For Teachers

Which Soil Do We Choose?

Developer: Jack Holbrook

Institute: ICASE
Country: UK

Subject: Science

Grade level: 8-9

Curriculum content: Characteristics of soil

Kind of activity: Library search, field visit, laboratory investigation, group discussion to make a justified socio-scientific decision

Anticipated time: 4 lessons plus 1 field visit

Objectives/competencies: Students are expected to be able to**:**

- Seek and select appropriate information related to the study of soil, from the books, computers networks and web pages.
- Explain the advantages and disadvantages of different types of soil.
- Explain density, adsorption and the various properties of soils.
- Put forward a plan of how the density of soil can be determined.
- To cooperate with partners in the group in undertaking an experimental investigation.
- To design and carry out experimental determinations in situ and in the laboratory.
- Decide, with reasons, which field Mr. Ground should buy.

Teacher guide

The soil is a universal system found in every place, in a yard, in a pot, in a big forest, in the imposing metropolis, in a wild field or in the best cultivated area.

There is no greater satisfaction for a baby than to take some soil in his/her hands and put it into the mouth, for a dog to plough it, for a farmer to furrow it and see how the unripe crop buds come up.

It is very common to see the soil. That is why many times we do not realize all the possibilities that it provides us to work with the students in science and technology, being a very useful “medium” to introduce concepts difficult to understand.

Learning outcomes by lesson

Lesson 1

At the end of this lesson, students are expected to be able to:

Discuss the scenario and the problem

Put forward suggestion of where to seek information

Lesson 2

At the end of this lesson, students are expected to be able to:

Put forward tests to perform in the field

Suggest advantages and disadvantages of different types of soil

Field Trip

At the end of the field trip, students are expected to be able to:

Carry out the tests

Obtain results

Collected appropriate samples for testing in the school laboratory

Lesson 3

At the end of this lesson, students are expected to be able to:

Carry out tests in the school laboratory

Obtain results

Lesson 4

At the end of this lesson, students are expected to be able to:

Discuss which field is appropriate

Make decision

Write the report

Teaching strategies

The teacher:

Pose the problem to the students given by the scenario

Prepare students for the task injecting in the students a feeling of labour responsibility, activity for which we also have to prepare them.

Introduce the group work through which students determine the source of information needed for their investigation, being critical as regards the texts/internet etc to be used, valuing them from the scientific point of view.

Facilitate the reading and interpretation of the bibliography consulted, as well as the interchange of ideas among members of the same group and others. Orient and collaborate with getting and preparing the work material for the field visit and for the lab analysis.

Coordinate the field visit,

Guide the experimental work in the laboratory; and also guide the students making the comparatives tables and charts.

Direct the plenary debate, encouraging the questions and analysis of findings, which each groups got, with the aim to get a general conclusion.
Suggest the criteria to taking account to elaborate the final report to be given to Mr. Manuel Ground.

Scope of the objectives

Objective	Achieved by means of
1. Seek and collect information relate to the study of soil, from the books, computers networks and web pages.	• Seek, presentation and analysis of information, from the collected material.
2. Explain the advantages and disadvantages of different types of soil.	• Confection of comparatives tables and charts, with the information gotten from different sources.
3. Explain density and how the density of soil can be determined.	• Seek in sources of information and election of the techniques to be used.
4. To cooperate with partners in the group in undertaking an experimental investigation.	• Group work about: investigation, field trip organisation and work in the lab.
5. To design and carry out experimental determinations, IN SITU, and at the lab.	• Preparation and taking of sample, analysis in field and analysis in the lab.
6. Decide, with reasons, which field Mr Ground should buy.	• Discussion of the findings and writing the final report for Mr. Ground in which the reasons for the decision made is given.