



# Environmental Stewardship Through Service Learning

The Service-Learning Waste Reduction Project in Alameda County, CA, provides guidance and impetus for school efforts to combine service and environmental education.

**N**ew school buildings often grab headlines that highlight their green features and LEED (Leadership in Energy and Environmental Design) certification, yet nearly 90% of schools in the United States were built before 1985, with the largest portion built from 1950–69 to accommodate the baby boom generation (National Clearinghouse for Educational Facilities, n.d.).

The children and grandchildren of the baby boom generation move into those older classrooms eager to learn how to address the environmental challenges that confront them daily. They are the central force of a green schools revolution that is

creating and implementing green policies and procedures in older school buildings. The “new” green schools engage students in solving real environmental challenges and organizing efficient operations while learning key skills and concepts in core disciplines.

In Alameda County, CA, 30 middle and high schools enrolling more than 38,000 students from 10 school districts participate in the Service-Learning Waste Reduction Project (SLWRP). Funded by StopWaste.Org



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and organized by the Alameda County Office of Education, SLWRP provides professional development and networking for teachers and school staff members who want to engage students in environmental stewardship using service learning as a teaching method. Students at SLWRP schools participate in waste audits that inform the design and development of waste reduction, recycling, and school lunch composting systems at their schools. Last year, the schools diverted more than one million pounds of waste from landfills using systems designed and organized by students. Schools in the project have also established e-waste (electronic waste, such as computers and mobile phones) diversion programs, energy audits and savings, school gardens, and other environmental programming.

SLWRP emphasizes student learning and action through service experiences that address environmental challenges on individual campuses and in the surrounding communities. Each school determines how it will respond. “Many environmental education programs focus on providing materials and curriculum to teachers and students,” said Nate Ivy, a teacher on special assignment to manage the countywide initiative. “We focus on helping students identify and solve real problems using the skills and knowledge from their classroom.”

### **Green and Getting Greener**

Principal Pete Murchison describes Irvington High in Fremont, CA, as “a great example of a public high school that is green and getting greener with each and every opportunity.” Stu-

dents and staff members aren’t afraid to get their hands dirty, as evidenced by the 50 redwoods they have planted. In 2009, Irvington won the America’s Greenest School contest, which is sponsored by IC Bus Company. The school received a \$250,000 diesel-electric hybrid bus for its efforts. Irvington has established a number of student-led environmental clubs, created a “green commissioner” position in student government, and incorporated grade-level environmental service learning opportunities. Between 2007 and 2011, Irvington diverted more than 200,000 pounds of e-waste from landfills, installed solar panels, worked to increase energy efficiency, hosted a community green fair, and more.

The idea of going green is well entrenched in this high school of 2,000 students. For about 15 years, all ninth-grade students have participated in the Change Project, which combines English and science studies. In groups, students identify an environmental problem, collect information, take action, and report on what they did. This academic model prepares students to successfully complete a senior exit project that demonstrates their mastery of core learning concepts and builds their sense of personal responsibility, communication and critical thinking skills, and social responsibility through applied content that focuses on community benefits.

Student initiative has been key to Irvington’s transformation. Two 10th-grade students questioned whether painting the school roof white would improve energy efficiency. On further investigation, students found an insurmountable hurdle: a gravel-top roof. Through this process, the students advanced their interest and knowledge in green schools and wrote the winning application for the America’s Greenest School contest. The school is now a community leader, developing sustainable ways to promote green concepts. For example, proceeds from High Tech Militia Club’s e-waste events help purchase energy-efficiency upgrades on campus.

For its student-led conservation efforts during the rolling blackout crises in California, Irvington was named the best overall winner of the fifth annual Flex Your Power Awards. The students

# Green Literature



Students can develop environmental literacy by reading well-written fiction and nonfiction that can be integrated in many subjects.

*The Boy Who Harnessed the Wind: Creating Currents of Electricity and Hope* by William Kamkwamba and Bryon Mealer (2009, William Morris). Fourteen-year-old William Kamkwamba took discarded items and produced a windmill. A true story of a community with famine, poverty, and plenty of wind and a teenager's determination. Nonfiction.

*The Curse of Akkad: Climate Upheavals That Rocked Human History* by Peter Christie (2008, Annick Press). Stories showing how climate change has been an influence throughout history are great for connecting science with social studies. Nonfiction.

*Empty* by Suzanne Weyn (Scholastic, 2010). What happens when we run out of fossil fuels—and what can teens do about it? Set 10 years from now, this book illustrates the inventive nature of youth when responding to real crises. Fiction.

*Going Blue: A Teen Guide to Saving Our Oceans, Lakes, Rivers, & Wetlands* by Cathryn Berger Kaye with Philippe Cousteau and EarthEcho International (2010, Free Spirit Publishing). Readers can use this colorful, informative guide to explore the interconnectedness of all natural resources. Nonfiction.

*A Kid's Guide to Climate Change and Global Warming—How to Take Action* by Cathryn Berger Kaye (2009, Free Spirit Publishing). This workbook can help create cross-curricular connections and engaging processes as students are guided through the five stages of service learning. Nonfiction.

*The Water Wars* by Cameron Stracher (2011, Sourcebooks). In this futuristic scenario, water is more precious than oil or gold. This environmental thriller places teens in the middle of a society depleted by drought and war. Fiction.

monitored vampire energy, purchased advanced computer server technology to turn off all the computers at night, and cut energy consumption by 30%. After studying how composting food scraps cuts harmful greenhouse gas production, students prompted Irvington to put in a food scrap diversion program in its cafeteria to reduce garbage; Irvington was the first school in the Fremont Unified School District to do so. Students won a solar panels grant that will generate data that will be used in math and science classes.

Recently Irvington installed a test parking area with permeable concrete that allows rainwater to trickle through concrete into the ground, preventing oils and other car-produced waste from running into storm drains and then into the San Francisco Bay. The new concrete pavement also has a lower heat index and doesn't promote the heat island effect like traditional asphalt.

Even the theater classes get into the act. The school partners with Circus Center, a local circus-oriented performing arts education facility. Visiting artists teach drama and vaudeville as well as circus skills to Irvington students. The advanced drama class developed and performed acts during waste-reduction assemblies for elementary children, using human pyramids, juggling, and clowning arts to teach the four Rs: reduce, reuse, recycle, and rot.

## Protecting the Bay

To achieve its mission of "Practicing environmental awareness to use less, recycle more and to protect the San Francisco Bay from pollution," Will C. Wood Middle School in Alameda, CA, ties environmental education to the science curriculum by engaging students in stewardship on campus and in the neighborhood. Wood is located just one block from the Bay, and students study how litter is generated and the impact it has on watersheds through clean-up and restoration opportunities. Wood has created Service-Learning Waste Reduction, an elective class that is part of the sixth-grade curriculum. Students participate in waste audits, awareness campaigns, and creative reuse contests. Wood systematically applies waste reduction principles to important school events, such as the Wood Museum of History Exhibit held each year.

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At the 2011 Bay Area Environmental School Conference, Jeannette Frechou was named Green Star Teacher of the Year. Among her many accomplishments, Frechou led Wood to become a NOAA Ocean Guardian School. Students study sources of litter at the beach and lead community campaigns to reduce the impact of trash on marine life.

As students discovered that the main type of litter was food packaging, they examined their own food choices to discover that healthier foods have less packaging. As a result of this study, the students lead a healthy eating campaign to reduce environmental effects. Students are also participating in the international Pellet Watch project to help monitor the spread of persistent organic pollutants as they attach to plastic debris in the water. The contaminated plastic pellets, called “nurdles,” are shaped like small pebbles and wash up on beaches all over the world. As citizen scientists, students have collected more than 100 pellets from their waterway and will receive detailed data on local pollution levels.

As a result of Frechou’s leadership and the strong collaboration among the teachers who engage students in environmental science through service learning, state test scores in science at Wood have increased more than 55% in the last three years, including for English language learners, all of whom learn academic vocabulary in the context of real-world problem solving.

**Green Is Good for Every Neighborhood**

Students at Mandela High School in East Oakland investigated food justice and the problem of food deserts, studying how far people must travel to get to healthy food in a community where most walk or take public transportation. Their research confirmed that most families had access to drugstores, liquor stores, and fast foods establishments—but not healthy, fresh food. In response, students planted a garden in the middle of their concrete jungle—which altered the feel of the campus—and now provide free, fresh produce to low-income neighbors. Their work extends across the curriculum to incorporate all core subjects, including the arts. The project inspired two students to start EAT GRUB (Enhancing Access to Gardens and Revolution-

izing Urban Backyards), a social enterprise that employs teens in the construction of planter boxes throughout the community.

At Leadership Public School–College Park, also in East Oakland, students are responding to the food desert concept by bringing a farmers market to school, increasing yields from the school garden by engineering cold frames for planter boxes, studying composting, and experimenting with hybrid and heirloom seeds. Students received a grant from the Shinnyo-En Foundation to build a peaceful reflecting pool oasis on campus. A student in the after-school robotics program is designing a remote-controlled submarine robot to collect water samples from the bottom of the pond to monitor the health of the ecosystem.

Students eagerly demonstrate their work to the community, both on campus and at larger events, such as East Oakland’s Green

## Learn More

**EarthEcho International’s Water Planet Challenge.**

Visit [www.waterplanetchallenge.org](http://www.waterplanetchallenge.org) and download free service learning action guides that address issues of water, energy, and food.

**EAT GRUB.** Learn how schools are helping eliminate urban deserts by visiting [www.plantingjustice.org/programs/eat-grub](http://www.plantingjustice.org/programs/eat-grub).

**Pellet Watch.** Help track industrial pollutants by participating in the international Pellet Watch program at [www.pelletwatch.org](http://www.pelletwatch.org).

**RandomKid.** Visit [www.RandomKid.org](http://www.RandomKid.org) to learn about the Anti-Bottle Project led by students across the country.

**TreePeople.** Take personal responsibility for the urban environment, making it safe, healthy, and sustainable and share the process as a model for the world; visit [www.treepeople.org](http://www.treepeople.org).

Is Good for Every Neighborhood Earth Day Festival and Parade. At the festival, organized in a partnership between Leadership students and Communities for a Better Environment, students and community members alike shared workshops and presentations teaching one another how to live healthier, more sustainable lives.

### Conclusion

“Green Schools aren’t about what an architect chooses to do on a new construction,” said Ivy. “It’s not [about having] a green building. It’s doing everything we can to be greener with the belief that students are learning all they can to be green citizens. We want our kids getting out and doing something, to be engaged.” What’s next for this thriving green community of schools? “One key effort is putting together a Green Star program with a variety of

curriculum-based environmental pathways,” Ivy said. “We aim to recognize schools that authentically involve youth as problemsolvers of environmental issues by combining learning and service.” **PL**

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### REFERENCE

■ National Clearinghouse for Educational Facilities. (n.d.). *Data and statistics: School building statistics*. Retrieved from [www.ncef.org/ds/statistics.cfm](http://www.ncef.org/ds/statistics.cfm)

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**Author’s note:** For more on SLWRP schools, free waste reduction videos, toolkits, downloadable lesson plans, and more, please visit <http://schools.stopwaste.org>.

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