

Sustainable Development Goals for Kindergarteners

Goal 15: Life on Land

Introduction

This lesson plan was designed for Indiana kindergarten classrooms as part of an initiative to create learning materials on the Sustainable Development Goals with European content. The goal of the unit is to build upon kindergarteners' knowledge of measurement and data analysis with the European example of Latvia's LV100 Great Trees Project. The project has been organized by the Centenary Bureau and the Nature Conservation Agency of Latvia in honor of the country's centennial celebration. Large and old trees called "Great Trees," are part of Latvia's cultural and natural history, and the project is an initiative to record and protect these trees. The Latvian government has encouraged participants to measure the tree however they like. "To measure the tree you can use almost any object that can be measured at home to later calculate the circumference, for example shoelaces, paper money, or the span of your hand" (LV100 Great Trees, link below). This flexibility in measurement fits especially well with kindergarten math classes using nonstandard units of measurement. For more information about the LV100 Great Trees project, you can visit the English website and read about the initiative here: <https://lv100.lv/en/iesasties/lv100-great-trees/>.

This unit consists of 7 parts and can be used in math classrooms as the unit addresses Indiana Academic Standards in math. This unit offers extensions and adaptations, giving educators flexibility in which activities they wish to employ in the classroom. Educators may adopt the activities or appendices for use in a lesson plan of their own or they may use the lesson plan in full. Educators may also contact Indiana University's Institute for European Studies (EURO) to arrange for faculty, advanced graduate students, or international students to give a presentation on trees in Latvia, nature in Europe, or another related topic. Please contact the Institute for further information about the Institute for European Studies or any of its outreach programs at euroinst@indiana.edu.

Standards Connections:

Indiana Process Standards:

PS.5: Use appropriate tools strategically

PS.6: Attend to precision

PS.8: Look for and express regularity in repeated reasoning

Mathematics Standards:

Measurement

K.M.1: Make direct comparisons of the length, capacity, weight, and temperature of objects, and recognize which object is shorter, longer, taller, lighter, heavier, warmer, cooler, or holds more.

Data Analysis

K.DA.1: Identify, sort, and classify objects by size, number, and other attributes. Identify objects that do not belong to a particular group and explain the reasoning used.

Compelling Questions:

What is a Great Tree?

Why is it important to know how many great trees there are?

Why is it important to measure the length around a tree?

How can the length around a tree be measured?

Lesson Objectives:

Students will be able to:

- Recognize that life on land includes people, animals, and plants.
- Become introduced to a European country, Latvia.
- Discuss tools of measurement and determine which tool is best for measuring the circumference of a tree for this stage in their learning.
- Measure the circumference of trees and compare the lengths measured.
- Classify the trees they measure as Great Trees or not Great Trees.

Prerequisite Knowledge:

- Students should be familiar with the 17 Sustainable Development Goals created by the United Nations.
- Students should be able to compare the lengths of objects in the classroom, understanding which are longer and which are shorter.

Materials & Setup

For this lesson plan, the teacher should be able to project a screen with internet capacity. If technology is unavailable, see the extensions & adaptations box below. Each student must have:

- A measuring tool. This can be a tool of standard measure, such as measuring tape, or can be a nonstandard tool, such as an eraser or paperclip. Use whichever tool students are most comfortable with.
- Handout of Appendix A
- A writing utensil

Extension materials include:

- Paper
- Drawing materials
- A measuring tool for home use
- A writing utensil for home use
- Handout of Appendix B

Before executing this lesson plan, the teacher should set up the lesson. The teacher should have an internet browser with the following tabs ready to show students:

- Google Maps, zoomed in on the school (for part 2 of the lesson)
- Google Image search of “Latvia landscape” (for part 3 of the lesson)
 - An image search of “Latvia” will just show you pictures of the capital, Riga.
- <https://karte.ozols.gov.lv/koki/index.html>, website in Latvian (for part 4 of this lesson)
 - This is the LV100 Great Trees project interactive map. While the information is in Latvian, you can use Google Translate to directly translate the website into English or can copy and paste chunks of text to Google Translate. Latvian is a language available on Google Translate. However, as the site is a map, you can easily navigate the site and tell where you are on the map.
 - Click on one of the numbers to zoom into an area and find a Great Tree. You might have to click a number a few times to get to an actual tree. On the righthand side of the map are photos of the trees. While the text will be in Latvian, you and your students will be able to read the numbers. “Apkārtmērs” in Latvian is circumference, and “metri” or “metra” is meters.
 - Before class, choose three trees that you will show your students. If you like, create new tabs for each of the trees.

Learning Plan

1. As an introduction to the lesson, tell students that today’s lesson connects with the Sustainable Development Goal, “Life on Land” (number 15). As a class or in partners, have students name different kinds of life on land. Remind students that people, animals, and plants are all forms of life on land.
2. Have all students look at the screen. Tell students that they are going to look at life on land in another country. Project the image of your school on Google Maps. Ask students to guess what they are looking at. When they understand that they are looking at their school, zoom out to your city. Explain to students that their school is located within a city and that you now are looking at a map of it. Zoom out again to your state, then country, then to the world, each time explaining that you are looking at a larger unit of where they are. Tell students that just like states are made up of cities and our country is made up of states, the world is made up of continents. Point out North America, the continent where you live. If you like, you can point to each of the continents. Tell students that you are going to look at life on land in a country on the continent of Europe. Ask students to help you find Europe. Then, zoom in to show students the country of Latvia, located in Eastern Europe along the Baltic Sea.
3. Show the students the Google Image search tab of “Latvian landscape.” Ask students what kinds of life they see. After you’ve discussed life on land, tell the students that about 45%, or a little less than half of Latvia is covered by trees. Trees are very important in Latvian culture and tradition. For example, couples may decorate an old and large tree with ribbons and a traditional lielvārde (lee-ehl-vahr-deh) belt, asking the tree for its blessing. Old and

large trees were once thought to be holy and signal the presence of God in Latvia. These old and large trees are called “Dižkoki” (deesh-dwah-kee) or “Great Trees.” Great Trees are protected by law in Latvia.

In honor of Latvia’s centennial celebration, much like a 100th birthday party for the country, everyone around the country is participating in a project called LV100 Great Trees project. Participants go out into nature and measure the circumference of trees, or measure how wide around a tree is, in order to find some of Latvia’s largest and oldest trees. Participants measure the tree, finding the length around the tree. If the tree is big enough around to be considered a Great Tree, they take a picture of it and post the picture along with its measurements to an interactive map. Usually, the length around the trunk of the tree must be at least 50 inches (1.3 meters) to be considered a Great Tree. When people know where these Great Trees are, they can be better protected.

4. Change the tab on your screen to the LV100 Great Trees project interactive map. One at a time, click on the three trees you found with a recorded circumference, and read the unit to your students. Explain to them that different parts of the world use different measurements, and in Latvia, they use meters. Convert the measurement to a unit students will understand, be it number of inches, number of paperclips, or other standard or nonstandard unit. Ask students which tree is the largest around. Explain to students that while you are measuring length, the length tells you how big around the tree is. Which tree is the smallest? Tell students that in order for trees to be considered Great Trees, the length around the tree’s trunk must be at least 50 inches, or whatever unit of measurement your students are familiar with.

Ask students how they think the person who recorded this tree measured the circumference. Did they use a ruler? What other tools can people use to measure things?

Some of the trees on the LV100 Great Trees site have height of tree listed as well. If any of the trees you found have height listed, project the tree on your screen, telling students the height and circumference in units they understand. Ask your students if the tree taller or wider? Which is bigger: the length or the height? How do you think they measured the height of the tree?

5. Like the Latvian participants, you are now going to go into nature and find the circumference of the trees accessible to you. Take the students outside and make sure each student has a way to measure the circumference of a tree, a writing utensil, and Appendix A. Using a unit of measurement your students understand, measure the circumference of a tree together. Ask your students if this tree is considered a Great Tree. Is it smaller, larger, or about the same size as the three trees you found in Latvia? If it’s about the same size or larger, it is a Great Tree. Ask your students how tall they think the tree is. How could they measure the height of the tree?
6. Invite students to measure the trees that are accessible to you, having them fill out Appendix A. Remind them that more than one student can measure a tree at the same time. Depending on the availability of trees and the level of your students, some students will have more measurements than others. As long as students have at least one measurement by the end of this part of the lesson, they can participate in the closing.
7. When you are ready to close the lesson, bring students back together and ask them the following questions:
 - Which tree was the biggest you measured? Which tree was the smallest?
 - Were any of the trees you measured Great Trees? How do you know?
 - Why is it important to know the size of trees? Is it important to measure other life on land? Why or why not?Gather students’ Appendix A to finish the lesson.

Assessment Suggestions

Examine students’ Appendix A. Do their measurements make sense? During the closing of the lesson, were students accurately able to say which tree was the biggest and which was the smallest? Were students able to accurately determine which trees would be considered Great Trees? You may also choose to have the students participate in the lesson closing through think-pair-share as an assessment.

Extensions & Adaptations

1. *Extension:* Have students draw pictures of life on land with a partner. Make sure students remember to draw both plants and animals.
- 3./4. *Adaptation:* If technology is an issue, prepare to show students on a map or globe your location and the location of Latvia. Ahead of the lesson, you can print photos of the three trees you find to show the class.
4. *Adaptation:* If your students are using nonstandard units of measurement, convert the tree circumference to something they can understand, such as block units or unsharpened pencils.
4. *Adaptation/Extension:* Very advanced students can explore the LV100 Great Trees project interactive map and compare tree circumference of various Latvian trees.
- 5./6. *Adaptation:* If going outside is not an option, have students measure objects in the classroom or school building. Ask them to determine whether the object is as large around as a Great Tree.
- 5./6. *Adaptation:* Students can measure trees using long strings. These can be pre-measured, or students can cut the strings to the length they like. Students can wrap the strings around trees to measure the tree's circumference. When students have finished measuring and are back in the classroom, they can use rulers or measuring tape to compare the trees' circumference in a variety of units: string, inches, or centimeters. Remind students that different places use different units of measurement.
7. *Extension:* See Appendix B for an extension homework assignment.
7. *Extension:* Some classes have private pages for students and teachers. Invite parents to take their students into nature and measure trees. Parents can take a picture of the student with the tree measured and put the measurement of the tree in the comments.
7. *Extension:* Read "[We're Going on a Leaf Hunt](#)" by Steve Metzger. Following the reading, have students find leaves and measure the size of leaves.

GREAT TREES

APPENDIX A
FROM SUSTAINABLE DEVELOPMENT GOALS FOR
KINDERGARTENERS
GOAL 15: LIFE ON LAND

NAME

SECTION

DATE

TEACHER

WHAT IS THE LENGTH AROUND
THE TREE?

IS IT A GREAT TREE?

WHAT IS THE LENGTH AROUND
THE TREE?

IS IT A GREAT TREE?

WHAT IS THE LENGTH AROUND
THE TREE?

IS IT A GREAT TREE?

WHAT IS THE LENGTH AROUND
THE TREE?

IS IT A GREAT TREE?

GREAT TREES

APPENDIX B

FROM SUSTAINABLE DEVELOPMENT GOALS FOR
KINDERGARTENERS
GOAL 15: LIFE ON LAND

NAME

DATE

SECTION

TEACHER

This extension on Great Trees in Latvia invites you to measure two objects in your home! Use your hands, measuring tape, or another measuring tool to find the length around an object in your home. Then compare the length around the object to the length around the trunk of a Great Tree.

Below, write the length around the object. Be sure to include units (hands, inches, etc.). Then write whether or not the object would be considered a Great Tree (i.e. is the length longer than 50 inches?). Have an adult help you measure and find objects in your home. Feel free to measure trees or other objects outside, too!

WHAT IS THE LENGTH AROUND
THE OBJECT?

IF IT WERE A TREE, WOULD IT BE A
GREAT TREE?

WHAT IS THE LENGTH AROUND
THE OBJECT?

IF IT WERE A TREE, WOULD IT BE A
GREAT TREE?
