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Special Issue -- Creativity in Mathematics: Foreword

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Special Issue – *Creativity in Mathematics* Foreword

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Our special issue was motivated by our passion for mathematical creativity. We believe that creativity is both valued by mathematicians and not always explicitly discussed in classrooms. It is often hidden within the process of doing homework problems or proving theorems. As many educators recognize, students at every level have mathematical creative potential that can be represented in many non-routine forms (e.g., new solution approaches, different representations, metaphors of concepts, etc.). The authors in our special issue have pushed the mathematical creativity literature in unexpected and exciting directions, and we are thankful for their gift of ideas.

There are articles in this special issue that reconceptualize and challenge definitions of mathematical creativity. Riling presents the Creative Mathematical Action Framework that is both grounded in previous literature and situates the definition of mathematics towards the actions of a student in the classroom environment. The focus on how multicultural aspects can influence students' collective creativity is represented with the works of both Adiredja and Zandieh and Dominguez *et al.* Culture and proof intersect in Balaji's article, where they present a thesis that Raaga improvisation and proving require a similar mathematical creativity. Fetterly examines how math creativity, beliefs, and anxiety can influence one another, while Blyman *et al.* focus on a rubric to capture creative actions in problem solving. Finally, Moore-Russo *et al.* research problem posing and categorized students' created tasks in terms of the mathematical creativity literature.

Our authors showcased a wide array of projects that can foster creativity in many different classroom environments. Some focused on the instructor perspective, providing details on implementation and facilitation. For example, Arney *et al.* thoroughly describe a tertiary, introductory, creative problem solving course. Fung and Hollander give their views on how a mathematics and an English professor co-taught classes where students created elementary mathematics children's books. Adams reports on students' work in three creativity-fostering projects in an undergraduate statistics class and the instructor rubric for assessment. Finally, Marciniak describes projects in upper-level courses inspired by mentoring undergraduate research projects.

It's not only paper or book projects, but physical manipulatives can generate mathematical creativity. Hodge *et al.* discuss TACTivity derivative refrigerator magnets and benefits of tactile objects in generating creativity. Monahan *et al.* discuss the unique nature of mathematics and creativity with juggling, and Selbach-Allen *et al.* argue for how a nautilus shell can be a golden spiral. There is a computer program designed to explicate the mathematics and creativity of Japanese temari created and discussed by Giuffre and Stemkoski. Wangberg reports on the ways in which a carefully designed multivariable calculus course provided opportunities for students to showcase their mathematical creativity through the act of conjecturing. Finally, Dickman and Nauman provide details of a Tromino project designed to foster mathematical creativity among students with details on implementation and student work. They bring up the notion of mathematical code switching in an attempt to break down reductive language used in classrooms.

A couple of the articles in the special issue provide an overview of the expert approach to mathematical creativity. Graham-Squire hypothesizes a theorem and provided their creative mathematical process to explore a proof of this theorem. This paper serves as an example of an expert process of creating original mathematics. In another article, Shahbazi *et al.* provide a discussion of the design and implementation of mathematical departmental publications. The authors argue that this platform fostered students' creativity and written communication skills, and highlights how we can go beyond the classroom to utilize institutional support to foster creativity. Delvento weaves the humanity of mathematical creativity in their two poems, bringing awareness of "emotional well-being through the lens of mathematics and logic."

We thank Gizem Karaali and Mark Huber for allowing us the opportunity for guest editing this special issue. It is indeed special — all of these authors worked quite hard to produce such high-quality articles. We urge you to think and re-think about your own views of mathematical creativity and ways you can incorporate them in the classroom.

Sincerely,

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