



Editorial

■ Ade Magaji



Theme for this issue:

Learning from the ASE Annual Conference

Happy New year to all members and readers of our journal. This issue of *ASE International* will highlight the recent ASE Annual Conference, held in January 2023: Europe's largest festival of science education CPD. The global perspective sessions had a variety of interesting topics presented by experts and enthusiastic presenters from various parts of the world. The topics included *People like us*, a new free STEM careers resource challenging stereotypes; an update on the new PISA Science Framework from OUP; and Research internships and publication in the *Young Scientists Journal*. Other topics included *Global Science: The importance of digital and STEM learning in creating the leaders of tomorrow*.

A summary of some of the sessions attended by the ASE International Group is reported in this issue. However, detailed write-ups and contributions will be made available in the May issue, as some of the presenters have agreed to write up articles for publication.

This issue also features contributions from various authors focusing on supporting and promoting pedagogical practices in science education, as well as two pre-published articles to advance this knowledge.

In the article, ***Addressing students' misconceptions related to the topic of heat***, Chloe Jack explores common misconceptions that secondary school students hold regarding the topic of heat. This involves critiquing the proposed strategies for overcoming the misconceptions, such as developing subject knowledge, a constructivist approach, co-operative learning, modelling and practical work, and using technology. She concludes that no single teaching strategy would best overcome misconceptions associated with the heat topic for all students, and that a combination of the strategies discussed following adaptive teaching practice would be most effective.

The article by Hesley Machado Silva, entitled ***History of science and health: educational opportunities must not be missed***, highlights the importance of linking science and history. This will inspire science teachers all over the world to search for local stories that can awaken in students and teachers a taste for the knowledge of the elders and the recovery of oral history. He encourages teachers to share rich experiences that will allow students to know the society in which they live and how it was formed, and to awaken their interest in science and its history. This is even more useful bearing in mind recent events regarding the pandemic and understanding how previous pandemics have had an impact on humans and their way of living.





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Michael Adjani's article on ***Overcoming students' misconceptions surrounding forces within secondary education physics*** discusses common misconceptions demonstrated by Key Stages 3 and 4 (aged 11-16) science students in England during the topic of forces, including the origins of these and strategies that teachers can use to address and prevent them from developing. The article argues that misconceptions are relevant to students' learning, as they help to identify pedagogical strategies needed to address them, such as using specific assessments for learning strategies, cognitive load theory, cognitive conflict and constructivist learning involving the 5E and 7E learning models. The article concludes that teachers should identify effective strategies that can address their students' misconceptions, suggesting a development in both their subject and pedagogical knowledge.

The article, ***Student perceptions of the knowledge generated in some scientific fields*** by Keith S. Taber, Berry Billingsley and Fran Riga reflects on students' comments relating to the nature of scientific knowledge. They stated that some comments reflected the aim of science as a means to better understand the world and our place, and others demonstrated perceptions of the possibility of applying scientific knowledge to engineer change – something that had great benefits, but also risks. There was also evidence that some students might hold misleadingly positivistic notions about scientific knowledge, which may distort perceptions of some areas of scientific work.

Michael Oh and Finley Lawson's article, ***The Engineering Ed project: dealing with failure and the robotic future – engaging students in multidisciplinary STEM learning***, proposes an alternative (or additional) place for the use of robotics within the secondary school curriculum. They suggest that robotics provides a unique opportunity to engage students in genuinely multidisciplinary learning that challenges their misperceptions about the nature of science/technology and engages them with 'big questions'. The article establishes the context and pedagogical framework for delivering science/technology and big questions sessions within the classroom and provides a practical description of how the session has been delivered with students.

Thank you for taking the time to read our articles. Please contact the Executive Editor if you would like to write for this journal (see page 43 for more details).

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