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Enquiry for innovation in a primary science classroom: A pilot study focusing on a lesson on 'dissolving' in grade five

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The 21st century is the era of 'a knowledge-based society' where new knowledge, information and technology are becoming increasingly important for activities in all walks of life, and science is the driving force. The purpose of this study was to examine the contemporary science lessons in primary science classrooms. A pilot study was conducted in a grade five regular science classroom related to the process of 'dissolving'. The pilot lesson had three stages: sharing scientific language, practicing scientific methods and experimental skills, and innovative application. This lesson model was based on an idea of science education as a second language education. The children did not consider the introduction part of sharing scientific language to be difficult and their self-evaluation of keenness to learn was high. In the second part which involved practicing scientific methods and experimental skills, the difficulty level of the lesson showed an increase in their self-evaluation. It seemed that self-confidence also increased slightly at this stage. In the final stage involving innovative application, the children designed their original experiments, and discussed what was new in their findings. In the final stage, the self-evaluation of difficulty of the lesson further increased while their self-confidence and self-evaluation of keenness to learn rose as well. In conclusion, primary students can consistently and intentionally manipulate 'scientific language and metaphor', confidently face difficult questions and discuss something new about their findings collaboratively.

Biography

Manabu Sumida is a Professor of Science Education at the Ehime University in Japan. He holds a BA in Chemistry from Kyushu University and PhD in Science Education from Hiroshima University. He was a Visiting Researcher at the University of Georgia in 1998 and Visiting Scholar at the University of Cambridge in 2012. He has been the Director of Kids Academy Science (a special science program for gifted young children) for nine years. He is currently the Director of Japan Society for Science Education and Regional Representative for Asia of the International Council of Association for Science Education.

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