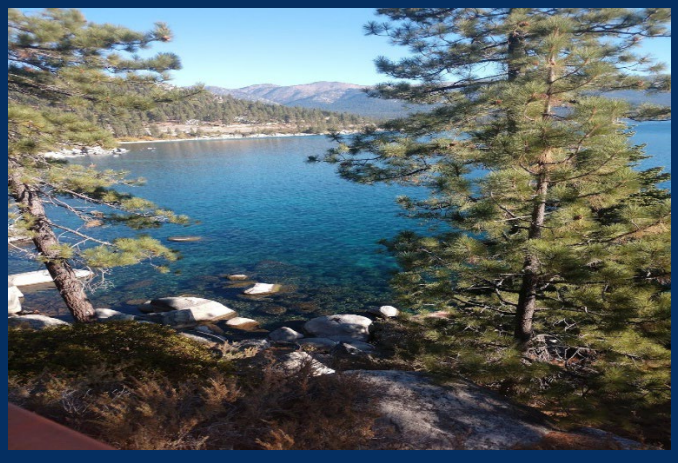
PLENARY SESSIONS



Annual Conference of the North American Chapter of the International Group for the Psychology of Mathematics Education

University of Nevada, Reno

PME-NA 2023

PME-NA PLENARY SESSIONS

Sunday

MOTIVATION AND EMBODIED COGNITION

Dr. Mitchell Nathan
University of Wisconsin at Madison

Dr. James Middleton
Arizona State University

Monday

CONNECTING MATH TO REAL-WORLD EXPERIENCES, CULTURE, AND TECHNOLOGY

Dr. Lisa Lunney Borden
St. Francis Xavier University, Canada

Dr. Jose Luis Cortina
National Pedagogical University in Mexico City

Dr. Theodore Chao
Ohio State University, USA

Tuesday

WHAT DO YOU SEE IN MATHEMATICAL PLAY?

Dr. Nathaniel Bryan,
University of Texas at Austin

Dr. Melissa Gresalfi
Vanderbilt University

Dr. Naomi Jessup.
Georgia State University

Dr. Amy Parks
Michigan State University

Dr. Tran Templeton.
Teachers College Columbia University

Dr. Anita Wager
Vanderbilt University

PREPARING TEACHERS TO ENGAGE STUDENTS

Dr. Robert Berry III
University of Arizona

SUNDAY

MOTIVATION AND EMBODIED COGNITION

Dr. Mitchell J. Nathan
University of Wisconsin at Madison

Dr. James A. Middleton
Arizona State University

Mitchell J. Nathan, Ph.D.
University of Wisconsin at Madison

Paper: Welcome to the world of mathematics, where anything is possible!

Mitchell J. Nathan, BSEE, Ph.D., studies how we think, teach, and learn, with particular emphasis on the role that language and embodied processes plays in mathematics and engineering learning, teaching, educational assessment, and design. Dr. Nathan has authored over 200 peer-reviewed publications and has secured research funds from the National Science Foundation (NSF), the U. S. Dept. of Education-Institute of Educational Sciences (IES), and the James S. McDonnell Foundation (JSMF). Dr. Nathan is an elected Fellow of the International

Society of the Learning Sciences, and a founding officer (2002). He founded the American Education Research Association (AERA) Division C section on Engineering and Computer Science Education (2013), co-Chaired the International Conference on Computer-supported Collaborative Learning, CSCL10 (2013), and co-founded EMIC (2016), an international group of scholars and educators focused on embodied education. He has been Visiting Professor (2011-2016) for the Latin American School for Education, Cognitive and Neural Sciences, and served on multiple committees for the National Academies of Sciences, Engineering, and Medicine. He is an inductee of the University of Wisconsin's Teaching Academy, which promotes excellence in teaching in higher education, and served on its executive board. Nathan has, since 2017, been the inaugural Chair of the Teachers as Learners (TaL) grant program, funded by JSMF.

James A. Middleton, Ph.D.

Arizona State University

Paper: An argument for engagement as a fundamental construct for understanding mathematical learning!

James A. Middleton is professor of aerospace and mechanical engineering in the School for the Engineering of Matter, Transport and Energy at Arizona State University. He is the past director of the Center for Research on Education in Science, Mathematics, Engineering, and Technology (CRESMET) at Arizona State University, which worked to improve K-12 STEM education. Prior to these appointments, Middleton served as associate dean for research for ASU's Mary Lou Fulton Teachers College for three years, and as director of the division of curriculum and instruction for another three years plus. He received his Ph.D. in Educational

Psychology from the University of Wisconsin-Madison in 1992, where he also served in the National Center for Research on Mathematical Sciences Education as a postdoctoral scholar for three years.

Middleton's research interests focus in the following areas where he has published extensively: children's mathematical thinking; teacher and student motivation in mathematics; and teacher change in mathematics. He is currently developing methodologies for utilizing the engineering design process to improve learning environments in science, engineering, and mathematics. He has also written on effective uses of educational technology in mathematics and science education as a natural outgrowth of these interests. To fund his research, Middleton has garnered more than $20 million in grants to study and improve mathematics education in urban schools. He just finished a $1.8 million research grant to model the longitudinal development of fractions, rational number and proportional reasoning knowledge and skills in middle school students and is currently engaged in a project studying the sustainability of changes in urban elementary teachers' mathematics practices. All of his work has been conducted in collaborative partnerships with diverse, economically challenged, urban schools. This relationship has resulted in a significant (positive) impact on the direction that partner districts have taken, including a significant increase in mathematics achievement in the face of a rising poverty rate.

Professor Middleton just finished a term as senior co-chair of the Special Interest Group for Mathematics Education in the American Educational Research Association. Previously he served for three years on the National Council of Teachers of Mathematics (NCTM) Research Committee, chairing that committee in 2006. He has served on several task forces for the NCTM, is a regular reviewer for the National Science Foundation and the Department of Education and serves on the boards of several regional and national-level research centers. He has been a consultant for the Rand Corporation, the National Academies, the American Statistical Association, the IEEE, and numerous school systems around the country.

MONDAY

CONNECTING MATH TO REAL-WORLD EXPERIENCES, CULTURE, AND TECHNOLOGY

Dr. Lisa Lunney Borden
St. Francis Xavier University, Canada

Dr. Jose Luis Cortina
National Pedagogical University in Mexico City

Dr. Theodore Chao
Ohio State University

Lisa Lunney Borden, Ph.D.

Francis Xavier University, Canada

Lisa Lunney Borden is a Professor in the faculty of education who holds the John Jerome Paul Chair for Equity in Mathematics Education striving to improve outcomes in mathematics for Mi'kmaw and African Nova Scotian youth. Prior to coming to StFX, she had a teaching career in We'koqma'q First Nation where she spent ten years as a secondary mathematics teacher, a vice-principal and principal, as well as the provincial mathematics leader for all Mi'kmaw Kina'matnewey schools in Nova Scotia. Lisa credits her students and the Mi'kmaw community

for inspiring her to think differently about mathematics education, which continues to shape her work today. She is committed to research and outreach that focuses on decolonizing mathematics education through culturally based practices and experiences that are rooted in Indigenous languages and knowledge systems. She is a sought-after speaker nationally and internationally and has a passion for working with teachers and their students. Lisa has helped to create the Show Me Your Math program that inspired thousands of Mi'kmaw youth to share the mathematical reasoning inherent in their own community contexts, and an outreach program called Connecting Math to Our Lives and Communities that brings similar ideas to Mi'kmaw and African Nova Scotian youth as an afterschool program. She currently serves as the vice-president of the Canadian Mathematics Education Study Group and sits on the Canadian Mathematical Society's reconciliation committee.

José Luis Cortina Morfin, Ph.D

Universidad Pedagógica Nacional, México

Paper: Designing instructional Resources to Support Teaching

Jose Luis Cortina is a Professor at the National Pedagogical University of Mexico. His research focuses on the design and theorization of resources for teaching mathematics well. This involves developing mathematics activities to be used in classrooms, in which students engage with meaningful ideas and enjoy the experience. It also involves the development of resources that support teachers, so that their mathematics teaching can be meaningful, manageable, and educationally fruitful. His research includes the fields of early number, fractions, proportionality, and indigenous education. Professor Cortina received a Doctor of Education degree from Vanderbilt University, where he attended with the support of a Fulbright Scholarship. He is a member of the National System of Researchers of Mexico. He was conference chair

of the PME-NA in 2008 and member of the Stirring Committee from 2007 to 2014. He is founder and member of the Number Sense Project (www.sentidonumerico.com).

Teddy Chao, Ph.D.

Ohio State University

Paper: Why am I Supposed to Love Math? Digital Mathematics storytelling in Asian American communities

Theodore Chao is an associate professor of Mathematics Education in the Department of Teaching and Learning at The Ohio State University. His research agenda involves engaging all students and teachers regardless of social identity (race, gender, socioeconomic status, etc.) to fully see themselves as mathematical humans, particularly through technology. He uses digital storytelling and photovoice as vehicles for mathematics teachers and students of color to create narratives that connect their mathematics identities with their community and family identities. He also builds technology for children to share their mathematical strategies, opening up windows for peers, teachers, and family members to recognize the brilliance of their mathematical thinking. Chao has published in journals such as Investigations in Mathematics Learning, Race, Ethnicity and Education, & Teaching Children Mathematics. Chao is currently principal investigator of a NSF CAREER research project exploring the ways children in urban emergent communities use Digital Mathematics Storytelling to share rich mathematical knowledge from their communities and families. Chao has taught courses such as elementary mathematics methods, a critical history of STEM education, and mobile app development in STEM education. Chao is currently an associate editor for Theory into Practice (TIP), an editorial panel member of Mathematics Teacher educator (MTE), and served as a steering committee member of the North American Chapter of the International Group for the Psychology of Mathematics Education, and a organizer for the Free Minds, Free People (FMFP) conference.

WHAT DO YOU SEE IN MATHEMATICAL PLAY?

Dr. Nathaniel Bryan
University of Texas, at Austin

Dr. Melissa Gresalfi
Vanderbilt University

Dr. Naomi Jessup
Georgia State University

Dr. Amy Parks
Michigan State University

Dr. Tran Templeton
Teachers College Columbia University

Dr. Anita Wager
Vanderbilt University

Paper: What do you see in Mathematical Play?

Nathanial Bryan, Ph.D.

University of Texas at Austin

Nathaniel Bryan, Ph.D. is an associate professor of early childhood education at The University of Texas-Austin. For more than a decade, Dr. Bryan's scholarship, teaching, and service have focused on the identities and pedagogical styles of Black male teachers, and the critical literacy development and childhood play experiences of Black boys in early childhood education. Dr. Bryan is the author of *Toward a BlackboyCrit Pedagogy: Black boys, male teachers, and early*

childhood classroom practices. He has also received prestigious awards such as the 2020 Emerging Scholar Award from the American Educational Association's Special Interest Group––Critical Perspectives on Early Childhood Education.

Melissa Gresalfi, Ph.D

Vanderbilt University

Melissa Gresalfi's research considers cognition and social context by examining student learning as a function of participation in activity settings. Following a situative perspective on learning, she has investigated the development of dispositions towards learning in mathematics classrooms by examining how opportunities to learn are constructed, and how, when and why different students take up those opportunities. Using this lens, Gresalfi has explored the extent to which classroom practices are equitable and examined categories such as race, gender and previous mathematical experience as they arise in interaction.

Gresalfi's work on the design of learning environments has focused on transforming learning spaces to focus student activity on mathematical engagement that involves sense making, decision-making and problem solving. Her projects focus on the role of play and experimentation on supporting learning through videogame design, informal learning, textile design and computational thinking. Her current projects are: Playful Mathematics Learning, Project CAMPS; Computing and Math in Play Spaces; The Role of Feedback in Digital Games and Re-crafting Mathematics Education.

Naomi Jessup, Ph.D.

Georgia State University

Naomi Jessup is an assistant professor in the Department of Early Childhood Elementary Education at Georgia State University. She received her Ph.D. in mathematics education at the University of North Carolina at Greensboro.

Her research examines teacher learning and development related to children's mathematical thinking of elementary fractions, mathematics teaching practices, and curriculum for culturally, linguistically, and economically diverse populations. In addition, Jessup's research examines ways of reengineering mathematics education spaces amid and post the COVID-19 pandemic that is rehumanizing and honors the voices, knowledge and contributions of Black students, parents and their communities. Her work has been supported by the National Science Foundation (NSF) and the National Council of Teachers of Mathematics (NCTM).

Jessup has more than 18 years of experience in mathematics education at the K-12 and university level serving as an elementary school teacher, K-8 mathematics instructional coach and formative assessment coach (school and district level) and methods course instructor. She teaches mathematics content and methods courses for prospective teachers in the elementary education bachelor's degree program and doctoral courses focused on critical issues in education.

Jessup is a member of the Georgia Mathematics and Illustrative Mathematics Advisory Council. She served as a member of the American Educational Research Association Research (AERA) Mathematics Education SIG and the Association of Mathematics Teacher Educators (AMTE) Membership Taskforce and Standards Dissemination Committee.

Her research has been published in high-quality mathematics education and teacher education journals including ZDM – International Journal on Mathematics Education, Educational Studies in Mathematics and Journal of Education for Teaching.

Amy Noelle Parks, Ph.D.

Michigan State University

Amy Noelle Parks is a professor of elementary education at Michigan State University and a former primary grade teacher. She is the author of Exploring Early Childhood Mathematics through play as well as several novels for children and young adults. Her research focuses on making children's experiences in school intelligible to adults. Her current projects include investigations of the role of play in mathematical learning, the resources parents draw on when supporting their children in mathematics, connections between emotional relationships and content learning in primary classrooms, and the mathematical engagements that are possible in informal spaces.

Tran Templeton, E.DD.

Teachers College Columbia

Taking up a critical childhoods framework that troubles the adult-child binary, Tran's work grapples with questions of how particular social and political structures, policies, and phenomena are brought to bear on childhoods, as well as how young children continually work to negotiate and refigure their social worlds and identities. Through visual research that examines young children's photographs, performances, and narrations of their own lives, Tran juxtaposes children's versions of themselves against adults' renditions of children. She is concerned with how adults mis-recognize and therefore misrepresent children, especially young children and disabled children, whose ways of knowing and relating far exceed adults' capacities to understand them. The implications of this are manifest in the processes, policies, and practices of school where adult agendas can override children's desires, interests, and intentions.

Throughout her body of work, Tran proposes that enlarging our adult visions of children has significant implications for the ways that curriculum, schooling, and research are enacted, especially as we account for the historical, social, and political conditions wherein childhoods play out. Her research draws out a politics of the child, which asks, which children are afforded which rights, which protections and which childhoods? These questions are threaded through her courses, which include topics such as critical pedagogies and visual research methods, children's environments and geographies, multi-species relations, and curriculum as socio-material assemblages.

Tran was a 2017-2018 AERA Minority Dissertation Fellow, part of the 2019-2021 STAR cohort of the Literacy Research Association, and a 2023 Emerging Scholar of AERA's Critical Perspectives in Early Childhood Education SIG. Over the last few years, she has been working with Vivek Vellanki (as part of their VT/TV collective) on how teachers can re-imagine place and space from children's perspectives. With Victoria Restler, she has co-edited the childhood & youth section of the Palgrave Encyclopedia of Critical perspectives on mental health (2019-

2023). With Haeny Yoon and Catherine Cheng Stahl, she's explored ways to tell multimodal stories of being Asian American. Tran has published her work in Children's geographies, Harvard Review, Language Arts, Urban Education and Bank Street Occasional Papers.

Anita Wager, Ph.D.

Vanderbilt University

Anita Wager's research focuses on teacher education that supports culturally relevant and socially just mathematics teaching in early childhood and elementary school. I work with prospective and practicing teachers to develop mathematics pedagogy that draws on children's multiple mathematical resources including: mathematical thinking; mathematics (and other) experiences in homes and communities; and the mathematics children engage with in play. I addition to having research published in Journal for Research in Mathematics Education, Journal of Teacher Education, and Journal of Early Childhood Teacher Education, my scholarly contributions also include a co-authored book, Young children's arithmetic: Cognitively guided instruction for preschool and kindergarten, and a co-edited book, Teaching mathematics for social justice: Conversations with educators.

Wager earned a B.S. in business and finance from University of Delaware and a M.B.A. from Columbia University. After working for fifteen years as an investment banker and securities analyst she earned my M.A.T. from Johns Hopkins and taught 5th grade for five years in an ethnically, linguistically, and economically diverse school in the Columbia, MD. After receiving my PhD from University of Wisconsin-Madison I joined the faculty in the department of curriculum and instruction. I joined the Peabody faculty in 2017 and teach courses for professional and undergraduate students seeking elementary education degrees.

PREPARING TEACHERS TO ENGAGE STUDENTS

Robert Q. Berry III

University of Arizona

Paper: Preparing Teachers to engage students for Equitable Mathematics Education

Robert Q. Berry III, Ph.D., is the Dean of the College of Education at the University of Arizona. He is also a Professor of Mathematics Education and holds the Paul L. Lindsey and Kathy J. Alexander Chair. He is a member National Academy of Education in 2022, an honorific society of U.S. members and international associates based on outstanding education scholarships. In addition, Berry is a Past-President of the National Council of Teachers of Mathematics.

Equity issues in mathematics education are central to Berry's teaching and research efforts. Berry co-edited the 2020 bestseller book High School Mathematics Lessons to Explore, Understand, and Respond to Social Injustice. Additionally, he is the co-editor of two books published in 2022, Upper Elementary Mathematics Lessons to Explore, Understand, and Respond to Social Injustice and Success Stories for Catalyzing Change. Berry has authored and co-edited eight books. Additionally, he has written more than 100 refereed and invited journal publications. His articles have appeared in the Journal for Research in Mathematics Education, the Journal of Teacher Education, Educational Studies in Mathematics, and the American Educational Research Journal.

Berry has made over 300 academic presentations, keynote talks, distinguished lectures, and invited presentations worldwide. Berry gave the 2022 Cox-Talbot Distinguished Lecturer at the Joint Mathematics Meetings for the National Association of Mathematicians. In addition, he gave the 2021 Kay Gilliland Equity Lecture for the National Council of Supervisors of Mathematics. In 2021, he was an invited lecturer to the 14th International Congress on Mathematics Education and the Founders' Lecturer for the Research Council on Mathematical Learning.

Berry has received several significant awards for research and service. He is a two-time recipient of the National Council of Teachers of Mathematics' Linking Research and Practice Publication Award and received the University of Virginia's All-University Teaching Award in 2011. Berry received the Distinguished Alumni Award from Old Dominion University in 2019; in 2016, he received the same award from the University of North Carolina at Chapel Hill. In addition, he is a 2021 Mathematically Gifted & Black Honoree from the Network of Minorities in Mathematical Sciences, and in 2011 he received the Mathematics Educator of the Year from the Virginia Council of Teachers of Mathematics.

Berry is a first-generation college graduate who received his Bachelor of Science degree from Old Dominion University, his master's degree from Christopher Newport University, and a Ph.D. from the University of North Carolina at Chapel Hill.

PME-NA STEERING COMMITTEE

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(Chair Elect)

Ayman Aljarrah – Acadia University

Leslie Dietiker – Boston University

Christopher Kurz – Rochester Institute of Technology

Zareen Rahman – James Madison University

Angeles Dominguez – Tecnológico de Monterrey

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María S. García González – Universidad Autónoma de Guerrero

Oyemolade (Molade) Osibodu – York University

Casey Griffin (Graduate Student Rep.) – University of Delaware

Tabatha Rainwater (Graduate Student Rep.) – University of Tennessee, Knoxville

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Aaron Brakoniecki (Webmaster) – Boston University

Winnie Ko (Treasurer) – Indiana State University

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CURRENT CONFERENCE (2022-2023)

Teruni Lamberg, Ph.D. *

Chair

University of Nevada, Reno

terunil@unr.edu

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*Served as strand leaders

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