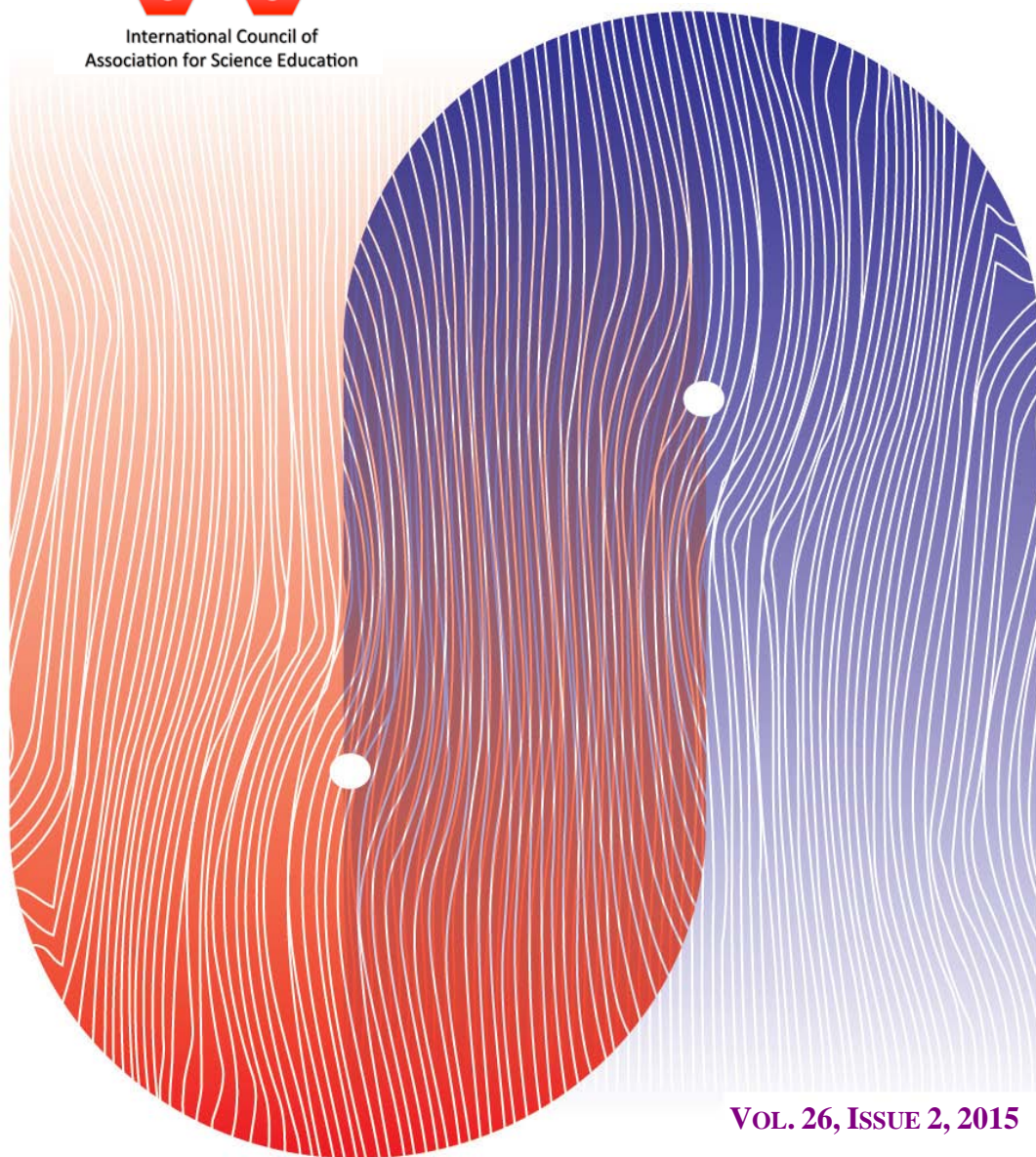


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Editorial

J.HOLBROOK

Welcome to the June 2015 issue of SEI, which includes a total of 8 articles covering studies ranging from the involvement of primary school students to pre-service teachers as the focus of research.

The first article relates to mental models associated with atomic structure. This is one of three articles on Chemistry teaching in this issue and aims to determine the effectiveness of a multiple representation-based learning model, (the SiMaYang model), in supporting students to construct mental models for atomic structure. While the theoretical construct is rather daunting. Outcomes point to its effectiveness, especially with low capability level students.

The next two articles include research into the learning of aspects of astronomy. The first explores the type of reference system used in referring to explanations of day and night. This research article analyzes mental models used by students of different ages to explain the phenomenon of day and night and how these explanations evolve based on changing reference systems at different educational levels. It seems younger students tend to consider the apparent movement of the Sun in their reference system (topocentric), whereas older students are more prone to consider the rotation of the Earth (heliocentric), even though the formation of day and night is usually only taught at the primary school level.

The second research article has a wider focus and seeks students' and teachers' views on astronomy through the use of two-tier testing, in which the first part is multiple choice and the second tier seeks the confidence level associated with the response to the first part. The study uses a 16 item test. Results tend to be low and nearly a third of University students consider astrology as a scientific discipline.

The fourth article attempts an international comparative study between views on aspects associated with scientific inquiry by middle school students in the US and in Turkey. Quite profound differences were found, with American students tending to have the more contemporary views associated with greater exposure to student-based experimentation.

The fifth article, the second on Chemistry, explores the teaching of chemistry in inclusive classes and seeks teachers' perceived benefits and challenges of using inquiry-based instruction. The study also seeks to establish chemistry teachers' knowledge of inclusive teaching. Results show that most teachers lacked knowledge of chemistry teaching in inclusive classes. Teachers acknowledge that inquiry instruction in inclusive chemistry classes has several benefits and challenges for students, but that the challenges are more with their copying with handling inquiry-based instruction than with the students.

The sixth article examines Chemistry teaching in a Chinese context and explore factors that influence teachers as to whether they use curriculum materials as guided, or prefer to use their own approach. This study is based on the premise that the interaction of the teacher with curriculum materials, in a given social context, determines what happens in the classroom. The study reveals seven factors that lead to teacher choosing to adapt curriculum materials and not surprising, time constraints is one, pushing the teaching away from curriculum suggested, student-centred approaches.

The seventh articles explores pre-service teacher understanding of science and argumentation and the perceived differences between scientific argumentation and scientific explanation. The results show, not surprisingly, that the majority of participants lack an informed understanding of these. In the light of modern trends in science teaching, it is not surprising that the article claims this has significant implications for classroom teaching and assessment.

The eighth and final article explores grade 6 students' emotions in examining a socio-scientific issue through the use of models. The study sought students' self-reported emotions about a series of lessons focusing, for the first time, on understanding an authentic

socio-scientific issue through the use of student constructed models. Findings suggest that students can hold either positive or negative emotions about aspects of SSI instruction, with some students exhibiting both.