

The ECCO-SM (the East-Asian Classroom Culture of Science & Mathematics)

Understanding of Science & Mathematics Classroom Cultures in East Asia

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Focusing on the Classroom Culture of Elementary School Science in Japan

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This paper focuses on the Classroom Culture of Elementary School Science in Japan. If I would focus on the classroom culture of school science at junior or senior secondary level, I might need to describe another story. My argument is like a description of a three-story museum, or an old-school building in a country side. At the basement which is not exposed to many people, I introduce the background or the paradigms in the field of (science) education in Japan. There are Pestalozzi, Herbart, Behaviorism, Empiricism of Dewey, the influence of curriculum reform movement of USA, Constructivism, and Social Constructionism. Those paradigms were not replaced by newer ones in sequence historically, instead exist simultaneously in multilayered shape. This is why I sometimes notice these co-existing paradigms at once when I visit school and observe present lessons. Coming up to the ground from the basement, you will see the school culture on the first floor and science education at the top of a three-story building. Each floor is the mixture of teacher's as well as student's culture. When the school year starts in April, teachers concentrate on creating a comfortable atmosphere like home, where students are going to grow every day and spending most of their time for a year. Students have lunch together by tasting the same distributed meals and they even clean up their own classroom together after school. Students have many seasonal events to share, such as athletic meet, field trip, school festival, etc. Through such activities, students earn skills for living as well as communicating, the attachment for school and the awareness of membership for the class, school and community to deepen the tie with friends. On the second floor where the science lessons are performed, the more you have keen senses, the more you will be able to find a variety of cultural codes. Comparing two classes where one is taught by a novice teacher and the other by an experienced teacher, we can obviously recognize its difference, particularly at the introduction and conclusion of the lessons. The experienced teacher can be observed to be successful in engaging students in the lesson. Without scientific knowledge or skills delivered at all, the students begin to remember their prior knowledge or experience

and connect them to the new one to re-construct their conception. This is not realized in the personal process but socially constructed in the classroom. During the process, students become familiar with the scientific way of thinking. However, the obtained scientific methods are not the imitation of scientist but the product of the inquiry flow by children. Sometimes student is admired in front of others. The student feels confident that he/she has contributed him/herself to the learning of whole class in addition to satisfaction of getting own new knowledge. On the floor, there are two different open lessons, the anatomy of fish and the introduction of electromagnet. I focus on them and interpret some of the particular classroom culture of elementary school science in my talk. (500/500 words)