

Math Ed Listserv

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BU Wheelock Math Education Newsletter

Hello BU Mathematics Education Community! We are very proud to share with you the second installment of our Math Education newsletter. This issue contains invitations to our Speaker Series, descriptions of recent presentations and publications, and an interview with recent alumnus Dr. Erin Barno about her dissertation! Read on and feel free to reach out to share your stories!

New Publication Alert!

Math Education doctoral student Brit Claiborne and faculty member Eric Cordero-Siy have a new article out in the Learning: Research and Practice Journal (Volume 10, Issue 2, p. 163-179) titled, "Imagining Anew: A Narrative Analysis of STEM Teachers' Fictional Educational Futures." In this article the authors describe how teachers' imagining transformational education futures allowed the teachers to take action and move beyond and around current circumstances (and past experiences) that had limited them from enacting the kinds of educational experiences they wanted to be a part of. Check out the full article via the open access link here: <https://doi.org/10.1080/23735082.2024.2414985>



Seminar Series



The Roles of Empathy and Creativity in Designing Accessible Mathematical Experiences; UDL Math and Games Time

On Tuesday, March 18th, Dr. Rachel Lambert (UC Santa Barbara) gave a presentation on her work at the intersection of Special Education and Mathematics Education. The recording of the seminar can be access here, and a description of her talk is included below.

Link to Recording: https://mymedia.bu.edu/media/t/1_tpr74ueh

Description: Mathematics has been an inaccessible space for too long for too many students, including students with disabilities. In this talk, Dr. Lambert will explore her on-going work to create a math-specific version of Universal Design for Learning that centers the empathy and creativity of teachers. She will discuss the theoretical roots of her work, including critical disability studies and design thinking. She will present research on how math and special educators use empathy as a tool in design, particularly in shifting away from deficit thinking and towards trusting in the thinking of all learners. She will discuss an on-going project to develop mathematical interventions that work with the current emotional and material conditions of teachers and students in schools: non-digital Games Time.

Co-Designing a Practical Measure to Reconceptualize Ability, Normativity, and Access in Mathematics Education



Please join us for the final talk in this year's seminar series on **Thursday, April 17th** from 6:00pm-7:15pm which can be attended either in-person in room 548 of CDS (665 Commonwealth Ave, Boston, MA 02215), or on Zoom (email Aaron Brakoniecki, brak@bu.edu for Zoom link). We will be welcoming **Dr. Cathery Yeh (University of Texas at Austin)**; a description of her presentation is included below.

Description: In this talk, Cathery will discuss the collaborative (re)development of a practical measure designed to capture embodied participation. Working alongside four mathematics and special education teachers who support students at the intersections of multiple marginalized identities—including students of color, emergent bilinguals, and students with disabilities—a classroom observation tool was redesigned to better capture embodied participation. This talk presents the theoretical and methodological approach, grounded in Disability Critical Race Theory and DisCrit Classroom Ecology, along with the outcomes of engaging teachers in the collaborative design and testing of research tools. By expanding beyond verbal-only measures, this research offers critical insights into student participation and contributes to the growing body of scholarship on equitable classroom measures.

New Book!

BU Math Education Faculty members, doctoral students, and alumni have contributed chapters to a new book: Promoting Equity in Approximations of Practice for Mathematics Teachers.

Publisher Description: “[This book] serves as a beacon for those seeking to navigate the intricate intersections of pedagogy and equity. With an insightful exploration of methodologies and design elements associated with approximations, this book offers a roadmap for educators and researchers. Its pages unfold as a dynamic resource, encouraging practitioners to position their use of approximations as catalysts for equitable mathematics instruction. Aiming to provoke thoughtful reflection, the book not only addresses the current state of the field but also propels readers toward envisioning a future where equity-focused approximations become the norm in mathematics teacher education.” - <https://www.igi-global.com/book/promoting-equity-approximations-practice-mathematics/326517>

We highlight a couple of the chapters below:

Simulating Equitable Discussions Using Practice-Based Teacher Education in Math Professional Learning

The chapter “Simulating Equitable Discussions Using Practice-Based Teacher Education in Math Professional Learning,” co-authored by **Greg Benoit**, **Erin Barno**, and Justin Reich explores a digital simulation intervention to help mathematics teachers examine their responses to students' algorithmic responses, (mis)conceptions, and alternative approaches. They found that teachers fostered students to share their thinking and positioned them as sense-makers in small-group simulations but made only minimal adjustments during simulated whole-class discussions.



Orienting to Student Sense-Making: Using Simulations to Support the Development of Equitable Mathematics Teaching

The chapter “Orienting to Student Sense-Making: Using Simulations to Support the Development of Equitable Mathematics Teaching,” co-authored by **Meghan Shaughnessy**, **Brit Claiborne**, Timothy A. Boerst, and Nicole Garcia reports on work from a decade-long project using teaching simulations to help preservice teachers' (PSTs) develop skills on eliciting and interpreting student thinking. These simulations support PSTs in orienting to student sense-making which is at the heart of equitable mathematics instruction.



Premier Research Source

Promoting Equity in
Approximations of Practice for
Mathematics Teachers

Carrie Wilkerson Lee, Liza Bondurant,
Bima Sapkota and Heather Howell



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Scientific Publishing
Publishing Tomorrow's Research Today

Alumni Interview



Faculty member Aaron Brakoniecki recently caught up with math education alumnus, Dr. Erin Barno (BU Wheelock '24) to chat with her about her dissertation work titled, “Using Digital Clinical Simulations to Support Early Career Teachers’ Sensemaking About Ambitious and Equitable Mathematics Teaching.”

Aaron: Thanks for meeting to chat about your work and your dissertation! Let me jump right in - How did you come to your dissertation topic? What were you noticing? What kind of problems were you seeing that you wanted to address?

Erin: When I was a new teacher, I felt like I was trying to make decisions that would support students' learning and make them feel like they belong in math classes. But the way I was enacting it, and what happened afterwards, was not working that way. I wanted to figure out how could I be better supported as a new teacher, and then how could I make sure that when I am a new teacher and something doesn't work, I'm not blaming my students. Like, how am I taking that as my problem of practice as something to fix and how are we supporting new teachers to think about that. But it didn't really come into fruition until I happened to get on a research project with Dr. Greg Benoit. Greg was working on the Inspire project which was using these simulations to practice in the moment decision making and high leverage teaching practices. So I was able to run with that work that I was doing with Greg with this original question of, *what is this disconnect between the decisions that we're saying in the moment, and what actually is happening?* But then, adding this additional layer of, *do we even realize that's happening when we do that?*

Aaron: Oh, that's so interesting. I'm hearing you talk a lot about what is going on in the classroom and teachers' decisions. How did studying teacher beliefs become a part of your dissertation?

Erin: Teaching is situated, and teaching is relational. Although sometimes, when we're teaching new teachers these ways to make decisions - these talk moves, ways to use high quality curriculum, etc. - it can't be stripped from what's actually happening in the classroom in the school. You're working with your particular students in the moment, and beliefs shape the way a teacher interprets all of that messiness going into when they make a decision and what happens afterward. We can begin to understand these hidden or explicit beliefs that are providing a lens over everything that you're doing. And if I'm able to unpack what that is, that might allow me to see different things that are happening or make different decisions or interpret students' thinking in a different way. So, understanding that decisions and interpretations are all situated within relationships and sociopolitical dynamics and school dynamics, and trying to decompose all of that in ways that maybe you weren't able to beforehand, and then putting it back together can lead to better experiences for students.

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Alumni Interview



Aaron: I noticed that in your dissertation, you really were centering this idea of Teachers' Ambitious and Equitable Stances. What is that, and why is it important for your work?

Erin: So this is a framework from Ilana Horn and Brette Garner where they created a spectrum of mathematics stances, which can range from sort of old school (i.e. I'm in the front of the class, there's a right and wrong answer, I'm only going to call on the students who are correct etc.) versus ambitious and equitable (i.e. I am valuing all students, I am leveraging misconceptions in ways that can shape students learning, etc.). So, it's a realm by which a teacher could position themselves as how they want to value students' and their thinking in that classroom when making decisions. In terms of using it in these practice scenarios that I studied in my dissertation, what I was trying to unpack was, if you're saying you're *talking the talk*, but you're making decisions that are maybe not showing that you're also *walking the walk*, when does that happen? And why does that happen? And how can we understand when there's a disconnect between what you think you're aligning yourself with, and what you actually did.

Aaron: I noticed from your initial description about what you wanted to study, it was mostly about understanding teachers' decisions in the moment, and the idea of simulations wasn't a part of it. Can you tell me a bit about how simulations became a part of your methodology?

Erin: So, when you're trying to unpack some of these really complicated things that happen in classrooms, it can be difficult for teachers to reflect on their teaching decisions when it's in the context of their everyday classroom experience because they can start to overly rely on one-on-one dynamics of their relationship to each student to explain particular actions. They may not understand when some of those dynamics are really related to larger sociopolitical issues and macro systems that shape classroom interactions and can shape teachers' perceptions of what is happening in the classroom. So I shifted to use simulations as a way to start to have these really sticky conversations. Since it's a couple of degrees removed from the actual classroom, you can create similar experiences in a simulation, but with a degree of separation, so that teachers have an opportunity to be a little bit more vulnerable and maybe rethink some of their decisions in a way that doesn't feel so personal to what's happening in their lived experiences. Then they can take what they have engaged with in the simulation and recognize they can use those lessons to reframe the way they are thinking about their classrooms and their students.

Aaron: This is so fascinating! Thank you for sharing all of this. As we wrap up, we have lots of different populations at Wheelock, ranging from those working to enter the classroom, those studying to become teacher leaders and administrators, to those doing research in math education. What would you like to highlight about your work to any of these populations?

Erin: So, in the moment, two different teachers can say things that are similar, but their

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justification for why they said that could be radically different. So for folks who are working in the classroom, it's important to think about, "When I made that decision, what was its purpose? Towards what end?" Also realizing that even if an outcome happened exactly the way you intended it to happen, it's still important to think about the purposes behind your actions, as that will reemerge later. For those who work with teachers, I would also point out that they too need to think about their own "whys" as well. It's not enough to have a checklist or rubric of what you would like to see teachers doing, but you need to understand why you want to see those things and also understand that teachers interpret and make a decision in part of a larger trajectory that shape multiple decisions. Teaching is not just these magical moves, but is a deeply relational situated practice among students, and content and more. And for those who study teachers, when they notice a disconnect with what a teacher might be saying and what they are doing, recognizing that those aren't "gotcha" moments, they're opportunities to create space for teachers to think deeply about their practice. So teaching is sustainable and feels good and feels good for students too.

Aaron: Thank you so much for meetings to talk about your work and your dissertation, and for allowing us to share this conversation with our students and alumni!

Erin: Absolutely! It was great catching up. I miss the BU Community, so this was really nice!

Research

BU Math Education at the PME-NA Annual Conference

In November of 2024, Math Education faculty and graduate students presented their work at the annual conference of the North American Chapter of the International Group for the Psychology of Mathematics Education (PME-NA) in Cleveland, Ohio.

- "Aesthetic and Affective Dimensions of Mathematics Learning" - V. Rani Satyam, **Leslie Dietiker**, Meghan Riling, Aida Alibek
- "Comparison of a Grade 8 Topic from One U.S.-Based and One India-Based Mathematics Textbooks" - Jaai Uday Phatak, Lillie R. Albert, **Leslie Dietiker**
- "I Had This Routine In My Head": The Influence of Instructional Orientations and Curricular Conceptions" - **Leslie Dietiker**, **Pelin Jackson**, **Timothy Smith**
- "Opportunities to Nurture Equitable Teaching Through Simulations of Eliciting and Interpreting Student Thinking" - **Meghan Shaughnessy**, Timothy Boerst, Nicole Garcia, Merrie Blunk
- "What Happened in the Second Simulation?: Analyzing the Formative Function of Feedback Across Teaching Simulations" - **Meghan Shaughnessy**, Nicole Garcia, Timothy Boerst, Ben Freeburn, Ada Okun, **Brit Claiborne**
- "Validating Decomposition of a Teaching Practice for Formative Assessment Feedback" - Daniel Heck, Evelyn M. Gordon, **Meghan Shaughnessy**, Anna Bruce, Tim Boerst, Nicole Garcia

