EDITORIAL

We are pleased to bring to our readers this issue of the *IJSME* featuring quality articles that embody the unique themes of our publication. We present herein authors from five different countries exploring such issues as intercultural conflicts and the impacts of technology in the classroom. Set in different cultures around the world, the articles describe and recommend theoretical and practical approaches for improving science and mathematics learning.

Anton Lawson from the US presents a theoretical paper on the hypothetico-deductive (HD) reasoning pattern of modifying and correcting one's beliefs as ideas are confirmed or contradicted. In addition to describing the neurological basis for such reasoning, Lawson also suggests instructional methods for promoting scientific literacy by engaging students in the processes of testing explanations and proving by analogue or confliction. This theoretical framework aids teachers in understanding how students acquire or lose science concepts, and how better to teach in ways that develop student's necessary reasoning abilities. We follow this with a practical paper on mathematical deduction from Constantinos Christou et al. in Cyprus describing the use of dynamic geometric software to encourage students to investigate and experiment with proofs. Because the software allows users to visualize variations of geometric configurations, students can better test conjectures that would otherwise be difficult to identify. The introduction of this technology allowed teachers to design effective teaching methods and meaningful proofs for students. Kaye Stacey et al. describe another technology-enhanced approach to help students in Australia realize abstract concepts in mathematics learning. With the use of graphics calculators, students were able to easily visualize graphical representations of context-based problems in algebra. This functional/modelling approach was both effective and affective, in that students solved problems with greater understanding and gained a better sense of abstract algebraic symbols and equations, and also developed positive attitudes in their ability to use technology. It is interesting to note however that this confidence did not necessarily carry over to their algebraic abilities.

Susanne Prediger from Germany provides readers with a theoretical framework that considers mathematics learning as cultural interaction between everyday culture and the culture of mathematics, wherein students must necessarily acquire a "foreign" mathematical language in order to overcome intercultural misunderstandings. As such, the framework allows

us to apply psychological and pedagogical research on cross-cultural learning to mathematics education. This article finally prescribes methods for arranging the mathematics learning process in an intercultural setting. Der-Ching Yang et al. present a very practical study on teaching number sense to Taiwanese schoolchildren. The authors recommend a process-oriented teaching model that poses challenging questions, encourages discussions, and provides opportunities for students to communicate and share their thinking and reasoning with other classmates. The study demonstrated that a process of discursive interaction was helpful in developing children's number sense and that their learning was meaningful and significant.

We hope our readers will enjoy this issue and feel inspired to submit more quality manuscripts such as these.

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Editor-in-Chief