

# Greening Communities with PLT GreenSchools



## INTRODUCTION

A few years ago, schools in the East End of Houston, Texas, were suffering from a familiar constellation of problems. Like other inner-city schools across the country, they struggled to keep students from dropping out and to get families engaged in their children's education. The physical environment around the schools was bleak, offering few opportunities for recreation or afterschool activities.

The community had other problems as well. The neighborhood is a "food desert" that lacks supermarkets or large grocery stores, making it difficult for residents to obtain fresh produce and other healthy foods. As a result, many people depend on fast food and snacks bought at convenience stores to feed their families.

Thanks to [Project Learning Tree® \(PLT\)](#), its partners, and the hard work of some dedicated students and community leaders, the picture today is improving. Students at 11 schools in the Houston East End have planted trees around their schools to provide shade and fruit and to absorb air pollution. They're growing vegetables in school gardens to donate to local food pantries. The gardens and tree plantings are linked to form the Houston East End Greenbelt (a greenbelt is an area of woods or parks surrounding a community). The garden projects have captured the interest of parents and neighbors, giving them a way to become involved with the school, and have helped some students blossom into leaders. A growing number of students are considering environmental careers as a result of their involvement.

Other schools around the country can replicate the successes that Houston's East End has achieved. PLT has developed this *Greening Communities with PLT GreenSchools guide* to help them do this. The *Guide* builds on the many

lessons learned from the two-year operation and implementation of the Houston East End project. Partners in the project included PLT, [Friends of the National Forest & Grasslands in Texas](#), the [Arbor Day Foundation](#), Dimensions Educational Research Foundation (Nature Explore Program) and Boyette Consulting. Funding came from the [National Urban and Community Forestry Advisory Council \(NUCFAC\)](#).

Every school, neighborhood, and region has unique resources and circumstances. The *Guide* offers general advice for starting tree-planting and gardening projects that ultimately benefit the whole community. It includes tips for facilitating the engagement of diverse stakeholders, including students, school employees, and community members. The ultimate goal of creating a green community is to elevate the quality of life for all residents, improving their health and that of the environment while giving young people in the community opportunities for a better life.



## PROJECT LEARNING TREE

PLT, a program of the [American Forest Foundation](#), provides educators of preschool through grade 12 with the tools they need to engage students in learning while developing critical thinking and problem-solving skills. PLT uses trees and forests as windows on the world to teach children how to think, not what to think, about complex environmental issues and how to make sound environmental choices.

PLT is one of the most widely used environmental education programs in the United States. It provides over half a million educators with high-quality professional development and multi-disciplinary supplemental curriculum materials that can be

integrated into lesson plans for all grades and subject areas. Independent evaluators have confirmed that PLT educational materials increase students' knowledge, reasoning, and academic skills.

The [PLT curriculum](#) is available to educators through in-person or online workshops. Some PLT materials can also be purchased directly from PLT. Educators can [contact their state coordinator](#) to get more information or to register for a workshop.

PLT's supplementary curriculum materials can be used to connect the learning that occurs through the [GreenSchools](#) program.

## GREENSCHOOLS

**P**LT's [GreenSchools](#) program, which started in 2008, has enabled hundreds of thousands of students across the country to apply their science, technology, engineering, and math skills in activities to make their schools greener. PLT GreenSchools inspires students to take personal responsibility for improving the environment at their school, through activities they can also apply at home and in their community. The program gives students, teachers, and school staff members the tools, training, and resources to form student-led Green Teams that work to create healthier schools—and to promote energy efficiency that saves schools money!

## URBAN FORESTS AND FORESTRY

**A**n urban forest is a group of trees growing in a city, town or a suburb, either a remnant inherited from forests that were surrounded by human settlement, or an area that was planted to provide recreation for urban residents – like the Houston East End Greenbelt. Because of their proximity to traffic, industry, and residential areas, and the large number of human visitors who frequent them, urban forests are likely to have some degradation.

These hard-working ecosystems provide important environmental services, filtering the air that people breathe, slowing winds, and capturing rainfall that would otherwise become runoff. Their presence reduces the potentially dangerous urban heat island effect, in which human activities cause a city to be significantly warmer than the areas around it. In addition, even small urban forests can provide habitat for wildlife. Finally, one of the most important benefits that urban forests confer is the opportunity for rest, recreation, and connection to the natural world. An urban forest provides the only contact with nature that some city residents have.

The planting, care, and management of urban forests pose unique challenges and this work is called urban forestry. As environmental problems such as climate change intensify the pressure on all ecosystems, people around the world are studying how better to manage, restore, and preserve ecosystems. Urban forests provide the ideal testing ground for techniques to foster the health of ecosystems that are in close proximity to human habitation.

## CASE STUDY: HOUSTON EAST END

The schools in the East End of Houston, Texas, serve some of the most at-risk students in the Houston Independent School District. Many of the families in the neighborhood are below the poverty line. The combination of urban pollution and generally poor diet have led to an epidemic of diabetes, obesity, and other illnesses in the East End.

There's cause for hope though: With funding from NUCFAC and help from [PLT](#) and its partners from 2014 to 2015, students from 11 elementary, middle, and high schools in the East End set ambitious goals to improve their neighborhood.

Participating schools integrated the use of PLT environmental education materials into their curriculum, and formed Green Teams to investigate their school site, using the PLT GreenSchools program. From their investigation results, they developed and implemented action plans to transform their community from a food desert to a food producer that can supply fresh, natural foods to the 100,000 residents of the East End, while also providing nourishment and shelter for wildlife and pollinators. They did (and continue) this work by planting fruit trees and community gardens, one at a time.

Schools also engaged their East End community through the creation of a Community Advisory Team and by conducting community arboriculture based workshops. These workshops educated the community members regarding the benefits of trees and empowered them to plant trees and improve the local urban forests.

(Additional information regarding school assessments and community workshops can be found in the "More Approaches to Building a Green Community Section.)

The Houston East End Greenbelt will continue to provide rewards for the community long after the students who started it have graduated.

### FROM FOOD DESERT TO FOOD PRODUCER



Emerson Hernandez (*above*) joined the Green Team at his school, E.L. Furr High School in Houston, when he was in ninth grade. The Green Team uses the [PLT GreenSchools](#) environmental service-learning program. This program sparked Hernandez's passion to work with his classmates and other participating GreenSchools to transform his community into a thriving green corridor.

"Through PLT you're empowering people to take action, to do something for their neighborhood. And while you're doing it, you're learning all kinds of other things—math, social studies, history, science, and writing"

~Emerson Hernandez  
E.L. Furr High School Ninth Grader



Through 2015, Hernandez, his classmates, and teachers have planted more than 200 trees all over the East End of Houston, created and tended more than 200 vegetable garden beds in the community, and raised approximately 3,000 pounds of collard greens, sweet potatoes, and other vegetables that have been donated to area food banks. One project (*pictured above*) was planting fruit trees in partnership with the Fruit Tree Planting Foundation, an international nonprofit charity whose goal is to plant 18 billion fruit trees to alleviate world hunger and combat climate change..

The experience is changing the lives of the young students by giving them opportunities to lead and to self-organize.

#### PROMOTING ENVIRONMENTAL JUSTICE

To instill a sense of environmental responsibility in younger students, the Houston East End schools gave some older students the role of Green Ambassador. These students mentor younger ones to ensure that the project will thrive long-term.

In 2015, a group of eight Green Ambassadors and their youth and adult leaders were invited to Washington, D.C., to [talk about their work at the National Environmental Justice Conference](#). Luis Cruz (*right*) told conference attendees that being a PLT Green Ambassador had changed his life.

“I really wanted to quit high school before I joined PLT in my freshman year,” explained Cruz, as a senior at Furr High School. “I wasn’t fluent in

English. I had failed five classes. When I first joined the program, and now as a leader, I realize that I had to push through the struggles and challenges. The PLT program has changed my life in so many ways. I have gone from a person who didn’t speak or write English very well, to actually designing a curriculum on pollinators and writing grants for other schools. PLT and being a Green Ambassador gave me a chance to prove that I could do things.”

Cruz and the other Green Ambassadors understand that what they are doing is critical to the East End community. “Our parents are suffering from diabetes, cancer, and all kinds of illnesses,” Cruz noted. “We have all these fast-food restaurants that are the only choice. Fresh foods have to come from far away.” To address these problems, he said, “we’re creating green spaces and encouraging others to create their own gardens and grow their own food.”

The students’ work on the East End Greenbelt “is what environmental justice is all about,” said his agriculture teacher, Juan Elizondo. “Environmental justice requires fair and equal access to fresh natural foods. That’s what our Green Ambassadors are trying to achieve.”

The USDA gave the Green Ambassadors one of its highest honors, the 2015 Abraham Lincoln Honor Award for Diversity, Inclusion, and Outreach.



## STRATEGIES THAT WORK

How can you make this happen in your school or community? Here are some lessons learned by the Houston East End Greenbelt, which succeeded thanks to its strong partnerships, its use of Green Ambassadors, its advisory team, its integration into an existing environmental education platform, and its recognition of youth and educator leadership.

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### 1. ESTABLISH A NETWORK OF SCHOOLS AND COMMUNITY PARTNERS

Creating the East End Greenbelt is a big undertaking, one that depends on the support of numerous partners. In addition to receiving a two-year grant and guidance from [PLT](#) and the [U.S. Forest Service](#), the students partnered with [Latino Legacy](#), the [Fruit Tree Planting Foundation](#), and the Arbor Day Foundation's [Nature Explore](#) program.

Two elementary schools, three middle schools, and two high schools participated in the project. At E.L. Furr High School, volunteers and students contributed over 2,000 hours of service to build the school's community garden. At Jackson Middle School, students successfully renewed the school's neglected atrium garden, producing a healthy crop of mustard greens, radishes, spinach, and carrots that they donated to the community. At Project Chrysalis Middle School, students built a new greenhouse and filled 30 planters around the school with plantings to enhance the school grounds.

During the 2014–2015 school year, Furr High School's Agriculture, Food and Natural Resources program partnered with Latino Legacy, a program of the U.S. Forest Service that provides conservation education programming to Latino populations, working through the local organization [Friends of National Forests and Grasslands in Texas](#). The partnership sought out at-risk high school students to serve as Green Ambassadors. These students had the opportunity to adopt a unique schooling

schedule that was designed to provide them with industry experience in an environmental field, while still earning school credit toward graduation. Throughout the year, students attended school for half a day, then devoted the rest of their day to working with other students at elementary, middle, and high schools on green action projects and implementing the [PLT GreenSchools](#) curriculum. The students received stipends for their role as Green Ambassadors and environmental stewards, which contributed to the economic sustainability of their families.

In addition, The National Arbor Day Foundation's Nature Explorer program worked with the local elementary schools, Lantrip School and Monarch School, in order to develop outdoor classrooms that can be used as part of the Green Ambassador program. The National Arbor Day Foundation and Project Learning Tree also conducted professional development workshops for educators and the Green Ambassadors to provide a greater understanding of how to support the development of the whole child in the nature-based outdoor classrooms, with the focus on nature-based learning.

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### 2. USE GREEN AMBASSADORS



School and community gardens are long-term projects that need to be maintained and cared for even as the initial group of students who planted them move on. The Green Ambassadors program helps ensure that the project will thrive long-term by maintaining continuity of environmental education experiences and inspiring investment across different grade levels. Ambassadors serve as stewards, teachers, and mentors to their peers, as well as to the

elementary and middle school students who will someday follow them (*previous page*).

The model provides leadership opportunities for the older students and helps them cement their knowledge by passing it on. It benefits teachers who might not otherwise have the ability to do environmental education activities with their younger students, by giving them the extra “hands on deck” they need to supervise and lead these activities. Finally, it benefits younger students by introducing them early to environmental education and by giving them role models to follow.

Each summer, Green Ambassadors work with their peers to formulate goals, objectives, and action plans for the following school year. They use Open Space Technology, an approach to running meetings. The approach emphasizes self-organization and includes no initial agenda, chairs arranged in a circle to foster contributions from all, the use of a bulletin board to track ideas, and small-group breakout sessions. The Green Ambassadors conduct fundraising, find resources, and develop partnerships to keep the program sustained and focused for the following year.

Tamberly Conway, a conservation education specialist with the U.S. Forest Service, noted, “GreenSchools provides students with opportunities that will help them on their pathway to higher education, careers, or simply as conservation leaders. I’ve seen this program change people’s lives.”

The idea of Green Ambassadors made a lot of sense to Juan Elizondo and David Salazar, agriculture instructors at Furr High School. They are former high school classmates from the East

End who returned to their community to teach. “We started noticing that most teachers don’t live in the community, so afterschool programs couldn’t get going because teachers sometimes live two hours away and need to get home after school,” said Salazar. “Our high school students stepped in as Green Ambassadors to fill the need for afterschool programs. The model is of youth leading youth, with students teaching each other how to learn and how to think.”



“The fact that this program is entirely youth-led makes it really interesting to other students,” added Elizondo.

Twenty Ambassadors were trained when the program first launched. All considered at-risk students themselves, they gained leadership skills and confidence through their role as teachers and mentors to younger students. They also had the chance to become community and national spokespeople for the PLT [GreenSchools](#) program. These Green Ambassadors are some of the first high school students to obtain professional training and certification through PLT in early childhood and PreK–8 environmental outdoor education, according to Salazar. One project (*above*) was planting a pollinator garden.

The program has been well received by school administrators. Salazar noted that Magdalena Strickland, the Lantrip Elementary School principal, is thrilled to have the Green Ambassadors come to her school to implement the PLT curriculum, because it makes her school more marketable to students and parents attracted to its environment-focused program.

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### 3. ASSEMBLE A COMMUNITY ADVISORY TEAM

The Houston East End's Community Advisory Team helped its fledgling Green Team and Green Ambassadors programs stay on track. This advisory team may be composed of community leaders or may include advisors from funding organizations. It can help the group articulate its goals, fashion a plan to achieve them, and ensure that the goals are in line with those of the community. The school might have educational goals (e.g., "to use the GreenSchools curriculum with 50 students"), community outreach goals (e.g., "to enlist the help of neighborhood residents in planting 50 trees on school grounds"), or resource management goals (e.g., "to implement energy efficiency measures that reduce the school's energy use by a third"). Information on setting realistic goals may be found in the [GreenSchools Investigations](#).

In addition, advisory team members with on-the-ground expertise can help advise on practical matters related to gardening and improving energy efficiency. Their assistance can make the difference between success and failure for a newly launched project.

To find advisory team members, consider hosting an open house to invite community members to the school, reaching out to the offices of local politicians, asking teachers to make recommendations, and contacting local nature centers to ask for their expertise. Seek out stakeholders who represent a diversity of socio-economic backgrounds, who are multigenerational, and who truly understand the community they will be representing. Ask students to invite family members and friends with an interest in environmental issues to join the advisory team. If the school has a PTA, ask them for help. Reach out to the local community college or university, particularly if it has an environmental science or urban planning program, to find students and professors looking for hands-on experience. Local nonprofit organizations and natural resource agencies may

also be willing to help. You can also reach out to your State PLT Coordinator and regional U.S. Forest Service Representative for assistance in finding and recruiting members.

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### 4. INTEGRATE INTO AN EXISTING PLATFORM

It can be challenging to keep an environmental education program running at a school in the face of educator turnover, changes in school administration, and the graduation of student leaders. A key factor in the Houston East End Greenbelt's success is that it was integrated into an existing program with an environmental focus. This program is the Green Institute at Furr High School, a magnet that provides career and technical education programming in environmental fields. The program is focused on preparing students for careers in renewable energy, energy efficiency, and environmental communications.

Thanks to the Green Institute structure, the students who became Green Ambassadors had an immediate role to play in the school. They attended monthly "Coffee with the Principal" meetings with parents and local partners. They also provided daily or weekly tours to guests and educators who were interested in implementing the [GreenSchools](#) program in their own schools. Finally, Green Ambassadors helped to manage a GreenSchool science, technology, engineering, arts, and mathematics room on campus devoted to environmental education. The room contained the materials for environmental education activities designed by students, as well as projects that revolve around topics like sustainable agriculture, insects, and the school's pet lizards, chickens, and chinchillas. The school's existing environmental program and opportunities for Green Ambassadors to contribute helped to cement the Green Team's activities and ensured the success of the Greenbelt program.



One experiment that the students at Furr High School tried was growing vegetables in



decomposing straw bales (*above*). The bales were allowed to decompose over the winter season. Soil, compost, and mulch were added to them in the spring to ensure that they would contain the nutrients that growing plants need to thrive. The students planted peppers, tomatoes, chard, and eggplants in the straw bales. The organic matter in the bales spurred plant growth and supported a variety of other beneficial organisms, including toads, butterflies, and ladybugs, during the growing season.

In addition to Furr’s Green Institute, one of the elementary schools in the group, Lantrip Elementary, is an environmental education magnet school and was also a natural fit for the PLT curriculum.

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## 5. RECOGNIZE YOUTH AND EDUCATOR LEADERSHIP

To organize momentum for the Greenbelt project, Elizondo and Salazar, the educators at Furr High School who lead the Green Team, started their own [blog](#). Green Ambassadors took turns contributing guest posts to describe the group’s work and successes. The blog not only provided a record of the team’s work but also generated positive public feedback for these dynamic young leaders.

The students also earned public recognition in the form of scholarships to attend the weeklong Student Climate & Conservation Congress (Sc3) at the U.S. Fish and Wildlife Service’s National Conservation Training Center in 2015. The mission of the Congress was to “empower outstanding student environmental leaders with the skills, knowledge, and tools to address climate change and natural resource conservation challenges and better serve their schools and communities.”

Educators also served as facilitators for Sc3. At the meeting, they received training in building leadership, formulating action plans, and incorporating diversity into lesson plans. Some educators received scholarships to join the Green Schools Alliance Ec3 Educators Climate & Conservation Colloquium for a further week of sustainability training. This program trained school personnel to attain a Green Sustainability Coordinator position and help their school integrate sustainability into school programming and community initiatives. The Office of Science and Technology Policy of the White House highlighted the program as one to watch in 2015.

Furr High School’s Green Ambassadors were guest speakers at the 2015 National Environmental Justice Conference in Washington, D.C. Their presentation, titled [Transforming Houston’s Urban Food Deserts into Sustainable Food Forests](#) (also available as a [video](#)), highlighted their work creating the Houston East End Greenbelt and serving as Green Ambassadors. This conference was followed by another week of U.S. Forest Service–Latino Legacy–Youth in Nature Leadership



Challenge programming, also in Washington, D.C.

While they were in town for the conferences, the youth leaders visited and learned from various partner organizations, including the national office of [PLT](#), the U.S. Forest Service (*previous page*), and the U.S. Fish & Wildlife Service.

#### FINAL REFLECTIONS ON THE HOUSTON EAST END CASE STUDY

**D**uring the 2015–2016 school year, Greenbelt Programming Sustainability was offered for the first time as a class at Furr High School. This class counted toward academic credit hours that students need to graduate. The school also continued to provide career and technical education programming through the Green Institute’s Agriculture, Food and Natural Resources program. In addition, the school launched an integrated career pathway incorporating permaculture, urban food, and other natural resources topics.

In addition, formal evaluation efforts conducted throughout this effort showed that students

engaged in the program had significant gains in urban forestry knowledge and skills, as well as leadership qualities. Graduates of this program will have valuable experience that prepares them for a career in natural resources.

The Green Ambassador program continues to thrive, even after the initial funding source expired, offering chances for students to mentor and learn from others both younger and older than they are. Green Ambassadors in high school work closely with fellow Green Ambassadors in college, most of whom are alumni who were engaged through high school and volunteer programs. College Green Ambassadors remain active as environmental educators and serve as mentors and leaders in their own community.

The schools and community leaders who were involved in launching the Houston East End Greenbelt are optimistic that the project will maintain its momentum and will continue to transform the area for the better.



## STRATEGIES AND TIPS FOR SETTING UP A GREEN PROGRAM

**J**uan Elizondo and David Salazar, agriculture instructors at Furr High School (*above*) shared the following tips for getting a Green Team or Green Ambassadors program up and running at a new school:

- Choose a GreenSchools lead teacher with high energy and passion to serve as facilitator. The students will follow that person's lead. The Houston East End Greenbelt used teachers who were known for their enthusiasm and dedication.
- Schedule work at times when people are available to help. At Furr High School, much of the work was done after school and on the weekends. At Jackson Middle School, Green Team members worked each morning in the garden before school. Front-load the work during the critical weeks at the beginning of the growing season.
- Give students opportunities to be leaders. When they are given responsibility, they will rise to the

challenge. However, they need to have ownership of their future and the autonomy to be in charge of this movement before they can set the stage for their younger peers.

- Before turning a classroom over to a youth leader, make sure that person has received ample training. Even the most enthusiastic young leaders need skills, knowledge, and supervised practice working as mentors to younger children. As Houston schools worked through the [GreenSchools](#) investigations, some Site Investigations and Action Plans had to be revised to compensate for the lack of experience of Green Ambassadors. Supervisors and trainers should provide clear expectations and make sure that Green Ambassadors receive plenty of practice working with groups.
- Be resourceful—you can't create something out of nothing. Pull in partners who can provide funding and resources. The Houston East End Greenbelt used a PLT [GreenWorks!](#)

[grant](#) to fund activities at the schools and the Arbor Day Foundation's [Nature Explore](#) program to fund the early childhood students.

- Be mindful that programs like this take some time to grow. Teachers and the school are the soil, and the students are our crop. We need to provide all the nutrients for the plant to grow and be healthy and strong, but progress doesn't happen overnight.
- Along the same lines, encourage administrators to be committed, engaged, and patient. They'll see a lot of great things happen, but they won't happen immediately. For example, the Houston Greenbelt project discovered that it took more time than expected to establish a Memorandum of Understanding (MOU) with the school district, individual school administrators, and the Green Team teachers. This document defined each partner's responsibilities and created a chain of command. Its creation was very important to the project's success.
- Likewise, take the time to set up a Community Advisory Team. The recruitment and development of this team should be a priority and should

start well before training and other activities commence. A strong Community Advisory Team like the one Houston had provides a support system that facilitates the work of Green Team teachers and Green Ambassadors. Without it, they will be burdened by too many responsibilities and the sustainability of the program will be in jeopardy.

- Do your research so you can spend money wisely. At Project Chrysalis Middle School, the students wanted to repair an old greenhouse. After they determined that the cost of materials would be \$440 but the cost of a brand-new greenhouse would be \$468, they decided to buy a new one. The students also took a field trip to a local nursery to learn which plants would be best for the school's needs. Some of the schools, like Project Chrysalis, received donations of plants and seeds, allowing them to reserve their funds for tools and seed trays. Others, like Stephen F. Austin High School, spent money on vegetable plants and fertilizer.
- Conduct regular evaluation of program efforts to ensure you are meeting your goals.

## STRENGTHENING PROGRAMS THROUGH PARTNERSHIPS

**W**hether you are implementing a local environmental improvement project using a PLT [GreenWorks! grant](#) or searching for other ways students can apply their learning in the real world, strategic partnerships can be truly beneficial.

How do you form meaningful and mutually beneficial partnerships? Sara Johnson, an Anthropology Professor for the California State University at Fullerton and the Project Director for the Urban Agriculture Community-based Research Experience (U-ACRE), shared her suggestions for finding partners, building

relationships, and collaborating to fulfill a shared mission.

Johnson and her college students have successfully partnered with the U.S. Forest Service, area schools, the Fullerton Arboretum, and environmental conservation, environmental education, and faith-based non-profit organizations. Her programs even earned a PLT [GreenWorks! grant](#) to implement a sustainable garden program using vermicomposting at Ladera Vista Junior High School.

Johnson uses her involvement and leadership in these programs to teach her students community-based research techniques that are grounded in the real world. Their hands-on research projects focus on implementing and evaluating sustainable urban agriculture projects, understanding the food choices and diets of various populations, and exploring how to improve agricultural sustainability and integrate such improvements into urban agriculture.

“We all have a challenge of making sure our students graduate, and that they are not just employable but also are promotable and creative innovators,” said Johnson (right). “That means we have to teach at the highest level and ensure that students can apply and assess information, not just memorize it.”



Johnson explained that professors don't need to partner with large schools or organizations to start programs like this. “I'm an anthropology professor, and am living proof that there are many different faculty you could work with successfully,” she said. Seek out local schools, businesses, or non-profit partners, regardless of their size, that complement your program resources and other offerings.

### STRATEGIES THAT WORK

**O**ne way to accomplish these goals is to work with partners who help students apply their education in the real world.

Johnson recommended the following tips to form these partnerships.

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#### FIND LOCAL PARTNERS

When Johnson began searching for partners to help her students, she started with organizations near her office. By choosing nearby partners, she was able to build a closer relationship based on regular visits, and the partners were better able to utilize each other's resources and expertise.

Johnson discovered that the principal, teachers, and students of a local school, Ladera Vista Junior High, were enthusiastic about starting a

sustainable garden project on their school grounds. Their partnership is bolstered by her frequent visits: “I pop in every couple of weeks to observe my students or to chat and see how things are going. That has been

invaluable.” The U-ACRE program and Ladera Vista have created a thriving vegetable garden that has increased students' knowledge of dietary choices and given them valuable experiential learning opportunities.

Local partners also have a stronger connection to the immediate area or local student groups. These connections help partners care more about the cause and often inspire them to become or remain involved.

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#### THINK CREATIVELY

There are many options for partnerships. Schools (including universities), local businesses, and non-profits are typically willing to form

meaningful partnerships with organizations that are doing demonstrably valuable work. Even home improvement and grocery stores have been known to support various community projects with funding or work days in which their employees participate. [PLT state coordinators](#) can help recommend local organizations that might be willing to form partnerships.

When forming partnerships with the U-ACRE program, Johnson often uses [PLT](#) materials. According to her, “PLT offers the kind of experiential learning that allows students to learn and teach at the highest level.”

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#### SEEK PARTNERS WHO COMPLEMENT YOU

Partnerships work best when the partners can offer one another something different. In one of Johnson’s recent projects, the teachers at Ladera Vista Junior High School served as incredible mentors to her college students. In turn, Johnson’s students applied the [PLT curriculum](#) as they worked with the junior high school students (*right*), lifting some of the teaching burden from the teachers. The arrangement was a mutually beneficial partnership.

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#### INVOLVE (AND THANK) YOUR PARTNERS

Once a partnership has been created, it’s worth seeking out additional ways that the partners

could connect. Consider inviting partner organizations to participate in professional development opportunities, milestone events, and other activities. For example, Johnson noted that training together helps partners work better together. Some of her U-ACRE students joined two Ladera Vista teachers at a [PLT workshop](#) in fall 2013 and participated in another PLT workshop in spring 2015.

You can also strengthen your relationships by communicating frequently with your partners and thanking them for their assistance. Partners appreciate receiving progress updates and evidence of achievements, such as pictures, blog posts, or presentations. Be sure to thank your partners each time you share a success.



## CONNECTING URBAN FORESTRY TO COMMUNITIES

**T**he success of urban forestry projects depends on their integration into the surrounding community. Before launching a project, visit existing green spaces in the area and talk with your students about potential projects they might do in collaboration with members of the community. Collaborations with people and organizations outside your school can double your positive impact and provide a framework to keep your project running long-term.

Here are some examples of urban forestry initiatives that successfully integrated into the community, starting with our main case study:

### HOUSTON EAST END GREENBELT

**T**he Houston East End Greenbelt’s success was due in large part to the organization and passion of its student and educator leaders, but it also benefited from its strong integration into the community.

As part of the Houston East End Greenbelt project, numerous urban forestry initiatives were undertaken. One of these was with the Fruit Tree Planting Foundation, which partnered with the East End schools to plant more than 200 fruit trees on school property and in community spaces. This foundation is an international nonprofit charity whose goal is to plant 18 billion fruit trees to alleviate world hunger and combat climate change. Their participation in the Greenbelt project contributed vital resources that gave the community hope and a stake in the future.

In addition, in summer 2015, Green Ambassadors teamed up with the U.S. Forest Service mascot Woodsy Owl, the organization Latino Legacy, and the Houston Independent School District Bookmobile, a mobile library for youth who primarily attend public park programming in low economic areas. Green Ambassadors (*above*) brought The Bosque Mobile, also known as The Forest Mobile, to these outings, promoting the culture of reading



with an emphasis on topics related to urban forestry and food sovereignty. The Bosque Mobile brought a live animal exhibit (a lizard and a snake), handed out free packets of flower seeds so people could plant their own bee- and butterfly-friendly gardens, and provided information and activities to engage community members with nature.

Houston East End Greenbelt schools also partnered with the Tree City USA program

(described in next section) to plant trees throughout the community and school grounds. Tree City USA provided over 100 fruit trees that were planted at 5 community and school action days to improve the urban forest of the Houston East End. These trees were planted not only at schools but also in public lands and community spaces. This is one example of how the Green Ambassadors' created solutions for a poverty-stricken community in which most students are on free or reduced lunch and lack access to fresh, affordable and organic produce.

Other initiatives focused on native gardening and pollinators. At public events, Green Ambassadors handed out goodie bags of educational material from The National Symbols Cache, an official service of the U.S. Forest Service. Green Ambassadors also created "seed bombs," balls of clay and fertile earth mixed with native seeds, to plant in local gardens and parks. These efforts were part of an integrated program created by students titled "Don't Mess With Pollinators," an effort to promote pollinator awareness and sustainability.

During the 2014–2015 school year, Green Ambassadors partnered with the Brazoria Refuge System and the U.S. Fish and Wildlife Service to establish a nature garden for pollinators. The garden incorporated walkable space, water retention, and a diversity of plants to increase urban green space. The partnership was cross-generational and included diverse partners.

Capitalizing on their momentum, the Green Ambassadors also partnered with the Texas Environmental Justice Advocacy Service and Texas A & M to complete a Resilience & Climate Change Cooperative Project. The project investigated flooding, environmental, and health problems in the community in order to formulate a solution for area flooding. Areas of focus were the underserved communities of Magnolia Park, Manchester, and Sunnyside in Houston.

By addressing issues that are important to various populations within the community, such as literacy, biodiversity, and flooding, the Houston East End Greenbelt program was able to extend its impact and ensure the continued support of community members.

## TREE CITY USA PROGRAM

**T**ree City USA® is an Arbor Day Foundation program that operates in partnership with the U.S. Forest Service and the National Association of State Foresters. This national framework for community forestry management promotes community pride, education, and individual actions to improve forest resources and quality of life in our cities.

Communities achieve Tree City USA status by meeting four core standards of sound urban forestry management: maintaining a tree board or department, having a community tree ordinance, spending at least \$2 per capita on urban forestry, and celebrating Arbor Day (on the last Friday in April each year). Participating communities have demonstrated a commitment to caring for and managing their public trees.



There are over 3,400 active Tree City USA communities; Houston has been one for 30 years.

The Tree City USA program can help states implement strategies to improve the quality of their urban forests. It also offers technical and administrative assistance to communities through the relevant state forestry agencies.

If you live in a Tree City USA community, your local Tree City USA tree board or urban forester can give you advice on appropriate trees to plant according to your specific climate and soils. Learn more at [arborday.org](http://arborday.org).

A related program is Tree Campus USA®, a national recognition that colleges and universities can earn by meeting five core standards developed to promote healthy trees and student involvement. The college or university must establish a campus tree advisory committee, create a care plan for campus trees, allocate financial resources for its tree program, celebrate Arbor Day (at any point during the year), and do a Service Learning Project with students. Achieving these standards challenges colleges and universities to use best practices regarding the trees on campus and to involve the student body in making the campus a healthier place to live. Local leadership for campus involvement is often coordinated by a university's Facilities Manager, Grounds Supervisor, or Plant Sciences professor. The Tree Campus USA program can help students build connections to conservation careers. Learn more at [arborday.org/TreeCampusUSA](http://arborday.org/TreeCampusUSA).

## NATURE EXPLORE CLASSROOMS

**A**nother environmental program that has successfully integrated into local communities is [Nature Explore](http://Nature_Explore), provided by the Arbor Day Foundation in collaboration with Dimensions Educational Research Foundation. The program's mission is to help children and families increase their engagement with the natural



world and to make nature an integral part of children's daily learning. Research suggests that positive childhood experiences in the natural world are the greatest predictor for caring about the environment as an adult.

Therefore, creating nature-rich spaces where children can play and learn (*next page*) is one way to create green communities and to nurture the growth of future environmental stewards.

The Nature Explore program works with schools, nature centers, national forests, parks and wildlife refuges, zoos, arboretums, early childhood programs, libraries, faith-based programs, and many other

organizations and institutions. A network of certified Nature Explore classrooms—outdoor spaces that are anywhere a traditional playground might be built—is developing throughout the United States. Learn more at [natureexplore.org](http://natureexplore.org).

A key element of integrating Nature Explore classrooms into the community is bringing community partners together at the outset. These partners collaborate on the design and creation of nature-rich outdoor classrooms at early childhood programs serving vulnerable children who may later attend PLT [GreenSchools](http://GreenSchools), thereby creating a developmentally appropriate continuum of environmental education experiences.



## MORE APPROACHES TO BUILDING A GREEN COMMUNITY

**A**ctivities that bring the community together can be an effective organizing tool. Not only can a large number of participants get a big project done in a few hours, offering these opportunities for people to engage is crucial to building their sense of commitment to having a green community. They are chances to disseminate information, connect like-minded individuals, and promote a sense of local pride.

### HOST AN ARBORICULTURE WORKSHOP

**A**rboriculture workshops are a unique opportunity to unite students, community, educators, and volunteers. Participants in these workshops plant trees and learn about local, city, state, and national forests. Here are some tips from the Houston East End Greenbelt on hosting a successful workshop.

Tips for Success

- Feature trees that are unique to the local area to promote local or regional pride.
- Demonstrate good pruning technique and allow participants to try it.
- Teach participants good technique regarding tree planting.
- Invite local experts and organizations to attend the workshop.
- Introduce new types of technology such as i-Tree (a software suite from the U.S. Forest Service that provides urban forestry analysis tools).
- Focus the workshop on doing an activity rather than on listening to an educational lecture.
- Provide additional resources such as handouts with links that participants can take home.
- Provide bilingual information if you live in an area where many people speak a language other than English.
- Provide native tree seedlings for attendees to take home.
- Tell participants the history of forests or trees in the area being served.
- Aim for multigenerational representation from the community by reaching out to individuals of different ages and ensuring that all can participate in the work.

An arboriculture workshop can also be a chance for the community to strengthen its spirit. For the Houston East End Greenbelt, planting fruit trees helped combat climate change and hunger, aided in habitat restoration, and provided habitat for pollinators. The fruit trees that have been planted symbolize the community's perseverance and resiliency. The work of planting and caring for these trees has created memories, stories, and shared commitment among the many people who have been involved. This sense of engagement and investment in the project is key and will ensure its long-term success.

## HOST A "GREEN YOUR COMMUNITY" WORKSHOP

Not every workshop needs to be a tree-planting exercise. You can also host a gathering just to build the capacity of your local organizing group, community members, and your school's Green Team members. Although organizing a green community workshop takes effort, it is an excellent opportunity to build your team and develop new skills that will make your work more effective. Here are some tips from the Houston East End Greenbelt for hosting a successful green communities workshop.

### Tips for Success

- Encourage young people to take the lead and develop the program.
- Aim for multigenerational representation.
- Try creative platforms of execution, such as Open Space Technology.
- Pull in enthusiastic people and give them a role to play in the workshop.
- Provide hands-on activities.
- Have a flexible agenda and timing.
- Facilitate interactions between participants, rather than lecturing.
- Establish a goal to develop a collaborative solution and plan of action, then carry it out.
- Think about what participants from different background or organizations are looking to gain from their participation, and ensure that they're getting it.

Community gatherings are a time to build relationships and earn trust. Don't stress if things don't go as planned; remember it's about trust and team building. If you help the participants have a good time and make the space a safe place to which they can return, you can count your workshop as a success.

## DO A SCHOOL SITE ASSESSMENT OR TREE INVENTORY

A great way to get students interested in environmental issues is to have them conduct PLT [GreenSchools](#) Investigations. The investigations inspire students to take personal responsibility for improving the environment at their school, at home, and in their community. Students, teachers, and school staff members receive tools, training, and resources for student-led Green Teams to create healthier schools—and to implement energy efficiency improvements that will save schools money! The PLT GreenSchools program helps improve students' academic performance, develops students' critical thinking skills, and creates student leaders. At Stephen F. Austin High School (*above*), students conducted a GreenSchools Investigation that led to the installation of a 300-gallon rainwater catchment system, with the help of biological engineers from Texas A&M University.

Best of all, the students then share what they have learned in the investigations with their families, creating a ripple of awareness and deepening the community's investment in being green.

The five hands-on investigations in PLT's GreenSchools program are Energy, Water, School Site, Waste and Recycling, and Environmental Quality. The investigations empower students to find out how much energy their school uses, where the school's water comes from and how much it costs, what grounds maintenance practices the school follows, how much waste the school generates and where it goes, and what kinds of chemicals students are exposed to from the air they breathe. These Green Ambassadors (*right*) are helping with a composting experiment, using cafeteria scraps from their school. The project reduces



waste as well as generating organic matter for the garden.

Here are some tips about maximizing the value of PLT Investigations.

- Forge a relationship with the school grounds keeper team and invite them to join your school's Green Team.
- Explain to the grounds keeper team that the goal of the school site assessment is simply to improve the school campus, not to interfere with their work.
- Realistically record school outdoor instructional and recreational use in order to establish a valid baseline.
- Educate the school and community about the benefits of schoolyard biodiversity and the importance of schoolyard habitats for outdoor instruction.
- Teach participants about the ecological and monetary benefits of trees.
- Spread the word about responsible and sustainable school yard landscape management practices.
- Ensure that the school and community are aware of the hazards of invasive species.
- Use i-Tree to assess tree health and canopy and ecosystem services provided to the community.



of high school students might work with a state forester to understand the complexities of fire in a forest ecosystem. Middle school students (*above*) from Scuola Vita Nuova Charter School in Kansas City, Missouri, completed the improvements to their school site (based upon their School Site Investigation results) with the aid of a \$5,000 GreenWorks! grant.

### FUND PROJECTS THROUGH GREENWORKS!

The PLT [GreenWorks! grant](#) program is the community action service learning component of PLT. It is built around action projects that partner educators, students, and the community in an effort to understand, respect, and improve the world around us. GreenWorks! action projects make a difference in how young people think, foster a sense of responsibility toward their communities, and improve their understanding of their relationship to the environment.



GreenWorks! experiences extend learning beyond the classroom into real-world contexts. The combination of community action with classroom activities gives students an understanding of environmental issues while enhancing basic math, science, English, and communication skills; strengthening problem-solving and decision-making skills; and developing civic skills, abilities, and competencies. GreenWorks! addresses community issues and integrates academic learning with community action projects to connect young people with their communities.

Schools, school districts, and states are increasingly integrating service-learning and community service requirements into their curricula. In many cases, students can complete these requirements by

GreenWorks! offers opportunities for people of all ages to work together to enhance their surroundings. For example, a GreenWorks! action project might partner students with a local nursery to plant a native garden at their school. Another project might involve many groups working together to enhance city streets by cleaning up graffiti and planting trees. A group

doing GreenWorks! action projects. Both service-learning and community service projects provide opportunities for students to address the needs of the community while expanding their own academic and personal growth and developing an understanding of civic responsibility. Learn more about PLT's GreenWorks! grants at [www.greenworks.org](http://www.greenworks.org).

## GIVE YOUTH EXPERIENCES IN NATURE

Experiences in nature are a vital part of a healthy childhood and of living a life in balance. They provide the benefits of



physical exercise and bring us back in tune with the natural world. However, experiences in nature are not readily available to many urban youth. Many parents of urban youth worry about their children's safety outdoors. In addition, access to addictive technology indoors –TV, computers, iPads, smartphones, and video games – keeps the average youth “plugged in” for 7.5 hours a day. As a result, a third of children are overweight or obese, with even higher rates among Latino youth.

The Youth in Nature Leadership Challenge (Y-LINC) in Texas, organized by Urban Connections–Latino Legacy is working to give underserved urban youth a chance to connect with nature (*above*). This program is a multi-day immersion experience that sends high school students to National Forests and other public lands, where they participate in service learning activities and camp overnight. Participants learn outdoor skills and teamwork as they work and play in small groups, guided by bilingual Latino Legacy team leaders and partners.

Y-LINC also sends students to visit Stephen F. Austin State University, the Arthur Temple College of Forestry and Agriculture in Nacogdoches, Texas, and other community colleges and universities. During their visit, they explore potential future careers in natural resource management and conservation.

## HELP STUDENTS EXPLORE A CAREER IN NATURAL RESOURCES

One of the most important reasons to make your community greener is to inspire a new generation of natural resource scientists, conservationists, teachers, gardeners, and citizens who will protect and care for our environment. Projects at the school and neighborhood level are a great way to get kids involved. They can also be a jumping-off point to launch a career in science or natural resources for particularly committed or talented individuals.

Consider taking high school students on field trips to nearby colleges and universities so they can tour the campus, attend a lecture or two, and talk with the school's career counselors about courses of study and future jobs.

This site offers information about careers in natural resources and forestry: <http://forestrycareers.org/>;

The Conservation Connect web-based video series, produced by the U.S. Fish and Wildlife Service National Conservation Training Center (NCTC), aims to connect youth, ages 9-13 (although any age is encouraged to enjoy), with the great outdoors, wildlife species, and conservation careers:

<https://training.fws.gov/conservationconnect/>

This resource can help college-bound students who want to study forestry review their options: [http://www.eforester.org/education/2014\\_SAF\\_College\\_Guide.pdf](http://www.eforester.org/education/2014_SAF_College_Guide.pdf)

Many families find the financial cost of college prohibitive, but there are scholarships available to students who major in natural resources, forestry, or conservation. Visit the links shown, or conduct your own search online:

<https://colleges.niche.com/scholarships/major/natural-resources-and-conservation-all-areas/>

<http://www.studentscholarshipsearch.com/major/natural-resources-conservation/>

<https://www.collegeoptions.org/40/0/ForestConservation/search-results-scholarship-search-by-major.aspx>

As the demands of human societies increase the pressure on natural resources, the world will need more scientists and conservation

professionals to help navigate the challenge of providing for people while preserving nature. Encourage young people to follow such a career and to make a difference in the world!

Creating Green Communities, using the PLT GreenSchools program, will result in greener and healthier communities, while building the next generation of environmental leaders.