

Suggestion to future soil education in Japan considering the current Guidelines for Primary School.

Keiko Mori (1,3), Hideaki Hirai (2,3), Mitsuru Toma (3,4), Ikuko Akahane (5), Maki Asano (6), and Takashi Kosaki (7)

(1) Saitama Museum of Rivers, Yorii-machi, Oosato-gun, Saitama, Japan (keiko_mori@river-museum.jp), (3) Committee for Soil Education of Japanese Society of Soil Science and Plant Nutrition, Tokyo, Japan, (2) Utsunomiya University, Tochigi, Japan, (4) Yamaguchi University, Yamaguchi, Japan, (5) Institute for Agro-Environmental Sciences, NARO, Ibaraki, Japan, (6) University of Tsukuba, Ibaraki, Japan, (7) International Union of Soil Sciences, Vienna, Austria

Soil is the base of life on terrestrial land. Soil and many global environmental and social issues are strongly related as it was stressed in the international year of soil. However, soil as such has scarcely dealt in the past Guidelines (called “Courses of Study”) for primary school education by the Ministry of Education (MEXT) of Japan.

In the latest Guidelines, new subchapter directly referring to soil was added under the subject of “the Earth” in Science in 4th grade. It is “the fate of rain water and the state of the ground”, which is aimed to understand A) Water runs from higher to lower place, B) Seepage of water differs in relation to the size of soil grains. We welcome the appearance of “soil” in the Guidelines, yet only physical aspects of soil is recognized in this subchapter and still far from enough in understanding the importance of soil as a base of life on land. What is lacking in the Guidelines? For example, in the subject of “Life”, there is a subchapter “Germination, growth and fruition of plants” (5th grade). In this subchapter, it is stated that water and air temperature influence plant germination, and matters affecting plant growth are sunlight and fertilizer. Soil is not referred as a reserve to retain nutrients nor water, as a medium to support plant body, nor as a place of organic matter decomposition.

Here are our suggestions to learn more about soil by making amends for the latest Guidelines.

- 1) Touch soil in pre-school to lower grades in primary school (making a ball with soil in “Art and Handicraft”, observe flower beds, cropland, forest etc. in “lower grade scientific studies”).
- 2) Observe different type of soil and notice aggregates of soil, and learn how the water seeps into the soil and how much water retained within (4-5th grade, Science “Earth”).
- 3) Underground including soil is a part of water cycle on land (6th grade, Science “Earth”).
- 4) Plant growth is affected by the state of water and nutrients and learn that soil has a function to retain nutrients and water (5th grade, Science “Life”).
- 5) When living things die, they become soil, recognition of cycle of life (6th grade, Science “Life”).
- 6) Observe living things in soil and notice some relation to the above cycle of life (3-6th grade, Science “Life”).
- 7) Make research on where the dietary staple food (grains) come from and how much space required to grow them (6th grade, Science “Life” and/or Social studies).
- 8) The surface of the earth (ground) is formed by soil and soil is constituted by grains such as sand and volcanic ash, and living and dead animals and plants (6th grade, Science “Earth”).
- 9) Soil can hardly be made, and need to be conserved from loss and contamination (6th grade, Science “Life”).

Such contents of study could also be considered in the world soil education standard.