less procrastination, better coping skills, greater self-discipline among girls, better social relationships, and less violence. Educators benefit, too. Canadian researchers found that teachers expressed renewed enthusiasm for teaching in schools that engage their students in natural settings.

Many of the available studies describe correlations rather than cause and effect. More rigorous research is needed. But to many educators, this body of evidence is at least as convincing as the data supporting the digital classroom.

Abstracts for these and other studies, with links to the original research, can be found on the [Children & Nature Network](#) Web site and a [deeper synthesis](#) is available in a report from C&NN. In the current cost-conscious political and economic climate, it's time to give nature - not only environmental education, but the nature-based classroom as a learning environment - a closer look. An outdoor classroom in a nearby park, vacant lot, or the woods behind the school, is a lot less expensive than building one more brick-and-mortar classroom, and possibly more effective. That's something to keep in mind as the new school year begins, as well as a useful consideration next spring.

We often hear from legislators and some educators, as an article of faith, that children lose knowledge during the summer months. What about a different approach? During summer and other out-of-school time, rather than immersing children in the same experiences, we should offer them an entirely different learning environment - one that we know stimulates all of the senses, including a sense of wonder, and a sense of humility.

Additional Resources

Part one: ["Want Your Kids to Get Into Harvard? Tell 'em to Go Outside!"](#)
[Grading the Digital School: In Classroom of the Future, Stagnant Scores](#),
The New York Times, Sept. 3, 2011

[C&NN Report: Children's Contact with the Outdoors and Nature: A Focus On Educators and Educational Settings](#), adapted from C&NN Annotated Bibliographies of Research and Studies by Cheryl Charles, Ph.D., President, Children & Nature Network, and Alicia Senauer, Yale University.

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By [Richard Louv](#) on August 25th, 2011

[WANT YOUR KIDS TO GET INTO HARVARD? TELL 'EM TO GO OUTSIDE!](#)

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First of two in a series

September is back-to-school month, and the chanting begins: Drill, test, lengthen the school day, skip recess, cancel field trips, and by all means discourage free time for (gasp!) self-directed play.

Is that approach working, particularly in science learning? Not so well.

A few months ago, I met with a dozen biology professors at North Carolina Central University. They were deeply concerned about the dramatic deterioration of student knowledge of what's out there: these students can tell you all about the Amazon rain forest, but nothing about the plants and animals of the neighborhoods in which they live.



photo © the Nature Conservancy

When researching *Last Child in the Woods*, I heard a similar complaint from Paul Dayton, a prominent oceanographer and professor in the Scripps Marine Life Research Group at Scripps Institution of Oceanography in La Jolla. Dayton is a harsh critic of a trend in higher education, the movement away from traditional biology toward the kind of molecular sciences and bioengineering that can produce products in the lab that can be patented by research universities.

The ethical issues of that process concern him, but what worries him even more is the growing ignorance of nature that he sees in young people.

"In a few years there will be nobody left to identify several major groups of marine organisms," he said. "I wish I were exaggerating."

During a later visit with Dayton, we were looking out of his window at the famous Scripps Pier. I asked him if he had ever thought to engaging a nearby high school. Maybe Scripps could bring the students from that school to the pier or even out on the Scripps explorer ships.

"I tried that." He said one school administrator's response was, "Oh, no, we've become so sophisticated in the teaching of science, that our students don't have to go outside anymore."

That attitude is more common than some of us would like to believe. Last November, two Oregon State University researchers, writing in [American Scientist](#), made the case that "an ever-growing body of evidence demonstrates that most science is learned outside of school." In "The 95 Percent Solution," John H. Falk and Lynn D. Dierking write, "The 'school-first' paradigm is so pervasive that few scientists, educators or policy makers question it. This despite two important facts:

Average Americans spend less than 5 percent of their life in classrooms, and an ever-growing body of evidence demonstrates that most science is learned outside of school."

Falk and Dierking contend that "a major educational advantage enjoyed by the U.S. relative to the rest of the world" is its out-of-school learning landscape, including museums, libraries, zoos, aquariums, national parks, 4-H clubs, scouting, and, I would add, nature centers, state and local parks, and the nearby nature of our neighborhoods. They add, "The sheer quantity and importance of this science learning landscape lies in plain sight but mostly out of mind." Rather than increasing school time, perhaps we should be investing in expanding quality, out-of-school experiences..."

Emerging research, some of it specific to out-of-school learning, some of it to the impact of time spent in natural environments on cognitive functioning, support that contention. A 2009 report by the National Research Council, *Learning Science in Informal Environments: Places, People and Pursuits*, "describes a range of evidence demonstrating that even everyday experiences such as a walk in the park contribute to people's knowledge and interest in science and the environment..."

As for the [research on nature experience and learning](#), that too is expanding. (More about that in Part Two) Many of the available studies describe correlations rather than cause and effect. But parents and educators certainly have enough evidence to act.

Out-of-school educators are already taking action, individually and programmatically. Consider Lori Kiessler's program, *Inside the Outdoors*, in Orange County, California, which serves 150,000 children each year with a nature-based STEM education afterschool program. A growing network of grassroots volunteers and professionals, [natural teachers](#) and pediatricians work every day at getting kids and their families connected to nature.

Many of us hope that the tide is turning, that educators, parents and young people, too, are becoming more aware of the value of out-of-school experience and self-directed exploration and play, especially in natural settings.

Want your kids to get into Harvard? Tell 'em to go outside.

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By [Richard Louv](#) on June 28th, 2011

[A Boost to Education and an Antidote to Teacher Burnout?](#)

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"Connected and honored, natural teachers could inspire other teachers; they could become a galvanizing force within their schools. In the process, they would contribute to their own psychological, physical, and spiritual health." — The Nature Principle

Not long ago, I was speaking with a middle school principal in Austin who was sympathetic to the cause, but felt overwhelmed by all the demands that he and his colleagues already face. "Look, you want me to add this to my plate when it's already overflowing?" he said. "I can't do this without outside help."

He was right. Bringing the classroom to nature and nature to the classroom is an enormous task, and educators need community and political support. Schools, businesses and outdoor organizations can work together to introduce students to nature centers and parks, and sponsor or promote overnight camping trips. Parent-teacher groups can raise

financial support for field trips and nature programs; they can sponsor family nature nights at schools; they can give awards to those teachers who, year after year, get their students outside.



No doubt about it, schools need community support. But educators can lead the way, and one teacher can make a difference — especially if he or she reaches out to another.

To get started (and keep going), check out C&NN's [synthesis of some of the best research](#) on how nature time stimulates learning and helps educators, assembled by Cheryl Charles, Ph.D, and Alicia Senauer of Yale University. The C&NN site is also packed with positive examples of what schools are doing around the U.S. and Canada and in other countries as well. Another resource is [C&NN's recommended reading list](#), which describes a number of books on place-based and nature-based learning by such authors as David Sobel, Louise Chawla, Robin Moore, Joseph Cornell, Jon Young, Ken Finch and others.

Through C&NN, you can also become a Natural Teacher. Many educators, especially new teachers, feel inadequately trained to give their students an outdoors experience. But by networking, teachers can share ideas, support each other, and know they're not alone.

You can learn more about [C&NN's Natural Teacher Network](#). And please see C&NN's latest [Natural Teachers Newsletter](#), edited by Tamra Willis and Herb Broda.

While we're on this topic of teachers organizing teachers, here's another notion: Why not start a nature club for teachers? That's a suggestion from Robert Bateman, the famous Canadian wildlife artist who launched his [Get-to-Know](#) campaign in Canada and the U.S. to connect kids to nature. Through such clubs, Bateman says, teachers who are experienced in nature could organize half-day hikes each month with other teachers.

C&NN isn't the only resource for natural teachers. Other organizations that offer excellent resources for schools that want to get their students outside include the [National Audubon Society](#) and [National Wildlife Refuges](#), which provide professional development programs that have been correlated to public school curriculum standards. To green your schoolyard, tap the knowledge of such programs as [Evergreen](#) in Canada, and [National Wildlife Federation's Schoolyard Habitats](#) and the [Natural Learning Initiative](#), and check out the [U.S. Fish and Wildlife Service's Schoolyard Habitat Project Guide](#).

Don't forget the school library. For ideas on how to naturalize your school library and how library systems can become information hubs on life in the surrounding bioregion, [click here](#).

These are just a few examples of the resources available for educators who want to connect their students to nature. Here's an added incentive. Want to avoid teacher burnout? Canadian researchers report that teachers who get their students - and themselves - outdoors can reignite their own energy and enthusiasm for teaching. Every teacher can become a natural teacher.

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By [Richard Louv](#) on July 26th, 2011

[THE "VITAMIN N" PRESCRIPTION - Some Health Professionals Now Recommending Nature Time for Children and Adults](#)

[Comments 7](#)

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In 2009, Janet Ady of the [U.S. Fish and Wildlife Service](#) stood before a crowd of grassroots leaders gathered by the Children & Nature Network. She held up an outsized pharmacy bottle. Within the bottle was a physician's prescription - one that would be as appropriate for adults as it would be for children.



The contents of the medicine bottle included a variety of information, including a Web address to National Wildlife Refuges, a guide to animal tracks, Leave No Trace tips, a link to information on planting native vegetation to help bring back butterfly and bird migration routes, a

Power Bar, and other items - including a temporary tattoo of migratory birds.

The label read: Directions: Use daily, outdoors in nature. Go on a nature walk, watch birds, and observe trees. Practice respectful outdoor behavior in solitude or take with friends and family. Refill: *Unlimited*. Expires: *Never*.

Here's a cost-effective way to improve the health of children and adults. An expanding body of primarily correlative scientific evidence points in a single, common-sense direction: Getting children outside can be good for their health. And getting them outside in *nature* may well offer special benefits.

Contact with the natural world appears to significantly reduce symptoms of attention deficit disorder in children as young as five. Nearby nature, and even a view of nature from a bedroom window, can reduce stress in children. Children in greener neighborhoods appear to have lower body weight changes. Spending time outdoors may help prevent myopia.



Natural environments, such as parks, foster recovery from mental fatigue and may help children as well as adults learn. Green exercise may offer added benefits when compared to equal exertion in indoor gyms. In hospitals, clinics and medical offices, incorporating nature into the design helps people of all ages reduces stress, improves health and cognition. What if our schools, homes, workplaces and cities were designed with such natural benefits in mind? Within the health professions, interest in the nature prescription is already growing. Healing gardens on hospital grounds are now popular. Dr. Daphne Miller, a general practitioner in Noe Valley, California., envisions

nature prescriptions as part of the burgeoning field of integrated medicine. "Nature is another tool in our toolbox," says Miller, who, in addition to her medical practice, is associate clinical professor in the Department of Family and Community Medicine, University of California, San Francisco. She also believes that park rangers can, in effect, become para-health professionals.

So can whole park districts. Santa Fe, New Mexico, in an effort to fight the high rate of diabetes there, launched its Prescription Trails program, which is partially funded by the Centers for Disease Control and Prevention. Besides trail time, physicians can refer their patients to a trail guide. In 2010, a pilot program in Portland, Ore., began pairing physicians with park professionals, who will record whether the outdoor prescriptions are fulfilled; the park prescription program will be part of a longitudinal study to measure the effect on health.

By applying what I call the Nature Principle, city planners, developers, architects, educators and many other professionals could improve the nation's health. But pediatricians have taken the first steps. They play an especially powerful role.

Any parent whose child has ever been sick - which means all of us - has deep respect, even love, for the pediatricians and other pediatric health providers in their lives.

It's one thing to put our trust for our own lives in a doctor's hands; it's quite another thing when the lives at stake are our children's. The gift pediatricians give us is much more than their technical knowledge. They give us their kindness and wisdom. They calm our fears. By prescribing time in the natural world, pediatricians and pediatric nurse practitioners can improve children's physical and psychological health, their ability to learn, their capacity for wonder - their ability to feel fully alive in a very real world - for generations to come.

Other resources:

[C&NN's "Grow Outside!": Tools and Resources for Pediatric Health Professionals](#)

[Video: Pediatrician Lewis First](#) from Vermont Children's Hospital at Fletcher Allen talks about the importance of getting your child outside each day to experience nature.

[Doctor's Orders: Get Outside](#): Washington Post

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By [Richard Louv](#) on July 21st, 2011

[The Eye in the Tree](#)

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In a recent feature on [Orion](#) magazine's Web site, the editors asked me this question: "Does technology merely distract us from the natural world—or can it help us gaze more intently at its varied forms?"

My article, answering that question, is [here](#). In it, I described how I spend more time carrying a camera than a fishing rod, these days. And I wrote:

I find that the camera makes me slow down and look more intently than I normally would. After one hike, I was sitting at my computer, reviewing photos of rock patterns and tree bark. I was suddenly startled by something I had not seen when I took the picture.

Hidden in the bark was an eye, looking back at me.

When I posted the address to the [Orion article](#) on my [Facebook](#) page, one reader asked me to post the actual photograph. A wonderful conversation ensued. People posed their theories as to just who's eye that was, if it was an eye. One mother showed it to her son, and he concluded that the eye belonged to a dragon. I went with her son's theory. What do you think? Here's the photo.



The eye is just right of center and up a bit. See it? It sees you.
Author [David Sobel](#) ("Wild Play") and film maker [Camilla Rockwell](#) and I discussed this topic and more during Orion's live web event in June, "Reimagining Nature Literacy." Listen to a recording of the conversation [here](#)."

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By [Richard Louv](#) on July 4th, 2011

[Ten Reasons Children & Adults Need Vitamin N](#)

[Comments 1](#)

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"I recall my father's dark tanned neck, creased with lines of dust, as he tilled our garden. I ran ahead of him, pulling rocks and bones and toys from his path." — The Nature Principle

In "Last Child in the Woods," I focused on why children need nature. In my new book, "The Nature Principle," I tell how the whole family - and whole communities — can become happier, healthier and smarter through more contact with the natural world. I do hope you'll read the book to find out how, but for starters, here are 10 reasons children and adults need nature:



• **The more high-tech our lives become, the more nature we need.**

We have a human right to a meaningful connection to nature, and we have the responsibilities that come with that right. Few today would question the notion that every person, especially every young person, has a right to access the Internet. We should also have access to the natural world, because that connection is part of our humanity.

- **Humans are hard-wired to love and need exposure to the natural world.** Researchers have found that regardless of culture people gravitate to images of nature, especially the savannah. Our inborn affiliation for nature may explain why we prefer to live in houses with particular views of the natural world.
- **We suffer when we withdraw from nature.** Australian professor Glenn Albrecht, director of the Institute of Sustainability and Technology Policy at Murdoch University, has coined the term solastalgia. He combined the Latin word solacium (comfort — as in solace) and the Greek root - algia (pain) to form solastalgia, which he defines as “the pain experienced when there is recognition that the place where one resides and that one loves is under immediate assault.”
- **Nature brings our senses alive.** Scientists recently found that humans have the ability to track by scent alone. Some humans rival bats in echolocation or biosonar abilities. Military studies show that some soldiers in war zones see nuances others miss, and can spot hidden bombs; by and large these tend to be rural or inner city soldiers, who grew up more conscious of their surroundings.
- **Individuals and businesses can become nature smart.** Spending more time outdoors nurtures our “nature neurons” and our natural creativity. For example, at the University of Michigan, researchers demonstrated that, after just an hour interacting with nature, memory performance and attention spans improved by 20 percent. In workplaces designed with nature in mind, employees are more productive and take less sick time.
- **Nature heals.** Pennsylvania researchers found that patients in rooms with tree views had shorter hospitalizations, less need for pain medications, and fewer negative comments in the nurses' notes, compared to patients with views of brick.
- **Nature can reduce depression and improve psychological well-being.** Researchers in Sweden have found that joggers who exercise in a natural green setting feel more restored and less anxious, angry, or depressed than people who burn the same amount of calories jogging in a built urban setting.
- **Nature builds community bonds.** Levels of neurochemicals and hormones associated with social bonding are elevated during animal-human interactions. Researchers at the University of Rochester report that exposure to the natural environment leads people to nurture close relationships with fellow human beings, value community, and to be more generous with money.
- **Nature bonds families and friends.** New ways are emerging to make that bond, such as family nature clubs, through which multiple families go

hiking, gardening or engage in other outdoor activities together. In the U.K., families are forming "green gyms," to bring people of all ages together to do green exercise.

- **The future is at stake.** The natural world's benefits to our cognition and health will be irrelevant if we continue to destroy the nature around us, but that destruction is assured without a human reconnection to nature.