A Region in My Own Backyard: A Geographic Field Study

Students learn about the theme of region while tracing the changes in a tree over a period of time

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Grade Level
6-7

Duration
3-4 class periods

National Geography Standards

Element One: The World in Spatial Terms
3. How to analyze the spatial organization of people, places, and environments on the earth’s surface.

Element Two: Places and Regions
4. The physical and human characteristics of places.

Arizona Geography Strand

Concept 1: The World in Spatial Terms
PO 1. Construct maps, charts, and graphs to display geographic information.

CONCEPT 2
Places and Regions
GRADE 6
PO 1 Identify regions studied using a variety of criteria, (e.g., climate, landforms, culture, vegetation).

GRADE 7
PO 1 Describe the human and physical characteristics of places and regions.

Other Arizona Standards

Mathematics Common Core Standards
Ratios and Proportional Relationships
6.RP.3. Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.

b. Solve unit rate problems including those involving unit pricing and constant speed.

7.RP.2. Recognize and represent proportional relationships between quantities.

c. Represent proportional relationships by equations.

Expressions and Equations
7.EE.3. Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.

Overview
Geographers use vegetation plots to examine an area, log the features found there, and analyze their roles in the ecosystem. The problem encountered in an urban environment is that dominant features of an inner city school are the cement and asphalt. However, students can still examine how a physical landscape can change in a very small ecosystem by examining a campus vegetation plot over several seasons. This lesson can be repeated three times over the course of a school year to allow the students to see changes in the region.

Purpose
In this lesson, students conduct a geographic field study where they map and do mathematical
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estimations reflecting a region on their school campus.

Materials

- A blank map of the school for students to plot a tree
- Tree Base Worksheet
- Type Your Tree
- Measuring Tree Height
- Tree Height Data Sheet
- String and pegs to section off a plot
- Tape measures
- Sighting sticks
- Clinometer- a device for measuring angles, which we will construct
- Worksheets
- Clipboards
- Pencils

Objectives

Students will be able to:

1. Do a field study of a region of their campus
2. Organize data and make mathematical calculations

Procedures

1. Have the students discuss the landscape of a familiar place: the student’s home, neighborhood, a local park, or shopping mall, for example. Focus on both the physical and human features that define these places.

2. In a similar fashion, discuss the landscape of the school campus. Ask the students how the landscape has changed over time and about the indigenous (natural) landscape that existed BEFORE urban development.

3. Explain to students that they will participate in a field study of a small region, called a vegetation plot, on their campus. This will require them to adopt a tree, examine it, record changes over a period of time. Distribute the “Type Your Tree” worksheet and discuss questions 1-9. Focus on related vocabulary and concepts such as: deciduous vs. coniferous, tree bark, leaf sketches, primary sources of water, and natural vs. transplant.

4. Before leaving the classroom divide the students into groups of two to three. Explain that the groups will “adopt” a tree on the campus, give it a name, and examine their tree, using Questions 1-9 on the “Type Your Tree” worksheet. NOTE: Question 10 cannot be accomplished until further instruction is given regarding methodology for measuring tree height.

5. Distribute the “Tree Measuring Height” worksheet along with the sheet explaining how to use a protractor as clinometer. Have the students read the 5 different methods for estimating tree height. Introduce the students to the measuring materials (the measuring tapes, sighting sticks, and clinometers) and demonstrate how to use them.

6. Have the groups further examine their tree, using Questions 10-12 on the “Type Your Tree” worksheet.

7. Distribute the “Tree Base” worksheet and discuss the procedures and observation strategies involved. Have the students plot six-foot square grid around the base of their tree and divide the grid into four quadrants, following the cardinal directions. Students will further examine their schoolyard eco-region and record their observations on the “Tree Base” worksheet.

8. Have the students draw a map of their campus identifying the location of their tree.
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9. Every eight weeks have the students perform the field study procedure and worksheet observations again. Save these for the final assessment.

Assessment

Each of the worksheets and the schoolyard map should be evaluated on the basis of completeness and accuracy. Points should be assigned for each item at the discretion of the teacher. Mastery will be considered 80% or higher.

Extensions

Once the field study is completed, students can research other regions of Arizona, the USA, or the world and compare/contrast these regions with their schoolyard region.