

A Study on Teaching the Evolution in Biological Sciences Education: the case study of BSCS in the USA

Kazumasa TAKAHASHI

Hiroshima University, JAPAN

1. The purpose of study

The purpose of study is that reconsidering the reasons of learning the Evolutionary Theory in Biological Sciences Education for Secondary School in Japan, based on the reasons why Biological Sciences Curriculum Study (BSCS) emphasizes teaching of this theory. In this study, I defined the word “Evolution” as the changes in organisms during the long history of life on the earth, and also defined “Evolutionary Theory” as the theory about factors that organisms evolve.

2. The Background of study

The Course of Study is the guideline that represents contents and objectives for each subject for each school. Teachers must follow it when they design curriculum, and teach. Likewise, contents of textbooks must follow it. The Course of Study for Lower Secondary and Upper Secondary were revised, and will be implemented fully in 2012(Lower Secondary) and in 2014(Upper Secondary). They were used to analyze. In Lower Secondary, students learn the Evolutionary Theory in Grade 8. Then students learn only the fact that the Evolution has occurred in past time. In Upper Secondary, students learn this theory at ‘Biology’ course. Students who take ‘Biology’ must take ‘Basic Biology’ in advance. At ‘Biology’ course, they learn the origin of life, a change of organisms and a mechanism of the Evolution. It may be not able to say that students could understand the explanation capability of the Evolutionary Theory and acquire the unifying viewpoints of nature and organisms, because Lower Secondary students learn not theory but facts and some Upper Secondary students learn this theory. Numata (1960)’s statement, “the Evolutionary Theory has not became serious problem and has not deeply discussed in Japan”, is seems to point out the situation of teaching this theory in Japan.

BSCS, a group of scientist and teacher, was established in 1958 in the U.S. Mainly BSCS has produced High School Biology programs since its establishment. BSCS programs emphasize the Evolutionary Theory as the unifying principle of program. In the U.S., teaching this theory has tended to resist. Under these difficult conditions, BSCS has had great impact for teaching this theory in the U.S.. There are some previous studies of BSCS in Japan, but the study that focuses on teaching this theory was not found.

3. The scheme of study

The scheme of study is constructed by three main phases. Those phases are as follows:

- 1) Research on current BSCS’s High school Biology Programs about the Evolutionary Theory and the Evolution.
- 2) Research on the reasons why BSCS has decided to place the Evolutionary Theory and the Evolution at the center of those programs.
- 3) As a result of analyzing ideas and methods of BSCS, I would like to study the reason we teach and students learn the Evolutionary Theory and the Evolution.