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A Century of Leadership in Mathematics and Its Teaching

Fostering Positive Cognitive and Affective Growth

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PREFACE

The Fall 2018 issue of the *Journal of Mathematics Education at Teachers College* features four articles offering reflections about and strategies for fostering positive cognitive and affective growth in mathematics students at the pre-university level. In this edition, prospective and practicing elementary school, middle school, and high school mathematics instructors will not only find recommendations for bettering themselves as educators of budding students, but also for cultivating healthy, encouraging spaces and activities for doing mathematics. We hope this issue will highlight exciting research that aims to enhance mathematics learning for a new generation.

Wade, Cimbricz, Sonnert, Gruver, and Sadler investigated the characteristics that consistently identify high school mathematics teachers as being able to holistically teach mathematics content for students' full conceptual understanding. Following up on a quantitative analysis of 2009's "Factors Influencing College Success in Mathematics" (FICSMath) Survey, the authors discuss five phenomenological themes typifying the essential attributes of those instructors helping students achieve strong conceptual understanding. Meditating on their study's qualitative findings relative to the FICSMath Survey's quantitative findings, the authors offer suggestions for the betterment of mathematics course instructors and mathematics education researchers alike.

Appova meditated on a potentially surprising characteristic of university courses for prospective mathematics educators: in the US, mathematics education courses frequently fail to develop prospective educators' knowledge about teaching schoolchildren, as many such courses are taught by individuals with only pure content skills and no formal training in mathematics education. The negative effects of instruction from educators unequipped to sufficiently develop students' mathematics skills at the elementary level are far-reaching; Appova offers a selection of learning opportunities for prospective educators' mathematics content courses which could help develop prospective mathematics educators' knowledge about teaching schoolchildren, thereby fortifying the prowess of tomorrow's mathematics doers.

Stohlmann, Huang, and DeVaul examined how students' mindsets, classified here as being either "growth" or "fixed," changed after participation in an enrichment course centered on open-ended problems. This quantitative analysis of both the students' mindsets and the students' solutions to problems builds upon previous research chronicling the benefits of students working with open-ended problems; Stohlmann, Huang and DeVaul's findings, however, indicate both how working on open-ended problems helps to enable growth mindsets in students, and how a growth mindset supports working through open-ended problems—a noteworthy duality.

PREFACE (Continued)

Slayton, Velez, Jong, and Perry explored the use of Project-Based Learning (PBL) as a vehicle for critical mathematics and literacy skills in an after-school club for 4th and 5th graders. Using both models of "good citizenship" and student feedback to design meaningful learning activities, the authors investigate how the participants in the study discover natural applications for mathematical processes and use mathematics to prove and persuade. Finally, the authors discover and elaborate upon several key factors that enable opportunities for mathematics connections at the elementary level, as well as address how educators can better engage students through community interaction.

Whether focused on the extracurricular activities of elementary school children, the roles of teachers in the classroom, or the nature of teacher training programs, each of the four articles in this issue of the Journal highlights one of our field's most essential desires: better teaching and better learning, not just for our students, but for us educators, too.

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