

In this issue: Five 2012 National PLT Outstanding Educators honored for improving environmental learning and stewardship. Ten PLT GreenSchools! named Green Ribbon Schools. A PLT GreenWorks! project in Ohio engages special-needs students, a PLT GreenSchool! in Denver serves Latino students, and a classic PLT activity connects students in Texas and Connecticut. Plus, try these ten free apps that bring technology to PLT.

FEATURE ARTICLE



2012 National PLT Outstanding Educators

By Vanessa Bullwinkle

Congratulations to five outstanding individuals who use PLT to improve student learning and grow stewardship. They will be honored at a special luncheon on May 15 during PLT's 26th International Coordinators' Conference in Deadwood, SD.

News & Updates



Ten PLT GreenSchools! Named Green Ribbon Schools

By Kathy McGlaufflin

When Secretary of Education Arne Duncan announced the winners of the inaugural Green Ribbon Schools competition, we were thrilled to learn that ten PLT GreenSchools! are among those recognized as the "best of the best."



Advocacy 101 - Tell Your Story

By Christine Cadigan

In April, PLT attended the White House Summit on Environmental Education. The most powerful thing we share with high-level decision makers is your story.

Check Out the Rest of PLT's Family! News about the American Forest Foundation is Now Online

By Vanessa Bullwinkle

Project Learning Tree is the environmental education program of the American Forest Foundation. Find out more about all that AFF does to grow stewardship every day.



On the Ground



Incorporating PLT GreenSchools! in Culturally Diverse Classrooms

By Monica Garcia

An urban school teacher in Denver adapts PLT's GreenSchools! Investigations to meet the needs of her Latino students, and extends their hands-on learning by gardening and farming once a week at a nearby Urban Farm.



Special-Needs Students Create a Bloomin' Butterfly Garden

By Meagan Tehua

Students learn new skills and expand their capabilities with help from dedicated teachers, supportive community members, and a PLT GreenWorks! PollinatorLIVE grant.

Educator Tips



An Environmental Exchange Box Journey

By Corrine Thompson

A Gifted and Talented elementary teacher in Texas partners with a kindergarten in Connecticut on a classic PLT activity—and a parent adds an unexpected personal connection to make the learning even more real.

Tools



PLT GreenSchools! Webinar to Focus on Waste

By Rachel Bayer

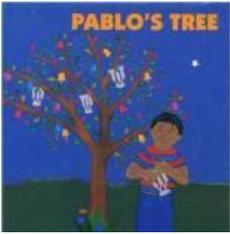
The last webinar in our series of free webinars highlighting PLT's GreenSchools! Investigations will take place on May 23 at 4pm ET.



There's an App for That

By Jaclyn Stallard

Explore ten useful, free mobile applications that bring technology to PLT.



Literature Connections - Pablo's Tree

By Jaclyn Stallard

Storybooks are a great way to capture children's interest in the environment. Check out this issue's suggestion for a great book—and some ways to tie it to PLT activities.



EE Resources - Spring 2012

By Jaclyn Stallard

Webinars, contests, grants, educational websites, online tools, games, quizzes and more!

2012 National PLT Outstanding Educators

By Vanessa Bullwinkle

Five educators who use environmental education as a tool to teach core subjects and foster environmental stewardship have been named 2012 National Project Learning Tree Outstanding Educators.

Every year PLT provides more than 30,000 educators with tools, on-the-ground training, and resources to incorporate environmental education and service-learning into their curriculum using forests as a “window” on the world. Since 1994, PLT’s Outstanding Educators have been honored for their commitment to environmental education, their exemplary use of PLT, and their exceptional teaching skills.

When asked what these educators collectively demonstrate, Kathy McGlaulin, Director of Project Learning Tree said, “Environmental education belongs throughout the curriculum. It taps into children’s interests while also strengthening the teaching of core subjects. These outstanding educators demonstrate how PLT helps improve student learning and engages students in understanding the role the environment plays in their daily lives and their responsibility for it.”

The five [2012 National Project Learning Tree Outstanding Educators](#) will be honored at a special luncheon on May 15 during PLT’s 26th International Coordinators’ Conference that will be held this year in Deadwood, SD. They range from a middle school teacher in rural Colorado to a university professor in the Washington, D.C., metropolitan area—and they show just how effective PLT can be on the ground with diverse age groups and cultures, and in diverse settings.

In addition to attending the PLT International Coordinators’ Conference, the five 2012 National PLT Outstanding Educators are invited to participate in the [World Forestry Center’s](#)

International Educators’ Institute, July 8-14, in Portland, Oregon.

Meet the 2012 National PLT Outstanding Educators:

- Lu Boren, a middle school science teacher at St. Columba School in Durango, **Colorado**
- Brooke Mohr, an elementary school teacher at Medart Elementary School in Crawfordville, **Florida**
- Dr. Usha Rajdev, associate professor of science education at Marymount University in Arlington, **Virginia**
- Kathy Rusert, science and reading teacher for Acorn Schools in Mena, **Arkansas**
- Dr. Cindi Smith-Walters, professor of biology at Middle Tennessee State University in Murfreesboro, **Tennessee**



Pictured from left to right: Lu Boren, Usha Rajdev, Brooke Mohr



Pictured from left to right: Kathy Rusert, Cindi Smith-Walters

Congratulations to them and to the Honorees selected as their state’s 2011 PLT outstanding educator from a large pool of PLT-trained educators.

“All of the candidates are clearly dedicated to PLT, environmental education, and environmental outreach,” said Jaclyn Stallard, manager of PLT’s Outstanding Educator program. “PLT is lucky to have them supporting our mission.”

See below for more about each of the five 2012 National PLT Outstanding Educators. For more about the Honorees from Michigan, Mississippi, New Hampshire, Nevada, Ohio, South Carolina, Texas and Wyoming, see their [profiles](#).

Lu Boren, Middle School Teacher, St. Columba School, Durango, CO



Lu Boren teaches earth science, chemistry, life science, and other subjects to students in grades 6, 7, and 8 at St. Columba School in Durango, CO. She uses environmental topics and PLT activities to wholly engage students in their learning, for example through studies

of forest management, fire ecology, and water quality, which has a direct impact on students’ interest in science and environmental studies. Her enthusiasm and approach also inspires fellow educators to get students involved in environmental service-learning projects. Through her efforts, St. Columba became a PLT GreenSchool! in 2011. She was honored as Outstanding PLT Educator in Colorado in 2009 by the Colorado State Forest Service, the sponsor of [PLT in Colorado](#).

- You can read more about Lu in the [Durango Herald](#) and [Today’s Catholic](#).

Brooke Mohr, Elementary Teacher, Medart Elementary School, Crawfordville, FL



Brooke Mohr has taught for more than 25 years in almost every elementary grade, as well as gifted instruction and early intervention for at-risk students. Now teaching at Medart Elementary School in Crawfordville, FL, she has taken a leading role at schools

throughout Wakulla County to promote environmental education and PLT. Through an annual “PLT Week,” she instills environmental awareness and stewardship of natural resources in both her students and the entire school community. Her teaching philosophy is based on her belief that teaching students to care about the environment creates positive change in schools, at home, and in the community. She became a National Board Certified Teacher in 2006 and was named Florida PLT Educator of the Year in 2011 by the University of Florida, School of Forest Resources and Conservation, the sponsor of [PLT in Florida](#).

- You can read more about Brooke from [WCTV “Eye Witness News”](#).

Dr. Usha Rajdev, Associate Professor, Marymount University, Arlington, VA



Usha Rajdev is the faculty leader for science education in Marymount University’s Teacher Education Program in Arlington, VA. She finds innovative ways to adapt PLT to different teaching environments and cultures. In addition to preparing her students

to teach in U.S. schools, she has led two groups to Porbandar, India. Using the hands-on activities of PLT, the trips have been a great success for the U.S. and Indian teacher candidates, as well as children in India. She ensures that future teachers have tools, critical thinking skills, and experiences so they, in turn, can improve the learning and instill a sense of stewardship in the students they teach. Recently she received a faculty of the year award from her school. She was selected as the Virginia nominee for the National PLT Outstanding Educator awards by [PLT in Virginia](#)'s sponsors, the Virginia Department of Forestry, Virginia Forestry Association, and Virginia Tech, Department of Forestry.

- You can read more about Usha in [Marymount University's News](#), [Virginia Department of Forestry News](#), and [Falls Church News-Press](#).

Kathy Rusert, Science and Reading Teacher, Acorn Schools, Mena, AR



Kathy Rusert teaches science in grades 7 and 8, science labs in grades 5 and 6, and remedial reading in the Acorn School District in Mena, Arkansas. On any given day, students may be dissecting rats, testing pH levels, or working in the outdoor classroom that she was

instrumental in creating. Rusert believes in hands-on, interdisciplinary education, and uses PLT to make the learning fun and meaningful. Her students have not only enjoyed science, but also have improved scores on state standardized exams. Kathy regularly partners with area businesses and nonprofits to further her students' learning through field trips, research, and community service. Her awards include Wal-Mart Teacher of the Year in 2005 and Outstanding Arkansas PLT Teacher of the Year in 2011 by the Arkansas Forestry Association, the sponsor of [PLT in Arkansas](#).

- You can read more about Kathy in the [Times Record](#) and [The Mena Star](#).

Dr. Cindi Smith-Walters, Professor, Middle Tennessee State University, Murfreesboro, TN



Cindi Smith-Walters is professor of biology at Middle Tennessee State University (MTSU) and is co-director of the MTSU Center for Environmental Education in Murfreesboro, TN. She has been a dedicated leader in environmental education in the state

since 1988, personally training thousands of educators to use PLT to improve student learning and promote stewardship. She helped make PLT and environmental education an important component of Tennessee's overall education curriculum while working at the Tennessee Department of Education. Since coming to MTSU in 1993, she has won numerous university faculty awards. She has served on multiple state and national committees, and helps school principals, superintendents, curriculum supervisors, and teachers throughout the state implement PLT and other environmental education curricula. She has received several awards from [PLT in Tennessee](#), sponsored by the Tennessee Forestry Association and the Tennessee Department of Agriculture, Forestry Division.

- You can read more about Cindi in [MTSU's Sidelines](#)

News & Updates

Ten PLT GreenSchools! Named Green Ribbon Schools

By Kathy McGlaufflin



Following on the heels of the first-ever [White House Summit on Environmental Education](#) (which I was privileged to attend along with Al Stenstrup, PLT's director of education programs), President Barack Obama issued a [proclamation](#) to mark Earth Day. It focused on the U.S. Department of Education's Green Ribbon Schools recognition award "to encourage more schools to pursue sustainability, foster health and wellness, and integrate environmental literacy into the curriculum." The next day, Secretary of Education Arne Duncan [announced the winners](#) of the inaugural [Green Ribbon Schools competition](#).

The administration's [announcement](#) is further evidence that environmental education is moving to the forefront of America's education priorities - an important step for environmental education both at the national and local level. Schools are being recognized not only for educational achievement but also for becoming community models for sustainability.

Many PLT GreenSchools! were among the nearly 100 schools nominated by their states' Chief State School Officers for this inaugural year of the Green Ribbon Award. Even more exciting was the news that **ten PLT GreenSchools!** have been recognized as the "best of the best," earning

them the designation of national Green Ribbon Schools.

Congratulations go to:

- Acorn High School in Mena, **Arkansas**
- Learning Gate Community School in Lutz, **Florida**
- Ewa Makai Middle School in Ewa Beach, **Hawaii**
- Eisenhower High School in Goddard, **Kansas**
- Lothrop Science & Technology Magnet Center in Omaha, **Nebraska**
- Adler Avenue Middle School in Egg Harbor Township, **New Jersey**
- The Willow School in Gladstone, **New Jersey**
- Detroit Edison Public School Academy in Detroit, **Michigan**
- Fishburn Park Elementary School in Roanoke, **Virginia**
- Dimensions of Learning Academy in Kenosha, **Wisconsin**

A total of 78 schools were awarded the Green Ribbon from among nearly 100 nominees submitted by 30 state education agencies, the District of Columbia and the Bureau of Indian Education. The Chief State School Officer in each participating state was allowed to nominate four schools for the honor.

"Science, environmental and outdoor education play a central role in providing children with a well-rounded education, helping prepare them for the jobs of the future," said U.S. Secretary of Education Arne Duncan. "U.S. Department of Education Green Ribbon Schools demonstrate compelling examples of the ways schools can help children build real-world skillsets, cut school costs, and provide healthy learning environments."

Winning schools will be celebrated at a national ceremony in Washington, D.C., on June 4. The Department of Education will host local ceremonies for each state's Green Ribbon Schools in the fall of 2012.

Just like schools are awarded a national Blue Ribbon for excellence in teaching and curriculum, the Green Ribbon gets pinned on the most environmentally conscious schools, as measured against three “pillars” of success identified by the Department of Education and highlighted by President Obama in his Earth Day proclamation:

1. **Sustainability:** The school’s efforts to reduce its environmental impact and improve its energy efficiency;
2. **Health and Wellness:** The school’s efforts to create healthy school environments for the entire school community, and to improve health, nutrition, and time spent outdoors;
3. **Environmental Literacy:** The school’s efforts to develop interdisciplinary environmental and sustainability education programs that improve students’ science, technology, engineering and math (STEM) skills, and result in student-led projects to address environmental issues in their community.

These pillars closely align with the goals of our [PLT GreenSchools! program](#) and we worked with states to help schools develop criteria for Green Ribbon recognition using the PLT GreenSchools! Investigations.

Here are three highlights:

- **Detroit Edison, a charter school in Michigan,** takes a comprehensive approach to ensure all graduates of the school are environmentally literate and works to reduce the school’s environmental impact. Student-led Green Teams are formed to focus on renewable/alternative energy, conservation and ecology. Recently, students were invited to present their work at the 2012 National Green Schools Conference in Denver. In October 2011, the school hosted a PLT GreenSchools! training for eight Detroit area schools. Both

teachers and students attended the training.

- After researching the plight of the Ozark chinquapin oak, students at **Acorn High School in Arkansas,** decided to create a garden labyrinth with a chinquapin tree at its core. In addition to a 3-year research project where they planted seeds and will monitor growth patterns, this labyrinth is just one of the ways youth are working together for ecological conservation. With help from a PLT GreenWorks! grant, over 250 students worked on building the outdoor space, and all 700 students grades PreK-12 benefit and use the area for academic and environmental learning.
- **Learning Gate Community School in Florida** is a Certified PLT GreenSchool! that has completed all five of PLT’s GreenSchools! Investigations. Their Energy Investigation resulted in a plan to reduce wasted electricity from classroom equipment that is switched off but in standby mode, called phantom electricity. After completing the Water Investigation, students recommended the school install hands-free faucets to replace leaky faucets, which they estimated wasted nearly 30 gallons of water per day, and they installed rain barrels to decrease their school garden water consumption by 660 gallons per week during the growing season! In addition to a recycling program, students started composting cafeteria food and garden waste. The students host an annual EcoFest to educate the rest of the school community about environmental issues and inspire others to take action.

Photo: Produce from the Acorn School garden is sold and profits donated to a local food bank. Photo courtesy of Kathy Rusert, science and reading teacher at Acorn Schools in Mena, AR, and a [2012 National Project Learning Tree Outstanding Educator](#).

Advocacy 101 - Tell Your Story

By Christine Cadigan

It's no surprise that today's political candidates pride themselves on being from "outside the beltway." So let's take a page out of their book and discuss how you can be an advocate from the comforts of your own home.

As valuable as [traveling to D.C. and building relationships](#) with your members of Congress can be, the vast majority of our Project Learning Tree network can also contribute great value to our policy efforts—with very little work!

PLT staff is often presented with the opportunity to meet with key decision makers at important events. For example, in mid-April the Director of PLT, Kathy McGlaufflin, and Al Stenstrup, PLT's Director of Education Programs, attended the [White House Summit on Environmental Education](#). This first-ever gathering brought together environmental education leaders from across the country with EPA Administrator Lisa Jackson, Secretary of Education Arne Duncan, and other administration officials, to discuss environmental education across federal agencies and throughout various programs.

What's the most powerful thing Kathy and Al brought to the table? *Your* PLT success stories. As PLT "insiders" we all know that when environmental education is integrated into curricula, students are more engaged in learning, and student achievement increases in core academic areas—including STEM subjects. We need to make high-level administration officials and your members of Congress aware of this, and we can do this by providing examples.

"Using EE to improve student achievement and get students excited about learning was a message that really seemed to resonate on Capitol Hill," said Pat Otto, Washington PLT State Coordinator when she came to Washington, DC last year.

Karen Christenson, a PLT teacher from Minnesota, is always quick to [share her PLT classroom success stories](#). Karen, like other PLT educators, facilitators, and coordinators, has her own story about how she incorporates PLT curricula in the classroom and the results she sees in student participation and classroom test scores. She continuously praises PLT's effectiveness and encourages as many people as possible to support PLT.

"PLT engages K-12 students in learning about our state's natural resources through interesting, rigorous lessons about forestry, farming, industry, and wildlife. As a teacher with 22 years of experience, I have seen many programs come and go. PLT really works! My students were engaged, motivated, and showed significant growth in their science scores on the MN Comprehensive Assessments," shares Karen.

"Project Learning Tree promotes high academic standards for students by having them learn critical thinking skills through direct experience during the school day. We teachers know that all learning begins locally and programs like PLT support local learning."

[Three PLT educators from Maine](#)—one elementary teacher, one high school teacher, and one pre-service teacher—told their Maine delegation that environmental education programs like PLT that get students into the outdoors are worth supporting. "Our students need the opportunity to learn about our natural resources and come to value Maine's outdoors—the very essence of what makes Maine, Maine."

Let's get to the bottom line. How can you help? [We need more stories.](#)

We need you to let us know the impact PLT has had on your teaching, and on your students. [Provide us with your PLT success story](#), and we'll make sure it's delivered to the right decision makers so federal policies and programs continue to support environmental education.

We know PLT works. Together we can make sure everyone else does, too.

Check Out the Rest of PLT's Family! News about the American Forest Foundation is Now Online

By Vanessa Bullwinkle



The American Forest Foundation has launched a new quarterly e-newsletter to tell the story of the woodland owners, educators, and students we support. Each

issue will include articles about the work that's happening on the ground to grow stewardship, and the tools we provide. Our inaugural issue highlighted four PLT GreenWorks! projects. Read this article, [GreenWorks! Grants Leverage Local Funds for Environmental Learning](#), check out the [whole issue](#), and [sign-up to subscribe](#).



Plus, we could use your help with our [new online tool for woodland owners! MyLandPlan](#) is still in development, but we will have a rotating series of inspiring quotes on woods, trees, and nature on the website's "dashboard."

We'd love to publish some student work, for example, an inspiring poem created using PLT's PreK-8 Activity 5 "Poet-Tree" ([see some examples](#) from an elementary teacher in Washington state who integrates photography and poetry into her lessons) or from PLT's PreK-8 Activity 20 "Environmental Exchange

Box" ([see some examples](#) from Washington, DC 4th grade students.)

Send your submissions to AFF's Vice President of Communications Jennifer Jones at jjones@forestfoundation.org.

Thanks for your help!

On the Ground

Incorporating PLT GreenSchools! in Culturally Diverse Classrooms

By Monica Garcia

Back in 1971, the late social activist Rodolfo "Corky" Gonzales, saw that the Denver, Colorado, public school system was not responding very well to the needs of Latino children. Corky, who was a visionary leader in Denver's Latino community, started our community school, [Escuela Tlatelolco Centro de Estudios](#), based on the principles of educational/social justice and diversity that he believed in. As a PLT GreenSchool!, we incorporate those principles into every part of the PLT curriculum.



As a teacher, I really like the [PLT GreenSchools!](#) curriculum. With some planning and preparation—and awareness of the special needs of my Latino students—I have been able to adapt the PLT GreenSchools! Investigations to reflect the cultural history and linguistic diversity of our school's students, while remaining true to Corky Gonzalez' vision for our community school.

Escuela Tlatelolco's "[Four Educational Cornerstones](#)" are very closely aligned with the work my students do in the PLT GreenSchools! program. For example, our students must be able "to utilize critical and creative thinking," and to "recognize, query and analyze [the] environment from the most immediate to the most remote." We also want our students to work to actively improve the community's health and well-being. The PLT GreenSchools! Investigations are well suited to help achieve these bigger goals.

Action and Results

When we first started with PLT GreenSchools!, we did the Energy Investigation. Students were energy sleuths who inventoried our energy use. As a result of their findings—and with the help of a PLT grant provided through funding from Learn & Serve America, a program of the Corporation for National and Community Service—we started using energy-saving light bulbs, turning computers off at night before we left, and using low-flow faucets and toilets in our school bathrooms. We have also cut back on the number of microwave ovens available to our students. We used to have several; now we don't have any. We also recycle on a regular basis.



Right now, gardening is Escuela's major focus, which is pretty remarkable since our school is completely landlocked in asphalt. We have aligned our curriculum this year around PLT lessons. Luckily, we can use Denver's [Urban Farm](#) as our outdoor learning environment. Once a week, my students work at the farm where they raise tilapia

fish and a variety of vegetables and herbs. Most of their science curriculum is integrated into what they do there.



The kids do a wide variety of projects geared toward understanding the sustainable food movement. An aquaponics system houses the farmed tilapia fish, and the water in which the fish swim is filtered through plants to provide the nutrients the plants need to grow, the plants filter the water and it returns back to the fish tank clean. In a few months, we can grow and harvest lettuce, herbs, tomatoes, peppers, and at the same time harvest fish.

My goal is to help my students understand the whole food system, all the way up to social policies. For example, we're integrating the PLT lessons to add questions about food justice: what happens when a community doesn't have access to fresh foods? What do they eat?

As we do PLT activities around trees, I try to bring in culturally relevant information. In addition to the maples and aspens included in the PLT curriculum, we study the *ceiba* tree that grows in Mexico. It's a sacred tree in the Mayan and Aztec cultures and traditions, and there are lots of legends and stories associated with it. Adding this tree connects our studies to who my students are.

Similarly, in addition to the PLT recommendations of poems about trees and nature, I have added a couple of poems to help my students see nature through a social justice and multicultural education lens. So alongside Robert Frost, I teach

African American poet Maya Angelou’s “When Great Trees Fall,” and “La Tortuga,” a poem by Spanish poet Pablo Neruda.



Five of my students (pictured from left to right, Jorge Chavez, Justin Torres, Celerino Banuelos, Rocsana Contreras, and Yesenia Luevano-Nava) were pleased to be able to [talk about this work to a national audience](#) at the recent national Green Schools Conference in Denver. I hope their presentation will inspire other urban teachers to build community partnerships around gardening, regardless of their location, and to think about the possibilities of incorporating cultural diversity in their own PLT GreenSchools! classrooms.

Tips for Teachers

- Know your students and understand where they’re coming from. That makes all the difference. It’s important to understand your students’ strengths and know, for example, which ones have a learning disability. A lot of kids with learning disabilities have been misdiagnosed or not diagnosed at all. Understanding which ones need extra help can help all of your students work better together.
- Look for additional resources that you can bring into the classroom to help your students to “get it.” I always think about my students’ different learning styles in everything I do. Some want to see. Some need to hear. Some have to have a hands-on experience. PLT offers all those

opportunities, but it takes thought and preparation.

- Plan ahead. I work a week in advance to be sure I have everything needed to teach the next PLT lesson and make it relevant to my students.
- Consider including reflective journaling as a regular part of your students’ PLT work. Everything we do for PLT at Escuela Tlatelolco goes in one notebook: the assignment *and* the reflection about the work they’ve done. It adds an important dimension.
- Be prepared to learn lessons from the unexpected. When a toad that had been hibernating in our garden jumped out as one of my students was breaking up the soil, it launched them into research on what kind of a toad it was, the lifecycle of toads, and toads as “indicator species” of habitat health. The students have built a terrarium habitat for “our” toad, and are recording their observations.
- Think outside the box. Even city folks can become sustainable, and there’s always space in the cities for an urban garden. If you’re creative, you will find a way to make it work.

Monica Garcia teaches grades 7 - 9 at [Escuela Tlatelolco de Estudios](#), an urban community school serving Latino students in Denver, Colorado.

PLT GreenSchools! is a program of the American Forest Foundation, in partnership with our 50-state PLT network, the U.S. Forest Service, the Corporation for National and Community Service, and many other national, state, and local partners.

Special-Needs Students Create a Bloomin' Butterfly Garden

By Meagan Tehua



At Columbiana High School in Ohio, Kathryn Kromer's special-needs class works together, learns together, and recognizes the differing skills of each student. For the past two years, students have volunteered each spring and fall at Goodness Grows, a church-founded, sustainable agriculture non-profit in North Lima. Goodness Grows facilitates educational workshops, produces organic vegetables, supports urban gardens, and hosts student and civic groups.

Once a week the Columbiana High School students help plant onions, peas, potatoes, turnips, lettuce, carrots, calendula, and day lilies. They water, compost, mulch, and weed. They help harvest vegetables and save seeds. The students have a variety of capacities, and are enthusiastic about gardening.

In 2010, the students learned about the importance of blossoms, native species, and pollination. They sampled fresh produce and learned about the edible parts of plants using PLT Activity 71 "Pass the Plants, Please." This sparked their interest, and laid the foundation to complete their own garden project. In 2011, ten students and three teachers took on the creation of a pollinator garden on the Goodness Grows site. They designed and built the Bloomin' Butterfly Garden with \$700 from a PLT GreenWorks! grant,

community support, and tools provided by Goodness Grows.

Gardening Builds Character and Skills



Planning and tending a garden is an avenue for all students to build character and gain skills. Special needs students have the opportunity to expand their capabilities in a collaborative, hands-on setting. The Columbiana class splits into three groups and works on tasks most appropriate to their abilities. Over the past two years, these students have improved speech patterns and dexterity. They have learned to compost, plant, and transplant, and they have learned about food and natural cycles.



Creating the pollinator garden was a great way to connect classroom learning to the natural world, and to experience direct outcomes. The students researched which host plants local butterflies need to feed the caterpillars once their eggs hatch. We learned host plants included parsley and holly hocks, and these were planted by the students in the garden. Nectar and pollen plants to suit area butterflies were chosen and planted as well. Not

only did the garden grow and blossom, so did the students' plant and butterfly knowledge.

Success On Many Levels

Our GreenWorks! project was successful on many levels. Not only did students gain research, planning, gardening, botany, and collaboration skills by being directly responsible for the project, but local groups and volunteers formed new relationships. An unattractive mound was turned into a beautiful oasis for pollinators, and many people were inspired to see caterpillars, butterflies and bees living their transformative lives.



Before: Students and Goodness Grows Director measure the area



After: Dustin and Tori in the Bloomin' Butterfly Garden

Students began planning the project with PLT Activity 96 "Improve Your Place." Each student researched the nectar and feed preferences of a local pollinator. It really enhanced their learning to know that the plants they found as good sources would be ones they would later plant and tend. Students were anxious to see the pollinators they had learned so much about.



They started seeds and developed transplanting skills. After drawing garden designs, the students decided to have a butterfly-shaped garden. The students marked the outline with rope and worked hard to remove the sod. Compost was integrated into the garden and seeds and starts were sown in accordance to the layout. In addition to leading the design and dirty work, the students made their own stepping stones and created a path. The walkway's contour curves around like the flight-path of a butterfly.

The students' creativity, leadership and learning are evident in the garden. They gained knowledge, skills and a sense of accomplishment for leading their project to completion.



Dan and Keegan mix and pour concrete into molds to create stepping stones while Rebekah and Tori decorate them.

Engaging Local Community Groups

As with any school garden or community project, success comes as a result of advance planning, having enough resources and a group of dedicated students, teachers, and volunteers with a long-term interest in the project. We found it helpful to have a project leader, schedule weekly work time, and enlist local naturalists to help.

We were fortunate to have the following local community organizations support our project:

- A local bee keeper spoke about native bees during one of the nine weeks the students were at Goodness Grows.
- A member of the Youngstown Men’s Garden Club helped determine the space and moisture requirements for each plant.
- A speaker at a local Audubon Society meeting provided a pamphlet that listed our area’s local butterflies.
- Community volunteers and church members worked alongside the students to encourage and help them complete the project.

Helpful Tips

To plan a garden project that will be enjoyable and rewarding, calculate as best you can the time, tools, materials, and funds you will need to create and maintain it over the long-term.

Goodness Grows’ staff, the students, teachers and volunteers worked on the garden every Tuesday for nine weeks. The students, with support from teachers and volunteers, conducted research during their home school classes and worked hard during on-site workdays. We allowed for three weeks of planning time before breaking ground, and we took three weeks after school ended to add the finishing touches. Over the summer, other volunteers installed a sign, pulled weeds, mulched and dead-headed plants.



It was very helpful that local naturalists gave their knowledge and time, plant starts and seeds to the Bloomin’ Butterfly Garden. They helped recommend plants that would not spread or takeover, such as tropical milkweed (*Asclepias curassavica*), false nettle seed (*Boehmeria cylindrical*), and “Lo and Behold Blue Chip” butterfly bush (*Buddleia spp.*)

Our garden acts as a live lab for environmental education and horticulture programs. The double-sided sign features the butterfly's lifecycle and food needs. Markers identify the diverse mix of annuals (zinnia, sunflower and hollyhock), perennials (cardinal flower, purple coneflower, butterfly bush, milkweed, and bee balm) and herbs (parsley, yarrow, and thyme).

The students and volunteers continued to care for the garden when they returned to Goodness Grows each week in the fall - and again this spring. Recently they were excited to host a local garden club interested in seeing what a special-needs class and a church gardening ministry could accomplish together.

Our beautiful pollinator garden continues to show the students rewards of participating in the yearly cycle of life. It is vibrant, educational, and maintained thanks to the commitment of dedicated students, teachers and community members working together.

Meagan Tehua is the Program Director at Goodness Grows in northeast Ohio. The PLT GreenWorks! PollinatorLIVE grants were made possible thanks to funding from the U.S. Forest Service. Check out [PollinatorLIVE's website](#) for more teacher resources, including information on pollinators, lesson plans, and citizen-science projects. More [PLT GreenWorks! grants](#) will be available later this year - the deadline to apply is September 30.

Educator Tips

An Environmental Exchange Box Journey

By Corrine Thompson

As educators, we continually request and receive materials to help develop new interests for our students. We also know that learning is not confined to the classroom, but rather can take place in any setting that presents new ideas.



I teach Gifted and Talented at [Mildred Elementary School](#) in Corsicana, Texas. My quest to offer my students opportunities related to environmental studies began last spring when I acquired a poster from the American Forest Foundation [celebrating 2011 International Year of Forests](#). The poster contained a description of Project Learning Tree's [Environmental Exchange Box program](#). I went to the [American Forest Foundation's website](#) and found a tab titled Environmental Education. Another click, and I discovered Project Learning Tree which led me to an email address for Jaclyn Stallard, Manager of Education Programs.

Planning Our Journey

I e-mailed Ms. Stallard asking for additional information about [Project Learning Tree's Environmental Exchange Box program](#). In a short time, I received a letter linking me with [Explorers Learning Center](#) in Seymour, Connecticut - a preschool that was to become our partner in a fascinating journey. An e-mail to the principal, Jackie Yannes, put me in contact with Julie Cavanaugh, the school's kindergarten teacher. Since my students were first and second graders and Ms. Cavanaugh's students were kindergarten age, we decided this would be a good match.

We were near summer break, so Ms. Cavanaugh and I agreed we would make our next contact with each other in the fall of 2011.

In September we renewed contact and each of us began guiding our students in preparation for our

"Box Exchange." My goal in the project was to help students focus on becoming more cognizant of the natural resources around us. I also wanted my students to learn that other areas in our country have distinct natural resources that may be different from those in our locality.

The Journey Begins At Home

We began our project researching trees native to our North Central Texas region. Students collected leaves from trees found in their yards, or near their homes, and brought them to school. Through posters we acquired, an online guide to [Trees of Texas](#) from the Texas Forest Service, and [What Tree Is That?](#), an online tree identification guide from the Arbor Day Foundation, we identified the tree from which each leaf came. This was a great way to connect school work with life at home, and also hone students' observation and research skills.

My class consisted of seven students, so we narrowed our study to seven species of trees. Each student selected a different species of a tree to research. Time spent in the computer lab allowed students to prepare note cards with facts about the tree species they had chosen. After completing their research, students gave oral presentations to their classmates to share the information they found. Their notes would become a part of our Exchange Box contents.

A Local Field Trip Reinforces Learning



I like to enhance my students' learning by making it relevant and tangible by connecting them to their local surroundings and things that are familiar. A local nature center operated by the Texas Parks and Wildlife Department is within driving distance of our school and served as our resource for environmental studies. Plans were made for a field trip that would give students an opportunity to walk a forest and wetlands trail, take time to observe the natural habitat, and gather specimens for inclusion in the box we would send to our partner school.



On the day of the trip, I handed out bags containing items students needed for making observations, taking notes or sketching, and collecting specimens. These items included:

- zip bags of various sizes
- clear plastic containers with lids
- small scissors
- hand lens
- pencils, and
- journaling pad.

Activities for the day included:

- making tree rubbings
- gathering leaves and specimens of native grasses, plants, and trees
- collecting seed pods, and
- in general, observing "all things of nature."

Illustrating Our Journey

In addition to the above, I wanted my students to have the opportunity to take photographs throughout the day. Because our program operates on a tight budget, as do many other educational programs, students shared the use of a digital camera. Once we were back in the classroom, students scrolled through the photos that were taken that day and selected the ones they felt best exemplified our natural wild scape. I printed the students' selections and we added these prints to our exchange box.

When asked what else should be included in our exchange box, most students wanted to draw pictures, so we set some class time aside to do this. Two students created a collage representative of trees and vegetation found in our region. Pictures from magazines such as [Texas Parks & Wildlife](#), and the National Wildlife Federation's [Ranger Rick](#) and [Big Backyard](#), were used to create their collage.

A Personal Connection with Our Destination

One last special serendipitous moment occurred when a parent of one student called to tell me how excited she was to know our partner school was in Seymour, Connecticut. As a child, she had lived in Seymour for a period of time. I invited her to come as a guest speaker and bring photos of the area. Her mom had just returned from a visit with family and friends in Seymour and she was happy to share her photos with the students. What a wonderful coincidence and how fortunate we were to have this local perspective.



The final step was to assemble our Environmental Exchange Box and prepare it for mailing.

Once this was done, our wait began for the box from students at Explorers Learning Center, our partner school in Seymour. How excited the class was when our partner box arrived and what fun the students had examining the contents our partners had chosen to share with us.

I am pleased to have been a part of [Project Learning Tree's Environmental Exchange Box program](#) and feel my students benefitted from it by gaining an understanding of the diversity of natural resources in the United States. Most importantly, I believe my students have a keener awareness for the beauty of nature that surrounds us, and gained new knowledge about their own environment.

I look forward to being a part of the program for the 2012-2013 school year and have already made initial contact with our new partner, Christine MacNeil, of the [Pine Plains Central School District](#) in Pine Plains, New York.

Thanks to the American Forest Foundation and Project Learning Tree's incredible network of educators across the United States for making our participation in this program possible.

Tools PLT GreenSchools! Webinar to Focus on Waste

By Rachel Bayer



The last webinar in our series of free webinars highlighting PLT's GreenSchools! Investigations will take place on May 23 at 4pm ET. It will include presentations by:

- **Kelley Dennings, Director of Recycling Programs and Services with Keep America Beautiful**

Kelley will discuss how to set up a school recycling program and how your school can become involved in the Recycle-Bowl competition, a free competition and benchmarking tool for K-12 school recycling programs to promote waste reduction activities. Learn how school recycling programs across the nation compete in a race to collect the most recyclables.

- **Students and teachers from St. Columba School in Durango, CO**

Lu Boren, middle school teacher at St. Columba School in Durango, CO, and a [2012 National PLT Outstanding Educator](#), will lead her team of students in discussions about their experiences conducting PLT's GreenSchools! Waste Investigation, including how the Investigation is integrated into their curriculum, and how they are using the results to further reduce their school's waste. They will also share information about their newest endeavor -- a solar vermicomposting bin. Students feed the worms from the school cafeteria, study the science behind

vermicomposting, and record the bin's impact on reducing school waste.

Anyone—teachers, students, individuals or groups—can participate in this FREE webinar series, made possible in part by generous funding from the U.S. Forest Service. For more information, and to register, go to www.plt.org/webinars. You can also access the recordings of our past webinars on Energy, School Site, and Water.

Finally, check out our blogs to date about the [Energy and School Site webinars](#), and the [students who presented](#) - they are the stars in the PLT GreenSchools! program!

There's an App for That

By Jaclyn Stallard

Whether we are shopping at the grocery store, beginning a new exercise regimen, or looking at the night sky, there's no doubt mobile applications provide assistance with everyday activities. In fact, when family or friends observe us engaging in some routine but seemingly archaic activity without technological assistance, we are often informed "there's an app for that."

Well, it doesn't stop with our personal lives. The usefulness of mobile applications has made its way into classrooms and other education arenas, all over the world. More and more schools view mobile learning as one of the best ways to integrate technology into education. These learning tools are flexible, portable, and cost efficient answers to modern learning needs (and requirements). Additionally, many students have mobile learning devices at home, are comfortable using them, and take them everywhere anyway.

With today's emphasis on STEM education and the upcoming release of the Next Generation Science Standards, technology is a tool to embrace. This article outlines ten mobile applications that can

be used to enhance Project Learning Tree activities.

As an educator, I realize that one of the most difficult things with using educational apps is finding the time to go through the half million or so available to find the one you need. As an educator, I realize the price of apps is also not to be ignored.

These ten recommended apps were identified with Project Learning Tree in mind...and are completely free for users to download. They provide a jumping off point for getting started, showcasing the variety of apps out there. Use the list below as a trailhead, realizing it is more than okay to blaze your own path. The app title and image link to the Apple store. If the app is available for android, you'll find a link to the android market under "devices."

Leafsnap



Price: Free
Size: 50.8 MB
Devices: iPhone, iPod touch, and iPad ([Android version in development](#))

Leafsnap uses visual recognition software to help identify tree species from individual leaf photographs you take in the field. This application contains high-resolution images of bark, flowers, fruit, seeds, and more. Currently Leafsnap specializes in tree species found in the Northeastern United States, but expansion to include all US regions is underway.

PLT Activity Correlation:
 PreK-8's 2, 20, 21, 22, 61, 64, 68, 78 (and more!)
 Early Childhood's 3, 4, 5, and 11
 Focus on Forests' 1, 2, 3, and 8
 GreenSchools! School Site Investigation

WildObs Observer



Price: Free
Size: 5.7 MB
Devices: iPhone, iPod touch, iPad, and [Android](#)

WildObs Observer allows users to search for and identify thousands of species of mammals, birds, snakes, plants, and more. Log your wildlife encounters for your own calculations or upload them to a national database for comparison.

PLT Activity Correlation:
 PreK-8's 6, 7, 8, 9, 11, 22, 23, 24, 45, 46, 47, 48, 88 (and more!)
 Early Childhood's 3, 4, 5, 6, 8, 10
 Biodiversity's 1, 2, 3
 Focus on Forests' 1, 2, 5, 7
 GreenSchools! School Site Investigation

WildLab Bird



Price: Free
Size: 38.3 MB
Devices: iPhone, iPod touch, and iPad (try [iBird Lite](#) for Android)

Use WildLab Bird to learn the basics of bird identification. This application uses audio, photographs, maps, and the process of elimination to help identify over 200 bird species. Sightings can also be entered into a national bird watching database for comparison.

PLT Activity Correlation:
 Good for use with all activities correlated to WildObs Observer, with the addition of PreK-8's Activity 25.

AllTrails



Price: Free
Size: 9.4 MB
Devices: iPhone, iPod touch, iPad, and [Android](#)

AllTrails helps users to get out and discover the outdoors. Use it to plan a national

park visit, find a hiking path near home, or map a new trail of your own! AllTrails can help you find local places to run, hike, bike, fish, and more in the outdoors. You can even upload photos and images to trails you create.

PLT Activity Correlation:

PreK-8's 1, 3, 4, 5, 21, 23, 35, 36, 46, 48, 54, 61, 71, 80 (and more!)
 Early Childhood's "Taking Neighborhood Walks" experiences (all 11 activities)
 Focus on Forests' 1, 2, 3
 GreenSchools! School Site Investigation

[SoilWeb](#)



Price: Free
Size: 0.1 MB
Devices: iPhone, iPod touch, iPad, and [Android](#)

A more technical application, SoilWeb allows users to access GPS based, real-time USDA-NRCS soil survey data. Using your geographic location, this app retrieves soil type summaries, including soil series names and image profiles.

PLT Activity Correlation:

PreK-8's 8, 24, 48, 70, 71, 77
 Focus on Forests' 1, 2, 5, 6
 GreenSchools! School Site Investigation

[Zero Carbon](#)



Price: Free
Size: 1.1 MB
Devices: iPhone, iPod touch, and iPad

Zero Carbon can calculate an individual's carbon footprint by looking at a person's daily habits. Once you know the amount of greenhouse gases your lifestyle is producing, this app offers tips on reducing that number. Zero Carbon also shows how your statistics stack up against world averages, and it can be connected to Facebook, for sharing results.

PLT Activity Correlation:

PreK-8's 31, 73, 84, 85, 86
 Focus on Forests' 1, 8
 Forest of the World's 6
 GreenSchools! Energy, School Site, and Environmental Quality Investigations

[EasyMeasure](#)



Price: Free
Size: 13.0 MB
Devices: iPhone, iPod touch, iPad ([SmartMeasure](#) for Android)

EasyMeasure uses the height of the camera lens and its tilt angle to calculate the distance to objects of your choice. Simply aim your mobile device at any object, and this app displays the distance towards that object on top of the camera image. Upgrades can be used to also calculate object height.

PLT Activity Correlation:

PreK-8's 21, 66, 67, 68
 Focus on Forests' 1, 2, 8
 GreenSchools! School Site Investigation

[Fairy Tale](#)



Price: Free
Size: 124.0 MB
Devices: iPhone, iPod touch, iPad

This story production tool can be used to create a personal story and enhance it by adding your own drawings, audio, and animation. The illustrations can be moved, expanded, reduced, or rotated with touch, and you can record your own voice as narrator.

PLT Activity Correlation:

PreK-8's 4, 5, 7, 8, 9, 18, 26, 40, 44, 47, 62, 63, 74, 76, 77, 78, 89, 91, 95
 Early Childhood's "Reading and Writing" experiences (all 11 activities)

Easy Chart



Price: Free
Size: 2.4 MB
Devices: iPhone, iPod touch, iPad

This is a good tool for teachers and classrooms. Easily create bar, line and pie charts that you can customize, save and e-mail or upload. The charts you create can be saved using multiple color schemes and in multiple sizes. The app also works without an internet connection.

PLT Activity Correlation:

PreK-8's 4, 6, 16, 22, 25, 27, 28, 36, 38, 41, 46, 67, 73, 77, 80

Early Childhood's 1, 3, 4, 5, 9

Forest of the World's 1, 2, 4, 8, 9

Focus on Forests' 1, 3, 7, 8

GreenSchools! All Five Investigations

Learn Sign Language



Price: Free
Size: 4.3 MB
Devices: iPhone, iPod touch, iPad
([ASL - American Sign Language](#) for Android)

This app introduces users to the world of communication by sign language. You learn from video clips, choosing from a wide variety of topic areas, including weather, colors, animals, shapes, feelings, family words, and more. Other free language apps are also available (Spanish, French, Italian, German, etc.)

PLT Activity Correlation:

Early Childhood's 1, 2

Many of these recommended free apps are "trial" in size, meaning that if you want to do more than the basic features allow, inexpensive upgrades are available (usually for about \$1). In my experience, however, the free apps provide more than enough technology to get the job done. Many applications

also offer "lite" versions, which provide a limited number of trials before purchase is required.

Like any good shopper, I recommend taking advantage of free trials and reading consumer reviews before making any app purchases. As often occurs with technology, applications seem to be outdated shortly after purchase, soon to be replaced by something newer, better, faster, etc.

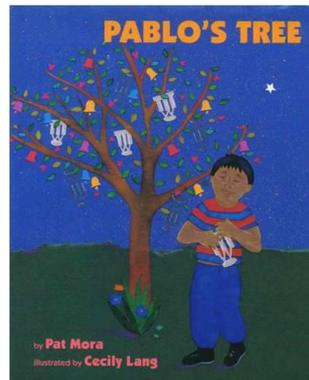
The bottom line: don't miss out. Using mobile technology has proven to increase student motivation and the number of educational applications available will remain on the rise. In short, there is no limit to the learning possibilities that are, quite literally, at your fingertips.

So, challenge students to give those texting thumbs a break and to exercise their brain instead. They will soon see that learning has never been more fun or convenient.

Jaclyn Stallard is Manager of Education Programs for Project Learning Tree. [Kyle Cooper](#), PLT Program Coordinator, also contributed to this article.

Literature Connections - Pablo's Tree

By Jaclyn Stallard



Each year on his birthday, a young Mexican-American boy looks forward to seeing how his grandfather decorated the tree planted the day the boy was adopted. Authored by Pat Mora, this book embraces new traditions and values, as well as exhibits familiar family

relations that are warm and heartfelt.

In addition to giving us wood, paper, food, and other products, trees are invaluable assets to our

communities. As such, people all over the world celebrate trees. This year, National Arbor Day is April 27th. Consider decorating a tree to celebrate, just like Pablo and his grandfather!

Grades PreK-3. ISBN: 0027674010.

Try this book in conjunction with the following PLT activities:

[Environmental Experiences for Early Childhood](#)

Activity 8: Adopt a Tree
Activity 11: Three Cheers for Trees

[PreK-8 Environmental Education Activity Guide](#)

Activity 13: We All Need Trees
Activity 15: A Few of My Favorite Things
Activity 21: Adopt a Tree
Activity 30: Three Cheers for Trees!
Activity 31: Plant a Tree
Activity 89: Trees for Many Reasons

EE Resources - Spring 2012

By Jaclyn Stallard

PLT GreenSchools! Webinar

[May 23, 2012 at 4pm ET](#)

The final webinar in our series on PLT's GreenSchools! Investigations will focus on Waste. Anyone—teachers, students, individuals or groups—can participate in this FREE webinar, made possible in part by generous funding from the U.S. Forest Service. For more information, and to register, go to www.plt.org/webinars. Plus, read our blogs about the [Energy and School Site webinars](#), and [the students who presented](#), and find out how to access the recordings of past webinars.

Project Earth's 2012 World Environment Day Contest

[Deadline: June 5, 2012](#)

One of the Project Earth 2012 U.S. Earth Day Contest winners is a PLT GreenSchool! Project Earth had many excellent entries, and the Wolford

Elementary School's entry received top honors in the K-5 category. [Check out their project](#), and consider entering Project Earth's World Environment Day contest. This contest is open not just to U.S. schools but schools around the globe. The best project from each country will be highlighted at a special event at the [Rio+20 conference](#) in June. Project Earth told us they would welcome more entries from schools participating in Project Learning Tree!

Captain Planet Foundation Grants

[Deadline: May 31, 2012](#)

These grants fund hands-on environmental projects for students ages 6-18 in US-based schools worldwide. The [Captain Planet Foundation](#) seeks to encourage programs empowering children and youth to work individually and collectively to solve environmental problems in their neighborhoods and communities. Grant amounts range from \$250 to \$2,500.

NEA Foundation Student Achievement Grants

[Deadline: June 1, 2012](#)

National Education Association (NEA) provides \$5,000 [grants to increase student academic achievement](#) in any subject area in US public schools and public higher education institutions. The proposed work should engage students in critical thinking and problem solving to deepen knowledge of standards-based subject matter. The work should also improve students' habit of inquiry, self-directed learning, and critical reflection. Proposals for work resulting in low-income and minority student success with honors, Advanced Placement, or other challenging curricula are encouraged.

NEA Foundation Learning and Leadership Grants

[Deadline: June 1, 2012](#)

These [National Education Association \(NEA\) grants](#) support K-12 public school teachers, public education support professionals, or faculty and staff in public institutions of higher education for one of two purposes. Grants to individuals fund participation in high-quality professional development experiences, such as summer institutes or action research. Grants to groups

fund collegial study, including study groups, action research, lesson study, or mentoring experiences for faculty or staff new to an assignment. The maximum award is \$5,000.

Lowe's Charitable and Educational Foundation Grants

The [Lowe's Charitable and Educational Foundation](#) is dedicated to enhancing the quality of life in the communities where Lowe's operates stores and distribution centers throughout the United States. Community Grants ranging from \$5,000 to \$25,000 are provided for community improvement initiatives and K-12 public education projects. Funding priorities for community improvement initiatives include park, neighborhood, and community facility enhancements; outdoor learning programs; and community clean-ups. Funding priorities for public education projects include construction-related education initiatives; playground enhancements; clean-up, landscaping, and painting projects; and minor repair of public school buildings. Requests may be submitted at any time. Visit the company's website to take the eligibility test and submit an online application.

University of Wisconsin Stevens Point Offers Online Courses - Summer 2012

Deadline: May 10, 2012 or 3 weeks before start date

This summer, UWSP will offer four online courses, now open for enrollment:

- Environmental Education Theory & Practice, May 31 - August 24
- Advanced Topics in Natural Resources and PR: Social Marketing, June 18 - July 13
- Natural Resources Policy and the Legislative Process, July 16 - August 9
- Water Resources and the Science, Policy and Politics of Climate Change, June 4 - June 22

All courses are available for credit. Contact Jessica Tomaszewski (715-346-3854 or jtomasze@uwsp.edu) for registration information and other inquiries.

Check Your School's Climate Impact

(resource for PLT's PreK-8 activity "The Global Climate", as well as PLT's Focus on Forests secondary activities "Monitoring Forest Health" and "Climate Change and Forests", and PLT's GreenSchools! program)

High school students can investigate the link between greenhouse gas emissions, climate change, and everyday actions at their high school. Using [EPA's Climate Change Emission Calculator Kit](#) (Climate CHECK) students can learn about climate change, estimate their school's greenhouse gas emissions and conceptualize ways to mitigate their school's climate impact. Students gain understandings of climate-change drivers, impacts, and science; produce an emission inventory and action plan; and can even submit the results of their emission inventory to their school district. You can [compare the energy use](#) of your school with other schools nationwide, and earn the ENERGY STAR for your school if it qualifies as a top performer.

Alliance for Climate Education's Energy Competition

(resource for PLT's PreK-8 activities "Energy Sleuths," "Waste Watchers," and "The Global Climate," as well as PLT's Energy & Society Kit and PLT's GreenSchools! program)

ACE's Biggest Loser: Energy competition makes it easy to save money, reduce CO₂ and win a **\$1,000 grant (and other prizes!)**. **How it works:** Reduce your school's energy use by turning down the lights and other energy intensive devices. The Action Team that sheds the most pounds of CO₂ in three weeks wins. Check out this [video](#) for a quick overview of the competition and visit the [ACE website](#) for more details!

The Scoop on Solar Power

(resource for PLT's PreK-8 activities "Renewable or Not?," "Energy Sleuths," and "Resource Go Round," as well as the Energy & Society Kit and PLT GreenSchools! program)

Check out the American Chemical Society's [podcasts exploring solar power](#). Two episodes examine the technology behind solar power, and two episodes describe the Solar Decathlon, an

international contest in which college students around the world compete to build innovative solar homes.

Chevron Presents: Energyville

(resource for PLT's PreK-8 activities "Energy Sleuths," "Waste Watchers," and "The Global Climate," as well as PLT's Energy & Society Kit and PLT's GreenSchools! program)

How can you provide enough power to meet the demands of 5.9 million people? That's the challenge students receive in the [online game Energyville](#). Students enter the name of their city and try their best to make informed decisions about its energy needs, while considering the economic, security, and environmental impacts of these decisions. The game provides a way for students to explore energy usage and its many implications for society and the environment.

Beetle Busters

(resource for PLT's PreK-8 activity "Invasive Species" and PLT's secondary activities - Biodiversity's "Global Invaders" and Focus on Forests' "Forest Invaders")

Help stop the Asian Longhorned Beetle from destroying U.S. Forests. Produced by the U.S.D.A.'s Office of Animal Plant and Health Inspection Service, the [Beetle Busters website](#) presents information about this invasive pest along with curriculum materials and a poster for grades 4-12.

Nab the Aquatic Invader

(resource for PLT's PreK-8 activities "Invasive Species" PLT's secondary activities - Biodiversity's "Global Invaders" and Focus on Forests' "Forest Invaders")

[Nab the Aquatic Invader](#) teaches students in grades 4-10 about aquatic invaders and the problems they create in the Atlantic, Pacific, Gulf, and Great Lakes regions. Produced by NOAA and the Sea Grant Program, the website features games and activities in which student detectives must "nab" critters in each locale that are damaging the environment. The website also includes extensive background information on each species.

Encounters: Wild Explorer

(resource for PLT's PreK-8 activities "Picture This!," "Habitat Pen Pals," "Charting Diversity" and "Web of Life", as well as PLT's Forests of the World secondary activity "Mapping the World's Forests")

The public radio program *Encounters: Radio Experiences in the North* explores the natural history of Alaska and the Far North. [An accompanying website](#) offers K-12 teachers links to the episodes as well as resources, such as slideshows, videos, and sound clips, introducing the animals and habitats of the regions: beavers, bears, caribou, humpback whales, boreal forests, moose, and others.

The Smithsonian Institution's Tree Banding Project

(resource for PLT's PreK-8 activities "How Big is Your Tree?" and "The Global Climate," as well as PLT's Focus on Forests secondary activities "Monitoring Forest Health" and "Climate Change and Forests")

Citizen science programs involve students and teachers contributing to ongoing scientific work. Sign up to participate in [The Smithsonian Institution's Tree Banding Project](#) and contribute to research about tree biomass, and how trees respond to climate. Students around the globe will monitor the rate at which their local trees grow, and [learn how that rate corresponds](#) to Smithsonian research, as well as compare their work to other students world-wide. Schools will be selected for participation based on location and when they apply. If selected, the Smithsonian will mail a kit that includes everything students will need to get started.

Project Budburst

(resource for PLT's PreK-8 activities "Bursting Buds," "Signs of Fall," "Looking at Leaves," "Adopt a Tree," "The Closer You Look," "Have Seeds, Will Travel" and more)

[Project BudBurst](#) is a network of people across the country that monitors plants as the seasons change. Get students outside and making seasonal observations that contribute to the collection of important ecological data. Involvement in Project BudBurst can give students invaluable experience

collecting data and making meaningful contributions to ongoing scientific research.

STEM e-Newsletter from NSTA

Science, technology, engineering, and math (STEM) education is on everyone's mind, and the National Science Teachers Association is publishing [STEM in the Classroom](#) to provide a forum for ideas and resources middle and high school teachers will need to support these disciplines. By coordinating science and math courses with technology and engineering courses, teachers can give students a better understanding of the world they live in.

Fire and Conservation Interactive Quiz

(resource for PLT's PreK-8 activities "Forest for the Trees," "Nothing Succeeds Like Succession," and "Living with Fire" and PLT's Focus on Forests secondary activities "The Nature of Fire" and "Story of Succession")

Get fired up and take [The Nature Conservancy's online quiz](#) to test your knowledge about fire and [how it can be used](#) as a tool to help people and wildlife. A scoring chart helps you to find local volunteer opportunities and other ideas for voicing your support for more American forest restoration by being fire smart!