

Lesson Title: Soil Mapping the Schoolyard

Grade levels: Grades 3-5

Applicable SOL:

History: 3.6 The student will read and construct maps, tables, graphs, and/or charts.

VS.1 i) analyze and interpret maps to explain relationships among landforms, water features, climatic characteristics, and historical events.

Science 3.1 (investigations), 3.7 (soil studies)  
4.1 (investigations), 4.9 (soil as natural resource)  
5.1 (investigations)

English: 4.9 (using information resources)  
5.9 (using research resources)

Math: 3.9 (measurement)  
4.7 (measurement)  
5.8 (measurement)

Materials:

- Sample for Mapping Schoolyard Soil pdf or find a soil map for your area through this site  
<http://www.nrcs.usda.gov/wps/portal/nrcs/surveylist/soils/survey/state/?stateId=VA>
- Soil testing kits (1 for every 4 to 5 students)
- Journals
- Large paper
- Measuring tape and rulers

## **Procedure:**

### Building Supporting Knowledge: (30 minutes)

1. Discuss the parts of a map. Have students recall compass rose, symbols in map key, scale, and title.
2. Pose the question, “Why do plants grow in specific habitats?” The fact that plants are adapted to live in particular habitats should come out in the discourse. Probe further, until a discussion about types of soil occurs. Explain that maps are created to show the types of soil in an area. Show and discuss the sample soil map. Pay particular attention to the symbols on the map.

### Main Lesson: (may take several sessions of 30 to 45 minutes each)

1. Explain that the class will be creating a map of the schoolyard’s soil, and relate that to the types of plants which grow in it. First, a map of the schoolyard must be created.
2. Have students take their journals and measuring tape. Go out and sketch the schoolyard, taking measurements to add to their rough map sketches.

3. Back in the classroom, use the measurements and sketches to create larger maps in groups of 4 to 5. Remember to create a scale for the measurements. An easy scale would be that one cm=one meter. Landmarks in the schoolyard should be added with symbols, and put in the map key (example: playground equipment, a large tree, picnic tables, etc.).
4. Discuss different types of soil: loam (mixture of clay and sand), sandy soil, clay, humus, silt. Go back to schoolyard with journals and label the types of soil found, using observations.
5. Spilt into groups. Give each group a soil testing kit and go over directions. Have the groups go to different areas of the school yard to do soil testing. Be sure to have them repeat the test for accuracy. They should write their results in their journals.
6. Back in classroom, have each group share their results. Compare their results to the type of soil found in that area. Was there any significant difference in the type of plants growing in the different parts of the schoolyard? (Some areas may have drastic differences, while other schoolyards may be very homogeneous.)

7. Have students decide on symbols for the different soils and add them to their map. They can also add the class results of the soil testing.

Follow-up:

1. Discuss why soil mapping would be helpful.
2. Have students research the types of soils and plants which may “like” different varieties of soil.
3. Have students devise a planting plan for the each section of the schoolyard. (Planting does not necessarily need to be carried out. Rather, this is their “ultimate” design for what would grow best, according to their research.)

Assessment Opportunities:

1. Informal assessments can be done during discourse and group cooperative work.
2. Formal assessments can be taken on the journals, as well as the final maps.