

Earth Science Education in High School from the Viewpoint of the Amount of Learning

- Consider Quantity Rather than Number, and Quality Rather than Quantity -

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Earth science education in high school based on current educational guidelines started in 2012 has been the 6th year, and revised textbooks have also been used since 2017. Under such circumstances, the demand number of the "Basic Earth Science" textbook has been around 330 thousand volumes, it is estimated that about 26% of high school students are studying this subject. However, "Earth science" has learned less than 1% of all high school students, and the number of textbooks is 11.6 thousand in 2018, decreasing by nearly 30% from 16.4 thousand in 2014. These facts are very serious matter.

At the time of 2012 or 2013, "Earth Science I" textbooks based on former educational guidelines were about 90 thousand volumes, whereas "Basic Earth Science" textbooks became approximately 4 times that. So this change was greatly welcomed as earth science education revived. But considering the conditions as shown below, it can be said that it was not possible to be overjoyed.

(i) The standard unit number has been reduced from 3 of "Earth Science I" to 2 of "Basic Earth Science", instead of increasing the compulsory number of subjects of science category from 2 to 3.

(ii) It was an alternative to the subject "General Science B" was abolished, which integrated the basic contents of earth science and biology, and had about a 38% selectivity among high school students.

Therefore, in this presentation, think about "*Gross Domestic Learning*" of earth science which can be an indicator of not only the number of textbooks but also the amount of learning and the number of teachers who instruct them. By doing so, the problems that must be realized on the next educational guidelines will be highlighted.

Despite the retirement of a large number of science teachers in recent years, most of the newly employed teachers are fields of physics, chemistry and biology, and only about 3% of them are fields of earth science, so this number is far short. This fact will accelerate the use of "Basic Earth Science" as a memorizing subject, and may lead to making it difficult to raise a strong people to deal effectively with natural disasters and global environmental problems.

We are not merely concerned with increasing or decreasing the number of textbooks, we must think about developing more human resources capable of dealing with various global problems by selecting and densifying even more learning contents.

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