

Science Education in the 21st Century and Chigaku

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It is worrisome that number of students who take Chigaku, a composite course of astronomy, Earth science, environmental science, and solar-system science, is on the decline. This is the area where natural phenomena have fascinated humankind from ancient times and fostered scientific quest of the world and universe we live in. In the last century our understanding has been significantly advanced on such subjects as cosmology, stellar evolution, plate tectonics, and dynamics of space plasma. The wealth of knowledge that is taught in Chigaku represents a very precious intellectual asset of humankind and at the same time it offers valuable basis for coping with natural disasters. It is regrettable increasing number of people are missing opportunity to learn Chigaku at school.

I believe, however, that the problem we face is not so much on Chigaku itself but on the system of dividing science education into four courses - physics, chemistry, biology and Chigaku- each of which takes one year. Personally, I took the Chigaku course at high school and chose Chigaku as well as physics for the entrance exam. I also served in 1970s in the Chigaku committee at the Examination Center. These experiences make me shy away from advocating relevance of Chigaku alone. Taking the Chigaku course was not without toll; I missed opportunity to learn chemistry at high school and I had to realize that it was not an ideal way for building scientific knowledge. As a member of the exam committee I found that Chigaku textbooks are overwhelmed by descriptions of phenomena due probably to the fact that physics course was not prerequisite to Chigaku.

In modern science physics, chemistry, astronomy, biology and earth/planetary science are all important and cross reference to each other. I believe that the system where a student can take three of these courses at most and have to dispense with at least one is no longer relevant. It is hoped that a comprehensive course (rika-kiso, rika-sougou) that have been introduced by the latest revision of the doctrine of school education be expanded to a contiguous 3 year course and become centerpiece of the science education at high school. Chigaku should be one of the essential elements of that course.