

4. Study on Outlooks and Methods for Teaching Respect for Life in Biology Education

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(1) Purpose and Aim of Study

This study aims to survey teaching outlooks and methods concerning respect for life in biology education, and to propose models for instruction concerning respect for life in the context of biology education in Japan. It entails the following tasks:

- i) Conducting a nationwide questionnaire survey of schoolteachers on the issue of outlooks, methods, and instructional materials for respect for life in elementary, secondary, and early higher education in Japan. This will shed light on the current situation and issues at each level of the education system.
- ii) Surveys to date have hinted at some differences between Japan and Western nations in terms of how life and living things are perceived, and approaches to teaching respect for life. In light of this, we undertake a comparative survey of outlooks, methods, and materials for teaching respect for life in the context of biology education based on how life and living things are perceived in Japan, the West, and other nations in East Asia. This enables the distinctive features of the Japanese outlook on teaching respect for life to be identified, and proposals to be made concerning approaches to biology education that foster the ability to comprehend “life” in scientific terms.
- iii) The dissection of small animals is thought to play an important part in cultivating schoolchildren’s understanding of the concept of life. The study considers how dissection should be conducted and what materials are appropriate for use at each developmental stage, compares educational effects in a dry lab environment as against a wet lab, and develops instructional programs in teacher training and professional development for practicing teachers.

(2) Outline of Research Results

- A nationwide questionnaire survey of biology teachers in upper secondary schools and science teachers in lower secondary schools was conducted to ascertain outlooks on the teaching of respect for life among science (biology) teachers, how they use observation and experimentation in their classes, and their ideas for improvement of biology education. The upper secondary school survey was conducted on biology teachers from 1,000 randomly selected schools across Japan, and 654 responses were received. The lower secondary school survey was conducted on science teachers from 1,000 randomly selected schools across Japan, and 548 responses were received.

- The results of these surveys were analyzed, and the following proposals made concerning biology education to foster the ability to comprehend “life” in scientific terms:

- i) Materials for teaching respect for life in the context of biology education need to be organized from the perspectives of “learning from living things,” “learning about living things,” and “learning for living things.”

- ii) Students need to be taught to appreciate the special characteristics of different living things scientifically, so that they understand that all organisms are living adeptly using extraordinary abilities developed in the course of adapting to their environments. However, teaching needs to ensure that that misunderstandings are not generated through the one-sided indoctrination of certain views of living things through Japanese language textbooks, children’s literature, and the like.

- iii) The experience of caring for animals enhances children’s prosocial behavior. Animals kept at schools should be cared for appropriately and used effectively in educating children. To achieve this, the Courses of Study must provide a clearer definition of the educational significance of raising animals at school.

- iv) Dissection classes are necessary in order to make children aware of the value of life and to foster their spirit of respect for living things. The richer a teacher's experience of living things has been in elementary, lower secondary and upper secondary school, and university, the more likely the teacher is to be pro-active in conducting observation and experimentation and participating in training sessions.

- v) In order to ensure that dissection classes are a success, it is important to provide thorough ex ante instruction, including on the use of dry labs, and attentive individual onsite instruction and ex post guidance.

- vi) Legislation needs to be put in place to make scientific observation and experiments compulsory at the training stage for elementary school teachers.