1. Analysis of the Guidelines for primary school education

In Japan, education is compulsory for age 6-12 (primary) and 13-15 (secondary). School education is carried out based on the Guidelines (called “Courses of Study”) by the Ministry of Education, Culture, Sports, Science and Technology (MEXT). Since the first draft in 1947, the Guideline has been revised almost every 10 years. To understand how the soil is taught, soil-related items are picked from the Guideline for primary school (1st to 6th grade) in science area and listed with number of citation of soil items referring to the nature of soil, relating to plant growth and ones not directly related to the nature of soil are separately colored in the table.

2. Activity of the Committee for Soil Education of JSSSPN

Recognizing the importance of soil education in school, JSSSPN has been putting efforts on the dissemination of soil education including;
- Publishing manuals on soil observation and proposal of teaching methods, and books for kids on soil.
- Organizing events and programs including scientific experiments for students and teachers, creating continuous awareness.
- Presentation of an official request for inclusion of soil education to MEXT.

3. The latest Guidelines for primary school (in act from April 2018) 4th grade and teaching guidance proposed (extraction)

Structure and some contents of the proposed teaching guidance
How to proceed the class on this sub-chapter
(Task to be solved)
- Spout and output of water different in relation to soil grain size.

(Observation and Experiment)

(Materials and Method)
- Soil (in order of smaller size)
- Sand (in order of larger size)
- Small size aggregate
- Medium size aggregate
- Large size aggregate

- Sand (from sand ground of court yard)
- Soil aggregate (from class buildings)

- Cylinder-cylindrical bottle to half.

- Observe the following points:
  1. The speed of water coming out.
  2. Amount of water in the cup.

- Movie of this experiment is on web-site of the Committee of Soil Education of JSSSPN.

4. How soils should be taught in primary school?

In the guidelines, the content is mostly on physical properties of soil only. The feeling of soil might be good start for lower grade students, but more biological and commercial aspects of soils and plants to ecosystem are also necessary for upper grade students. It is important to make students recognize that soils are the base of life on land.

For example...
- 1st grade: Playing with soil and discover the feeling of soil.
- 2nd grade: Learn about soil animals. They are abundant in surface soil.
- 3rd to 5th grade: Plants need sun light, water and nutrient for growth. Food web of plant and animals, and dead animals and plant goes into soil and new life starts from soils.
- Physical nature of soil.
- 6th grade and up: Importance of soil as a “filter” for water and air in the environment and function in ecosystem.

(Suggested Conclusions)
The small grains of soil that forms surface ground hold water and accumulate the speed of nutrient goes through. Viewing from the prevention of natural hazard, the existence of small soil grains increase the ability to hold rainwater and prevent flooding.

Applied studies
As applied studies, it can be discussed that under forest vegetation, soil aggregates forming with soil grains keep good drainage and water holding capacity leading to rich vegetation, resulting in alleviation of natural hazard. Make students notice that conservation of forest and soils is important in the prevention of erosion due to heavy rain.

(Examples of the applied study)
1. Soil animals are abundant under forest or steppe vegetation forming aggregates, which is formed with small soil grains. Good aggregates has high water holding capacity.
2. Let’s research about soil aggregates.
3. Think about ground with vegetation such as forest, no plantation with bare soil, no vegetation or soil such as concrete roads in relation with rainwater seepage.
4. Cultivate plants with soils used in the experiment (soils of flower bed and sand), and compare the growth.

From aim and scope of the guidelines, it is apparent that this sub-chapter is conscious with natural hazard. JSSSPN welcomed the reappearance of “soil”, and released a proposal of teaching guidance for better understanding and use of this sub-chapter by teachers, with intention to suggest the importance of soil aggregates in comparison to “soil grain”, single particle, as one of the applied studies.

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