It is my pleasure to describe some of the changes for the journal starting in this first issue of 2022. We have expanded the number of articles in the journal. For the first 18 years, we had about six articles per issue. For a couple of years, we had 12 articles per issue. We are now expanding to about 18 manuscripts per issue while maintaining a 20% acceptance rate. With a large increase in manuscripts, we are able to expand into more commentaries, book reviews, and, as of Issue 21.3, the return of Newsround.

At the 2022 Editorial Board meeting, members had been discussing how we can integrate interdisciplinary themes in the journal. In this editorial, I will be starting this process by organizing the manuscripts around general themes. In this issue, there are four major areas: the teaching process, preservice teachers, technology, and commentaries.

In one of the teaching process theme papers, Fuchs and Tan (2022) examined four frameworks that support socially responsible science education and the opportunities and challenges for teachers to implement this curriculum. These frameworks provide a context for students to use and learn science. The teachers recognized the importance of intervention strategies and this paper provides a discussion about policy and future research. Toma (2022) explored the effect of short-term confirmation and structured inquiry on students’ expectations of success in grade 6 science in Spain. He found that there were no statistically significant differences between lecture, confirmation inquiry, and structured inquiry. This could be attributed to the six hours use of confirmation inquiry and structured inquiry, and that teachers need to use new teaching approaches for a long time to make a difference in students’ expectations of success. Das and Richman (2022) explored the public energy literacy of Torontonians using an instrument measuring cognition, attitudes, and behaviours that they developed. They used a mixed methods approach that included pretesting and interviews. They noted that the participants had high attitude and behaviour, but low knowledge about public energy. They suggest that this instrument will be useful for practitioners conducting energy- and environmental-related research.

Gallegos et al. (2022) investigated Indigenous children’s model constructions of two scientific topics. They analyzed the representations (models) elaborated by the children from México in three
cultural domains: ethnic, daily (domestic), and school. The authors provide a discussion on the implications of the results on crossing border processes. This paper provides insights into the potential conflicts in young students. Fu et al. (2022) explored the topics of reasoning and proof in three popular series of mathematics textbooks in China. Using Davis’ subdivision of conjecture in Stylianides framework, the authors analyzed patterns, conjectures, proofs and non-proof arguments, and the purposes of each component. They found that there was no significant statistical difference in the number of reasoning and proof components by grade in the three series of textbooks. However, there was a significant statistical difference in the reasoning and proof tasks. Given the importance of textbooks in the teaching process, the quality of the student tasks and the depth of topics are extremely important to educators.

Capone (2022) studied “blended” teaching environments integrated with traditional lessons in a Student-Centred Active Learning Environment. This interaction included creating learning environments, artifacts and teaching and learning sequences. They noted that the alternative teaching methodologies increased the achievement of the students.

Another theme in this issue is about research on preservice teachers. Cavadas et al. (2022) present a framework and research design to identify preservice teachers’ integration performance of science and mathematics education. The authors describe a PBL (problem-based learning) activity named STEM Bees that was divided into two integrated problems. They found that almost every preservice student was able to make meaningful connections between science and mathematics. The framework was useful in identifying the level of integration of science and mathematics and should serve as a useful tool for preservice students and instructors. In another paper, Boscia (2022) investigated mathematics teaching anxiety with elementary school preservice teachers. This mixed methods study examined the relationship between mathematics anxiety, mathematics teacher anxiety, and mathematics teacher efficacy. He found that mathematics teaching anxiety does interact with mathematics anxiety and mathematics teacher efficacy. It is very important to find ways to provide support for preservice teachers for many possible anxieties that they may have in the teaching and learning of mathematics and science.

A third theme is about the use of technology to teach mathematics and science. Khalloufi (2022) explored the language practices of a teacher while using dynamic geometric software. The teachers in the study were using a networking strategy between mediation theory semiotics and commognitive theory. The paper gives a discursive and semiotic analysis of the teacher’s actions. The authors address the problem of teaching practices when integrating a computing environment and illustrate how the teacher can enhance the role of mediator between mathematical knowledge and the student.

Code et al. (2022) explored the effect of pandemic-related emergency remote teaching had on technology educators. They use Mezirow’s transformative learning theory to better understand the teacher’s use of physical aspects of teaching remotely as well as creative problem solving. They demonstrate that the COVID-19 presents pandemic will shape the transformed pedagogy of technology educators.

Allaire-Duquette et al. (2022) explored how an introductory programming workshop about robotics held in a science museum impacts a student’s self-efficacy for programming. The 172 students in the workshop completed a survey before and after their programming experience. The authors found that after the two-hour workshop, the gender differences in self-efficacy for programming narrowed. While we know that short workshops seldom result in any change, the authors felt that the greatest growth for girls came from single-sex groupings and suggest that more single-sex learning experiences in programming would be helpful for self-efficacy, although additional research is necessary to learn about these potential benefits.

We are very excited to increase the commentaries in the journal. We consider these commentaries an opportunity for knowledge mobilization and scholars to reflect on previously published articles.
in the journal, provide insights into science, mathematics, and/or technology, and to write about important topics of the day. In this issue, Cormier and Voisard (2022) write about an article written by Désautels (2020). She makes suggestions for science teachers to compensate for the problems identified in the article. Roth (2022) writes about the resistance to science-based arguments by politicians, especially during the COVID-19 pandemic. He provides some reflections on the impact of this resistance and how to make science more relevant to students.

Chernoff (2022) continues his regular column on Canadian mathematics education matters. In this issue, he investigates tipping practices and the evolution of the tipping culture in Canada. He noticed how “the Machine” has moved the tipping formula from a few cents to a habit of tipping. Read this humorous reflection on our unconscious activity.

Declarations

Conflict of Interest The author declares no competing interests.

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