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EDITORIAL

Editorial

This will be my last issue as Editor of the *Science Education International* journal. I have had the privilege of being the Editor since 2017. During this tenure, I have worked with authors from around the world to publish 229 articles in the 23 issues I have been Editor. This has seen *Science Education International* move to the Open Journal System and become registered as a DOI journal under Crossref, Directory of Open Access Journals (DOAJ), and SCOPUS. To the new Editor starting with Volume 34, Issue 2, I wish you all the best for this very rewarding position.

In this Volume 34, Issue 1 edition of *Science Education International*, seven articles are brought together from the Philippines, Turkey, Malawi, Lebanon, and the United States of America. In the first article, Kym Clyde H. Moro and William Jo Se M. Billote integrate Ivatan indigenous games in a learning module in physics to investigate its effect on Filipino high school students' understanding, motivation, attitude, and scientific sublime. Havva Yaman, Şeyma Nur Bekar, Hakan Yildiz, Salih Koyun, and Sibel Er Nas employ educational games to explore 340 Turkish secondary school students' cognitive structures in the second article. The third article from Malawi's Nellie Mbano, Pascal Chitundu, and Dorothy Nampota report on how Mendelian genetics is taught in Malawi's high school biology classes. Article four from Turkey's Mehmet Şen and Betül Demirdöğen examined how filters and amplifiers affect pre-service science teachers' pedagogical content knowledge (PCK) in a human and environment unit, while the fifth article from The United States of America's Hayat Hokayem and Christelle Fayad report on Lebanese undergraduate students' perceptions of the tentativeness and evidence of the Theory of Evolution. The purpose of phenomenological study is the sixth article from the United States of America's Richard H. Kozoll and Peter S. Ower was to understand a middle school teacher's construction of a science teaching identity through his lived experience in adapting the curriculum. Justine C. Mercado and Jay P. Picardal from the Philippines conducted a systematic review of virtual laboratory simulations (VLSs) in biotechnology in the final article of this issue.

In the first article, Kym Clyde H. Moro and William Jo Se M. Billote integrate Ivatan indigenous games in a learning module in physics to investigate its effect on Filipino high school students' understanding, motivation, attitude, and scientific sublime. Moro and Billote report on the state of physics education in the Philippines noting the poor student achievement in science education and as a result the need to increase students' Physics achievement. Moro and Billote note that once a learner starts to understand physics ideas and is able to apply these concepts in their day-to-day experiences, science sublime, the mixture of strong emotions such as feelings of awe, wonder, appreciation, astonishment, and fear, attracts people to study science and sustains their interest in that particular subject area. This study encourages to reintroduce the Ivatan indigenous games to learners, with the expectations of preserving the Ivatan indigenous games and traditions. Their study employed Quasi-Experimental research design with 20 Grade 11 High School students which integrated physics into a game-based learning module with Ivatan indigenous games. The results on the effect of the utilization of the game-based learning module on students' attitudes toward learning physics indicated a significant increase in students' attitudes toward learning physics after using the game-based learning module. Moro and Billote concluded integrating Ivatan indigenous games to learning modules in physics which is effective in improving students' understanding, motivation, and attitudes toward learning physics, but unsuccessful in fostering the scientific sublime.

Havva Yaman, Şeyma Nur Bekar, Hakan Yildiz, Salih Koyun, and Sibel Er Nas employ educational games to explore 340 Turkish secondary school students' cognitive structures in the second article. Yaman et al. argued that through games, children learn about themselves and the world they live in, find their greatest forms of expression, and develop critical thinking abilities. They went on to caution the effectiveness of the game depends on how closely it relates to the subject's objectives, how well it fits the student's age, gender, and developmental features, and how interesting and entertaining it is. Their study was a survey-based descriptive study with 5th, 6th, 7th, and 8th grade students using the Word Association Test (WAT) and drawing test. Six categories were used to organize the students' responses to the WAT and four categories were used to categorize the drawings. Yaman et al. concluded that to enhance students' cognitive structures toward educational games, focus should be given to the instructional feature of educational games in research to be undertaken in the relevant field.

The third article from Malawi's Nellie Mbano, Pascal Chitundu, and Dorothy Nampota report on how Mendelian genetics is taught in Malawi's high school biology classes. Mbano et al. highlight how genetics has been an issue in Malawi and teachers have approached the Ministry for support as many did not study biology but now teach it. As such Mbano et al. sought to investigate how Genetics is taught in Malawian schools with large classes, underqualified teachers, and a paucity of resources. Their study was a qualitative multiple case study to explore how six teachers from six schools taught Mendelian genetics and how they explained their choice of teaching techniques used. All six teachers used expository teaching methods with the focus to pass on information and practice working out the outcomes of monohybrid crosses. Their

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common teaching techniques used were lecture and question and answer. Mbano et al. conclude with recommendations based on their study.

Article four from Turkey's Mehmet Şen and Betül Demirdöğen examined how filters and amplifiers affect pre-service science teachers' PCK in a human and environment unit. Şen and Demirdöğen highlight how research has reported it takes at least a decade for a science teacher to embrace robust beliefs about how good teaching occurs and the alignment of teachers' beliefs with their practice is not clear-cut. Şen and Demirdöğen argue how amplifiers and filters have been used in recent theoretical frameworks about teachers' professional content knowledge (PCK) when describing how teacher beliefs mediate teachers' PCK. Their study was a case study of two pre-service teachers to examine their PCK in and how filters and amplifiers affected their PCK. Şen and Demirdöğen report with how the effect of filters and amplifiers on PCK components is idiosyncratic. They conclude with recommendations based upon this study.

The fifth article from the United States of America's Hayat Hokayem and Christelle Fayad reports on Lebanese undergraduate students' perceptions of the tentativeness and evidence of the Theory of Evolution. Hokayem and Fayad highlight how the theory of evolution is a principal theory in the biological sciences but are highly controversial for many individuals across the world, specifically for those whose religious beliefs are at odds with the scientific theory. Hokayem and Fayad, then, note that researchers agree on the tentative nature of science and on the evidence requirement for scientific discoveries; however, in their study, they focus on these two aspects of the in regards to evolution theory. Their study was a qualitative study that interviewed 11 junior and senior students (aged 19–22) majoring in Biology and taking an evolution course at a University in Beirut, Lebanon. They reported those students accepting evolution theory, accepted its tentative nature and its associated evidence, and formed a cooperative relationship between evolution and religion, while those students uncertain or rejecting the theory struggled to accept the tentative nature of evolution theory and its historical evidence and they found conflict between religion and evolution. Hokayem and Fayad conclude their study with recommendations based on this study.

The purpose of phenomenological study is the sixth article from The United States of America's Richard H. Kozoll and Peter S. Ower was to understand a middle school teacher's construction of a science teaching identity through his lived experience in adapting the curriculum. Kozoll and Ower report how, in the United States, there is a change in curriculum design with an emphasis on the use of phenomena, within the context of a storyline, wherein students use science and engineering practices to explore a central question or solve a fundamental problem. Their study was an empirical study was to understand one teacher's changes to the phenomena-based science curriculum amid the articulation of his lived experience using it. Kozoll and Ower's study highlights the tension between teachers' perceptions of teaching and learning science and their position on the new or modified emphases of science education reform documents and materials. Kozoll and Ower conclude by highlighting the necessity of recognizing a teacher's positional identity as instrumental to classroom practice.

Justine C. Mercado and Jay P. Picardal from the Philippines conducted a systematic review of VLS in biotechnology in the final article of this issue. Mercado and Picardal note that laboratory activities and work are often viewed as an essential part of science education, however, the recent COVID-19 lockdowns have highlighted the advantages of VLS as alternatives to face-to-face or actual conduct of practical abilities. Mercado and Picardal's study is a systematic review of 22 articles that include VLS involving biotechnology concepts. Mercado and Picardal reported that most of the published journal articles performed comparison of the different media which led to comparing the VLS with the traditional teaching styles. Similarly, most of the articles used three-dimensional technology for the VLS. Mercado and Picardal concluded that virtual biotech laboratories can be used as an effective complementary or support tool or even an alternative to the physical hands-on laboratory activities.

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