

## Environmental Citizen Science as the Seamless Earth Science (SMLES) Policy

\*Yoshinari Hayashi<sup>1</sup>

### 1. Faculty of Safety Science, Kansai University

Prof. Yasuo Shimazu started his research career in the dynamo theory of the earth. After that he changed his research subject to the Earth's interior physics, environmental science and regional studies. He promoted his research under the slogan of "3E Science" (Earth science, Ecology, Economy) and "3A Science" (Assessments science, Action science, Appropriate science). These phrases were clearly guiding principles of his students. The most famous slogan is "SMLES" (Seamless Earth Science = no seam earth science). It has been enthusiastically supported by a number of young earth scientists. SMLES has been used not entirely faded.

Prof. Shimazu worked at Department of Earth Sciences, Faculty of Science, Nagoya University until retirement in 1990. So, after he changed his research subject, his students were educated in the course of earth science program. Therefore almost people of his students and co-researcher thought SMLES mean the policy of seamless in science sections, geology, geophysics and geochemistry. Of course, these seams are big walls for the professional researchers.

But was he proposed "SMLES" as the borderless between the disciplines? In this study, we focused the role of Prof. Shimazu in "the environmental citizen research contest" supported by the Toyota Foundation began in 1979. This contest was citizen lead research on familiar environment by a team. In the process of each research, the team advances the research has been the advice in the field, is a special research expenses of the judge.

Prof. Shimadzu has played a role of a judge at the 3rd and 4th contests. After that, he has also served as evaluators of the first year of "Review Project". He proposed the evaluation point as "First scientific research, second something different with professional research". He classified research on the environment in three categories "Science of academicism" "Science of service", "Citizen Science".

"Science of service" and "Citizen Science" are unique concepts. These were new categories invented by Prof. Shimazu. Citizen science is to know the mechanism of the environment in a study carried out by the citizens themselves. This means the effect and achievement is not only how-to of solving the problem but also to discover the problem in his activity by himself.

In this way, Prof. Shimadzu has emphasized the importance of citizens to study with a sense of ownership about their personal belongings of environment. To carry out life-sized environmental research by citizens mean a change of research system from expert only to co collaboration research between citizens and expert. In conclusion, "SMLES" means not only the seamless of disciplines in earth science but also the seamless of participant of scientific research.

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Keywords: Interdisciplinary, Environmental studies, Citizen Science

## Background of the Geologist Teiichi Kobayashi's Conception of 'Geoscience'

\*Toshihiro Yamada<sup>1,2</sup>

1.Chiba Prefectural Funabashi High School, 2.Research Fellow, Graduate School of Education, University of Tokyo

When the geologist Teiichi Kobayashi (1901-1996) published a paper on earth sciences education in 1942, he included not only geology but also astronomy and geophysics as teaching materials. During the post-war period he was engaged in the establishment of the educational category 'earth sciences' or *chigaku* namely 'geoscience'. In this paper, I examine the background of Kobayashi's conception of 'geoscience', pointing especially to the development of theories of the evolution of the universe and the popularization of them from 1910s to 1930s.

Keywords: Teiichi Kobayashi, geoscience, earth sciences education, theory of the evolution of the universe

Important Materials for Earth Sciences in the Archives of Earth and Planetary Science  
Department, Graduate School of Science, the University of Tokyo

\*Michiko Yajima<sup>1</sup>, Toshihiro Yamada<sup>2</sup>

1.College of Humanity and Science, Nihon University, 2.Graduate School of Education, University of  
Tokyo

The first generation of geologists in Japan studied at the Geology Institute (now Earth and  
Planetary Science Department) of the University of Tokyo, which was first founded in 1877. The  
Archives of the Institute has many valuable used books, maps and journals, as well as graduation  
theses of all students and many reprints collected by successive professors. Unfortunately,  
however, most geoscientists and historians in Japan have not realized the importance of above  
mentioned 'treasure'.

There is a plan to make a new library in the Faculty of Science of the University of Tokyo in a few  
years. The new library will not have adequate base area to accept all the 'treasure'. It is  
problem. The archives are important enough not only to register the history of geosciences in the  
East Asia from their beginnings but also to promote future historical study of the sciences. Please  
visit the Library of Earth and Planetary Sciences, explore the archives, and consult magnus opus,  
maps and manuscripts.

Keywords: The Library of the Earth and Planetary Science Department, Graduate School of Science,  
the University of Tokyo, Archives, East Asia