Missouri Community Forestry Council and the
Missouri Department of Conservation
Missouri Arbor Day Poster Contest for 5th Grade
2018-19 Curriculum and Teacher's Guide

Theme:

Trees Work for Our Community

Introduction:

Trees work in amazing ways that shape the quality of our daily life. They provide shade, food, comfort and a place to play. For more information on how Trees Work, visit the Missouri Department of Conservation webpage at www.treeswork.org and get to know more about the real and valuable benefits trees provide in our lives.

Goal: For students to gain appreciation for trees and understand how trees impact their lives.

You are encouraged to use all or adapt the activities in these instructional materials to meet the learning objectives of your classroom. These activities utilize Missouri Learning Standards for science and English Language Arts. You can use one activity and then introduce the poster contest information as an assignment, or you may decide to use all of the activities. Please note that some activities also have supplemental materials, which are available on the Missouri Community Forestry Council (MCFC) website at http://mocommunitytrees.org. Be sure to review the poster contest rules and due date to be included at the state competition. Students may still participate in the contest, even if they have not experienced the curriculum, although the activities may help students decide on their poster content and are used to judge the posters.

Trees Work for Our Community

Objectives

1. Students will be able to identify at least two features of their neighborhoods that make them desirable places to live.
2. Students will be able to explain the importance of trees to a neighborhood and community.
3. Students will be able to justify their choice of tree for a yard, neighborhood or community.
4. Students will be able to determine which species of tree is best for a yard, neighborhood or community.
5. Students will plant and take care of a new tree in their yard, school or community.

Time Considerations

Activity 1: 15-20 minutes to draw or map their neighborhoods and 15-20 minutes for the discussion following, led by questions in lesson
Activity 2: 30-40 minutes for full activity
Activity 3: 30 minutes to 1 hour to plant a tree OR 20-30 minutes to select and determine a location for a tree

Additional Resources

Many online resources are referenced within each lesson that provide additional information for teachers, parents and group leaders.

References

Calculating the Green in Green: What's an Urban Tree Worth? (2010). US Forest Service, USDA, Washington, DC. https://www.fs.fed.us/pnw/sciencef/scifi126.pdf

https://extension2.missouri.edu/

https://mdc.mo.gov http://moreleaf.org

http://www.everythingesl.net/downloads/tchart.pdf

http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx

http://www.mortonarb.org

http://www.treeswork.org/benefits/your-community

Missouri Learning Standards

English/Language Arts

R.1.D.5.b: Read independently for multiple purposes over sustained periods of time by providing evidence of reading (Activities 2 & 3)

R.3.A.5.b: Interpret details from procedural text to complete a task, solve a problem or perform an action (Activity 3 only)

R.3.A.4&5.c: Use multiple text features and graphics to locate information and gain an overview of the contents of text information. (Activities 2 & 3)

Science

4&5.ETS1.B.1: Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem. (Activities 2 & 3)

Resources Needed

Activity 1: Colored pencils, crayons or markers, paper, projector or Smartboard and/or Internet access on device.

Activity 2: 30-40 minutes for full activity

Activity 3: Student Handouts for Activity 3, Missouri Department of Conservation flier "How to Plant a Tree", shovel, water container such as a bucket or hose, tree fertilizer or food OR Internet access on device.

Activity 1: My Neighborhood

Objective

1. Students will be able to identify at least two features of their neighborhoods that make them desirable places to live.
2. Students will be able to explain the importance of trees to a neighborhood and community.

Background Information for Teacher and Preparing for the Activity

Great neighborhoods exist is nearly every town and city—even in rural areas! What makes these neighborhoods good places to live? Although the people in neighborhoods make the difference, the presence of trees and green spaces also contribute to making neighborhoods desirable and even increase the property values of homes in the neighborhood too. As we focus on the neighborhood first for Activity 1, we also want to emphasize that neighborhoods make up their town or community. Depending on the size of their community, it may be made of up many neighborhoods or the entire community may be considered their neighborhood too. The basis for these lessons comes from the TreesWork campaign, which does focus on the community as a whole.

According to the Trees Work website, linked on the Missouri Department of Conservation's website, http://www.treeswork.org/benefits/your-community , people feel a bit more satisfied in life when they live in areas surrounded by trees. Specifically, the following list reveals research findings related to life satisfaction in people:

* Feeling their life issues are less difficult.
* They have longer attention spans.
* Feeling that they procrastinate less.
* Neighborhoods with trees also support more socialization between neighbors.
* Links to both increased shopping for both goods and services and lowered crime rates are attributed to neighborhoods with mature trees in the landscape.

This activity begins the discussion of the value of trees in a neighborhood by asking students to draw their own neighborhoods where they live or the neighborhood that their school is located in. Once they have made their drawings, then they can consider what makes their neighborhood a good place to be (or not—if not, is it lacking trees that might encourage more positive interaction between neighbors?) and also consider what makes someone a "good neighbor". Finally, the discussion goes to the importance of having trees in a neighborhood and allows students to come up with their own ideas about the worth of having trees in their neighborhoods and how good neighborhoods help to make good communities.

Steps for Activity 1: My Neighborhood

1. Provide each student a piece of paper and access to colored pencils, crayons and/or markers.

2. Ask students to draw a picture or map of their neighborhood, including all buildings and other natural features such as trees, shrubs, grass, animals they have seen, etc. They may also decide to draw a picture or map of their school's neighborhood.

3. Tell students that they have 15-20 minutes to draw—they may also want to include a key or labels for the parts of their drawing or map.

4. After students have finished their drawings and/or maps, ask them the following questions, beginning by letting them discuss with a partner sitting near them or within a small group. After roughly 2-3 minutes of discussion within their small group or with a partner, ask them to share their lists and discussions with the whole class.

Questions:
1. What makes a good neighborhood? Please create a list of the features of a good neighborhood, but also be prepared to explain "why" the feature makes a neighborhood a good place to be.

Teacher Note: If it does not come up in whole class discussion, please make sure that TREES are on the list of features.

2. What makes someone a good neighbor? Please create a list of characteristics of good neighbors.

After whole class discussion about these first two items, finish this activity with the last questions for the whole group:

3. In what sorts of places do neighbors meet in a neighborhood? In what kinds of places can neighbors meet inside? In what kinds of places can neighbors meet outdoors? What makes these places good for visiting with their neighbors?

Teacher Note: If trees aren't mentioned in this discussion, please encourage including trees by asking if they would want to meet and talk with a neighbor on the sidewalk in the middle of the day when it is 90 degrees outside? If not, where would they look to meet? (in the shade of a tree!)

4. Introduce the larger idea of "community" by asking students how they would define the word "community". (essentially, neighborhoods make up a community) How would they describe their community?

5. Finally, ask them to consider the importance of TREES to their outdoor meeting areas—What is the benefit of TREES to their community?

No matter where the discussion goes, please make sure to emphasize the last item here about the importance of trees to their communities. Finally, many good neighborhoods make a good community.

Activity 2: What are Trees Worth in my Community?

Objective

1. Students will be able to justify their choice of tree for a yard, neighborhood or community.
2. Students will be able to determine which species of tree is best for a yard, neighborhood or community.

Background Information for Teacher and Preparing for the Activity

Many attributes of trees make them good choices for neighborhoods and communities. Some attributes are as follows:

* Some trees have pretty flowers such as redbuds, dogwoods and apple trees.
* Some provide noticeable fruits for wildlife and people such as apples trees, cedar trees (blue juniper berries) and oak trees (acorns).
* Some trees provide great shade due to a large canopy of leaves like oaks, ash trees, sweetgums, and maple trees.
* Finally, other trees provide places for wildlife and birds like pine trees, and cedar trees.

There is no one right tree for a yard or neighborhood, but research suggests that larger, mature trees provide increased home values, better socialization and neighborhood engagement (USFS, 2010).

Additionally, the placement of trees can also increase the value of a home, when there are shade trees in a yard and along streets in a neighborhood and community. The only downside would be when trees are potentially too close to the house or close to utilities such as electric lines or underground sewer lines (in which roots may break pipes).

Some trees provide beautiful flowers, but the fruits are problematic for mowing yards near a home—for example, apple trees or sweetgum balls (which are the fruit of the sweetgum tree) can get in the way of mower blades. Other trees provide nice flowers and fruits that are an important source of food for wildlife, such as oak trees with their acorns or dogwood trees that produce tiny red berries, prized by birds.

Some trees that lose their leaves each year, or deciduous trees, often provide nice coloration in the fall of the year when they turn from green to yellow, orange or reds. Ash trees typically turn yellow, maples turn oranges/red and dogwoods will also turn reddish in color. Other trees are coniferous, such as pine trees or cedar trees, and stay green all year long, which can be welcome in the winter months.

It should be noted that cedar trees are native to Missouri, meaning that they are commonly found and grow in MO and have for many years, but they are also invasive, meaning that they tend to spread and take over an area once established, due to a “toxin” that they secrete that inhibits the growth of other trees in the area. Some students may know this and understand that planting cedar trees brings other consequences, as well as providing green all year and berries for wildlife.

Decisions about tree placement in a yard, neighborhood or community often comes down to whether or not to plant a native tree (all trees used as examples in our activity are native to MO—trees purchased at a

greenhouse or nursery may not be native to our state, but are typically selected by nurseries because they will grow here successfully) OR whether to plant a nursery tree. Many nursery trees are hybrid trees, meaning that they have a combination of traits that typically make them hardier against diseases or drought. A few of our Missouri native tree species may be in danger from invasive insects, such as ash trees. The Emerald Ash Borer (EAB) is an insect that has been found in some Missouri counties and could eventually cause disease in many ash trees.

Another important consideration in planting a tree comes down to tree height, due to power lines. Some trees such as the dogwood and redbud are naturally found in the Missouri woods as an understory tree. This means that they are found in shaded areas, under existing oak and hickory trees, and will not do well in a yard that has no shade and much direct sunlight.

Other trees need a lot of water, such as sycamores, and would be found near water, if they grew on their own. Will the yard they might grow in, have enough water for a sycamore? As students discuss and think about planting a tree, help them to consider all aspects of tree selection for best tree growth success.

The following web pages from the Missouri Department of Conservation (MDC) website highlight features of all trees mentioned in the background information above and may be shared with students:

https://nature.mdc.mo.gov/discover-nature/field-guide/eastern-white-pine
https://nature.mdc.mo.gov/discover-nature/field-guide/eastern-red-cedar
https://nature.mdc.mo.gov/discover-nature/field-guide/flowering-dogwood
https://nature.mdc.mo.gov/discover-nature/field-guide/white-oak
https://nature.mdc.mo.gov/discover-nature/field-guide/green-ash
https://nature.mdc.mo.gov/discover-nature/field-guide/sugar-maple
https://nature.mdc.mo.gov/discover-nature/field-guide/sycamore
https://nature.mdc.mo.gov/discover-nature/field-guide/eastern-redbud
https://nature.mdc.mo.gov/discover-nature/field-guide/sweet-gum

NOTE: If time is limited for Activity 2, please consider doing Steps 1, 2, 3, 5, 6 and 7 of this activity (Activity 2—skip the T-Chart and the Resources piece at the end).

Steps for Activity 2: What are Trees Worth in my Community?

1. Show the Activity 2 Power Point slides, either by showing on a Smartboard, asking students to pull up each tree picture (slides 4-12) on their device. Other alternatives include printing off pictures or making copied sets for each group to consider.

2. Briefly, ask students to explain what makes all trees the same—they make their own food, leaves, roots, trunks (stem), etc. For each picture, ask students to consider what makes each tree different/unique from each other. Using the Missouri Tree Student Handout, students can write down what makes each tree different from the others as they see each slide/picture. As students create their lists (as in Activity 1, with small groups or partners) OR contribute to a whole class list, ask them if they would want that particular tree in their own yard, at school, or in their community.

3. Students may need to revisit the tree picture slides (Slides 4-12), as they consider which trees that would like in their communities. For those students who would want a particular tree in their community, please ask them to explain why they would like the tree? For those students who do not want that particular tree in their community, please have them explain their reasoning as well.

4. Optional: You might want to create a T-chart that has the names of the trees they would want to have in their community into the "Keep" side and the names of the trees that they would not want in their communities in the "Plant elsewhere" side. Or, ask students to create their own T-charts with a partner, small group or individually. Most importantly, be sure that students are able to explain their thinking about each tree. A sample T-chart can be found at the link in the Resources Needed section.

5. Next, ask students to decide if "big" trees or "small" trees are better in a yard, school yard or community… this could mean by size (oak trees are larger than dogwood trees) or the age of the tree—a newly planted oak tree compared to an older oak tree that is much larger. Have students consider the benefits and drawbacks to both older/larger trees and younger/smaller trees (or trees that simply never get as big such as a redbud or dogwood tree).

6. Finally, begin the discussion of where to put a tree in a yard or in their community. Where is the best place to plant a tree? Why is that particular location the best place?

7. Students may refer to their original drawings from Activity 1 and decide if they can locate a good place to put an additional tree in their drawings. What makes the location they selected a good choice? In other words, why did they put the tree where they did? Once again, students must justify their answers with an explanation.

8. If additional time permits, students may also refer to the following websites for ideas about trees that are good for yards and communities, but only after they have considered it on their own first:

Planting the right tree in the right place free download from MU Extension: "Right Species, Right Place: Considerations Before You Order Tree Seedlings in Missouri" https://extension2.missouri.edu/g5006

"Right Tree in the Right Place" article from MDC website
https://mdc.mo.gov/sites/default/files/downloads/right-tree-right-place.pdf

Activity 3: Let's Plant a Tree

Objective

1.Students will plant and take care of a new tree in their yard, school or community.

Background Information for Teachers and Families—Preparing the Activity

Many attributes of trees make them good choices for neighborhoods and communities. Some attributes are as follows:

* Some trees have pretty flowers such as redbuds, dogwoods and apple trees.
* Some provide noticeable fruits for wildlife and people such as apples trees, cedar trees (blue juniper berries) and oak trees (acorns).
* Some trees provide great shade due to a large canopy of leaves like oaks, ash trees, sweetgums, and maple trees.
* Finally, other trees provide places for wildlife and birds like pine trees, and cedar trees.

There is no one right tree for a yard, neighborhood or community but research suggests that larger, mature trees provide increased home values, better socialization and neighborhood engagement (USFS, 2010).

Additionally, the placement of trees can also increase the value of a home, when there are shade trees in a yard and along streets in a neighborhood. The only downside would be when trees are potentially too close to the house or close to utilities such as electric lines or underground sewer lines (in which roots may break pipes).

Some trees provide beautiful flowers, but the fruits are problematic for mowing yards near a home—for example, apple trees or sweetgum balls (which are the fruit of the sweetgum tree) can get in the way of mower blades. Other trees provide nice flowers and fruits that are an important source of food for wildlife, such as oak trees with their acorns or dogwood trees that produce tiny red berries, prized by birds.

Some trees that lose their leaves each year, or deciduous trees, often provide nice coloration in the fall of the year when they turn from green to yellow, orange or reds. Ash trees typically turn yellow, maples turn oranges/red and dogwoods will also turn reddish in color. Other trees are coniferous, such as pine trees or cedar trees, and stay green all year long, which can be welcome in the winter months.

It should be noted that cedar trees are native to Missouri, meaning that they are commonly found and grow in MO and have for many years, but they are also invasive, meaning that they tend to spread and take over an area once established, due to a "toxin" that they secrete that inhibits the growth of other trees in the area. Some students may know this and understand that planting cedar trees brings other consequences, as well as providing green all year and berries for wildlife.

Decisions about tree placement in a yard, neighborhood or community often comes down to whether or not to plant a native tree (all trees used as examples in our activity are native to MO—trees purchased at a

greenhouse or nursery may not be native to our state, but are typically selected by nurseries because they will grow here successfully) OR whether to plant a nursery tree. Many nursery trees are hybrid trees, meaning that they have a combination of traits that typically make them hardier against diseases or drought. A few of our Missouri native tree species may be in danger from invasive insects, such as ash trees. The Emerald Ash Borer (EAB) is an insect that has been found in some Missouri counties and could eventually cause disease in many ash trees.

Another important consideration in planting a tree comes down to tree height, due to power lines. Some trees such as the dogwood and redbud are naturally found in the Missouri woods as an understory tree. This means that they are found in shaded areas, under existing oak and hickory trees, and will not do well in a yard that has no shade and much direct sunlight.

Other trees need a lot of water, such as sycamores, and would be found near water, if they grew on their own. Will the yard they might grow in, have enough water for a sycamore? As students discuss and think about planting a tree, help them to consider all aspects of tree selection for best tree growth success.

The following web pages from the Missouri Department of Conservation (MDC) website highlight features of all trees mentioned in the background information above and may be shared with students:

https://nature.mdc.mo.gov/discover-nature/field-guide/eastern-red-cedar
https://nature.mdc.mo.gov/discover-nature/field-guide/eastern-white-pine
https://nature.mdc.mo.gov/discover-nature/field-guide/flowering-dogwood
https://nature.mdc.mo.gov/discover-nature/field-guide/black-oak
https://nature.mdc.mo.gov/discover-nature/field-guide/green-ash
https://nature.mdc.mo.gov/discover-nature/field-guide/sugar-maple
https://nature.mdc.mo.gov/discover-nature/field-guide/sycamore
https://nature.mdc.mo.gov/discover-nature/field-guide/sweet-gum
https://nature.mdc.mo.gov/discover-nature/field-guide/eastern-redbud

For Activity 3, ideally students would select a tree for their school, neighborhood or yard and plant a tree that they have carefully researched and selected for their site. If that is not possible, then perhaps a more thoughtful look at tree selection can be done and is indicated on the Student Page as an alternate activity.

Resources for Tree Selection:

Planting the right tree in the right place free download from MU Extension: “Right Species, Right Place: Considerations Before You Order Tree Seedlings in Missouri”
https://extension2.missouri.edu/g5006

“Right Tree in the Right Place” article from MDC website
https://mdc.mo.gov/sites/default/files/downloads/right-tree-right-place.pdf

Resources for Obtaining Trees to Plant:

Forest ReLeaf of Missouri has free trees for schools http://moreleaf.org

Source for native trees to Missouri from the Missouri Department of Conservation's (MDC) website. Contact your local MDC forester for more info and website for pricing/ availability. https://mdc.mo.gov/trees-plants/tree-seedlings/about-missouris-state-forest-nursery

Resources for Planting a Tree:

MDC publication for planting a tree—free download
https://mdc.mo.gov/sites/default/files/downloads/How-Plant-Tree.pdf

MU Extension flier for planting a tree—free download https://extension2.missouri.edu/g6850

Resources for Tree Selection and Tree Care, after Planting:

MDC publication on using mulch for trees https://mdc.mo.gov/sites/default/files/downloads/mulch.pdf

MU Extension website—look under Publications for all topics related to tree selection, tree planting, etc.
https://extension2.missouri.edu/

Trees Work website-linked to the MDC website, has helpful information about tree care
http://www.treeswork.org/tree-care

Additional references:

http://www.treeswork.org/benefits/your-community

Calculating the Green in Green: What's an Urban Tree Worth? (2010). US Forest Service, USDA, Washington, DC. https://www.fs.fed.us/pnw/sciencef/scifi126.pdf

Steps for Activity 3: Let's Plant a Tree - Student Page

1. Following the work done in Activity 2: What are Trees Worth in My Community, determine a good tree to plant in the space that you have. Your space may be in your own yard, at school, or in your community. If looking to plant a tree in your community, you may need to get permission from your city or town's city hall first. You may also refer to the resources listed below Step 9.

2. Be sure that you know exactly what tree and especially why this tree is the best tree for the space before you ask permission from your parents, teachers and principal and from your city or town. They may have questions about your tree selection and you need to have answers and reasons for your selection.

3. Ask for help from an adult such as a parent, teacher or group leader, to get a tree to plant for your space.

4. Gather all materials and supplies needed to plant a tree—a shovel, water and recommended fertilizer or plant food to make sure the tree gets all that it needs to grow.

5. Plant your tree, according to the Missouri Department of Conservation flier download below.

MDC publication for planting a tree—free download
https://mdc.mo.gov/sites/default/files/downloads/How-Plant-Tree.pdf

6. Continue to care for your tree by supplying it with extra water for the first two years after planting, to make sure that it is established in your yard or community.

7. Enjoy your new tree and the changes that you see over the year.

Alternate Steps for Activity 3, If you are not able to plant a tree:

If planting a tree in your yard, school or community is not possible, then please consider the last part of Activity 2 and really spend some time, using the resources here to pick a good tree for a site. There are many considerations in deciding where to plant a tree and where to put it. You'll want to be able to explain to an adult, why this tree is the best tree for a space that you've selected, just like in Step 2 above.

8. Look back at your drawing that you made of your own yard or neighborhood from Activity 1. Where is the best place to plant a tree? Why is that particular location the best place?

9. Students may also refer to the following websites for ideas about trees that are good for yards and communities:

Planting the right tree in the right place free download from MU Extension: “Right Species, Right Place: Considerations Before You Order Tree Seedlings in Missouri” https://extension2.missouri.edu/g5006

“Right Tree in the Right Place” article from MDC website
https://mdc.mo.gov/sites/default/files/downloads/right-tree-right-place.pdf

10. After reading the resources above, you can adjust either the tree species that you would suggest planting there or maybe the exact location of the tree in relation to buildings. Now that you’ve read the resources here, is your tree location too close to a house or other building? Is the tree you are considering too large or too small for the space now, but also when it is full grown?

11. Be sure that you know exactly what tree and especially why this tree is the best tree for the space before you share this information with a parent, teacher or other adult. They may have questions about your tree selection and you need to have answers and reasons for your selection.

12. Explain to your parent, teacher or group leader what tree you’ve selected and why it is the best tree to select. You may want to have a picture of your tree available to show too.