BRANCHING OUT

EXPANDING YOUR SCHOOL'S URBAN TREE PROGRAMS

URBAN FOREST INITIATIVE

THE URBAN FOREST INITIATIVE (UFI)

UFI is a collaborative group of faculty, staff, and students from the University of Kentucky; professional organizations; local, state, and federal governments; and Lexington community stakeholders, all with an active interest in enhancing the urban forest. This organization has championed the perception, value, and function of the urban forest on campus and beyond since 2014. Its members have achieved significant and positive impacts on the public's awareness of, and active involvement in, the support, care, and expansion of the local tree canopy.

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INTRODUCTION

Purpose of this toolkit

This toolkit was created to assist K-12 faculty, staff, and sustainability coordinators in enhancing their school's environmental well-being through urban forestry programming. We hope that by using this toolkit, trees will be more widely embraced in school communities.

Please provide acknowledgment for the use of this toolkit by citing with:

Urban Forest Initiative. (2018). Branching out: Expanding your school's urban tree programs. University of Kentucky, Lexington, KY.

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MULCHING PROJECTS

Mulching projects engage the school community to promote tree and soil health. These events educate participants on tree care and can be a fun community-building exercise. Mulching is a simple way to retain moisture for your trees, improve soil health, and reduce weeds.

Intention

- To enhance tree health through mulching and educate about the benefits mulching provides trees
- To actively engage the school community, promoting camaraderie and building a sense of place

You will need:

- Permission
- Location with plants that need mulch
- Mulch
- Means of transporting mulch to site
- Cardboard
- Volunteers

- Wheelbarrows
- Space to place mulch pile
- Rakes
- Shovels
- Water
- Snacks

How to do it

- Work with your school's grounds department to identify a location, date, and approximately how many volunteers you will need.
- Advertise the event via social media, take-home flyers, and mailing lists.
- Partner with other entities to secure materials for the event.
- Demonstrate proper mulching at the beginning of the event, as improper mulching can compromise a tree's health.
- Consider combining this with a lesson or hands-on activity on tree biology.

Securing materials

- Arborists typically generate a lot of mulch through tree pruning and removal, and are often are able to give it away for free. Consider developing a relationship with a local arborist when planning this event.

- Mulching events can occur on school grounds or in a community setting. If the event is at your school, it is likely that your grounds department will have materials they can provide. If the event is at a community setting, partner with the city to secure tools, such as rakes, shovels, and wheelbarrows.

- Consider using cardboard as a first layer to eliminate competition from weeds and grass. Source clean cardboard from campus bins and recycling centers (have volunteers help remove tape and staples).

Securing volunteers

- Mulching events allow students to engage in teamwork and exercise, as well as spark excitement about trees. Consider offering extra credit for participation in mulching events.

What makes a good mulching location?

- Visible space with potential for community involvement
- Adequate number of trees that need mulching
- Iconic trees and prominent locations are nice, but not essential
- Room for parking
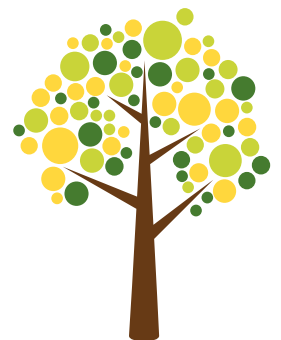
Proper mulching will...

- Be spread evenly at a depth of 3-4"
- Start a few inches away from the trunk (no mulch volcanoes)
- Extend to the drip-line, the edge of the tree canopy, if possible

NO MULCH VOLCANO!

Mulch should not cover trunk

DRIP LINE

PROPER MULCHING

Root flare exposed

DRIP LINE
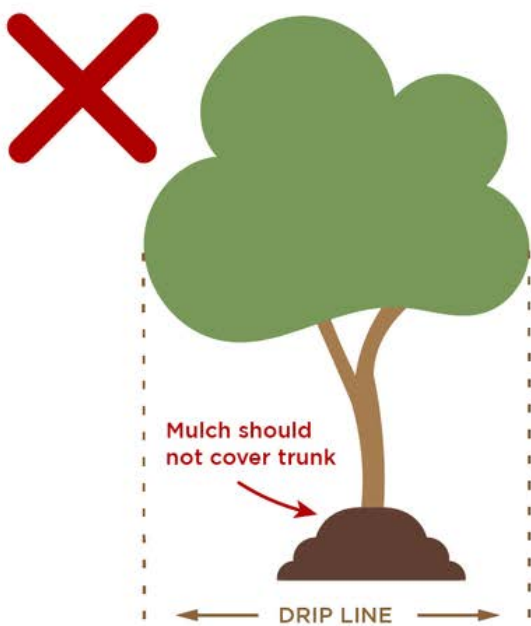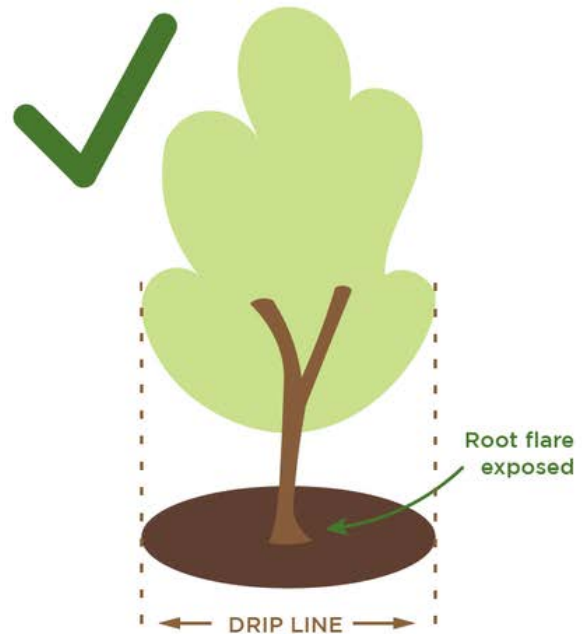
Never pile mulch over the trunk into a "mulch volcano."
This can cause rot issues and damage the tree.

Graphic credit Live Green Lexington

BEYOND MULCHING

De-Mulching

- Another service event to consider is de-mulching trees.
- Mulch applied improperly can harm trees. Mulch "volcanoes" can cause rot issues and lack of oxygen to a tree's roots.
- A de-mulching event is a simpler project to initiate, as you will not need mulch or larger tools. You will need gloves, hand trowels, and trees that were improperly mulched. Soil knives, small serrated knives used to cut through roots and soil, can be used to remove girdling roots.

Watering

- Newly planted trees need: 1) to be watered immediately following planting, 2) an inch of rain (or manual irrigation) every week while their leaves are present, and 3) to be sufficiently watered for the first three years after planting.
- Mature trees can be watered weekly during a drought.
- You can use a rain gauge or foil pan to check weekly rainfall, or simply look up rainfall amount for your area online.
- Generally, if it hasn't rained in a week and there is no rain in the forecast, a newly planted tree needs to be watered!
- When watering, remember that the majority of any trees' roots are no deeper than 18 inches in the soil.
- If there are newly planted trees on your campus, coordinating a watering event can keep your trees healthy and serve as a teaching opportunity.

TREE PLANTING

Tree plantings are a great way to get students excited about urban forestry and can be excellent learning opportunities. If you are a public school in Lexington, KY check the Acceptable Plant list and planting guidelines in the Teacher + Parent Corner at www.fcps.net/sustainability.

There are several important things to consider before planting trees, and communication with your school district's grounds department is essential. Use the following information from Fayette County Public Schools as a guide:

1

Interested parties need to first set up a meeting with your grounds department to discuss your ideas and help ensure that your chosen location is acceptable for your campus' grounds crew, who will be responsible for mowing around the perimeter of your planting. The Approved Species List + Guidelines for FCPS can be found on the Teacher + Parent Corner at www.fcps.net/sustainability. Proposals MUST be submitted by a teacher from a school email address, and it also MUST have approval of the principal.

2

The grounds department will inform you of the need to check for utilities, future renovations, and other large projects (i.e. roof work, A/C unit replacement). They will also help with the proper placement and planting of tree(s). Depending on the time of year, the grounds department may be able to deliver a tree or provide mulch.

3

After a decision is made about the types of trees, locations, and who is responsible for project oversight and maintenance during summer months, a project proposal should be sent in through the FCPS system.

4

The requirement to submit a Project Proposal is in essence a document trail for the grounds department, and to raise their awareness of projects they may not be aware of yet. Currently, there is no official acceptance to the project proposal, just collaboration with plant operations. The person responsible for the project will be sent an acceptance to the project proposal. At the end of each proposal, the committee chair includes a statement that before any work is to start, they are to confer with the grounds supervisor to make sure everything has gone as planned.

If you want to lead an outdoor activity that could potentially impact the way your school's grounds are maintained, a meeting in advance is essential. Setting this meeting to occur two months in advance should provide sufficient time. If scheduled closer to the event, approval may not be granted in time.

TREE MAPPING PROJECTS

Tree mapping projects are fun and interactive activities that can occur on your school's campus. They can be as simple as hand drawings or as complex as a digital map of trees around your school.

Intention

- To allow students to learn more about the grounds where they spend most of their days, gain basic information about tree identification and tree health, and express their creativity in new ways.

How to do it

- Younger children can draw trees or mark up a pre-existing map on paper.
- Older children can explore tree mapping using a free and easy-to-use online software, such as My Maps from Google. If GIS software is available for the students to use, this might be a practical way to get them familiar with the software.
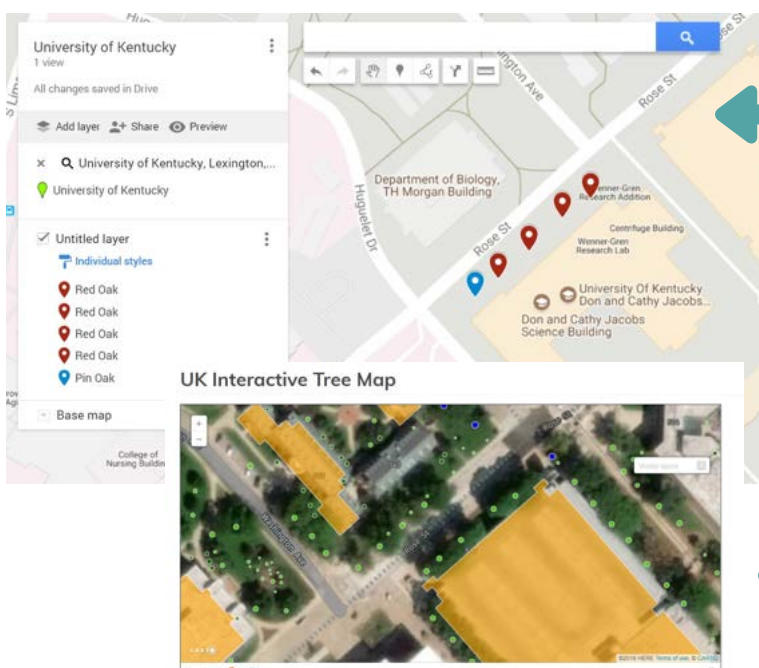
Trees mapped using My Maps. Requires limited teaching and is free to use.

Trees mapped using GIS software CARTO. Requires more advanced skills but is also free to use.

TREE MAPPING IN PRACTICE

Tree mapping example: Lafayette High School

- Student Gabbie Epley worked with the Urban Forest Initiative to identify, measure, and map the trees on Lafayette High School grounds.
- This map, created in ArcGIS, was used as an educational tool by the high school's science teachers. View the map at **arcg.is/1amSv90.**
- Mapping projects can educate students about ecosystem benefits, species identification through use of a dichotomous key, and basic tree health.
- To calculate a tree's ecosystem benefits, such as stormwater and carbon capture, consider using iTree software at **www.itreetools.org.**

Gabbie educating fellow students about trees
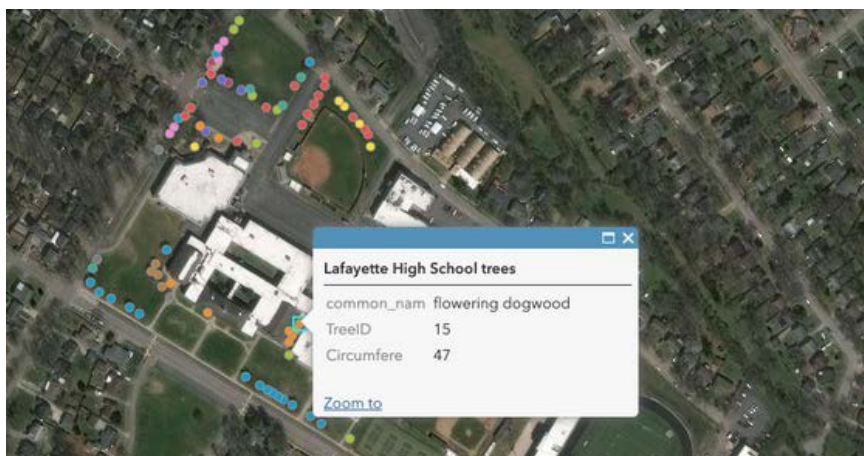
Lafayette's tree map in ArcGIS

IN THE CLASSROOM

ADOPT A KENTUCKY TREE PROGRAM

Developing an **Adopt a Kentucky Tree program** is a great way to help students learn more about a tree they love or see on a daily basis and increase their awareness about the many benefits trees provide.

Adopting a tree is a simple process, involving 1) finding a tree, 2) measuring the tree's diameter, 3) using an online calculator to discover the tree's ecological benefits, and 4) sharing your findings and what you love about your tree.

Intention

- To encourage students to join a community of treekeepers who recognize the benefits and beauty that trees provide
- To engage students in a way that allows them to form a closer relationship with the world around them. Students will learn more about their favorite tree and be able to share what they love about it!

How to do it

- Adopting a tree can be done individually or in a group. This process can be introduced in relevant classes such as math or science.
- To lead this activity, simply visit **ufi.ca.uky.edu/adopt-a-tree** and follow the steps listed on the page. It is wise to familiarize yourself with the Adopt a Kentucky Tree process and webform before you begin.

NATURE THERAPY

Nature therapy and mindfulness

Nature therapy is the process of connecting people and trees to promote both human and environmental health. Interacting with the natural environment has been shown to improve mental and physical well-being. Additionally, developing a healthy relationship with trees leads to a higher likelihood of quality tree care.

This dynamic relationship between people and trees has the potential to cultivate a healthier environment and community. One way of engaging students in nature therapy is through guided tree walks. Influenced by research on forest bathing, these walks were developed at the University of Kentucky through the Urban Forest Initiative.

The following pages contain a ten-minute script that can be used to lead guided nature therapy. This script can be adapted for all ages.

Find all of UFI's tree walks online at **ufi.ca.uky.edu/walks**

Script introduction

- Nature therapy is the practice of connecting with the natural environment to enhance your mental and physical health. You don't have to make a trip to a forest to do this; it's as simple as approaching the trees around you, wherever you are, with an attitude of mindfulness. When we go outside, for 10 minutes or so, that is what we are going to do. I'm going to lead you through a guided meditation, but if you wanted to do something like this again in the future, you don't even need that for nature therapy to be effective. It's honestly as simple as sitting outside with some trees. If you can't go outside, benefits have also been to shown to exist by just looking out a window and watching the trees, or maybe listening to sounds of nature on your phone.

  (The following two paragraphs may be included for middle and high school participants to facilitate a more scientific discussion)

- **Biophilia** is the idea that humans have this innate drive to be around other living things, like plants and trees. A lot of people speculate that rising rates of depression and chronic illnesses in the United States can be partially attributed to increasing urbanization and decreasing natural spaces. We're not spending enough time in nature.

- **Forest bathing** takes biophilia and puts it into practice. Forest bathing is the practice of mindfully interacting with the trees around you by using all of your senses. So much of our daily experiences are visual; we rely on our eyes to go places, to do school work, or to play on your phone. When you're forest bathing, you want to take time to notice what you're hearing, smelling, and touching, too.

Nature therapy & mindfulness script

Language may be adapted depending on age of participants.
Pause throughout the script when appropriate.

- Let's begin. If you feel comfortable, you can close your eyes. Rest your hands gently on your legs. Focus on your breath. Breathe in slowly and breathe out slowly. Feel your chest and belly rise and fall together with each breath. In and out. Feel the cool air entering through your nose, traveling down your throat, and expanding your lungs. Pause here. Then, exhale. Try to soften the muscles in your face; relax your jaw, notice if you are carrying any tension in your forehead or eyebrows. Breathe. We often carry stress in our shoulders. Take a moment to bring your shoulders up to your ears and release them back down. Do this two more times. Feel the tension leaving your shoulders with every release.

- Now, bring your awareness to the rest of your body. What exactly do you feel? What is the temperature like? Think past the words "hot" and "cold" and focus on exactly what your skin feels. Do you feel the wind? Now, focus on each part of your body, starting with your feet. Consciously try to relax each part of your body that you are concentrating on as you now turn your focus to your ankles, your calves, your thighs, your hips. Notice the sensations present in your abdomen, your chest, your back. Allow your arms to grow heavy. Be still.

- Notice the weight of your body being supported by the earth. Maybe you want to feel the grass around you, notice the temperature of the ground beneath you. Find a sense of security in this. This earth will not let you fall; it will not harm you. This earth has supported you, is supporting you, and will continue to support you. Think about this as you breathe.

Nature therapy & mindfulness script, cont.

- Move your attention outside of your body now, perhaps opening your eyes as you do so. You are just as much a part of this natural environment as the trees and wildlife around you. Just as we bring awareness to our bodies in a meditative practice, we do the same with the trees around us. In this way, we can begin to feel more connected to the natural environment.

- Pick a tree and look at the shape and color of its leaves, the patterns in the bark, and the structure of the branches. Do you see any birds or squirrels? Can you see, or hear, the leaves of the tree rustling in the wind? Does looking at a tree evoke any kind of emotion? Another important part of this tree that you can't see are its roots. They support the tree as it grows strong and tall. Shift your attention back to yourself. Where have you planted your roots? You may realize that, like these trees, you have grown the strongest where you have laid your most solid foundation. Your roots help to define the kind of person you are. Recognize that, unlike these trees, you have the power to replant your roots. Take a moment to reflect on this.

- These trees are tough. They have managed to find a home in the sometimes harsh and stressful urban environment; their resiliency helps them grow stronger and fuller and allows them to provide more and more benefits to their ecosystem. Recognize that this power resides in you, as well. While a strong tree may help develop a healthy ecosystem, a strong person can help to foster a thriving community. Each gallon of storm-water that tree intercepts strengthens its ecosystem, just as each small act of kindness that you can do for others works to create a stronger community.

Ending with gratitude

- It can be easy to travel mindlessly throughout our days. In our busy lives, we sometimes neglect to take the time to notice something as simple as trees. I invite you to end this practice with a final meditation, focusing on your breath, your body, and the trees surrounding you. As you breathe in, focus on how the air you are breathing is from the trees. Slowly exhale, knowing your breath joins the atmosphere as a crucial ingredient for trees to also grow strong and beautiful. Breathe in, noticing how the trees around you stand solid and confident. As you breathe out, imagine that same confidence spreading throughout your own body. Breathe in, thinking about how these trees persevere in the often-stressful urban environment. Breathe out, feeling assured in your ability to similarly thrive, even when conditions are difficult. And finally, breathe in and understand the value that trees have by virtue of simply existing. And as you breathe out, know that you are of value, as well.

- Remember to stay grateful throughout your day today. Offer your gratitude to the trees around you, the people walking past you, and of course, to yourself. It can be easy to lose sight of our inherent worth in the face of stress or adversity, but it is something worth reminding ourselves of frequently. I am capable. I am enough. You may open your eyes. I invite you to continue to spend time outside, when you can. Try to slow down when you're feeling stressed and divert your attention to the trees. Feel the sun and the wind on your skin, and just breathe.

Possible follow-up activities

- Written reflection or discussion on their experience with nature therapy
- Research paper on health benefits of nature, biophilia, or forest bathing
- Favorite Tree writing prompt (see next page)

"FAVORITE TREE" ACTIVITIES

"Favorite Tree" activities include several different assignments or aproaches to get students thinking about urban trees. A few examples can be found below, but consider developing other creative options for students to get to know their favorite trees.

Intention

- To help students develop a sense of place by establishing relationships with their school trees. "Favorite Tree" activities help to connect students with the natural environment and foster a sense of ownership for the trees around them.

How to do it

- A simple way to engage students is through writing about their favorite trees. For younger students, this could look like an open-ended writing prompt. For older students, more detail can be incorporated, such as information about location, tree species, and speculation on what kinds of ecosystem services their tree provides. This assignment could be done to connect environmental science to writing, and it can be done individually or in a group.
- Another great activity is labeling iconic trees at your school. One way of doing so is through designing and purchasing tree labels. Some labels are designed specifically for trees to allow growth. Ensure that your labels have proper springs and screws. An example of what this might look like can be found on the next page.

"FAVORITE TREE" ACTIVITIES

How to do it (cont.)

- Drawing trees is another great way for students to start thinking about the trees around them. This also serves as an opportunity for education on different parts of a tree (leaves, bark, roots, etc.). Many children neglect to include roots when drawing trees, so this could be a valuable time to tell your students about the importance and role of a tree's root system.
- A great way to step into "Favorite Tree" activities is by having your students take pictures with their favorite tree. For older students, you could involve the use of social media (e.g., posting their picture on Facebook) to engage them in a form of communication that they enjoy!

Tree labels with springs and screws.
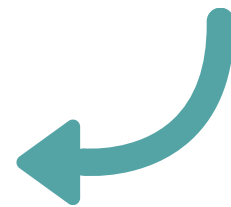
OTHER GREAT TREE RESOURCES:
Methods of Enhancing Urban Tree Programs

Tree Are Good -- www.treesaregood.org
Description: Trees Are Good provides the public with educational information about the benefits of trees and how to properly care for trees in the urban environment. The site contains resources from the International Society of Arboriculture, and also provides a collection of reliable tree care information provided by other industry organizations.

UFI website -- ufi.ca.uky.edu
Description: Visit the Urban Forest Initiative website to learn more about our programming, events, and partners.

Fayette County Tree Planting Guide -- fcps.net/bysc

Additionally, it is recommended that you seek partnerships with your school's (or local college's) environmentally-related clubs and service groups. This could include a sustainability council, gardening club, service team, etc.