Navigating Abstraction in Modern Algebra

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Abstract: In this talk, I revisit Hazzan’s (1999) fundamental work on reducing abstraction in abstract algebra tasks. During an extensive analysis of students’ work on abstract algebra tasks, we discovered that students reduced abstraction in many ways beyond the scope of the original framework. Furthermore, we found that reducing implies a false hierarchy in terms of this activity. I will share an expanded framework based on our theoretical exploration of the literature on abstraction. I will then instantiate the expanded framework with student work that illustrates productive and unproductive ways students navigated abstraction in a series of abstract algebra tasks.

Dr. Kate Melhuish is second year assistant professor at Texas State University. Her main passion is thinking about students’ thinking—particularly, their thinking about modern algebra concepts. She also studies lots of other stuff like how variation theory can inform task design for pre-service teachers, and how elementary school teachers notice justifying and generalizing. She hopes to one day not have so many active research projects.

Next Friday: Dr. Samuel Obara, Texas State University