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A Century of Leadership in Mathematics and Its Teaching

Growth through Reflection in Mathematics Education

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PREFACE

The spring 2019 issue of the *Journal of Mathematics Education at Teacher College* features five articles that focus on aspects of teacher growth and development. In particular, a theme of “reflective practices” emerges throughout the articles—how can educators, through introspection and evaluation, become better practitioners of their craft? Whether considering the relationship between secondary education and universities, how preservice teachers grow and change through preservice experiences, the role of culture in educational practices, or how to develop and measure teacher competencies, each article examines a different aspect of how educators of mathematics learn and grow. Included in this is a biography of a recently deceased mathematician that serves as an inspiration and role model to future mathematics educators and scholars.

Gujarati explored how the Child Mathematics Inquiry Portfolio (CMIP), a semester-long project in an elementary mathematics methods course involving repeated observation and reflection on one child’s mathematical development, influenced preservice teachers. This structure was chosen in place of several short independent observations over the course of the semester. The CMIP increased the preservice teachers’ understandings of mathematics teaching and learning and its relation to teacher student interaction, as well as their mathematical confidence. This work shows that reflective practice can have a positive impact on preservice teachers as they head into their own classrooms.

In her biographical article Gibbons examined the life of mathematician Maryam Mirzakhani through the lens of a mathematics educator. Mirzakhani, the first and only female winner of the Fields Medal, died in 2017 of breast cancer. In this brief biography the author discussed aspects of Mirzakhani’s personal history, professional life, and mathematical contributions. Gibbons also argued that both Mirzakhani herself and her mathematical discoveries could serve as an inspiration to students, helping to reveal the humanistic aspect of mathematics and mathematical learning.

Johnson, Nebesniak and Rupnow investigated how collaborations between school districts and local universities led to the creation of district specific graduate courses for teachers. The courses focused on curricular and instructional reform and had key components of research, practice, and leadership. Teachers who took these courses were able to become curriculum leaders in their respective schools and felt more able to improve their own teaching practices. Benefits flowed in both directions as faculty members also felt more informed about curriculum and practice trends. This work can serve as a model for creating professional development for teachers tailored to their local school districts.

PREFACE (Continued)

Thomas and Berry synthesized qualitative research on Culturally Relevant Pedagogy (CRP) and Culturally Relevant Teaching (CRT) in relation to mathematics teaching and learning in primary and secondary schools. Twelve articles met the criteria for inclusion and were analyzed according to the framework of a qualitative metasynthesis. The findings were that CRP and CRT include five major components: caring, knowledge of contexts and teaching practices using contexts, knowledge of cultural competency and teaching practices using cultural competency, high expectations, and mathematics instruction/teacher efficacy and beliefs.

Ahuja described the theory of professional competence in teaching mathematics by examining a cross-cultural collection of teaching practices of teachers in India and the United States. By comparing different case studies, the author develops a rich conceptualization of the relationship between knowledge base and competence in mathematics teachers. The author's theory attempts to explain how teachers develop and display competence, and it justifies competence as a dynamic interplay of knowledge situated in the context of classroom, school, and wider social culture.

Together these five articles serve as a framework for the ways that we as educators can investigate our own practice. Looking from the perspectives of pre-service teacher, secondary educator, college professor, and even curriculum developer, these articles provide examples of ways the mathematics education field is continuing to develop in the 21st century. Taking the time to reflect on all aspects of our practice is a necessary component of this development.

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Guest Editors