

Trees: Our Past and Our Sustainable Future

Lesson plan for grades K-2

Length of lesson: 65 minutes

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Original Lesson Concept Authored by: Green Education Foundation (GEF)

SOURCES AND RESOURCES:

- Green Education Foundation (GEF)
<http://www.greeneducationfoundation.org/institute/lesson-clearinghouse/402-A-Tree-Is-Nice.html>
- Recycling helps you, me, and a tree
<http://www.marca-smallsteps.com/learn>
- David Orr Hot Science – Cool Talks Lecture on Sustainability:
<http://www.esi.utexas.edu/k-12-a-the-community/hot-science-cool-talks/black-swans-a-the-us-future-creating-sustainable-a-resilient-societies>

POTENTIAL CONCEPTS & TEKS ADDRESSED THROUGH THIS LESSON

§112.11.Science, Kindergarten: 3A, 9B, 10B

§112.12. Science, Grade 1: 1C, 3B, 9C

§112.13. Science, Grade 2: 1C, 3B, 9C

PERFORMANCE OBJECTIVES:

Students will be able to:

- Identify the various parts of a tree and describe their functions and purpose
- Discuss how trees are used by humans and animals everyday
- Justify the importance of tree conservation in urban and rural settings
- Illustrate specific examples of the services and goods trees provide as an essential part of building sustainable and resilient societies
- Illustrate how trees are a renewable resource

MATERIALS (per group of four):

- [Parts of a tree \(diagram\) Authored by Green Education Foundation \(GEF\)](#)
- [Uses for a tree game \(cards\)](#)
- [Struggle of trees \(slide-show\)](#)

CONCEPTS:

-**Conservation** is the process of protecting valuable natural resources such as water, soil, or forests from being lost to pollution, waste, and other harmful activity.

-An **Arboretum** is a park or area where trees are grown for scientific study and display

-**Sustainability** is the idea that all living things on earth are living inside limits. These limits can be the amount of resources that we have or even the space we have to grow and develop. To sustain is to understand these limits and plan growth and development with them in mind.

BACKGROUND:

Teacher says: The next time you go outside take a good look around you. Look carefully and see how many trees there are. Are there more trees than you can count or are there barely any trees at all? How about outside of the city or your neighborhood, do you see more trees there? Believe it or not this question is more important than you think. We often go for a ride in our parent's car or go on a walk without paying too much attention to the grass beneath our feet or the trees over our heads. Sometimes we just forget that they are even around us. Sadly, these trees are disappearing more and more because we take them for granted.

Trees come in all shapes and sizes. Some can be gigantic such as the Redwood tree while others are smaller like the olive tree. They can also be found in very different places around the world all the way from the tropical rain-forest of South America to the cold Tundra of Russia. But no matter how they look or where they are found, trees are very useful to all the animals and people around them.

Just like the flowers in a garden, trees are also plants. Though they look very different they both are living things that need food and water to survive. Trees have 4 major components that allow them to live and function. These parts are called the trunk, leaves, branches, and roots. The cooperation of these parts allows the tree to get the water, food, and nutrients that it needs for survival. However, trees have functions that not only benefit themselves but also many other living things, especially people!

There are dozens if not hundreds of examples of "fruit bearing trees" that provide some form of food for animals and humans alike. It's important to recognize that the apples we snack on or the oranges that are squeezed into our juices come from fruit bearing trees. Another vital characteristic of trees are their ability to produce oxygen. Oxygen is an invisible gas that is found in the air we breathe. Without it, there would be disastrous consequences for nearly all life on earth. These are only a few of the many benefits that trees provide for us, but it is also important to understand how long these benefits last.

Trees are considered to be a renewable resource. Why you might ask? The reason is because the products that trees provide for us can be harvested and in proper time renewed by the tree for us to harvest again. The fruit that a tree provides is a great example of this. When it is harvest season we collect all of the fruit that we can and after a while new fruit will have grown back for us to collect

again and again. The oxygen that trees produce is another great example. Trees take in all of the “used air,” also called carbon dioxide, and exchange it for “fresh air” that we need to breath. Trees can even be considered a renewable resource for their lumber or wood. Though the tree would be sacrificed in this process more trees can be planted in its stead so that more lumber can be harvested in the future.

Considering how useful these trees are, it is fair to say that we couldn't live without them. But, as time goes on we see that there are fewer and fewer trees left. Humans carry a fair share of the blame for this. The expansion of cities and industry has ravaged trees in order to accommodate and fuel the growth. Waste and pollution have also taken a large toll on forests as materials that are deemed toxic to botanical life are spread relentlessly.

There is hope. Though one individual can have little impact, many individual with a similar mindset can reduce overconsumption of trees and conserve everything that is left for us to use and appreciate.

By first learning the basic parts and of a tree, as well as their functions, you will then be able to discover more about how a tree is useful to humans as well as animals. Then, the concept of sustainability will be defined through an activity that shows how thinking about long term problems is important to serving future generations of people.

PREPARATION:

Teacher should have the tree parts diagram (see materials) projected for the class to view or simply have it copied by hand onto a board. It should be displayed so that throughout the **Engage** process the 4 main parts of the tree can be labeled. The teacher should also pre-cut the cards from the 'uses for a tree game' (see materials) so that they can be handed to the students during the **Explore** portion of this lesson. If necessary, the teacher may choose to have the groups for this part of the activity predetermined (groups of 3-4 students). For the **Explain** portion of this lesson the teacher might want to draw and label the 3 columns as described to save time during class.

ENGAGE: 15 min

Teacher asks:

- Who has trees in their yard or close to their house, and if so how many?
- talk to me about these trees, what do they look like? Their size, shape, color....?

Possible Student responses:

- “trees are really big and fun to climb”
- “they have lots of branches and leaves but sometimes the leaves all fall off”
- “trees are brown but their leaves are sometimes yellow, or green, or orange”

Let us first identify the four main parts that most trees have in common (branches, trunk, roots, and leaves). This here is a diagram/picture of a tree. As you all can tell there are certain parts of the tree that look distinct from the others.

-Can someone tell me what this part is? What does it do?

Every time a student names a part and describes its function the teacher should then reinforce their knowledge by confirming their answers and filling in small details

Example: student names roots and says they take in water for the tree. The teacher should then say "Yes, that is right. The roots are actually a huge part of the tree but we often don't see them because they are all the way underground. The water goes into the tree through the roots and it will be taken to this part of the tree next (point at trunk). Can anyone tell me what this part is and what it does?"

Ask:

- "Why is it important that the tree can take in water?"

- "Do you think trees could survive just as well if they were missing any of these parts that we discussed?"

- "What parts of the tree do we see all year around?"

Note to teachers: If the students in the class are not yet comfortable or have not yet learned the names and functions of the tree parts then feel free to treat that portion of the engagement as more of a mini-lesson. You may choose to ask fewer questions to the students and instruct more; however, take note that this will extend the duration of this step.

EXPLORE: 10 min

Teacher says: "Now that we understand a little more about a tree's parts and their functions let us explore a little further."

-The teacher has the students split up into groups of 3 or 4. Each student is then handed a cut out card from the 'uses for a tree game' (see materials).

The students are to work with their groups and determine whether their illustration or word goes under the category of trunk, branches and leaves, or roots. For example, if a student had a card that had a picture of an apple on it then the student would be ideally choose the category 'branches and leaves' because that's where the apples would be hanging from.

-The teacher is encouraged to walk around the classroom and assist the groups if necessary and have them justify their choices. For example, if a student had the apple card, they would explain to the teacher that "apples hang from the branches of a tree and that is where we pick them from to eat."

- Once all the students have determined a category for their card the teacher will stop the class.

EXPLAIN : 20 min

Teacher says: “I am interested in what everyone's cards were and what categories everyone put their card in”

- The teacher will draw 3 large columns on the board and label them trunk, branches and leaves, and roots.

- The teacher calls up each group one at a time to the front of the class to show their cards and tell the class where they chose to put them. Each student in the group will individually show their card (can be displayed on by a projector or can be described by the student/teacher) For example, the student could say “my card has a picture of a man sitting under the shade of a tree.” The student then tapes/pins their card under the category

'branches and leaves' on the board. Another option is that the teacher can choose to have the students write the words on their card under the correct column instead of pinning up the card itself (note that this will extend the duration of this step).

- The teacher should ask each student why they put their card in that column. The students are to justify their responses to both the class and the teacher.

- Once the entire class has done this the teacher asks the class to be seated and moves on to the next step of the lesson.

ELABORATE: 15 min

Teacher Says: “Wow, there sure were a lot of ways we can use a tree. I hope everyone is starting to understand how important trees are to the way we live and even our survival. While keeping in mind what we just learned let’s explore a little further and see what problems these valuable plants are facing all around the world.

- The teacher can play the 'struggle of trees' slide-show. During this slide-show the teacher should describe each slide and answer any student questions (there are descriptions with each slide on the power-point).

Key topics addressed by slide-show:

- deforestation
- human pollution/waste
- consequences of there being fewer or no trees
- how preserving and planting trees help guarantee more opportunities for future generations
- what people can do every day to help conserve trees

1. Let's also put some content that directly prompts students to think about how this relates to the idea of SUSTAINABILITY. How do trees allow people and animals to live, generation after generation, mom and dads, kids, and their kids, over time? Great oppty to get little kids thinking about this.
2. One Idea I had is to illustrate how old a California redwood is (can be up to 2000 years old) put that in the slideshow, and ask the kids to guess how many families – grandparents, parents, grandkids an old redwood has provided oxygen for? Get them to think about the live oaks they see outside – some of these are 50-100 years old. That means the trees were giving their grandparents air!
3. Ask kids how long they think it takes to cut down a 100 year old tree. This gives them an appreciation for how long it takes nature to build something, and that thing is giving to us all along the way!

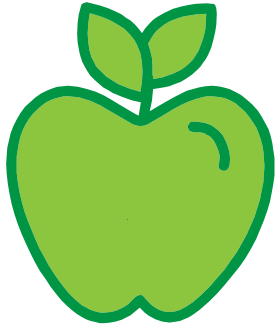
EVALUATE: 5 min

The students are to write a list of things they can do to help protect trees in their neighborhoods, parks, and city.

Possible questions the teacher can ask:

- “Would you consider it much easier to destroy a forest than to grow one? Why?”
- “Can you point out some objects in this room that are products of trees?” ... “Can you tell me what part of the tree that object was made from?”
- “Tell me some easy ways I can help conserve and protect trees everyday”
- “What kinds of things are bad for trees? Give me some examples.”

A



B



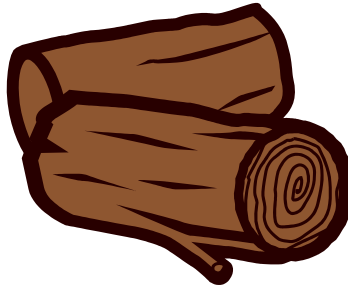
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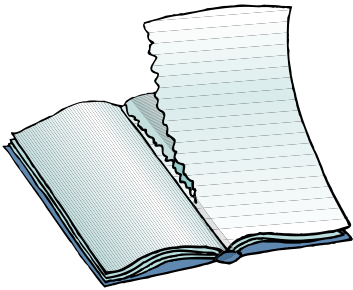
E



F



G



H



I



J



K



L

