

## FOREWORD

### National Parks: “America’s Best” Outdoor Classrooms

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In the second decade of the 21<sup>st</sup> Century, our American democracy lies at a crossroads. We face challenges to our economy, national security, and social fabric after decades of disruption from forces ranging from technology to terrorism. It’s becoming clear that meeting these challenges depends on how well we educate more diverse generations of students for higher achievement. The research is definitive: college graduates earn more money, pay more taxes, avoid public welfare and incarceration, live healthier lives, and are more open- and civic-minded than their less-educated peers.

It’s also becoming clear that the institution of traditional schooling, largely unchanged from previous generations, needs a bigger vision and innovative partners. The model of one teacher tasked with educating 25 students—within the four walls of the classroom, for 180 days a year—was created for an agrarian economy, when students needed to work on their family farms during the long summer vacation. The politics and policies of school districts often obstruct creative approaches to reforming teaching and learning.

It’s high time we recognize that a missing key to unlocking the potential of our youth lies beyond the walls of the school building. A major part of the longstanding “achievement gap” can be explained by an “experience gap.” Many of today’s students, from all backgrounds, are growing up without the broad range of experiences that connect classroom lessons to real life and propel their educations forward with purpose and passion. The same digital technologies that can bring virtual field trips and global friendships to today’s students are frequently overused for binge-watching TV and mundane texting.

In many coastal cities, it is astonishing to find so many high school students who live within five miles of the ocean, but have never seen it. Many have never put their hands in dirt and grown a flower or a tree. Their generation faces dramatic environmental challenges, requiring solutions for clean air, water, and energy, but their “experience portfolio” needs rebalancing. As one Oakland teacher described her middle-school boys on a field trip to a Bay Area National Park, “These boys carry guns, but they’re afraid of bugs.”

Filmmaker Ken Burns, using novelist Wallace Stegner’s line, titled his documentary on the National Parks, “America’s Best Idea.” This extraordinary American idea—to set aside our nation’s most inspiring landscapes and important historic sites, not for a wealthy aristocracy but for all members of society—can be a “best idea” for education as well. Our National Parks are turning out to be our best outdoor classrooms, where students can literally “come to their senses,” using all of their senses—their heads, hands, and hearts—to understand their place in the natural and human world.

Recent research, including findings from neuroscience, supports the engagement of students’ bodies, as well as their minds, for deeper learning. In his 2013 book, *Education and the Environment*, author and educator Gerald A. Lieberman reviewed research on the impact of place-based experiential learning on improved academic achievement, classroom behavior, preparation for college and careers, and personal confidence. Such programs also energized teachers and strengthened relationships between schools and communities.

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As the National Park Service (NPS) enters its second century, it has joined with schools, universities, museums, libraries, nonprofits, and many youth-serving organizations to map a new ecosystem for learning. In more than 400 National Parks, from the iconic Yellowstone, Grand Canyon and Yosemite, to the Nez Perce sites spanning four states, to the smaller jewels of the homes of César Chávez and Frederick Douglass, students are documenting flora, fauna, and human artifacts, restoring valuable habitats, and gaining a deeper understanding of our nation's conflicts. Through these place-based learning experiences, abstract ideas from biodiversity to cultural diversity come alive.

When students stand on the Gettysburg battlefield or at the USS Arizona memorial at Pearl Harbor, the phrase "hallowed ground" takes on new meaning. NPS has courageously committed to telling all of America's stories in the interpretation of current sites and development of new ones. Students gain a more complete picture of the impact of war by connecting Pearl Harbor to the unjust internment of Japanese-Americans at two other National Parks, Manzanar and Tule Lake. Indeed, the themes of war, heroism, and injustice are fully evident in the Journey Through Hallowed Ground program, described here by Jim Percoco, encompassing Gettysburg to Monticello, 180 miles and 13 National Park units.

This book grew out of a 2016 meeting in Yosemite of the Education Committee of the National Park System Advisory Board. Our 20-member group had been meeting for seven years, enthusiastic about the new directions the National Park Service was taking to elevate education as part of its core mission. This work was led by NPS Director Jon Jarvis, who appointed the first Associate Director for Interpretation, Education, and Volunteers, Julia Washburn.

A frequent theme of our meetings was the many inspiring ways in which learners of all ages were engaged in Park-based experiential learning, but how little known these projects were. We highlighted some of these programs at the first-ever National Parks Learning Summit at National Geographic Society in Washington, D.C., during the NPS Centennial in 2016. In reviewing that Summit at the Yosemite meeting, we believed a book containing a larger collection of these programs and their related research would be invaluable. Two members of the Committee, Dr. Jes Thompson and Dr. Ana Houseal, intrepidly agreed to take on this major project.

*America's Largest Classrooms* represents, to my knowledge, the first compilation of stories and studies devoted exclusively to education in the National Parks. These chapters embrace an astonishing spectrum of educational experiences for students, from K-12 through college. These studies also address adults, especially teachers and parents, and how National Park experiences enhance their own knowledge and motivation and how they, in turn, can reinforce these outcomes for children.

Far beyond the typical field trip, this book documents how National Parks are serving as partners with universities and nonprofits to create authentic, deeper, and more lasting learning. In immersive residential programs, such as the Cuyahoga Valley Environmental Education Center near Cleveland, students investigate an ecosystem of forests, meadows, and ponds, and observe how shipping along the Ohio & Erie Canal contributed to the state's prosperity in the 19<sup>th</sup> century. NatureBridge offers such programs at six other National Parks, including Yosemite, where students can walk in the footsteps of John Muir and the Buffalo Soldiers and learn how one founded the National Park idea and the others protected it.

Park learning highlights collaborative learning, where students work in teams to accomplish larger projects, such as measuring water quality in New York Harbor or supporting their peers while biking 1,800 miles of the Underground Railroad. The Climate Change Academies operating at Indiana Dunes National Lakeshore and Cape Cod National Seashore, allow high school students to spend two days learning about climate change monitoring through peat marshes, sea level rise, and bird and plant species, and then teach 4<sup>th</sup> graders on day three.

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Teachers are often learning alongside their students, in partnership with interpretive Park Rangers. One of the best professional development programs, Teacher-Ranger-Teacher, involves teachers spending a summer in a National Park and bringing home lesson plans to share with their students.

Many college faculty use the parks as outdoor laboratories. In this book, Dr. Douglas Miller of University of North Carolina describes his undergraduate field research using a rain gauge network in the Great Smoky Mountains, providing valuable data for NOAA and NASA. During the 2016 Centennial, NPS and the National Geographic Society expanded the popular BioBlitz, a citizen science project to conduct species inventories, to more than 200 parks, cities, and campuses. These experiences enable students to work with others across age and racial boundaries and strengthen their social and emotional muscles, valuable assets as future team members in the workplace.

The National Parks and their partners are employing an expanding array of educational media and technologies to engage students in novel ways, including a project described here where California State University students use augmented reality apps to learn the geology of the Grand Canyon. The National Park website ([nps.gov/teachers](http://nps.gov/teachers)) is full of lesson plans to whet students' appetites for deeper learning in the sciences, the environment, and their peoples.

Online field trips are connecting students to Ranger talks from the Grand Canyon and underwater research at the Cabrillo National Monument. Webcams give students a bird's eye view of Alaskan brown bears catching salmon at Alaska's Katmai National Park, or a fish-eye view of a kelp forest at California's Channel Islands. Google and others are producing virtual reality field trips to give the most immersive experience, short of actually going there, to 40 National Parks, from Alcatraz to the cliff dwellings of Montezuma National Park.

As our nation continues to urbanize, new national park initiatives are attracting more diverse city-dwellers. Already, 75% of students live within 50 miles of a National Park site. The first National Park in Chicago, the Pullman National Historic Park, designated in 2015, commemorates George Pullman's innovations in rail travel and the first African-American union. That journey continued to the White House, where the great-granddaughter of a Pullman porter is former First Lady Michelle Obama.

When students are transported to these places, their hearts follow their minds. They learn more, not only about the subject matter of science or history, but also about themselves, their interests, and their abilities. They engage in learning "from the outside in." They understand how the larger ecosystem is affected by their everyday actions in consuming water and plastic, gas and electricity. Students who have faced adversity in their lives see the parallels with endangered animals and plants and, taking lessons from those species, reflect on their own resilience. In his chapter, Dr. Donal Carbaugh of University of Massachusetts describes the practice of "deep listening" used by the Blackfeet Indians, drawing inspiration from their homeland, what is now Glacier National Park.

Importantly for policy makers, one chapter authored by Dr. Linda Bilmes at Harvard's Kennedy School of Government and her colleagues, provides a creative and rigorous analysis of the economic value of these educational experiences, concluding that the value far exceeds the federal investment.

The St. Olaf College students who travelled to Rocky Mountain National Park for Dr. Donna McMillan's Environmental Psychology course say it best. As one put it: "Before this class, I thought I had a pretty good grasp on why the environment is important to our well-being. I really had no idea! From every book to discussion to assignment to adventure in nature, I learned something new every day and had my own previous conceptions challenged.... I understand my own love for the natural world so much better now."

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I hope you'll enjoy *America's Largest Classrooms* as much as I have. You might have similar reactions to the two I've had: one—every student should be able to have these experiences, and two—I'm still a learner and I'd like to have more of these experiences myself! Much like the National Parks themselves, this book expands our vistas of how, at this pivotal time, education should be transformed and leads us to envision a new landscape of learning. Perhaps most importantly, it reminds us that, in the end, Mother Nature is still our most marvelous teacher.