

Some reasons why pupils learn Earth Science in schools

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After World War II, the subject known as Earth Science in upper secondary school was established as one of the 'science' subjects alongside Biology, Chemistry and Physics. However, the number of pupils enrolling in Earth Science courses has decreased due to revisions in the Course of Study. There are some reasons why Earth science is not popular with pupils of upper secondary schools compared with other science subjects. For example, one of the main problems is the lack of suitable science teachers, and pupils seem not to feel attracted to learn Earth Science. However, the most important reason is that not only people in general but also science teachers believe without any doubts that Earth Science is taken for granted as one of the four science subjects. Therefore science teachers and policy makers have missed the opportunity to discuss deeply and publically why pupils learn Earth Science in schools. Generally science education is required to contain an explicit statement of its aims and objectives -making clear why we consider it valuable for pupils to learn science, and what we would wish them to gain from the learning experience of science (Millar & Osborne, 1998).

In this research, the author refers to the notion by J. Osborne (2000), and I examine the aims and objectives of Earth Science education. The first argument for the value of learning Earth Science is 'the utilitarian argument', which is the view that pupils might benefit by acquiring scientific knowledge and skills from learning Earth Science. The second is 'the economic and state argument' claiming that advanced technological and knowledge-based societies need a sufficient supply of scientists and engineers relating to Earth Science in order to sustain their status in the world, and be winners in international economic competition based on high-technology. The third is 'the cultural argument', which claims that Earth Science along with the other sciences is one of the great achievements of human culture in the course of history. The fourth one, 'the democratic argument', is that we, as scientifically literate citizens, have to make decisions based on scientific evidence about the socio-scientific issues relating to Earth Science such as energy resources and global warming. Especially, the 'cultural' and 'democratic' values of learning Earth Science should be emphasized over other arguments from the perspective of 'scientific literacy'. Of course, these four values of Earth Science have both advantages and disadvantages according to the times.

As a result of analyzing these arguments about the value of learning Earth Science in schools, I argue that 'the pedagogical argument' - that the learning experience of Earth Science will encourage pupils to become future citizens with scientific literacy and give them direct contact with natural materials, phenomena and environment of the real world, developing an attitude of respect for life, promoting a scientific insight to socio-scientific issues and acquiring an interest in nature conservation, and to make important careers' decisions (Isozaki, 1996) - should be added to the above-mentioned arguments. To emphasize the cultural, democratic, and pedagogical values of Earth Science, a context-based/led approach should be adequately combined with a content-based/led approach in teaching.

References

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