



Association of Mathematics Teacher Educators

TWENTY-FOURTH ANNUAL AMTE CONFERENCE

2020

FEBRUARY 6 - 8, 2020

SHERATON PHOENIX DOWNTOWN HOTEL
PHOENIX, ARIZONA

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WELCOME

Welcome to the Twenty-Fourth Annual Conference of the Association of Mathematics Teacher Educators (AMTE)! We are excited to have you join us for the first time here in Phoenix for an exciting three days of professional learning and growth. You may notice a common theme at our conference this year of looking ahead to the future. In our opening plenary session, we've invited forward-thinking voices to push our thinking about the field of mathematics teacher education and what AMTE's role will be in it. Organizationally, we are embarking for the first time in long-term planning as a board and as a part of that, we will be inviting you to share your thoughts on where AMTE should go in the next 5-10 years. Look for a variety of different opportunities to help us think about the future of AMTE, both in our physical spaces and in the app! Whether it's your first time attending the AMTE conference or your twenty-fourth, we hope you find new ideas and engaging conversations in your time with us. Please welcome our first-time attendees to our AMTE family as you encounter them and engage with our Board members and Conference team to share your experiences. We are glad to have you with us this year!

INVITED SPEAKERS AND AWARD SESSIONS

The opening general session, "Looking Down the AMTE Road," is Thursday morning at 8:15 AM in Phoenix D/E. Speakers include:

Kathryn Chval, *University of Missouri*

Carlos Nicolas Gomez, *Clemson University*

Mike Steele, *University of Wisconsin, Milwaukee*

Paola Sztajn gives the 2020 Judith E. Jacobs Lecture, with a talk titled *"Research and Mathematics Teacher Education: Triumphs, Trials, and Transitions"* on Friday afternoon, at 5:00 PM in Phoenix C.

Christopher C. Jett, recipient of the 2019 Early Career Award, will present a talk titled *"Supporting African American Male Mathematics Students: MTEs' High-impact Practices"* on Thursday morning, at 10:45 AM (Session 9) in Maryvale A.

AnnaMarie Conner, recipient of the 2020 Excellence in Scholarship Award, gives a talk titled *"Teacher Support for Argumentation: An Examination of Beliefs and Practice"* on Friday morning, at 8:00 AM (Session 81) in Maryvale A.

Frances K. Harper, Zach Stumbo, and Nick Kim, recipients of the 2020 AMTE NTLI Award, will present a talk based on their paper titled *"When Robots Invade the Neighborhood: Learning to Teach PK-5 Mathematics Leveraging Both Technology and Community Knowledge"* on Friday at 10:15 AM (Session 107) in South Mountain.

PROGRAM INFORMATION

There are 183 sessions and 435 speakers on this year's program. There were 426 proposals submitted for review. The program committee accepted 263 (62%) of these for the program, including: 126 individual presentations, discussion and extended sessions, and symposia; 83 brief reports organized into 32 thematic sessions; and 29 posters for the poster session. The fifth annual AMTE Poster Session is Friday afternoon from 1:00 to 2:00 PM in Phoenix D. The program also includes 10 invited presentations, 3 award-winner sessions, and 4 sessions presented by AMTE sponsors.

LEAD THE WAY

AMTE has grown in scope and influence, and our activities now include co-publishing two journals, publishing books and policy documents, publishing a quarterly newsletter, offering webinars, hosting an active website, administering the STaR program, and working with other professional organizations to provide national leadership. And yet, as much as AMTE offers throughout the year, our conference continues to be a highlight. There really is no substitute for the dynamic quality of sharing and learning with other mathematics teacher educators! Thank you for attending the 2020 AMTE Annual Conference in Phoenix and helping to make this a rich experience.



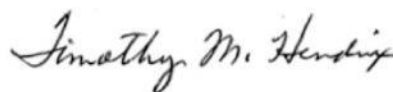
Mike Steele, AMTE President



AnnaMarie Conner, 2020 AMTE AVP for Annual Conference Program



Trena Wilkerson, AMTE AVP for Conferences



Tim Hendrix, AMTE Executive Director

CONFERENCE SCHEDULE

2020 ANNUAL AMTE CONFERENCE FEBRUARY 6-8, 2020, PHOENIX, ARIZONA

WEDNESDAY, FEBRUARY 5, 2020

4:30 PM – 7:30 PM AMTE Registration Desk Open

THURSDAY, FEBRUARY 6, 2020

7:00 AM – 5:00 PM	AMTE Registration Desk Open
10:00 AM – 5:00 PM	Exhibits Open
8:15 AM – 10:15 AM	Opening Session – Phoenix D/E
10:45 AM – 11:45 AM	Concurrent Sessions
11:45 AM – 1:15 PM	Lunch – Phoenix C
1:15 PM – 2:00 PM	Concurrent Sessions
2:15 PM – 3:00 PM	Concurrent Sessions
3:00 PM – 3:30 PM	Break
3:30 PM – 4:30 PM	Concurrent Sessions
4:45 PM – 5:30 PM	Concurrent Sessions
5:30 PM – 6:30 PM	Reception for Graduate Students & Early Career Faculty – Valley Overlook (Fourth Level)
7:00 PM – 9:00 PM	Plenary: Continuing the Conversation – Encanto A

FRIDAY, FEBRUARY 7, 2020

6:45 AM – 7:45 AM	Breakfast – Phoenix C
6:45 AM – 7:45 AM	Advocacy and Emerging Issues Breakfast – Phoenix D
7:30 AM – 4:30 PM	AMTE Registration Desk Open
8:30 AM – 5:00 PM	Exhibits Open
8:00 AM – 9:00 AM	Concurrent Sessions
9:15 AM – 10:00 AM	Concurrent Sessions
10:15 AM – 11:30 AM	Concurrent Sessions
11:30 AM – 1:00 PM	Lunch – Phoenix C
1:00 PM – 2:00 PM	Poster Session – Phoenix D
2:15 PM – 3:00 PM	Concurrent Sessions
3:00 PM – 3:30 PM	Break
3:30 PM – 4:30 PM	Concurrent Sessions
5:00 PM – 6:30 PM	Judith E. Jacobs Lecture – Phoenix C
6:30 PM – 7:30 PM	Reception for All Conference Attendees – Phoenix D & 3 rd Street Foyer

SATURDAY, FEBRUARY 8, 2020

6:45 AM – 7:45 AM	Breakfast and Affiliate Meetings – Phoenix C
7:30 AM – 10:30 AM	AMTE Registration Desk Open
8:00 AM – 9:00 AM	Concurrent Sessions
9:15 AM – 10:15 AM	Concurrent Sessions
10:30 AM – 11:30 AM	Concurrent Sessions
11:30 AM – 1:15 PM	Lunch and Business Meeting – Phoenix C

CONFERENCE INFORMATION

CONFERENCE REGISTRATION DESK

Please stop by the AMTE Registration Desk, located in the Phoenix Ballroom Foyer on the Third Level, to obtain your conference materials, including your nametag and the conference program, if you requested a print copy.

AMTE REGISTRATION DESK HOURS

WEDNESDAY	4:30 PM - 7:30 PM
THURSDAY	7:00 AM - 5:00 PM
FRIDAY	7:30 AM - 4:30 PM
SATURDAY	7:30 AM - 10:30 AM

FINDING THE CONFERENCE AREA

Conference session rooms are located on the Second and Third Levels. Meals will be held in Phoenix C Ballroom on the Third Level. For your convenience, a map of the hotel conference area is printed on the back of the program book. For other questions about hotel facilities, please contact the volunteers at the AMTE Registration Desk, the members of the Conferences Committee, or hotel staff.

WIRELESS INTERNET ACCESS

Conference attendees who are staying at the Sheraton Phoenix Downtown Hotel receive complimentary internet access in individual guestrooms for the duration of the conference. Directions on how to access wireless and wired internet service can be found in each guestroom. Complimentary wireless internet access is provided in the conference/meeting area of the hotel for conference attendees and for AMTE usage throughout the conference. Using your laptop or mobile device, look for the network or SSID – **Sheraton_CONFERENCE** and use the Password (not case-sensitive): **AMTE2020**

CANCELLATIONS AND PROGRAM CHANGES

For updated lists of cancellations and other program changes, visit amte.net/conferences/conf2020/updates or the conference app.

HOTEL PARKING INFORMATION

Self-parking at the Sheraton Phoenix Downtown Hotel is available at the discounted rate of \$10 per day for everyone attending the conference. This rate will be noted on the room key for attendees staying at the Sheraton Phoenix Downtown Hotel. Vouchers for the discounted parking rate can be picked up at the Registration Desk for attendees who are not staying in the hotel. Valet parking is also available for \$37 per car per day (price subject to change).

OPTIONS FOR DINNER

The Sheraton Phoenix Downtown Hotel has a restaurant in the Paradise Valley room on the second level serving breakfast, lunch, dinner, and cocktail options each day. Several dining options are available within walking distance of the hotel. For information on nearby restaurants, inquire with the Hotel Concierge, Conference App, or AMTE Registration Desk.

CONFERENCE PHOTOGRAPHS

Photographs are being taken during the conference for use on the AMTE website, newsletters, and brochures. These photographs will not be sold or distributed in any way beyond the promotion of AMTE and its conference. If you do not wish your likeness to be used in these ways, please contact AMTE Executive Director, Tim Hendrix, at the conference or via email at hendrixt@meredith.edu. Thanks to Tyler Mahal for serving as conference photographer.

PERSONAL PROPERTY

Please note that the hotel is not responsible for the safekeeping of equipment such as laptop computers or personal LCD projectors, supplies, written materials, or any other items that are unattended or left in meeting rooms by conference attendees.

LOST AND FOUND

Please drop off any unclaimed found items at the AMTE Registration Desk. Or you can drop off items at the Manager-On-Duty desk located at the hotel front desk next to the bell stand. AMTE and the hotel are not responsible for items being left in the session rooms and in the conference area.

EXHIBITS

THURSDAY

10:00 AM – 5:00 PM

FRIDAY

8:30 AM – 5:00 PM

Make sure to visit the exhibits located in the Phoenix Ballroom Foyer! Exhibitors include Casio America, Inc. – ClassPad, CPM Educational Program, Great Minds – Eureka Math, Information Age Publishing – IAP, Math Learning Center, NCSM – Leadership in Mathematics Education, National Council of Teachers of Mathematics, and TODOS – Mathematics for ALL! See the Exhibitors Section of this program for more information.

COMMITTEE MEETINGS

AMTE Committees will meet during the conference according to the schedule provided to committee leaders. These meetings will take place in either Arcadia Boardroom (Second Level) or Coronado Boardroom (Third Level).

AFFILIATE MEETINGS

AMTE Affiliates will meet during breakfast on Saturday in Phoenix C. This is a great time to meet each other face-to-face and discuss a game plan for the upcoming year. See page 9 in your conference program for table locations for each affiliate.

COLLABORATION SPACE

THURSDAY

8:00 AM – 6:30 PM

FRIDAY

8:00 AM – 4:30 PM

SATURDAY

8:00 AM – 11:30 AM

A space for collaboration and informal meetings among conference attendees will be available in the 3rd Street Foyer (Third Level). Please take advantage of this area to share your conference experiences and engage in productive discussions with other conference attendees.

CONFERENCE APP & SOCIAL MEDIA

USE THE FREE AMTE CONFERENCE APP TO:

- View the Conference Program
- Organize your schedule
- Find more information about speakers and attendees
- Join informal Meet-Ups
- Share documents, participate in audience surveys, polls, and Q & A sessions
- Engage attendees and colleagues around the world through Social Media



The official app is available through the major app stores. Search “AMTE 2020”, or go to:

AMTE2020.QUICKMOBILE.MOBI

Username = **(your registration email address before the @ symbol)**

Password = **amte20**



Web Application

LIKE AMTE ON FACEBOOK



facebook.com/AMTE.net

FOLLOW AMTE ON TWITTER



@AMTEnews



Apple App Store



Google Play App Store

USE #AMTE2020 TO JOIN PUBLIC DISCUSSION AROUND THE CONFERENCE.

AMTE 2019 BOARD OF DIRECTORS

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Michael D. Steele
University of Wisconsin, Milwaukee
Milwaukee, WI
steelem@uwm.edu

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Indiana University
Bloomington, IN
egalindo@indiana.edu

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sandra_cooper@baylor.edu

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San Diego State University
San Diego, CA
rphilipp@sdsu.edu

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Portland State University
Portland, OR
evat@pdx.edu

TREASURER

Sarah Quebec Fuentes
Texas Christian University
Fort Worth, TX
s.quebec.fuentes@tcu.edu

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Iowa State University
Ames, IA
jacksonc@iastate.edu

VICE-PRESIDENT OF MEMBERSHIP

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M^2 Consulting
Louisville, KY
maggiemcgatha87@gmail.com

EXECUTIVE DIRECTOR

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Meredith College
Raleigh, NC
hendrixt@meredith.edu

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Dustin Jones
Sam Houston State University
Huntsville, TX
dustinjones@shsu.edu

VICE-PRESIDENT OF PROFESSIONAL LEARNING

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Bucknell University
Bucknell, PA
mbreyfog@bucknell.edu

VICE-PRESIDENT OF PUBLICATIONS

Babette Benken
California State University, Long Beach
Long Beach, CA
babette.benken@csulb.edu

VICE-PRESIDENT OF ADVOCACY, EQUITY, & RESEARCH

Sarah van Ingen
University of South Florida
Tampa, FL
vaningen@usf.edu

HISTORICAL LISTING OF AMTE PRESIDENTS

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Randolph Philipp
Christine Thomas
Fran Arbaugh
Marilyn Strutchens
Barbara Reys
Jennifer Bay-Williams
Sid Rachlin

TERM

2019 – 2021
2017 – 2019
2015 – 2017
2013 – 2015
2011 – 2013
2009 – 2011
2007 – 2009
2005 – 2007

PRESIDENT

Karen Karp
Francis (Skip) Fennell
Susan Gay
Nadine Bezuk
Judith Jacobs
Henry Kepner
Mark Spikell

TERM

2003 – 2005
2001 – 2003
1999 – 2001
1997 – 1999
1995 – 1997
1993 – 1995
1991 – 1993

HISTORY OF THE JUDITH E. JACOBS LECTURE

The Judith E. Jacobs Lecture was established in 2003 to honor Dr. Judith E. Jacobs, one of the founding AMTE members. Dr. Jacobs was instrumental in developing AMTE into a national organization and in the development of the AMTE conference with its current structure and emphasis on interaction. Judith Jacobs is an active member who served as treasurer, president, and as the first executive director. The Judith E. Jacobs Lecture was established after Dr. Jacobs completed her tenure as AMTE Executive Director.

Dr. Jacobs gave the first lecture where she described what it means to be a mathematics teacher educator. She outlined how being a mathematics teacher educator is different from being a mathematics teacher, a career professional developer, or a researcher in mathematics education. Dr. Jacobs challenged us to recognize our roles as mathematics teacher educators and reminded us that, through the AMTE organization, an outlet has been created to share and learn from each other.

YEAR	JUDITH E. JACOBS LECTURER	AFFILIATION	TITLE
2020	Paola Sztajn	North Carolina State University	<i>Research and Mathematics Education: Triumphs, Trials, and Transitions</i>
2019	Denise A. Spangler	University of Georgia	<i>Fundamental Commitments of My Work as a Mathematics Teacher Educator</i>
2018	Margaret (Peg) Smith	University of Pittsburgh	<i>A Mathematics Teacher Educator's Journey: Responding to An Evolving Field</i>
2017	Marilyn E. Strutchens	Auburn University	<i>Attending to Access, Equity, and Empowerment Matters for Each and Every Student: Beyond Courses and Workshops</i>
2016	Francis (Skip) Fennell	McDaniel College	<i>Mathematics Teacher Education: Normal Schools to Now. What's the Fit and Future for AMTE?</i>
2015	Nadine Bezuk	San Diego State University	<i>Supporting Elementary Teachers in Developing Their Mathematics Teaching</i>
2014	Barbara J. Reys	University of Missouri	<i>Curriculum Matters! For Teachers, for Students, and for Mathematics Teacher Educators</i>
2013	Karen Karp	University of Louisville	<i>The Invisible 10% - Preparing Teachers to Teach Mathematics to Students with Special Needs</i>
2012	Deborah Schifter	Education Development Center	<i>Interpreting the Common Core: What Might It Look Like in the Classrooms?</i>
2011	Joan Ferrini-Mundy	Michigan State University	<i>Learning for Tomorrow: Challenges and Opportunities in Mathematics Teacher Education</i>
2010	James Hiebert	University of Delaware	<i>Building Knowledge for Helping Teachers Learn to Teach: An Alternative Path for Teacher Education</i>
2009	Jeremy Kilpatrick	University of Georgia	<i>Going to War with the Army You Have</i>
2008	Ed Silver	University of Michigan	<i>Mathematics Teacher Education in Dodge City: Desperately Seeking Wyatt Earp and Henri Poincaré</i>
2007	Deborah Loewenberg Ball	University of Michigan	<i>The Core and Contemporary Challenges of Mathematics Teacher Education</i>
2006	Judith Sowder	San Diego State University	<i>Preparing Elementary Teachers: The Role of Reasoning about Numbers and Quantities</i>
2005	Glenda Lappan	Michigan State University	<i>Reflections on a Lifetime of Work: Why Curriculum Matters</i>
2004	Thomas J. Cooney	University of Georgia	<i>The Role of Mathematics Teacher Education: Reform or Enculturation?</i>
2003	Judith E. Jacobs	California State Polytechnic University, Pomona	<i>Improving Mathematics Education: Mathematics Teacher Educators Lead the Way</i>

2020 ANNUAL AMTE CONFERENCE COMMITTEE

Associate Vice-President for Conferences: Trena Wilkerson, Baylor University, trena_wilkerson@baylor.edu

Associate Vice-President for Annual Conference Program: AnnaMarie Conner, University of Georgia, aconner@uga.edu

CONFERENCES COMMITTEE

If you have questions, comments, or concerns throughout the conference, please notify one of these members of the Conferences Committee. They will be wearing designated attire and will be happy to assist you.

Tim Hendrix (AMTE Executive Director), Meredith College, hendrixt@meredith.edu

Enrique Galindo (AMTE Board Liaison), Indiana University, egalindo@indiana.edu

Trena Wilkerson, Baylor University, trena_wilkerson@baylor.edu

Colleen Eddy, University of North Texas, Colleen.Eddy@unt.edu

Suzanne Harper, Miami University, harpersr@MiamiOH.edu

Ray LaRochelle, University of Delaware, rlarochel@udel.edu

Lateefah Id-Deen, Kennesaw State University, liddeen@kennesaw.edu

Julie James, University of Mississippi, jjames1@olemiss.edu

ANNUAL CONFERENCE PROGRAM COMMITTEE

Program Committee Chairs:

2020 AnnaMarie Conner, University of Georgia, aconner@uga.edu

2019 Dana Cox, Miami University, Dana.Cox@MiamiOH.edu

2021 Rick Hudson, University of Southern Indiana, rhudson@usi.edu

2017 - 2020

Julie Amador, University of Idaho, jamador@uidaho.edu

Jennifer Eli, University of Arizona, jeli@math.arizona.edu

Cathy Liebars, The College of New Jersey, liebars@tcnj.edu

Jane Wilburne, Pennsylvania State University, Harrisburg, jmw41@psu.edu

2018 - 2021

Megan Burton, Auburn University, megan.burton@auburn.edu

Mary Enderson, Old Dominion University, menderso@odu.edu

Thomas Hodges, University of South Carolina, hodgeste@mailbox.sc.edu

Jeremy Zelkowski, University of Alabama, jzelkowski@ua.edu

2019 - 2022

Kelly Costner, Winthrop University, costnerk@winthrop.edu

Rebekah Elliott, Oregon State University, elliottr@science.oregonstate.edu

Carlos Nicolas Gomez, Clemson University, carlos@clemson.edu

Shari Stockero, Michigan Technological University, stockero@mtu.edu

CONFERENCE APP DEVELOPMENT TEAM

App Coordinator: Joe Champion, Website Director, joechampion@boisestate.edu

App Graphics Assets: Tony Nguyen, Webmaster, ttnguyen@meredith.edu

LOCAL ARRANGEMENTS COMMITTEE

Mi Yeon Lee (Co-chair), Arizona State University

Terri Kurz (Co-chair), Arizona State University

William DeLeeuw, Arizona State University

Kyeong Hah Roh, Arizona State University

Carla van de Sande, Arizona State University

Surani Joshua, Arizona State University

Aubrey Neihaus, University of Arizona

AMTE AFFILIATES

AMTE is proud to welcome members of its 25 affiliated organizations:

AFFILIATE

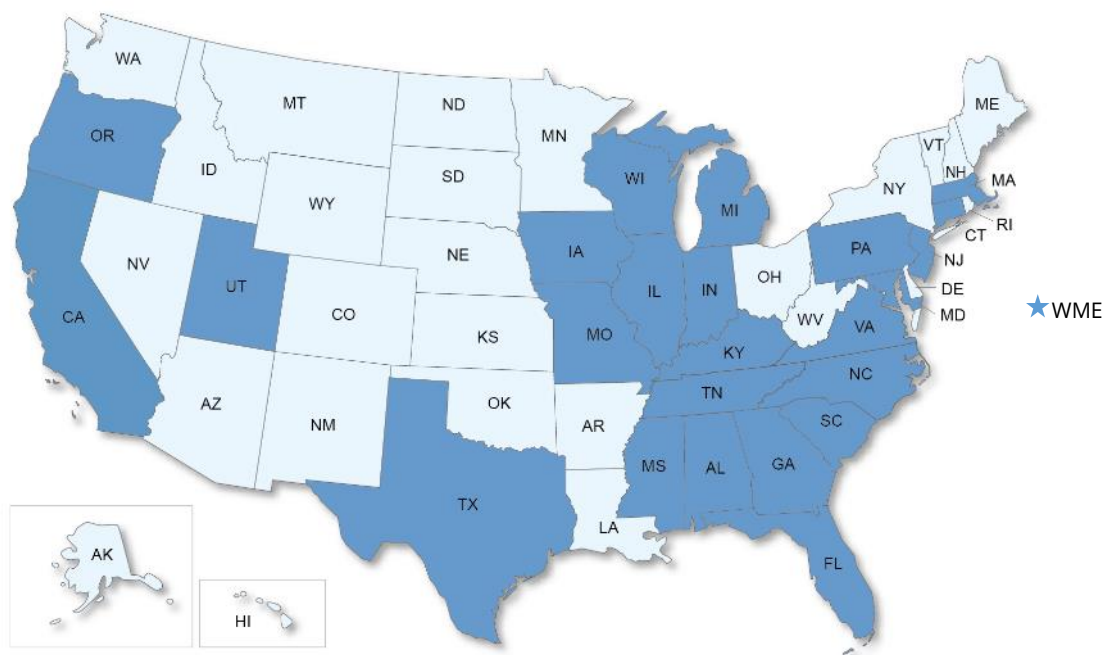
Illinois Mathematics Teacher Educators
 Utah Association of Mathematics Teacher Educators
 Florida Association of Mathematics Teacher Educators
 California Association of Mathematics Teacher Educators
 Association of Mathematics Teacher Educators of Connecticut
 Georgia Association of Mathematics Teacher Educators
 Pennsylvania Association of Mathematics Teacher Educators
 Tennessee Association of Mathematics Teacher Educators
 Massachusetts Mathematics Association of Teacher Educators
 South Carolina Association of Mathematics Teacher Educators
 New Jersey Association of Mathematics Teacher Educators
 Association of Mathematics Teacher Educators of Alabama
 Teachers of Teachers of Mathematics, Oregon
 Association of Mathematics Teacher Educators in Texas
 Mississippi Association of Mathematics Teacher Educators
 Missouri Mathematics Association for Advancement of Teacher Training
 Iowa Association of Mathematics Teacher Educators
 Association of Maryland Mathematics Teacher Educators
 Hoosier Association of Mathematics Teacher Educators
 Association of Mathematics Teacher Educators of North Carolina
 Michigan Association of Mathematics Teacher Educators
 Virginia Association of Mathematics Teacher Educators
 Kentucky Association of Mathematics Teacher Educators
 Wisconsin Association of Mathematics Teacher Educators
 Women and Mathematics Education

ACRONYM

IMTE
 UAMTE
 FAMTE
 CAMTE
 AMTEC
 GAMTE
 PAMTE
 TAMTE
 MassMATE
 SCAMTE
 NJAMTE
 AMTEA
 TOTOM
 AMTE-TX
 MAMTE
 (MAT)^2
 IOWA AMTE
 AMMTE
 HAMTE
 AMTE-NC
 MI-AMTE
 VA-AMTE
 KAMTE
 WI-AMTE
 WME

LOCATION

Illinois
 Utah
 Florida
 California
 Connecticut
 Georgia
 Pennsylvania
 Tennessee
 Massachusetts
 South Carolina
 New Jersey
 Alabama
 Oregon
 Texas
 Mississippi
 Missouri
 Iowa
 Maryland
 Indiana
 North Carolina
 Michigan
 Virginia
 Kentucky
 Wisconsin
 National



The Association of Mathematics Teacher Educators is a member of the Conference Board of the Mathematical Sciences and is an Affiliated Group of the National Council of Teachers of Mathematics.

*Are you connected with an AMTE Affiliate? Does your state or regional area have an AMTE Affiliate?
 There are several opportunities to learn more about AMTE Affiliates during the annual conference.*

SATURDAY BREAKFAST AFFILIATE MEETINGS

Saturday, February 8, 6:45 - 7:45 AM, Phoenix C

The special Affiliates breakfast is a great opportunity to meet with colleagues in your region.

WESTERN REGION

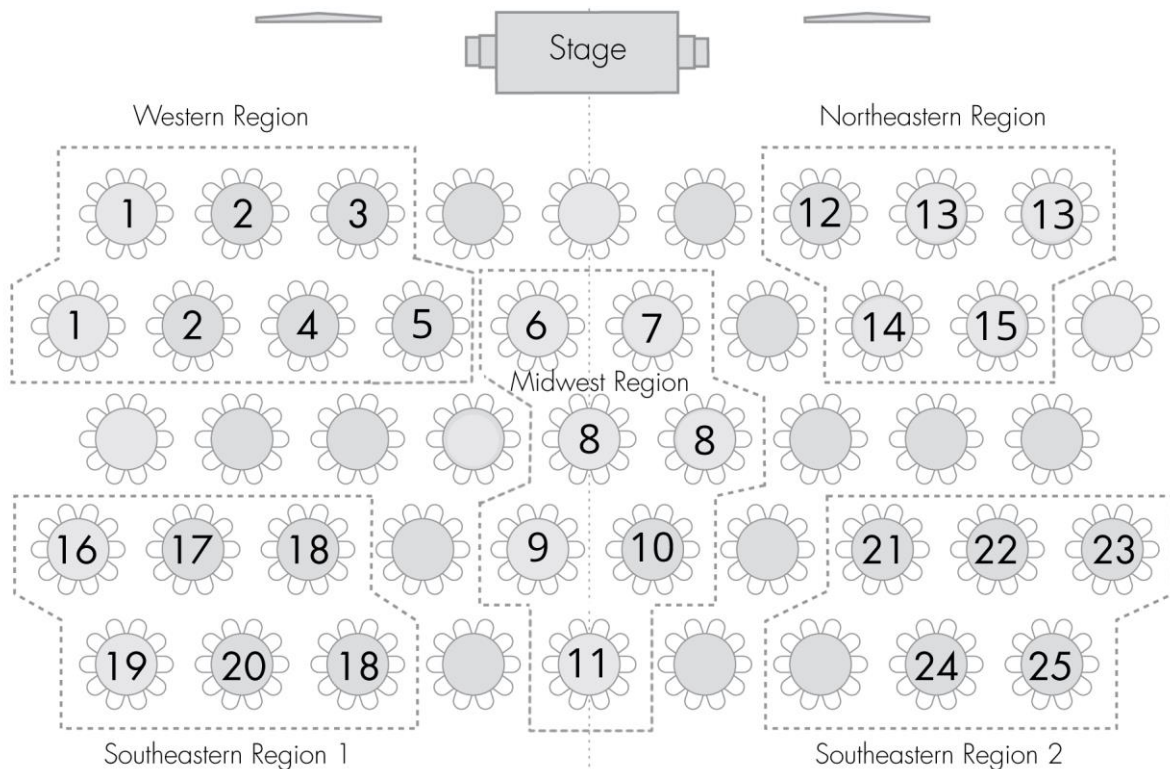
1. CAMTE (California)
2. AMTE-TX (Texas)
3. UAMTE (Utah)
4. TOTOM (Oregon)
5. Women & Mathematics Education

MIDWESTERN REGION

6. IMTE (Illinois)
7. HAMTE (Indiana)
8. MI-AMTE (Michigan)
9. (MATY)^2 (Missouri)
10. IAMTE (Iowa)
11. WI-AMTE (Wisconsin)

NORTHEASTERN REGION

12. AMTEC (Connecticut)
13. PAMTE (Pennsylvania)
14. MassMATE (Massachusetts)
15. NJAMTE (New Jersey)



SOUTHEASTERN REGION 1

16. AMMTE (Maryland)
17. SCAMTE (South Carolina)
18. AMTE-NC (North Carolina)
19. GAMTE (Georgia)
20. VA-AMTE (Virginia)

SOUTHEASTERN REGION 2

21. FAMTE (Florida)
22. TAMTE (Tennessee)
23. MAMTE (Mississippi)
24. AMTEA (Alabama)
25. KAMTE (Kentucky)

AFFILIATE CONNECTIONS COMMITTEE SESSION

ADDRESSING THE NEEDS OF MATHEMATICS TEACHER EDUCATORS THROUGH COLLABORATIVE LEADERSHIP BETWEEN AMTE AND AMTE AFFILIATES

Saturday, February 8, 8:00 AM – 9:00 AM, Phoenix B

The purpose of this session is to engage AMTE affiliate leaders and members in a discussion with AMTE Board of Directors to build seamless collaboration. If your state or regional area does not have an AMTE Affiliate and you are interested in organizing one, please contact (amteaffiliate@gmail.com). For more about AMTE Affiliates, please visit at amte.net/affiliates.

THE NTLI AWARD

Since fall 2000, the Society for Information Technology and Teacher Education (SITE) has been collaborating with four teacher education associations representing the content areas of mathematics, science, English language arts, and social studies education through the National Technology Leadership Initiative (NTLI). The NTLI fellowships were established to recognize exemplary presentations related to integration of technology in core content areas at the annual meetings of each participating association. AMTE identifies the winner of its NTLI fellowship through a competitive process that includes the requirement of submitting a paper in advance of the conference. The winner of the award receives travel funding (\$1200, made possible by a donation by Texas Instruments) for presenting at the annual conference of the SITE, and the paper is forwarded and recommended for publication in the CITE journal by the AMTE Technology Committee after additional review. For more information, visit the following website: site.aace.org/awards/awards-ntli.htm. Thanks to Texas Instruments for their ongoing support of this award.

2020 AMTE NTLI AWARD WINNERS

Frances K. Harper, Zach Stumbo, and Nick Kim - University of Tennessee, Knoxville

Session Title: *Leveraging Community Funds of Knowledge to Teach Mathematics with Technology*

Location: Session 107, South Mountain

Time: Friday, February 7, 10:15 - 11:30 AM

Look in the 2021 Call for Proposals for information on how to submit a paper for the 2021 AMTE NTLI Award.

SCHOLARSHIPS FOR ELEMENTARY MATHEMATICS SPECIALISTS

The purpose of this Elementary Mathematics Specialist (EMS) Scholarship is to provide the recipient with \$2,000 of funding to enhance their mathematics knowledge, teaching, and leadership by enrolling in university coursework that will result in becoming a certified elementary mathematics specialist. Elementary mathematics specialists work as teachers, teacher leaders, or coaches and support effective mathematics instruction and student learning at the classroom, school, district, or state levels.

CONGRATULATIONS TO THE 2019 EMS SCHOLARSHIP RECIPIENTS!

Rachel Barrong Aazzerah, Portland, Oregon

MaryBeth Bates, Bennington, Nebraska

Stephanie Casasanta, Orange, Virginia

Check amte.net/about/ems in the spring for information about the next round of EMS Scholarships.

AMTE would like to thank our founding sponsor of the EMS Scholarships:



ACKNOWLEDGEMENTS

The Twenty-Fourth Annual AMTE Conference would not be possible without the contributions and support of many individuals. It is not possible to name each one individually!

AMTE WISHES TO EXPRESS ITS SINCERE APPRECIATION TO THE FOLLOWING:

- The Local Arrangements Committee, especially Mi Yeon Lee and Terri Kurz, Co-chairs, who are critical to making our conference successful;
- All of the speakers who have contributed their time and expertise to make this conference a success;
- The many individuals who make up the AMTE infrastructure – the AMTE Board of Directors, Executive Director, Program Committee, Conferences Committee, Conference App Team, and Headquarters staff for providing the time and effort necessary to organize all facets of the conference;
- Joe Champion, AVP for Website Development, and Tony Nguyen, AMTE Graphic Designer & Webmaster, for their dedicated work on the conference program and materials;
- Mimi Mays, student assistant at Meredith College, and a host of retired teachers for their help with this year's conference preparations;
- Rachel Harlow, Administrative Assistant for AMTE Conferences Committee, for all of her hard work with organizing logistics and details for this year's conference; and
- Susan Gay and Carol Lucas for their guidance and support to the AMTE Conference Committee.

When you see any of these individuals at our AMTE conference, we hope that you will take the time to express your own gratitude for their dedication to the organization and to the success of the 2020 conference.

Thank you!

SPONSORS

AMTE would like to express our appreciation to this year's Sponsors for providing invaluable support for our conference and for our organization's activities and initiatives.

CPM EDUCATIONAL PROGRAM

GOLD SPONSOR

CPM Educational Program is a California nonprofit 501(c)(3) serving the secondary mathematics education community with curriculum, professional development, and leadership. CPM envisions a world where mathematics is viewed as intriguing and useful, and is appreciated by all; where powerful mathematical thinking is an essential, universal, and desirable trait; and where people are empowered by mathematical problem-solving and reasoning to solve the world's problems.

CPM Educational Program is pleased to support AMTE and its STaR program by matching AMTE funds for STaR fellows. The STaR program aligns with CPM's mission to empower mathematics students and foster expertise in teachers as it provides professional development for new math education faculty targeted to help them inspire the next wave of math teachers across the country.

THE MATH LEARNING CENTER

GOLD SPONSOR

The Math Learning Center (MLC) offers innovative, standards-based programs for elementary classrooms. *Bridges in Mathematics*, Number Corner, and Bridges Intervention develop mathematical confidence and ability not only in students but also in teachers. In support of our nonprofit mission, we offer a range of free resources, including the Bridges University program, which provides university instructors access to the full contents of the *Bridges in Mathematics* PK–5 curriculum.

MLC is the founding sponsor of the Elementary Mathematics Specialist (EMS) Awards. The recipients of these awards receive funding to enhance their mathematics knowledge, teaching, and leadership by enrolling in university coursework that will result in becoming a certified elementary mathematics specialist.

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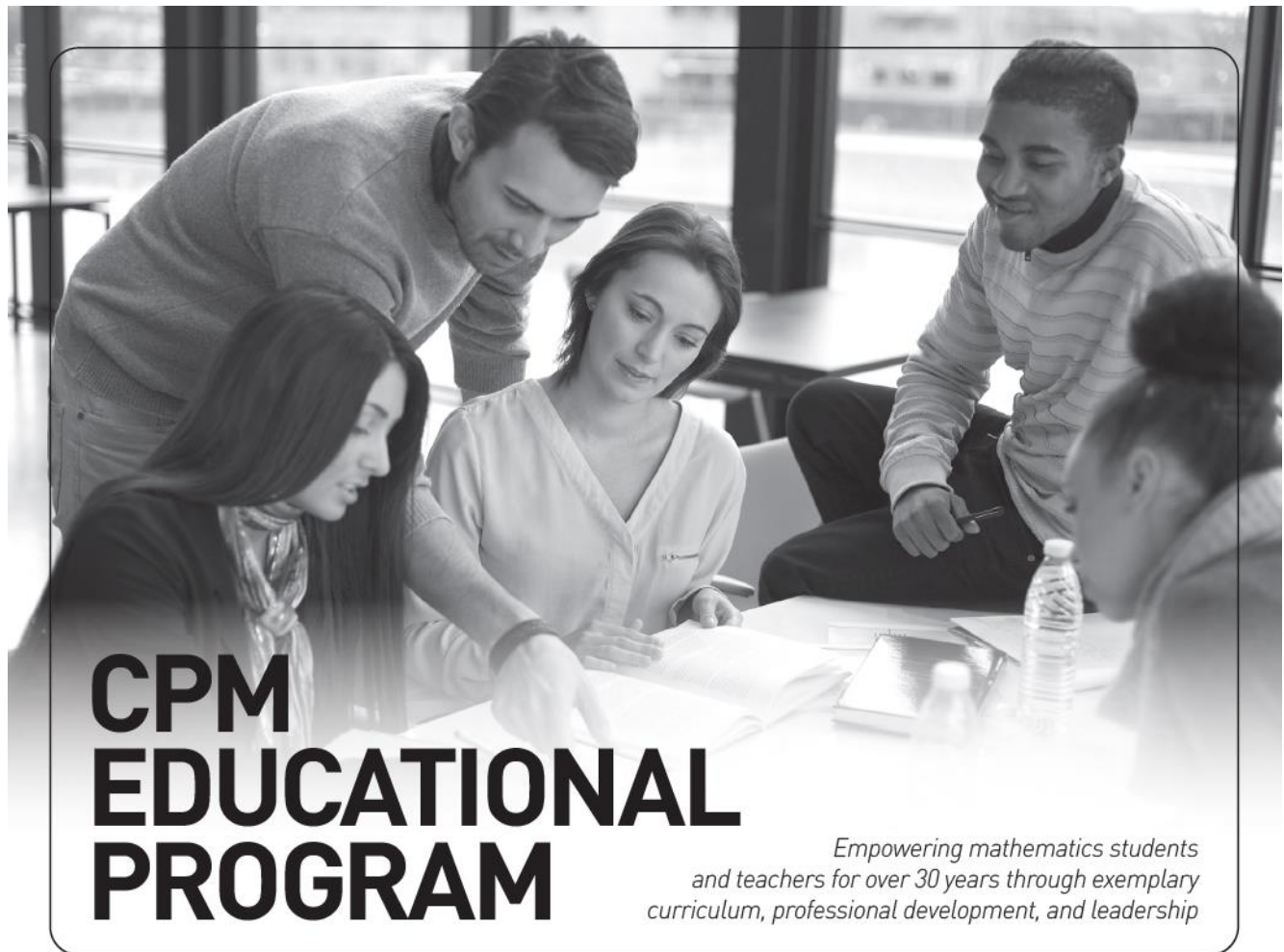
Information Age Publishing – IAP continues to partner with AMTE on multiple projects, including both the republication of the AMTE Monograph Series and the publication of the AMTE Professional Book Series: A four-volume series in the field of mathematics teacher education published over the last three years. AMTE is proud to have IAP as a sponsor. They have provided support for the AMTE Awards, and are donating books as prizes for our Early Career and Graduate Student Reception. Thanks to IAP for their continued support and growing partnership.

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The National Council of Teachers of Mathematics is the public voice of mathematics education, supporting teachers to ensure equitable mathematics learning of the highest quality for all students. NCTM members belong to the largest community of mathematics educators committed to ensuring each and every student has access to the highest quality mathematics teaching and learning. Membership opens doors to classroom resources, professional development opportunities, advocacy, peer-reviewed journals and publications, and an extensive network of teachers and mentors. Learn more about NCTM and the benefits of membership at [NCTM.org](https://nctm.org).

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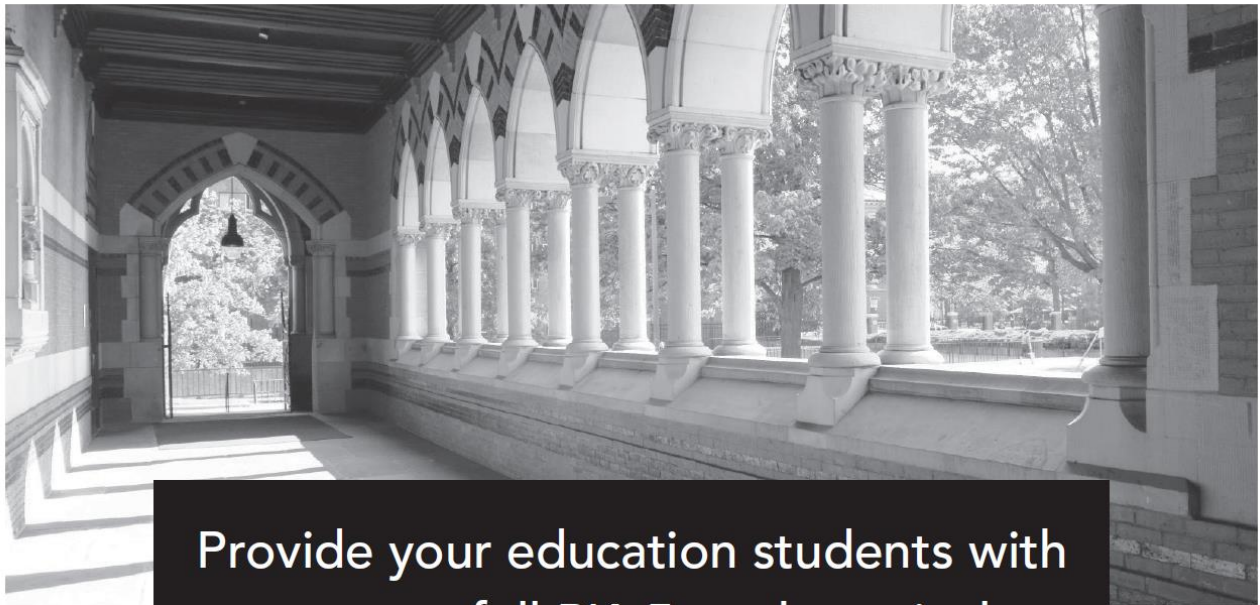


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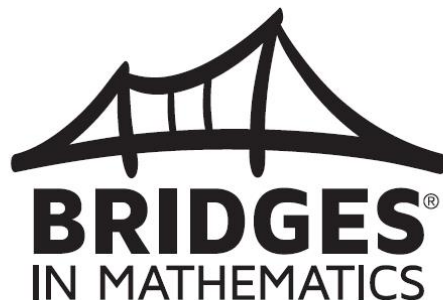


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mathlearningcenter.org/university

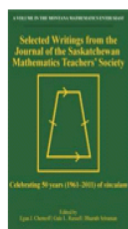


To learn more, please join us for a presentation by
Pamela Weber Harris, Texas State University
Friday, February 7, 9:15–10:00 a.m. in Encanto A
or stop by The Math Learning Center's booth.

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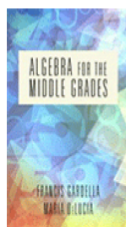
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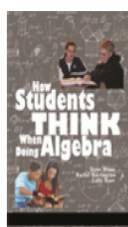
Algebra for the Middle Grades

By: Francis Gardella, *Hunter College-CUNY*; and Maria DeLucia, *Middlesex County College*



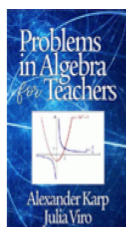
Learning Mathematics Successfully: Raising Self-Efficacy in Students, Teachers and Parents

By: Clark J Hickman; and Helene J. Sherman



How Students Think When Doing Algebra

By: Steve Rhine, *Pacific University*; Rachel Harrington, *Western Oregon University*; and Colin Starr, *Willamette University*



Problems in Algebra for Teachers

By: Alexander Karp, *Teachers College, Columbia University*; and Julia Viro, *Stony Brook University*



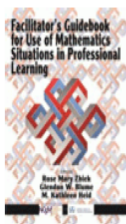
A Quiet Revolution: One District's Story of Radical Curricular Change in High School Mathematics

By: Michael D. Steele, *University of Wisconsin-Milwaukee*; and Craig Huhn, *Holt (MI) High School*



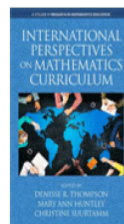
Write On! Math: Note Taking Strategies That Increase Understanding and Achievement 3rd Edition

By: Robert Gerver



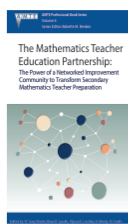
Facilitator's Guidebook for Use of Mathematics Situations in Professional Learning

Edited by: Rose Mary Zbiek, *Pennsylvania State University*; Glendon W. Blume, *The Pennsylvania State University*; and M. Kathleen Heid, *The Pennsylvania State University*



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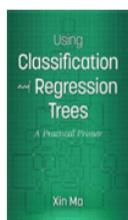
Elementary Mathematics Specialists: Developing, Refining, and Examining Programs That Support Mathematics Teaching and Learning

Edited by: Maggie B. McGatha, *University of Louisville*; and Nicole R. Rigelman, *Portland State University*



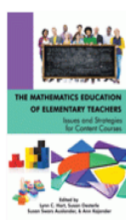
Reflecting the World: A Guide to Incorporating Equity in Mathematics Teacher Education

By: Mathew D. Felton-Koestler, *Ohio University*; Ksenija Simic-Muller, *Pacific Lutheran University*; and José María Menéndez, *Pima Community College*



Using Classification and Regression Trees: A Practical Primer

By: Xin Ma, *University of Kentucky*



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EXHIBITORS

AMTE expresses our appreciation to this year's Exhibitors for providing support for our conference. Stop by the Exhibit area in the Phoenix Ballroom Foyer to see materials from the following exhibitors:

EXHIBITOR

ABOUT THE EXHIBIT

CASIO AMERICA, INC. – CLASSPAD

Casio America, Inc. is a leading manufacturer of education technology. Casio understands the importance of education and strives to provide classroom tools that support the learning process. We offer scientific, graphing, and basic calculators to support all grade levels and mathematical needs.

Casio is also proud to announce the launch of "ClassPad.net" a FREE web-based calculation tool that includes Calculation, Graphing, Geometry, and Statistics, free to teachers and students. This new software also offers Assessment Solutions for companies involved in large and small scale national or state testing and can be customized as desired to meet any integration needs.

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Eureka Math (EngageNY Math) builds conceptual understanding to reduce gaps in learning and instill persistence in problem solving, preparing students to understand advanced math, and apply it in the real world. *Eureka Math* is a full solution—a comprehensive PK–12 curriculum, professional development, print materials, digital tools, and support.

INFORMATION AGE PUBLISHING – IAP

Information Age Publishing – IAP is a social science publisher of academic and scholarly book series, monographs, handbooks and journals. IAP's goal is to develop a comprehensive library of content that breaks down and defines specific niches that lack high-level research material in the fields of Education, Psychology, Management, Mathematics, Educational Technology, and Black Studies. AMTE is proud of our partnership with IAP as they continue to launch new books within the Association of Mathematics Teacher Educators (AMTE) Professional Book Series. IAP has also republished seven (7) monographs that were a part of the AMTE monograph series. They have an extensive list of products in the field of mathematics and look forward to adding yours to their program. Please stop by the exhibit area to browse their current mathematics publications as well as the AMTE monographs.

EXHIBITOR

ABOUT THE EXHIBIT

THE MATH LEARNING CENTER

The Math Learning Center (MLC) is a nonprofit organization serving the PK–12 education community. Our mission is to inspire and enable individuals to discover and develop their mathematical confidence and ability. We offer innovative, standards-based resources and professional development. MLC also provides university instructors free access to the full contents of the *Bridges in Mathematics PK–5* curriculum. Stop by our table to learn more about the Bridges University program.

NCSM – LEADERSHIP IN MATHEMATICS EDUCATION

NCSM – Leadership in Mathematics Education is a mathematics education leadership organization that equips and empowers a diverse education community to engage in leadership that supports, sustains, and inspires high-quality mathematics teaching and learning every day for each and every learner. Our bold leadership in the mathematics education community develops vision, ensures support, and guarantees that all students engage in equitable, high-quality mathematical experiences that lead to powerful, flexible uses of mathematical understanding to affect their lives and to improve the world. Stop by for more information about NCSM and our publications and resources, including the NCSM Journal of Mathematics Education Leadership, Position Papers and Publications. Also learn about NCSM partnerships to support Formative Assessment and Digital Learning and about professional learning opportunities scheduled for 2020.

NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS

The National Council of Teachers of Mathematics (NCTM) is the public voice of mathematics education, supporting teachers to ensure equitable mathematics learning of the highest quality through vision, leadership, professional development, and research. NCTM members belong to the largest community of mathematics educators committed to ensuring each and every student has access to the highest quality mathematics teaching and learning. Membership opens doors to classroom resources, professional development opportunities, advocacy, peer-reviewed journals and publications, and an extensive network of teachers and mentors. Learn more about NCTM and the benefits of membership at [NCTM.org](https://nctm.org).

TODOS – MATHEMATICS FOR ALL!

TODOS – Mathematics for ALL is an international professional organization that advocates for equity and high-quality mathematics education for all students - in particular, Latinx students. One of the goals of the organization is to advance educators' knowledge and abilities that lead to implementing an equitable, rigorous, and coherent mathematics program that incorporates the role language and culture play in teaching and learning mathematics. Stop by to hear about the benefits of membership!



COFFEE AND TEA

Please join us in greeting first-time and returning attendees over coffee and tea in the lobby outside Phoenix C.

(There are options for breakfast in the hotel at the Sheraton Link Café in the lobby area, in the Paradise Valley room on the second level, and at nearby restaurants.)

PHOENIX BALLROOM FOYER



OPENING SESSION

LOOKING DOWN THE AMTE ROAD

Kathryn Chval, University of Missouri

Carlos Nicolas Gomez, Clemson University

Mike Steele, University of Wisconsin, Milwaukee

Mathematics Teacher Education is undergoing major disruptions. Nationally, mathematics teacher shortages are prominent while enrollment in university-based teacher education programs continue to decline. We are more aware of the inequities that affect who learns mathematics and who teaches mathematics. Technologies continue to provide new opportunities to change the ways teachers are educated and engaged in professional development. Our current context suggests that AMTE should play a critical role as we face challenges and opportunities associated with these disruptions. A panel will challenge us during the opening session of the 2020 AMTE Conference as they discuss the future of mathematics teacher education in general and AMTE's role in particular. As a community, we will consider the role AMTE might play so that its impact is significant ten or more years into the future, including policies and practices we ought to embrace, the partnerships we need to form, and the people who ought to be part of our organization. The panelists will also highlight initiatives that have been successful and show promise for the future as we work together to address challenges we will ultimately face.

PHOENIX D/E



OVERVIEW OF THURSDAY MORNING, FEBRUARY 6, 2020

	10:45 AM – 11:45 AM
Desert Sky	1. <i>Brief Report Session: Teaching Mathematical Modeling-</i> Luebeck; Asempapa & Alhammouri; Ozturk, Sanjari, & Manouchehri
Cave Creek	2. <i>Simulations in the Elementary Methods Class: Supporting Preservice Teachers in Leading Mathematical Discussions-</i> Liebars & Howell
Ahwatukee A	3. <i>Brief Report Session: Prospective Teachers' Experiences, Stories, and Identities-</i> Davis; Ward; Neihaus
Ahwatukee B	4. <i>Using Student Thinking in Instruction: Leveraging Student Thinking or Endorsing a Particular Method?-</i> Hawthorne & Gruver
Laveen A	5. <i>Designing Teacher Assessments to Improve Feedback for Mathematics Teacher Education-</i> Jacobson, Walkowiak, & Bradshaw
Laveen B	6. <i>Brief Report Session: Prospective Teachers' Knowledge-</i> Marmur & Zazkis; Lee; Hertel
South Mountain	7. <i>Tools to Support Teaching Mathematics Content and Pedagogy Online-</i> Swartz
Estrella	8. <i>Mathematical Tasks as Focus of a Professional Development for Middle School Teachers-</i> Ozgun-Koca, Lewis, & Ferry
Maryvale A	9. <i>Supporting African American Male Mathematics Students: MTEs' High-Impact Practices-</i> Jett 2019 AMTE Early Career Award Winner
Maryvale B	10. <i>Does Place Matter? Implementing a Spatial Justice Framework-</i> Poling & Weiland
Encanto A	11. <i>Facilitating Middle and Secondary Mathematics Teachers' Learning of Statistical Design-</i> Peters
Encanto B	12. <i>Whose "Support Group"?: Negotiating Purpose within Partnership between Mathematics Teacher Researchers and Teacher Educator Researchers-</i> Scroggins, Jackson, & Herbel Eisenmann
Phoenix A	13. <i>Implementing Lessons to Teach Prospective Teachers to Notice High Leverage Practices-</i> Gallagher & Rougee
Phoenix B	14. <i>Teachers' Beliefs About How to Support Students in Making Future Use of their Mathematics Learning-</i> Diamond
Phoenix D	15. <i>A Collaborative Inquiry Model for Teacher Professional Development: A Focus on Formative Assessment and Student Agency-</i> Pitvorec & Castro Superfine
Phoenix E	16. <i>Research-Based, Targeted Interventions to Support and Retain Early Career Secondary Mathematics Teachers-</i> Amick

Session 1

Desert Sky

BRIEF REPORT SESSION: TEACHING MATHEMATICAL MODELING**CHANGING TEACHERS' (MIS)CONCEPTIONS ABOUT MATHEMATICAL MODELING: OUTCOMES FROM THE MONTANA MODELING INITIATIVE**

Jennifer Luebeck, Montana State University

Montana's Modeling Initiative offers teachers a framework to deepen their conceptual understanding of modeling, explore and assess modeling tasks, and design original tasks for Algebra and Geometry. Session reviews the framework, showcases sample tasks, and presents results of task analysis.

DEVELOPING PRESERVICE TEACHERS' CAPACITY TO CREATE MATHEMATICAL MODELING TASKS

Reuben Asempapa, Pennsylvania State University, Harrisburg
 Ahmad Alhammouri, Jacksonville State University

This session addresses the challenges in engaging students with modeling. We discuss a framework on how to create tasks that will effectively engage students in modeling practices. The goal is to support and enhance preservice teachers' knowledge and pedagogical practices in modeling.

PEDAGOGY OF TECHNOLOGY INTEGRATED MATHEMATICAL MODELING INSTRUCTION

Ayse Ozturk, The Ohio State University
 Azin Sanjari, Arkansas Tech University
 Azita Manouchehri, The Ohio State University

This study focuses on examining a teacher's use of simulation as a pedagogical tool for developing students' modeling skills in identifying and coordinating variables while at the same time reinforcing algebraic reasoning.

Session 2

Cave Creek

Practice-Based Experiences for Prospective Teachers
Individual Session

SIMULATIONS IN THE ELEMENTARY METHODS CLASS: SUPPORTING PRESERVICE TEACHERS IN LEADING MATHEMATICAL DISCUSSIONS

Cathy S. Liebars, The College of New Jersey
 Heather Howell, Educational Testing Service

The presenters will share reflections and some surprising results on the recent implementation of technology supported simulated classroom teaching as part of an elementary mathematics methods course. Participants will discuss course activities designed to support individual and group reflection.

Session 3

Ahwatukee A

BRIEF REPORT SESSION: PROSPECTIVE TEACHERS' EXPERIENCES, STORIES, AND IDENTITIES**EXPLORING THE MATHEMATICS IDENTITIES OF PRESERVICE EARLY CHILDHOOD TEACHERS OF COLOR**

Ashley Renaire Davis, The Graduate Center, CUNY

This exploratory study sought to examine the construct of mathematics identity by examining the ways in which preservice early childhood teachers' identities as teachers of mathematics are linked to their experiences as learners.

THE ROAD YOU TRAVELED: REEXAMINING PSTS EXPERIENCES TO TALK ABOUT THE SOCIOPOLITICAL NATURE OF MATH

Jennifer Ward, Kennesaw State University

In mathematics methods engaging preservice teachers in considering their own histories in mathematics is critical (Marshall & Chao, 2016). These dialogues serve as opportunity to introduce dimensions of equity and the sociopolitical nature of mathematics teaching and learning (Gutiérrez, 2009, 2012).

WHAT CAN WE LEARN FROM PROSPECTIVE TEACHERS' STORIES ABOUT EQUITY?

Aubrey Neihaus, The University of Arizona

This work is on preservice teachers' stories of learning about equity. The stories' narrative features tell much regarding resources preservice teachers bring, ways in which they negotiate their learning about equity, and how they incorporate equity into their identity as future teachers.

Session 4

Ahwatukee B

Mathematics Pedagogy
Individual Session

USING STUDENT THINKING IN INSTRUCTION: LEVERAGING STUDENT THINKING OR ENDORSING A PARTICULAR METHOD?

Casey W. Hawthorne, Furman University
 John Gruver, Michigan Technological University

This study characterizes a way of orchestrating class discussion we refer to as endorsing, in which the teacher privileges a particular way of reasoning. While this shares surface-level features with productively leveraging student thinking, we illustrate problematic features of endorsing.

<p>Session 5 Laveen A <i>Mathematics Content and Curriculum</i> <i>Individual Session</i></p> <p>DESIGNING TEACHER ASSESSMENTS TO IMPROVE FEEDBACK FOR MATHEMATICS TEACHER EDUCATION</p> <p>Erik Jacobson, Indiana University Temple A. Walkowiak, North Carolina State University Laine Bradshaw, University of Georgia</p> <p>We present a strategy for mathematics teacher assessment with potential to directly inform the continuous improvement of workshops, classes, and preparation programs. Items that assess specific mathematical topics and teaching practices are individually linked to evidence of classroom impact.</p>	<p>Session 8 Estrella <i>Professional Development</i> <i>Individual Session</i></p> <p>MATHEMATICAL TASKS AS FOCUS OF A PROFESSIONAL DEVELOPMENT FOR MIDDLE SCHOOL TEACHERS</p> <p>S. Asli Ozgun-Koca, Wayne State University Jennifer M. Lewis, Wayne State University Deborah Ferry, Macomb Independent School District</p> <p>Mathematical tasks are a useful window onto teachers' thinking about instruction because tasks are instantiations of the mathematics curriculum. After sharing our conceptual framework, we will unpack the different ways of using mathematical tasks in a PD with evidence.</p>
<p>Session 6 Laveen B</p> <p>BRIEF REPORT SESSION: PROSPECTIVE TEACHERS' KNOWLEDGE</p> <p>ATYPICAL REPRESENTATIONS OF FRACTIONS: PROSPECTIVE TEACHERS EXPLAIN</p> <p>Ofer Marmur, Simon Fraser University Rina Zazkis, Simon Fraser University</p> <p>We explore prospective teachers' attempts to explain atypical fraction representations, particularly when non-integers appear in the numerator or denominator. As practical implication, we advocate the use of the set model to interpret atypical representations and expand learners' understanding of fractions.</p> <p>PUTTING A SPOTLIGHT ON AREA MODELS: PRESERVICE TEACHERS' CAPACITY TO LINK FRACTIONS AND GEOMETRIC MEASUREMENT</p> <p>Mi Yeon Lee, Arizona State University</p> <p>To explore preservice teachers' understanding of area models in fractions, a non-typical task was given to 82 preservice teachers. The strategies used by those who solved the problem correctly and the misconceptions of those who did not are discussed.</p> <p>DEVELOPING TASKS FOR INVESTIGATING INFORMAL NOTIONS OF RANDOMNESS</p> <p>Joshua Hertel, University of Wisconsin, La Crosse</p> <p>In this presentation, we discuss a task designed to investigate informal notions of randomness held by elementary preservice teachers. We will consider task development, examine findings from implementation, and discuss how we prepare preservice teachers to teach probability and statistics.</p>	<p>Session 9 Maryvale A <i>2019 AMTE Early Career Award Winner</i></p> <p>SUPPORTING AFRICAN AMERICAN MALE MATHEMATICS STUDENTS: MTES' HIGH-IMPACT PRACTICES</p> <p>Christopher C. Jett, University of West Georgia</p> <p>In this session, MTEs will be exposed to scholarship regarding African American male students' experiences. Then, they will critically examine relevant cases. Finally, MTEs will share evidence-based practices to positively influence the mathematics achievement outcomes for African American male students.</p> <hr/> <p>Session 10 Maryvale B <i>Equity, Social Justice, and Mathematics Teacher Education</i> <i>Individual Session</i></p> <p>DOES PLACE MATTER? IMPLEMENTING A SPATIAL JUSTICE FRAMEWORK</p> <p>Lisa Poling, Appalachian State University Travis Weiland, Appalachian State University</p> <p>Our work differs from past work related to spatial justice research in that we seek to consider four aspects, socio-cultural, critical, quantitative, and spatial, as interwoven and inseparable in guiding the creation of quantitative learning experiences for preservice teachers.</p> <hr/> <p>Session 11 Encanto A <i>Professional Development</i> <i>Individual Session</i></p> <p>FACILITATING MIDDLE AND SECONDARY MATHEMATICS TEACHERS' LEARNING OF STATISTICAL DESIGN</p> <p>Susan A. Peters, University of Louisville</p> <p>Participants engage with concept-building activities that promote teaching and learning of statistical design and are consistent with professional recommendations for statistics teacher education (AMTE, SET). Discussion focuses on features of the activities that are effective for developing teachers' statistical understandings.</p>
<p>Session 7 South Mountain <i>Teaching and Learning with Technology</i> <i>Individual Session</i></p> <p>TOOLS TO SUPPORT TEACHING MATHEMATICS CONTENT AND PEDAGOGY ONLINE</p> <p>Barbara Ann Swartz, McDaniel College</p> <p>This session will explore course designs and digital tools to promote the achievement of AMTE's (2017) Standards for Preparing Teachers of Mathematics in the online environment for mathematics and mathematics education courses.</p>	

Session 12 <i>Collaborations and Partnerships</i> <i>Individual Session</i> WHOSE “SUPPORT GROUP”? : NEGOTIATING PURPOSE WITHIN PARTNERSHIP BETWEEN MATHEMATICS TEACHER RESEARCHERS AND TEACHER EDUCATOR RESEARCHERS Ashley Danielle Scroggins, University of Colorado, Boulder Brent Jackson, Michigan State University Beth Herbel Eisenmann, Michigan State University In school-university partnerships without students, the ambitions of allywork with mathematics students and teacher researchers can produce tension. This session will interrogate the discursive practices used in negotiating partnership purpose during a community discussion in an equitable mathematics professional development.	Encanto B
Session 13 <i>Mathematics Pedagogy</i> <i>Discussion Session</i> IMPLEMENTING LESSONS TO TEACH PROSPECTIVE TEACHERS TO NOTICE HIGH LEVERAGE PRACTICES Melissa A. Gallagher, University of Louisiana, Lafayette Annick Rougee, Washington State University, TriCities This discussion presentation will share the four lessons that were created to support PTs’ professional noticing of HLPs selected from the Mathematical Quality of Instruction (MQI; Hill et al., 2008) and develop opportunities for collaboration among participants.	Phoenix A
Session 14 <i>Mathematics Content and Curriculum</i> <i>Individual Session</i> TEACHERS’ BELIEFS ABOUT HOW TO SUPPORT STUDENTS IN MAKING FUTURE USE OF THEIR MATHEMATICS LEARNING Jaime Diamond, University of Georgia I share results from a study examining teachers’ beliefs about how to support students in making future use of their mathematics learning and facilitate discussion connecting these results with educational documents that call for and outline good mathematics teaching.	Phoenix B
Session 15 <i>Professional Development</i> <i>Individual Session</i> A COLLABORATIVE INQUIRY MODEL FOR TEACHER PROFESSIONAL DEVELOPMENT: A FOCUS ON FORMATIVE ASSESSMENT AND STUDENT AGENCY Kathleen Pitvorec, University of Illinois, Chicago Alison Castro Superfine, University of Illinois, Chicago In this session, we engage participants in exploring our model of engaging with teachers in collaborative-inquiry where teacher-researcher dyads collaborate to examine teachers’ videotaped lessons to identify where and how teachers might increase student agency, thereby enhancing formative assessment opportunities.	Phoenix D
Session 16 <i>Collaborations and Partnerships</i> <i>Individual Session</i> RESEARCH-BASED, TARGETED INTERVENTIONS TO SUPPORT AND RETAIN EARLY CAREER SECONDARY MATHEMATICS TEACHERS Lisa Amick, University of Kentucky This session reports on the design and initial implementation of two year-long (AY 2018-2019) pilot interventions, created through a design-based approach, intended to support secondary mathematics teachers in their first year of teaching.	Phoenix E



LUNCH

AMTE provides a buffet lunch in Phoenix C. Please join your colleagues for lunch and good conversation before the Thursday afternoon sessions.

PHOENIX C



OVERVIEW OF THURSDAY AFTERNOON, FEBRUARY 6, 2020

	1:15 PM - 2:00 PM	2:15 PM - 3:00 PM
Desert Sky	17. <i>What if...?: Exploring Thought Experiments and the Development of Adaptive Expertise in Rehearsal Debriefs-</i> Munson & Baldinger	33. <i>Developing Preservice and Inservice Teachers' Ability to Teach Proof in High School Geometry-</i> Nirode & Boyd
Cave Creek	18. <i>The Power of Rehearsal: Developing Mathematics Teacher Candidates' Teaching, Learning, and Assessing Habits and Practices-</i> Sugimoto & Rigelman	34. <i>Reflecting on Scaling Professional Development, a Decade in: Findings, Methodology, and Persistent Questions-</i> Kaschner, Neihaus, & McGraw
Ahwatukee A	19. <i>What's the Lesson?: Following a Lesson Study Through Professional Contexts-</i> Erickson & Makowski	35. <i>Contrasting Sociomathematical Norms in Lessons with/out Interactive Simulations-</i> Atabas
Ahwatukee B	20. <i>State Involvement in Elementary Mathematics Digital Curricula-</i> Rhine & Driskell	36. <i>Seeing the Forest Through the Trees: MTEs Making Sense of Multiple Perspectives on Equity-</i> Stoehr, Lopez Leiva, Fernandes, & Edwards
Laveen A	21. <i>Understanding District Teacher Leaders' Visions of High Quality Middle School Mathematics Instruction-</i> Stephan	37. <i>I Used to Think, Now I Know - Using Reflective Writing to Make Thinking Visible-</i> Gay & Lucas
Laveen B	22. <i>Actions & Accountability towards Social Justice in Mathematics Education de TODOS-</i> Lopez Leiva, de Araujo, & Zavala	38. <i>Create Equity for Students through Intentional Teacher Collaboration-</i> Toncheff
South Mountain	29. <i>Defining Core Practices for Mathematical Modeling for Elementary Mathematics Teachers-</i> Suh, Turner, Roth McDuffie, Aguirre, & Birkhead	
Estrella	30. <i>Identifying Initial Recommendations for Infusing Mathematical Writing within Teacher Preparation Programs-</i> Colonnese & Casa	
Maryvale A	23. <i>Opportunities, Advocacy, and Communication in Support of MTE: Standards, HEA, Infographics, and Case Studies-</i> Berry, Wilkerson, Martin, & Barnes	39. <i>Supporting the Enactment of Ambitious Practices through an Online Community-</i> Ebby, Goldsmith-Markey, & Remillard
Maryvale B	31. <i>But I'm Not Creative Enough! Supporting Novice Teachers: Culturally Relevant Pedagogy and Social Justice Math-</i> Cook & Yanisko	
Encanto A	24. <i>Professional Development that is Inclusive of and Responsive to Teachers' Voices-</i> Liu, Galindo, Bharaj, & Yoder	40. <i>Threading Project-Based Learning (PBL) in Teacher Preparation Clinical Residency Program-</i> Lee & Sachs
Encanto B	32. <i>Considering Quantitative, Sociocultural, Spatial, and Critical Ways of Knowing in Preservice Teacher Education-</i> Weiland & Poling	
Phoenix A	25. <i>MTE Questioning in Methods Courses: How and What do We Come to Know?-</i> Lischka, Kastberg, & Hillman	41. <i>The Principles and Practices of Teaching and Learning Math Outside-</i> Baker
Phoenix B	26. <i>Mathematics Teacher Educator Knowledge: What Is It, and How Do We Support Its Development?-</i> Olanoff, Prasad, & Welder	42. <i>Are We Providing High-Quality Mathematics Instruction for All?: Highlights from the 2018 NSSME+-</i> Malzahn
Phoenix D	27. <i>Brief Report Session: Practice-based Pedagogies-</i> Madis, Ruk, Van Zoest, Peterson, & Stockero; Brasel & Gonzalez	43. <i>Brief Report Session: Partnering with Communities-</i> Bonner, Kalinec-Craig, & Hinojosa; Kelley
Phoenix E	28. <i>Brief Report Session: Innovation in Recruitment and Retention of Teachers-</i> Brantlinger & Cooley; Harris, Kurz, Ganesh, & Dyer	44. <i>Brief Report Session: Focusing on Students-</i> Gomez, Jones, & Tanck; Kurtz

	3:30 PM - 4:30 PM	4:45 PM - 5:30 PM
Desert Sky	45. <i>Brief Report Session: Teaching Geometry with Technology</i> - Zambak; An; Yao	61. <i>Geometric Transformations & Desmos: Reflections from a Study on Curricular Reasoning</i> - Shulman & Dingman
Cave Creek	46. <i>Centering Building Relationships with Children in Field-Based Elementary Math Methods</i> - Turrou, Johnson, McMillan, & Franke	62. <i>Creative Mathematical Reasoning and Key Curricular Content as an Evaluative Framework for Preservice Task Engagement</i> - Martin, Cullen, & Day
Ahwatukee A	47. <i>Brief Report Session: Preservice Teachers' Knowledge</i> - Lloyd & Rice; Reeder, Utley, & Che; Kirwan & Barker	63. <i>The Viability and Impact of Building District Mathematical Professional Development Capacity</i> - Novak
Ahwatukee B	48. <i>Fluency Development in Content Courses for Elementary Teachers</i> - Walters	64. <i>Many Perspectives, One Vision: Learning to Respond to Student Thinking by Reflecting on Shared Experience</i> - Patterson & Warshauer
Laveen A	49. <i>Embedded Days for Professional Development: Structure, Activities, and Results</i> - Jones & Lamb	65. <i>Brief Report Session: Eliciting Student Thinking</i> - Reinke; Jensen & Gallagher
Laveen B	50. <i>Brief Report Session: Teacher Practice</i> - Cannon; Graif	66. <i>Brief Report Session: Secondary Teachers' Views of Teacher Preparation</i> - White; Allen
South Mountain	58. <i>Connecting Preservice Teachers' Learning of Mathematics and Pedagogy to Social Justice and Culturally Responsive Teaching</i> - McGraw	
Estrella	51. <i>Supporting Mathematics Teachers' Understanding of Privilege and Oppression: A Critical Examination</i> - Bartell, Koestler, & Amidon	67. <i>Brief Report Session: Equity and Preservice Teachers</i> - Przybyla-Kuchek; Sears, Dupree, & Castro-Minnehan
Maryvale A	52. <i>Preparing to Launch a Task: What Does it Look Like for Pre-Service Teachers?</i> - Snider, Creager, & Parrish	68. <i>Using Mathematical Noticing in Deepening Mathematical Understanding for Teaching the Concept of Function</i> - Heid
Maryvale B	53. <i>Geometric Transformations: Alignment of Teachers Mathematical Goals to Research-Based Learning Trajectories</i> - Nielsen, Teuscher, & Cloward	69. <i>A Measurement Lesson Leveraging Quantitative Reasoning for Elementary Prospective Teachers</i> - Lee
Encanto A	54. <i>Leveraging Dynamic Geometry Software to Promote Authentic Mathematics</i> - Boyd & Nirode	70. <i>Addressing Mathematics Anxiety in Preservice Teachers through Creating Explicit Awareness in the Classroom</i> - Hansen
Encanto B	55. <i>Rethinking the Student Teaching Experience: Engaging in a Dialogue about Paired-Placement Student Teaching</i> - Edenfield & Christensen	71. <i>Using Robotics to Emphasize the M in STEM</i> - Thomas, Buchheister, & Sokoll
Phoenix A	59. <i>Humanizing Approaches to Grading with Mathematics Pre-Service Teachers: Navigating and Pushing Beyond Systems</i> - Raygoza, Lischka, Tanner, Males, Stone, Harper, & Sullivan	
Phoenix B	60. <i>A Critical Perspective on Equity Pedagogies and Race in Mathematics Education</i> - Louie, Zavala, Dunleavy, Kalinec-Craig, & Bannister	
Phoenix D	56. <i>Developing Coaching Skills for Rehearsals</i> - Miller & Jensen	72. <i>Practice-Based Professional Development: Dilemmas in Balancing Pedagogies of Enactment and Pedagogies of Investigation</i> - Shaughnessy, Garcia, Mortimer, & Ball
Phoenix E	57. <i>An Intersectional Analysis of Justice-oriented Mathematics Teaching</i> - Garner	73. <i>Preservice Teachers' Understandings of the Professional Obligations of Mathematics Teaching</i> - Ortiz & Bieda

Session 17**Desert Sky***Professional Development
Individual Session***WHAT IF...?: EXPLORING THOUGHT EXPERIMENTS AND THE DEVELOPMENT OF ADAPTIVE EXPERTISE IN REHEARSAL DEBRIEFS**Jen Munson, Northwestern University
Erin E. Baldinger, University of Minnesota

Debrief discussions offer a window into how non-rehearsing teachers make meaning of rehearsals. In this session, we will discuss “thought experiments” shared by non-rehearsing teachers through the lens of how they may contribute to the development of adaptive expertise.

Session 18**Cave Creek***Practice-Based Experiences for Prospective Teachers
Individual Session***THE POWER OF REHEARSAL: DEVELOPING MATHEMATICS TEACHER CANDIDATES’ TEACHING, LEARNING, AND ASSESSING HABITS AND PRACTICES**Amanda T. Sugimoto, Portland State University
Nicole Rigelman, Portland State University

We will examine a series of field-based assignments—rehearsing aspects of the plan-instruct-assess cycle—and ways these experiences influenced teacher candidate learning. We will explore affordances and challenges, as well as ways to forefront equitable practices within any field-based work.

Session 19**Ahwatukee A***Mathematics Pedagogy
Individual Session***WHAT’S THE LESSON?: FOLLOWING A LESSON STUDY THROUGH PROFESSIONAL CONTEXTS**Ander Erickson, University of Washington, Tacoma
Martha Makowski, The University of Alabama

This presentation describes two cycles of a lesson study. The lesson facilitators worked to adapt the lesson on rational functions for different professional contexts between cycles. The session reviews the lesson, how thinking changed between contexts, and participants’ mathematical thinking.

Session 20**Ahwatukee B***Mathematics Content and Curriculum
Individual Session***STATE INVOLVEMENT IN ELEMENTARY MATHEMATICS DIGITAL CURRICULA**Steve Rhine, Pacific University
Shannon Driskell, University of Dayton

We present results from our survey to state math directors (37 states responded) regarding their role in guiding digital curricula (DC) acquisition decisions, professional development for teachers, and assessment of the impact of DC on students and teachers.

Session 21**Laveen A***Collaborations and Partnerships
Individual Session***UNDERSTANDING DISTRICT TEACHER LEADERS’ VISIONS OF HIGH QUALITY MIDDLE SCHOOL MATHEMATICS INSTRUCTION**

Michelle Stephan, University of North Carolina, Charlotte

Twenty district teacher-leaders were convened to create instructional resources for teachers within the state that support new state standards. We explore how their resources revealed beliefs that both support and conflict with visions of high-quality math instruction.

Session 22**Laveen B***AMTE Sponsor Session***ACTIONS & ACCOUNTABILITY TOWARDS SOCIAL JUSTICE IN MATHEMATICS EDUCATION DE TODOS**Carlos A. Lopez Leiva, University of New Mexico
Zandra de Araujo, University of Missouri
Maria del Rosario Zavala, San Francisco State University

Under the light of the TODOS and NCSM position statement for social justice in mathematics education, this session will present related actions that the TODOS organization has followed up on these issues and will identify future directions. The audience will be asked to actively engage in and contribute to the discussion during the presentation.

Session 23**Maryvale A***AMTE Sponsor Session***OPPORTUNITIES, ADVOCACY, AND COMMUNICATION IN SUPPORT OF MTE: STANDARDS, HEA, INFOGRAPHICS, AND CASE STUDIES**Robert Berry, National Council of Teachers of Mathematics & University of Virginia
Trena Wilkerson, National Council of Teachers of Mathematics & Baylor UniversityW. Gary Martin, Auburn University
David Barnes, National Council of Teachers of Mathematics

Education in general, teacher education in particular, and mathematics teacher education specifically have at times been under attack in media, policy and legislative arenas. Learn about opportunities, successes, and strategies for advocating for positive change through your work.

Session 24**Encanto A***Collaborations and Partnerships
Individual Session***PROFESSIONAL DEVELOPMENT THAT IS INCLUSIVE OF AND RESPONSIVE TO TEACHERS’ VOICES**Jinqing Liu, Indiana University, Bloomington
Enrique Galindo, Indiana University
Pavneet Kaur Bharaj, Indiana University, Bloomington
Gina Borgioli Yoder, Indiana University - Purdue University Indianapolis

In this session, we will share a Collaborative Responsive Professional Development Model (CRPDM), where teachers became active professional developers having a say about both the professional growth they wanted and the means to attain their goals.

Session 25 **Phoenix A**

Mathematics Pedagogy
Discussion Session

MTE QUESTIONING IN METHODS COURSES: HOW AND WHAT DO WE COME TO KNOW?

Alyson E. Lischka, Middle Tennessee State University
Signe Kastberg, Purdue University
Susan L. Hillman, Saginaw Valley State University

Participants will engage in reflective discussion of MTEs' questioning practices with mathematics-focused questions and pedagogically-focused questions in the context of teaching mathematics methods courses. Revising questions to support relational practice within mathematics teacher education will be explored.

Session 26 **Phoenix B**

Development of Mathematics Teacher Educators
Individual Session

MATHEMATICS TEACHER EDUCATOR KNOWLEDGE: WHAT IS IT, AND HOW DO WE SUPPORT ITS DEVELOPMENT?

Dana Olanoff, Widener University
Priya Vinata Prasad, The University of Texas, San Antonio
Rachael M. Welder, Texas A&M University

In this session, we will present the results of our review of current research on teacher educator knowledge, and discuss the implications of the research review for designing professional learning opportunities for teacher educators.

Session 27 **Phoenix D****BRIEF REPORT SESSION: PRACTICE-BASED PEDAGOGIES****LEARNING A TEACHING PRACTICE THROUGH REPRESENTATIONS, DECOMPOSITIONS, AND APPROXIMATIONS**

Carlee Elizabeth Madis, Western Michigan University
Joshua Michael Ruk, Western Michigan University
Laura Van Zoest, Western Michigan University
Blake E. Peterson, Brigham Young University
Shari L. Stockero, Michigan Technological University

Preparing teachers to enact challenging teaching practices can be a difficult endeavor, even with experienced teachers. This presentation will show how representations, decompositions, and approximations of practice can be used to help all teachers learn a new teaching practice.

SUPPORTING MATHEMATICS TEACHER EDUCATOR LEARNING WITH PRACTICAL MEASURES OF PRACTICE-BASED PEDAGOGIES

Jason Brasel, University of Michigan
Monica Gonzalez, East Carolina University

We describe our efforts to develop and pilot a practical measure to support the enactment of practice-based pedagogies. In particular, we share an instrument focused on the pedagogy of rehearsal that supports MTEs' improvement efforts as they lead rehearsals.

Session 28 **Phoenix E****BRIEF REPORT SESSION: INNOVATION IN RECRUITMENT AND RETENTION OF TEACHERS****AN INTERACTIONAL ANALYSIS OF MATHEMATICS TEACHING FELLOW RETENTION IN NYC SCHOOLS**

Andrew Brantlinger, University of Maryland
Laurel Cooley, Brooklyn College, CUNY

This paper reports on a quantitative analysis of the retention of 620 alternatively certified mathematics teachers. We show that the retention of different teacher subgroups is highly malleable, shaped by both training and school contexts.

THE CHALLENGES AND SUCCESSES OF RECRUITING STEM TEACHERS FOR ASU'S NOYCE SCHOLARSHIP PROGRAM

Pamela Harris, Arizona State University
Terri L. Kurz, Arizona State University
Tirupalavanam G. Ganesh, Arizona State University
Penny Dyer, Arizona State University

We created a framework that connects a community of learners to improve the quality and quantity of STEM teachers in high-needs districts after receiving an NSF Noyce grant. We highlight recruitment techniques that increased the number of teacher candidates.

Session 29

South Mountain

*Mathematics Content and Curriculum**Extended Session***DEFINING CORE PRACTICES FOR MATHEMATICAL MODELING FOR ELEMENTARY MATHEMATICS TEACHERS**

Jennifer M. Suh, George Mason University

Erin E. Turner, The University of Arizona

Amy Roth McDuffie, Washington State University

Julia Aguirre, University of Washington, Tacoma

Sara Birkhead, George Mason University

This workshop is aimed at informing the modeling-interested community about teaching practices to support (early) mathematical modeling connected to the elementary curriculum and about ways modeling fits well with visions of effective teaching and ambitious teacher development.

Session 30

Estrella

*Mathematics Pedagogy**Extended Session***IDENTIFYING INITIAL RECOMMENDATIONS FOR INFUSING MATHEMATICAL WRITING WITHIN TEACHER PREPARATION PROGRAMS**

Madelyn Colonnese, University of North Carolina, Charlotte

Tutita M. Casa, University of Connecticut

Opportunities for K-12 students to communicate reasoning is an important aspect of mathematics learning. In this working group, we will discuss ways to support preservice teachers in learning about how to engage their future students in reasoning through written discourse.

Session 31

Maryvale B

*Equity, Social Justice, and Mathematics Teacher Education**Extended Session***BUT I'M NOT CREATIVE ENOUGH! SUPPORTING NOVICE TEACHERS: CULTURALLY RELEVANT PEDAGOGY AND SOCIAL JUSTICE MATH**

Alice L. Cook, Johns Hopkins University

Emily J. Yanisko, Urban Teachers, Baltimore

But I'm not creative enough for CRP! During our social justice math task, students asked if I voted for Trump! In this workshop, we 1)present a task analysis; 2)share tasks; 3)discuss supporting and eliciting more robust CRP and SJM tasks.

Session 32

Encanto B

*Equity, Social Justice, and Mathematics Teacher Education**Extended Session***CONSIDERING QUANTITATIVE, SOCIOCULTURAL, SPATIAL, AND CRITICAL WAYS OF KNOWING IN PRESERVICE TEACHER EDUCATION**

Travis Weiland, Appalachian State University

Lisa Poling, Appalachian State University

This session will present a series of activities developed to explicitly highlight multiple ways of knowing in elementary preservice teacher education in a statistics content unit. Dynamic online tools will be used to explore data as part of the activities.

Session 33**Desert Sky***Mathematics Pedagogy
Individual Session***DEVELOPING PRESERVICE AND INSERVICE TEACHERS' ABILITIES TO TEACH PROOF IN HIGH SCHOOL GEOMETRY**Wayne Nirode, Miami University
Brian Boyd, Wright State University

This session shares a five-part proof progression that focuses on developing teachers' abilities to facilitate and support student learning of proof. Participants will gain hands-on experience with this field-tested progression that is grounded in research on teaching and learning proof.

Session 34**Cave Creek***Professional Development
Individual Session***REFLECTING ON SCALING PROFESSIONAL DEVELOPMENT, A DECADE IN: FINDINGS, METHODOLOGY, AND PERSISTENT QUESTIONS**Scott Kaschner, Butler University
Aubrey Neihaus, The University of Arizona
Rebecca McGraw, The University of Arizona

We will share about the national scaling of a teacher professional development program over ten years. This will contribute to the ongoing discussion of lessons learned in scaling, methodologies for studying scaling, and persistent questions around scaling professional development.

Session 35**Ahwatukee A***Teaching and Learning with Technology
Individual Session***CONTRASTING SOCIOMATHEMATICAL NORMS IN LESSONS WITH/OUT INTERACTIVE SIMULATIONS**

Sebnem Atabas, Florida State University

We describe the sociomathematical norms in a middle-school mathematics classroom in lessons with/out the use of interactive simulations. We ask attendees to think critically about the notion of norms in light of evidence of contrasting norms within the same classroom.

Session 36**Ahwatukee B***Equity, Social Justice, and Mathematics Teacher Education
Individual Session***SEEING THE FOREST THROUGH THE TREES: MTEs MAKING SENSE OF MULTIPLE PERSPECTIVES ON EQUITY**Kathleen Jablon Stoebr, Santa Clara University
Carlos A. LopezLeiva, University of New Mexico
Anthony Fernandes, University of North Carolina, Charlotte
Belinda Pickett Edwards, Kennesaw State University

This session focuses on supporting MTEs in the critical work of preparing new teachers to create equitable and socially just mathematics classrooms for all students. Participants will engage with two modules that directly address this key issue.

Session 37**Laveen A***Mathematics Content and Curriculum
Individual Session***I USED TO THINK, NOW I KNOW - USING REFLECTIVE WRITING TO MAKE THINKING VISIBLE**Susan Gay, University of Kansas
Carol Lucas, University of Central Oklahoma

Our reflective writing task makes visible how preservice teachers' thinking changed about content and pedagogy topics. Participants will experience the task, consider sample responses from our students and course achievement data, and reflect on how similar tasks could be useful.

Session 38**Laveen B***NCSM President Exchange Session***CREATE EQUITY FOR STUDENTS THROUGH INTENTIONAL TEACHER COLLABORATION**

Mona Toncheff, NCSM: Leadership in Mathematics Education

In order to ensure equitable learning in mathematics, teachers must create it. Collaboration is key to ensuring every student learns. This session explores four key strategies needed for effective adult collaboration that results in equitable teaching and learning for students.

Session 39**Maryvale A***Practice-Based Experiences for Prospective Teachers
Individual Session***SUPPORTING THE ENACTMENT OF AMBITIOUS PRACTICES THROUGH AN ONLINE COMMUNITY**Caroline B. Ebby, University of Pennsylvania
Lindsay Thompson Goldsmith-Markey, University of Pennsylvania
Janine Remillard, University of Pennsylvania

This session focuses on how developing proficiency in an instructional routine through an online video feedback environment supports novice teachers in translating ambitious teaching practices learned in a university-based methods course into student teaching and the first year of teaching.

Session 40**Encanto A***Practice-Based Experiences for Prospective Teachers
Individual Session***THREADING PROJECT-BASED LEARNING (PBL) IN TEACHER PREPARATION CLINICAL RESIDENCY PROGRAM**Jean S. Lee, University of Indianapolis
Deb Sachs, University of Indianapolis

We provide an overview of our teacher preparation clinical residency model that emphasizes PBL through the delivery and design of program coursework while teacher candidates design PBL units to use in their clinical residency classrooms.

Session 41 **Phoenix A**

Mathematics Pedagogy
Individual Session

THE PRINCIPLES AND PRACTICES OF TEACHING AND LEARNING MATH OUTSIDE

Katherine Baker, Elon University

We will share how we use nature as a text and context for mathematics teacher preparation. We offer our heuristic that supports teaching mathematics in outdoor environments in ways that foster learning and connections to nature for children and teachers.

Session 42 **Phoenix B**

Individual Session

ARE WE PROVIDING HIGH-QUALITY MATHEMATICS INSTRUCTION FOR ALL?: HIGHLIGHTS FROM THE 2018 NSSME+

Kristen Malzahn, Horizon Research, Inc.

This session shares results from the 2018 NSSME+, which highlights a number of disparities in students' mathematics learning opportunities. Findings about instruction and teacher preparation and professional learning opportunities will be shared. Participants will consider implications for mathematics teacher educators.

Session 43 **Phoenix D****BRIEF REPORT SESSION: PARTNERING WITH COMMUNITIES****COMMUNITY MATH PROJECT: PARTNERING UNIVERSITIES, PROSPECTIVE TEACHERS, AND COMMUNITY CENTERS TO FACILITATE MATHEMATICS TUTORING FOR PARENTS**

Emily Bonner, The University of Texas, San Antonio
Crystal Kalinec-Craig, The University of Texas, San Antonio
Denisse Maribel Hinojosa, The University of Texas, San Antonio

This session will report on the Community Math Project, a collaborative program involving higher education partners and community centers. The focus of this presentation is a tutoring program that pairs a prospective teacher with a parent in a community center.

ELEMENTARY MATHEMATICS PRESERVICE TEACHERS LEARNING FROM AND WITH FAMILIES ON A COMMUNITY WALK

Traci Kelley, The University of Texas, San Antonio

This study examines the reflections of preservice teachers from two semester cohorts of an elementary math approaches course, and participating family members, about a community walk activity that was planned by the participating community members.

Session 44 **Phoenix E****BRIEF REPORT SESSION: FOCUSING ON STUDENTS****ELEMENTARY LATINX STUDENTS' INTERPRETATION OF THEIR MATHEMATICS TEACHERS' EXPECTATIONS**

Carlos Nicolas Gomez, Clemson University

Stacy R. Jones, Clemson University

Hilary Tanck, Clemson University

This study investigates how Latinx students in grades 3-5 interpret their mathematics teacher's goals for them. We discuss themes found among our participants and implications for constructing more meaningful goals will be discussed.

THE AFTERMATH: INTERVENTION TECHNIQUES TO AID STUDENTS DISPLACED BY NATURAL DISASTERS IN MATHEMATICAL ACHIEVEMENT

Brianna Ashley Kurtz, University of Central Florida

The United States ranks fifth globally in internal displacement by natural disasters (IDMC, 2017). This report showcases practices to assist students in mathematics education recovery post-disaster interruption, highlighting a successful multiple case study of students affected by Hurricane Maria.

**THURSDAY AFTERNOON BREAK****PHOENIX BALLROOM FOYER
& ENCANTO FOYER**

This is a great time to stretch, network with colleagues, and visit the exhibitors.

**Session 45****Desert Sky****BRIEF REPORT SESSION: TEACHING GEOMETRY WITH TECHNOLOGY****CRITIQUING SECONDARY STUDENTS' REASONING WITHIN STATIC AND DYNAMIC GEOMETRY ENVIRONMENTS: ANALYZING PSTS' SPECIALIZED CONTENT KNOWLEDGE**

Vecihi Serbay Zambak, Monmouth University

The session will examine the relationship between preservice teachers' SCK (i.e., understanding of hypothetical secondary students' thinking within static and dynamic geometry environments), their technology perspectives, and argumentation schemes. Participants will explore and discuss preservice teachers' interpretations of static and dynamic representations.

PRESERVICE SECONDARY MATHEMATICS TEACHERS' CONCEPTIONS OF COUNTEREXAMPLE IN NON-DYNAMIC GEOMETRY ENVIRONMENTS VS DYNAMIC GEOMETRY ENVIRONMENTS

Tuyin An, Georgia Southern University

The goal of this session is to share results of a case study that compares preservice secondary mathematics teachers' conceptions of counterexample through working on dynamic geometry environment (DGE) tasks vs non-DGE tasks designed in the context of Euclidean geometry.

PRESERVICE SECONDARY MATHEMATICS TEACHERS' DEVELOPMENT OF TECHNOLOGICAL CONTENT KNOWLEDGE WHEN EXPLORING COMPOSITION OF TRANSFORMATIONS WITH GSP

Xiangquan Yao, Pennsylvania State University

This session will report on preservice secondary mathematics teachers' development of technological content knowledge when exploring composition of transformations with Geometer's Sketchpad, focusing on their representational fluency, knowledge resulting from reification, and knowledge constructed from noticing.

Session 46**Cave Creek**

*Practice-Based Experiences for Prospective Teachers
Individual Session*

CENTERING BUILDING RELATIONSHIPS WITH CHILDREN IN FIELD-BASED ELEMENTARY MATH METHODS

Angela C. Turrou, University of California, Los Angeles
Nicholas Charles Johnson, San Diego State University
Brandon McMillan, University of California, Los Angeles
Megan Franke, University of California, Los Angeles

Prioritizing a focus on building relationships with children has supported our efforts to address issues of equity in our elementary math methods courses. Our session explores the affordances and challenges of navigating this work in field-based methods settings.

BRIEF REPORT SESSION: PRESERVICE TEACHERS' KNOWLEDGE

ELEMENTARY PRESERVICE TEACHERS' EMERGENT KNOWLEDGE OF STUDENTS AS LEARNERS OF MATHEMATICS

Gwendolyn Lloyd, Pennsylvania State University
Courtney Rice, Pennsylvania State University

We will describe our efforts to enhance preservice teachers' knowledge of students as learners of mathematics through a series of field-based methods course assignments. Examples from preservice teachers' reflections will be used to illustrate shifts in their views of children's understanding and development.

MATHEMATICAL ROUTINES THAT WILL SUPPORT STUDENTS' SENSE MAKING, UNDERSTANDING, AND REASONING

Stacy Reeder, University of Oklahoma
Juliana Utley, Oklahoma State University
S. Megan Che, Clemson University

To engage their own future students in worthwhile mathematics, teacher candidates must be regularly engaged in rich mathematical activities to develop their mathematical knowledge, pedagogical knowledge, and a positive mathematical disposition. Tasks used to engage teacher candidates will be shared.

STRATEGIES FOR PROMOTING KNOWLEDGE INTEGRATION IN CONTENT COURSES FOR PRESERVICE TEACHERS

J. Vince Kirwan, Kennesaw State University
David D. Barker, Illinois State University

We will present empirically-based mathematics teacher educator actions that have the potential to promote knowledge integration. Data on the influence of these strategies in a content course will be presented. Attendees will discuss potential implementation into their content courses.

Mathematics Content and Curriculum
Individual Session

FLUENCY DEVELOPMENT IN CONTENT COURSES FOR ELEMENTARY TEACHERS

C. David Walters, Weber State University

I will share details of an initiative undertaken to restructure a content course sequence for future elementary teachers to better help them build procedural fluency from conceptual understanding. Participants will engage with and discuss fluency-building activities from the courses.

Professional Development
Individual Session

EMBEDDED DAYS FOR PROFESSIONAL DEVELOPMENT: STRUCTURE, ACTIVITIES, AND RESULTS

Dusty Jones, Sam Houston State University
John H. Lamb, The University of Texas, Tyler

Embedded Days are a key component of a professional development project designed for mathematics teachers in rural areas. Teachers have found these to be rewarding in a number of ways. We will be define Embedded Days and discuss their implementation.

BRIEF REPORT SESSION: TEACHER PRACTICE

LEARNING FROM THE FIELD: BRINGING STATISTICAL LITERACY PRACTICES FROM MIDDLE SCHOOL CLASSROOMS TO THE UNIVERSITY

Susan Ophelia Cannon, Mercer University

This project works to draw on the pedagogies and practices of two in-service teachers who were successful in implementing a critical statistical literacy curriculum to middle schoolers to create a methods course for preservice middle grades mathematics teachers.

TEACHER BELIEFS AND PRACTICE IN THE AREA OF PROOF AND THEIR INFLUENCE ON STUDENTS

Foster Graif, University of Minnesota

In this session, I will engage participants with my efforts to connect a teacher's beliefs about proof to their teaching practice and the influence of these factors on students. Participants will discuss strategies to develop productive beliefs in teacher education.

Equity, Social Justice, and Mathematics Teacher Education
Discussion Session

SUPPORTING MATHEMATICS TEACHERS' UNDERSTANDING OF PRIVILEGE AND OPPRESSION: A CRITICAL EXAMINATION

Tonya Bartell, Michigan State University
Courtney Koestler, Ohio University
Joel Amidon, University of Mississippi

We discuss two activities aimed to support mathematics teachers in understanding that people's identity groups fall into both privileged and marginalized, and that oppression operates on multiple levels. We consider the activities, their facilitation, teachers' responses, and ongoing reflections.

Mathematics Pedagogy
Individual Session

PREPARING TO LAUNCH A TASK: WHAT DOES IT LOOK LIKE FOR PRE-SERVICE TEACHERS?

Rachel B. Snider, The College of New Jersey
Mark A. Creager, University of Southern Indiana
Christopher W. Parrish, University of South Alabama

In this session, we present a unit designed to support secondary preservice teachers in learning to launch complex tasks. We focus specifically on how preservice teachers plan to launch a task before in-class peer rehearsals.

Session 53 <i>Mathematics Content and Curriculum</i> <i>Individual Session</i> GEOMETRIC TRANSFORMATIONS: ALIGNMENT OF TEACHERS MATHEMATICAL GOALS TO RESEARCH-BASED LEARNING TRAJECTORIES Porter Nielsen, Brigham Young University Dawn Teuscher, Brigham Young University Janessa Cloward, Brigham Young University In this session, we examine multiple middle grades teachers' mathematical goals and how much time students spend during class working towards these goals. We also examine if the teachers' goals are aligned or not aligned with research-based learning trajectories.	Maryvale B	Session 55 <i>Practice-Based Experiences for Prospective Teachers</i> <i>Discussion Session</i> RETHINKING THE STUDENT TEACHING EXPERIENCE: ENGAGING IN A DIALOGUE ABOUT PAIRED-PLACEMENT STUDENT TEACHING Kelly Edenfield, University of Georgia Sharon Christensen, Brigham Young University Join us in a discussion around the purposes of student teaching, the design of existing paired-placement student teaching experiences, and how such experiences can be designed to better align with current purposes of student teaching.	Encanto B
Session 54 <i>Teaching and Learning with Technology</i> <i>Individual Session</i> LEVERAGING DYNAMIC GEOMETRY SOFTWARE TO PROMOTE AUTHENTIC MATHEMATICS Brian Boyd, Wright State University Wayne Nirode, Miami University This session shares a project where students pose questions to investigate with Dynamic Geometry Software, construct proofs of their conjectures, and get feedback along the way from peers and experts. Bring your own device to the session for hands-on experience.	Encanto A	Session 56 <i>Development of Mathematics Teacher Educators</i> <i>Individual Session</i> DEVELOPING COACHING SKILLS FOR REHEARSALS Emily Miller, West Chester University Jess Jensen, California Polytechnic State University, San Luis Obispo Preservice teachers should have many opportunities to rehearse the practice of teaching. However, just as important is the opportunity for teacher educators to practice productive coaching moves. This session will engage participants in discussing and practicing three such coaching moves.	Phoenix D
		Session 57 <i>Equity, Social Justice, and Mathematics Teacher Education</i> <i>Discussion Session</i> AN INTERSECTIONAL ANALYSIS OF JUSTICE-ORIENTED MATHEMATICS TEACHING Brette Garner, University of Denver In this session, presenters will share examples of urban secondary teachers incorporating sociopolitical contexts into mathematics lessons. Participants will discuss the affordances and tensions in implementing justice-oriented pedagogy and synthesize implications for developing more equitable instruction.	Phoenix E

Session 58

South Mountain

Equity, Social Justice, and Mathematics Teacher Education
 Extended Session

CONNECTING PRESERVICE TEACHERS' LEARNING OF MATHEMATICS AND PEDAGOGY TO SOCIAL JUSTICE AND CULTURALLY RESPONSIVE TEACHING

Rebecca McGraw, The University of Arizona

Participants will engage in an activity connecting geometry, politics, and law, examine preservice teachers' thinking about equity as it relates to written curriculum materials, and consider opportunities to connect the histories of mathematics and education.

Session 59

Phoenix A

Mathematics Education Policy and Program Issues
 Extended Session

HUMANIZING APPROACHES TO GRADING WITH MATHEMATICS PRE-SERVICE TEACHERS: NAVIGATING AND PUSHING BEYOND SYSTEMS

Mary Candace Raygoza, Saint Mary's College of California

Alyson E. Lischka, Middle Tennessee State University

Amy Tanner, Brigham Young University

Lorraine M. Males, University of Nebraska, Lincoln

Jamalee Stone, Black Hills State University

Frances K. Harper, University of Tennessee, Knoxville

Patrick Lane Sullivan, Missouri State University

This session highlights examples of praxis that challenge traditional grading practices. Drawing on collective insights of participating MTEs, we will identify next steps in our praxis of humanizing grading, brainstorm strategies for systemic change, and develop a shared resource.

Session 60

Phoenix B

Equity, Social Justice, and Mathematics Teacher Education
 Extended Session

A CRITICAL PERSPECTIVE ON EQUITY PEDAGOGIES AND RACE IN MATHEMATICS EDUCATION

Nicole L. Louie, University of Wisconsin, Madison

Maria del Rosario Zavala, San Francisco State University

Teresa K. Dunleavy, Vanderbilt University

Crystal Kalinec-Craig, The University of Texas, San Antonio

Nicole Bannister, Clemson University

Equity-oriented pedagogies may provide classroom strategies that are easily adopted without attention to race and power, or present rich theorizing that leaves practical details vague. Join us to put complex instruction and critical mathematics in dialogue to address these issues.

Session 61

Desert Sky

*Mathematics Content and Curriculum
Individual Session*

GEOMETRIC TRANSFORMATIONS & DESMOS: REFLECTIONS FROM A STUDY ON CURRICULAR REASONING

Jonah Shulman, University of Nevada, Las Vegas
Shannon W. Dingman, University of Arkansas

We focus on data collected within a larger study into middle grades mathematics teachers' curricular reasoning. Specifically, we present data from three teachers' integration of Desmos' Transformation Golf: Rigid Motion activity into their 8th grade unit on geometric transformations.

Session 62

Cave Creek

*Mathematics Pedagogy
Individual Session*

CREATIVE MATHEMATICAL REASONING AND KEY CURRICULAR CONTENT AS AN EVALUATIVE FRAMEWORK FOR PRESERVICE TASK ENGAGEMENT

Tami Martin, Illinois State University
Craig Cullen, Illinois State University
Roger Day, Illinois State University

We proposed that the criteria of engagement in creative mathematical reasoning, coupled with in-depth explorations with concepts connected to future teaching assignments may be a reasonable way to assess the potential quality of a task for preservice teacher education experiences.

Session 63

Ahwatukee A

*Professional Development
Individual Session*

THE VIABILITY AND IMPACT OF BUILDING DISTRICT MATHEMATICAL PROFESSIONAL DEVELOPMENT CAPACITY

Jodie Novak, University of Northern Colorado

We describe a PD model where university faculty work with district math coaches to train elementary teachers to offer high quality mathematical professional development to their peers. Evaluation data suggest the model scales, impacts practice, and builds district PD capacity.

Session 64

Ahwatukee B

*Practice-Based Experiences for Prospective Teachers
Individual Session*

MANY PERSPECTIVES, ONE VISION: LEARNING TO RESPOND TO STUDENT THINKING BY REFLECTING ON SHARED EXPERIENCE

Cody L. Patterson, Texas State University
Hiroko K. Warshauer, Texas State University

We will share results of a study of how preservice and inservice teachers, through small-group discussions of observations of a shared classroom context, engage in collaboration around the practice of interpreting and responding to instances of nonstandard student thinking.

Session 65

Laveen A

BRIEF REPORT SESSION: ELICITING STUDENT THINKING COACHING STUDENT TEACHERS TO ELICIT STUDENTS' MATHEMATICAL THINKING

Luke T. Reinke, University of North Carolina, Charlotte

We report on a case study of two student teachers coached to elicit student thinking. A trajectory for learning to elicit and interpret student thinking will be proposed and the coaching moves used to support the candidates will be identified.

TRANSFER OF ELICITING AND INTERPRETING STUDENT THINKING (EIST) FROM LITERACY TO MATHEMATICS

Jess Jensen, California Polytechnic State University, San Luis Obispo
Melissa A. Gallagher, University of Louisiana, Lafayette

Findings from this study indicate that multiple stakeholders should be involved in preparing mathematics teachers, as most EIST skills transfer from literacy to mathematics methods. This project helps determine how a series of education courses could be designed more synergistically.

Session 66

Laveen B

BRIEF REPORT SESSION: SECONDARY TEACHERS' VIEWS OF TEACHER PREPARATION

COMING FULL CIRCLE: WHAT DO SECONDARY TEACHERS VALUE IN PROGRAM PREPARATION?

Janet A. White, Millersville University

During 2018-2019, the presenter visited over 45 program alumni in secondary schools. These mathematics teachers' opinions on their own preparation in terms of AMTE's SPTM and specific recommended topics for inclusion in a methods course will be shared and discussed.

IS THIS CO-TEACHING? A REVIEW OF GRADUATE TEACHING INTERNSHIP EXPERIENCES

Jessica S. Allen, University of South Carolina

Using existing literature, reflective journals, and student surveys, two graduate students review their experiences within similar teaching internships to analyze the degree to which true co-teaching is occurring. Analysis includes a review of planning, teaching, and grading within participants' internships.

Session 67 BRIEF REPORT SESSION: EQUITY AND PRESERVICE TEACHERS “GAP-GAZING” TO DISRUPT, NOT REPRODUCE, HARMFUL STEREOTYPES Julia Przybyla-Kuchek, University of Georgia I share an activity designed for secondary preservice teachers using NAEP mathematics achievement data to empower preservice teachers to draw conclusions and challenge their assumptions about what produces achievement gaps and contributes to inequity in mathematics education.	Estrella
SECONDARY MATHEMATICS TEACHER CANDIDATES’ PERSPECTIVES ABOUT STRATEGIES THAT CAN SUPPORT EQUITABLE LEARNING OPPORTUNITIES Ruthmae Sears, University of South Florida Lakesia L. Dupree, University of South Florida Cynthia Ann Castro-Minnehan, University of South Florida This presentation will describe secondary mathematics teacher candidates’ perspectives about equity, and the complexities and challenges that may impact it within high-needs schools. We will also identify strategies teacher candidates perceive can support equitable learning opportunities.	Encanto A
Session 68 <i>Mathematics Content and Curriculum</i> <i>Individual Session</i> USING MATHEMATICAL NOTICING IN DEEPENING MATHEMATICAL UNDERSTANDING FOR TEACHING THE CONCEPT OF FUNCTION Mary Kathleen Heid, Pennsylvania State University Courses for secondary teachers involving mathematical noticing can deepen mathematical understanding. Examples include (a) extending the domain of application for familiar operations on function and (b) pushing boundaries of familiar functions by enveloping seemingly distinct concepts under a single concept.	Maryvale A
Session 69 <i>Mathematics Content and Curriculum</i> <i>Individual Session</i> A MEASUREMENT LESSON LEVERAGING QUANTITATIVE REASONING FOR ELEMENTARY PROSPECTIVE TEACHERS Hwa Young Lee, Texas State University In this session, I share an introductory lesson on measurement for a geometry content course for elementary prospective teachers, present how the lesson helped address central ideas of measurement across multiple quantities, and discuss implications and limitations of the lesson.	Maryvale B
Session 70 <i>Mathematics Pedagogy</i> <i>Individual Session</i> ADDRESSING MATHEMATICS ANXIETY IN PRESERVICE TEACHERS THROUGH CREATING EXPLICIT AWARENESS IN THE CLASSROOM Heidi B. Hansen, Bemidji State University This session outlines a research project in which the explicit discussion and study of mathematics anxiety was included in the curriculum of a mathematics content course for preservice elementary teachers as an intervention for decreasing anxiety.	Encanto A
Session 71 <i>Teaching and Learning with Technology</i> <i>Individual Session</i> USING ROBOTICS TO EMPHASIZE THE M IN STEM Amanda Thomas, University of Nebraska, Lincoln Kelley Buchheister, University of Nebraska, Lincoln Amy Sokoll, University of Nebraska, Lincoln This session will engage mathematics teacher educators (MTEs) in hands-on experiences with coding robots. The presenters will also disseminate findings from a project in which teachers of mathematics used robotics to design STEM learning activities that emphasized mathematics content.	Encanto B
Session 72 <i>Professional Development</i> <i>Individual Session</i> PRACTICE-BASED PROFESSIONAL DEVELOPMENT: DILEMMAS IN BALANCING PEDAGOGIES OF ENACTMENT AND PEDAGOGIES OF INVESTIGATION Meghan Shaughnessy, University of Michigan Nicole M. Garcia, University of Michigan Jillian Peterson Mortimer, University of Michigan Deborah Loewenberg Ball, University of Michigan Recent efforts have centered on designing professional learning that is focused on teaching practice. This session will support collective conversation around the strategic use of pedagogies of investigation and enactment and develop critical questions to ask to balance their use.	Phoenix D
Session 73 <i>Practice-Based Experiences for Prospective Teachers</i> <i>Individual Session</i> PRESERVICE TEACHERS’ UNDERSTANDINGS OF THE PROFESSIONAL OBLIGATIONS OF MATHEMATICS TEACHING Nickolaus A. Ortiz, Michigan State University Kristen N. Bieda, Michigan State University We share anecdotes from preservice teachers and highlight the prevalence of descriptions aligned with the professional obligations of mathematics teaching, and those which take precedence after preservice teachers engage in their first teaching experience within this innovative model for practice teaching.	Phoenix E

THURSDAY, FEBRUARY 6, 2020

5:30 PM - 6:30 PM

A / M T E

VALLEY OVERLOOK

RECEPTION FOR GRADUATE STUDENTS & EARLY CAREER FACULTY

Graduate students and early career faculty in their first three years are invited to join the AMTE Board of Directors and leadership in Valley Overlook (located on the Fourth Level) for a reception. Refreshments will be served.



THURSDAY, FEBRUARY 6, 2020

7:00 PM - 9:00 PM

A / M T E

PLENARY: CONTINUING THE CONVERSATION

ENCANTO A

Join representatives from the Opening Session and the AMTE Board of Directors for an informal conversation about the ideas shared and future directions for AMTE. This conversation is an opportunity to share innovative thoughts and ideas to shape the future of AMTE and our priorities in the coming decade.





Conference participants have two options for breakfast.

ADVOCACY AND EMERGING ISSUES BREAKFAST

PHOENIX D

Julia Aguirre, University of Washington, Tacoma

Cynthia Anhalt, University of Arizona

Toya Frank, George Mason University

Erin Turner, University of Arizona

Amy Roth McDuffie, Washington State University

The Advocacy Breakfast is a long-standing, AMTE tradition in which speakers are invited to share their insights on advocacy in mathematics education. This year we will feature panelists from two projects, *Mathematical Modeling with Cultural and Community Contexts* and *Trajectories of Black Mathematics Teachers*. The panelists will share their experiences engaging in advocacy work with teachers and communities and provide ideas for others to get involved in this important work. There will also be time for audience questions. Everyone is invited to attend! We hope to see you there.



FRIDAY BREAKFAST

PHOENIX C

Join colleagues for breakfast and informal conversation.

OVERVIEW OF FRIDAY MORNING, FEBRUARY 7, 2020

	8:00 AM - 9:00 AM	9:15 AM - 10:00 AM
Desert Sky	74. <i>Brief Report Session: Equity, Social Justice, and Mathematics Teacher Education 1-</i> Jones & Gomez; Byun; Jackson, Taylor, & Buchheister	89. <i>Dear Math... Examining Women's Self-Identified Critical Experiences in Mathematics-</i> Bertolone-Smith & MacDonald
Cave Creek	75. <i>Going Beyond the Comfort Zone: Transitioning to Ambitious Teaching Practices through Video Peer Coaching-</i> Capen, Birkhead, & Suh	90. <i>Preparing Mathematics and Special Education Teachers to Engage in Content-Specific Consultations: Research Across Four Continents-</i> van Ingen & Eskelson
Ahwatukee A	76. <i>Brief Report Session: Perspectives of Mathematics-</i> Watson; Abel; Lamb	91. <i>Brief Report Session: Research in Teacher Education-</i> Melville; Callis & McNally
Ahwatukee B	77. <i>Building Mathematical Knowledge in Otherwise Pedagogically-Focused Secondary Teacher Preparation Programs-</i> Kimmerling & Chesler	92. <i>Second Wave Challenges to Improving Instruction Across a District: Plateaus and Threats-</i> Lawler & Leaf
Laveen A	78. <i>Theoretically Framing the Pedagogy of Learning to Teach Mathematics with Technology-</i> Bailey, McCulloch, Cayton, Reed, & Fye	93. <i>The Role of Voice Thread in Supporting Effective Mathematical Discussions Online-</i> Dean & Goodson-Espy
Laveen B	79. <i>Brief Report Session: Teaching Geometry and Measurement-</i> Bharaj; Hardison & Lee; Boyce	94. <i>Learning to Plan Instructional Units: Reexamining the Grain-Size in Teacher Preparation-</i> Males & Buchbinder
South Mountain	87. <i>Teacher and Student Angles: Building a Critical Mathematics Video Repository-</i> Dunleavy, Raygoza, Jessup, Yeh, & Krause	
Estrella	80. <i>Math Work Station Project: Supporting Preservice Teachers to Notice and Analyze Mathematical Thinking in Photographs-</i> Roller & Marin	95. <i>Brief Report Session: Differentiation-</i> Saclarides & Harbour; van den Kieboom
Maryvale A	81. <i>Teacher Support for Argumentation: An Examination of Beliefs and Practice-</i> Conner 2020 AMTE Excellence in Scholarship Award	96. <i>Preservice Teachers' Views of Mathematics Instruction Mediated by iPads-</i> Barlow & Groves-Scott
Maryvale B	82. <i>Exploring the Mathematical Identity of Prospective Elementary Teachers-</i> Willingham, Ruef, & Sweeny	97. <i>Toward an Antiracist Mathematics Teacher Educator Practice: A Reflective Resource-</i> Jackson, Osibodu, Byun, Herbel Eisenmann, & Cosby
Encanto A	83. <i>Steering into the Storm: Confronting Classroom Realities with PSTs to Address Issues of Equity-</i> Sharpe, Pinter, Knapp, Woods, Lynch, & Billings	98. <i>Learn How to Incorporate Free PK-5 Math Curriculum into Your Course-</i> Harris
Encanto B	88. <i>Using the Process Writing Model as a Tool for Mathematics Teacher Professional Development-</i> Satyam	
Phoenix A	84. <i>Is It Culturally Relevant or Just Plain Racist? Examining Mathematics Homework Examples in Mainstream Media-</i> Myers	99. <i>Developing Prospective Teachers' Ability to Engage Children in Argument in an Elementary Methods Course-</i> Kline
Phoenix B	85. <i>Collaborating to Improve Clinical Experiences for Secondary Mathematics Teacher Candidates-</i> Strutchens, Sears, Zerkowski, Mangram, & Conway	100. <i>Engaging Alumni: Linking Longitudinal Research to Program Evaluation and Innovation-</i> Harper & Cox
Phoenix E	86. <i>Community, Advocacy, and Mathematics Education-</i> Emerging Issues Committee	101. <i>Beginning Teachers' Ambitious Instruction: Promising Practices and Places to Grow-</i> Cavanna, Casa, & Pinter

	10:15 AM - 11:30 AM
Desert Sky	102. <i>Scaling Professional Development Programs: Transitioning from Face-to-Face to Online Environments</i> - Sztajn, Carson, Knotts, Carroll, Martin, Alnizami, & Seago
Cave Creek	103. <i>Investigations into Connections between Teachers' Professional Noticing and Teachers' Cognitive Resources: Looking Back and Moving Forward</i> - LaRochelle, Dick, Skultety, & Thomas
Ahwatukee A	104. <i>Quantitative Research Instruments Relevant to Mathematics Teacher Educators</i> - Krupa, Bostic, Cavey, Harrell-Williams, Hjalmarson, & Walkowiak
Ahwatukee B	105. <i>Framing and Assessing Mathematical Knowledge for Teaching Proof</i> - Buchbinder, Lesseig, Cirillo, & Hempel
Laveen A	106. <i>Leveraging Diverse Tools to Measure Components of Mathematically Productive Classrooms</i> - Litke, Thanheiser, Heaton, & Reinholz
Laveen B	107. <i>Bringing Teacher Education Outdoors</i> - Weston & Baker
South Mountain	108. <i>Leveraging Community Funds of Knowledge to Teach Mathematics with Technology</i> - Harper & Kim 2020 AMTE NTLI Award Winner
Estrella	109. <i>A Mathematics Selective Alternative Teacher Certification Program (ATCP) for Urban Schools: Trajectories, Preparation, and Consequences</i> - Cooley, Brantlinger, Lochard, Khalil, & Bullock
Maryvale A	110. <i>New Directions for Video-Based Pedagogies to Enhance Teacher Noticing</i> - van Es & Dobie
Maryvale B	111. <i>Strategies for Supporting Technology in Mathematics Teacher Education</i> - AMTE Technology Committee
Encanto A	112. <i>National Science Foundation Proposals for Equity, Diversity, and Inclusion in Mathematics Teacher Education</i> - Richardson
Encanto B	113. <i>Publishing Your Scholarly Work in an AMTE Publication: Opportunities Explored and Questions Answered</i> – AMTE Publications Division
Phoenix A	114. <i>Mathematical Modeling in K-12 Mathematics Teacher Preparation</i> - Aguirre & Turner
Phoenix B	115. <i>I Am New to Mathematics Teacher Education: Realities of Teaching, Scholarship, and Service</i> – AMTE Professional Development Committee
Phoenix E	116. <i>Tasks for Teachers: Approaches to the Design of Tasks for Preservice and Inservice Learners</i> - Orrill, Olanoff, Boston, Brown, Tobias, Bajwa, Thanheiser, Welder, & Candela

Session 74**Desert Sky***Equity, Social Justice, and Mathematics Teacher Education***BRIEF REPORT SESSION: EQUITY, SOCIAL JUSTICE, AND MATHEMATICS TEACHER EDUCATION 1****DEVELOPING PRESERVICE TEACHERS' CRITICAL CONSCIOUSNESS**

Stacy R. Jones, Clemson University

Carlos Nicolas Gomez, Clemson University

This session describes a mathematics content course that used teaching mathematics for social justice in order to develop preservice teachers' critical consciousness. Participants will examine how preservice teachers' critical consciousness development impacts their perspectives on teaching mathematics for social justice.

DEVELOPING THE EQUITY LITERACY OF PROSPECTIVE TEACHERS IN THEIR PRACTICE-BASED EXPERIENCE: AN APPLICATION OF EQUIP

Sunghwan Byun, Michigan State University

I present how the use of EQUIP, a free web-based application, allowed prospective teachers to develop equity literacy against the inequitable participation of the students with minoritized social markers (e.g., students of color) in the practice-based experience.

EQUITY NOTICING FRAMEWORK-A TOOL FOR MATHEMATICS TEACHER EDUCATORS

Christa Jackson, Iowa State University

Cynthia E. Taylor, Millersville University of Pennsylvania

Kelley Buchheister, University of Nebraska, Lincoln

In this session, we describe our conceptualization of the Equity Noticing Framework and engage participants in a discussion on how the framework may be used as a tool in their practice.

Session 75**Cave Creek***Professional Development
Individual Session***GOING BEYOND THE COMFORT ZONE: TRANSITIONING TO AMBITIOUS TEACHING PRACTICES THROUGH VIDEO PEER COACHING**

Laurie M. Capen, George Mason University

Sara Birkhead, George Mason University

Jennifer M. Suh, George Mason University

Interactive session demonstrating professional development model focused on peer video coaching. Case study vignettes encourage participants to consider the model to engage in reflective, ambitious teaching practices that engage students in rich mathematics tasks and promoting discourse in mathematical reasoning.

Session 76**Ahwatukee A****BRIEF REPORT SESSION: PERSPECTIVES OF MATHEMATICS****ELEMENTARY PROSPECTIVE TEACHERS' CONCEPTIONS OF THE NATURE OF MATHEMATICS**

Lucy Watson, Belmont University

I will discuss results from a project with elementary prospective teachers who were enrolled in content and methods courses and reflected on their understandings of and experiences with the nature of mathematics.

HISTORICAL MATHEMATICAL PROBLEMS AND PRESERVICE TEACHERS' METAPERSPECTIVES OF MATHEMATICS

Todd Abel, University of Central Arkansas

The report describes an exploratory study of changes in preservice teachers' metaperspectives of mathematics while engaging with historical mathematical problems. Analysis suggests some reevaluation of metaperspectives on mathematics as a discipline and the cultural-situatedness of mathematics.

RELATIONSHIPS BETWEEN FUTURE TEACHERS' PERCEPTIONS OF MATH AS A MALE DOMAIN, ANXIETY, CONFIDENCE, AND MATH USEFULNESS

John H. Lamb, The University of Texas, Tyler

This presentation will share survey data from over 50 graduates of a primarily female teacher preparation program. Relationships between mathematics being a male domain, mathematics anxiety, their confidence in mathematics, and their view of mathematics being a useful subject were analyzed.

Session 77**Ahwatukee B***Mathematics Content and Curriculum
Discussion Session***BUILDING MATHEMATICAL KNOWLEDGE IN OTHERWISE PEDAGOGICALLY-FOCUSED SECONDARY TEACHER PREPARATION PROGRAMS**

Christina Kimmerling, California State University, Long Beach

Joshua Chesler, California State University, Long Beach

Students of various mathematical backgrounds pursue mathematics credentials. Yet many teacher preparation programs afford limited opportunities to attend to preservice teachers' mathematical development. We will discuss strategies for focusing on mathematics, even if your program wasn't designed for it.

<p>Session 78 Laveen A <i>Teaching and Learning with Technology</i> <i>Individual Session</i></p> <p>THEORETICALLY FRAMING THE PEDAGOGY OF LEARNING TO TEACH MATHEMATICS WITH TECHNOLOGY</p> <p>Nina Gabrielle Bailey, University of North Carolina, Charlotte Allison McCulloch, University of North Carolina, Charlotte Charity Cayton, East Carolina University Samuel Douglas Reed, Middle Tennessee State University Kristen Fye, University of North Carolina, Charlotte</p> <p>We share the results of a survey about the frameworks used in courses related to learning to teach mathematics with technology. Participants will discuss ways that the field might move forward in further developing and utilizing frameworks to support this work.</p>	<p>Session 81 Maryvale A <i>AMTE 2020 Excellence in Scholarship Award</i></p> <p>TEACHER SUPPORT FOR ARGUMENTATION: AN EXAMINATION OF BELIEFS AND PRACTICE</p> <p>AnnaMarie Conner, University of Georgia</p> <p>Supporting students in making mathematical arguments is an important part of discourse practices in mathematics classrooms. This session explores teachers' argumentation practices and beliefs about mathematics, teaching, and proof, showing which beliefs are visible in their support for argumentation.</p>
<p>Session 79 Laveen B</p> <p>BRIEF REPORT SESSION: TEACHING GEOMETRY AND MEASUREMENT</p> <p>DESIGN OF A COHERENT UNIT FOR QUADRILATERALS</p> <p>Pavneet Kaur Bharaj, Indiana University, Bloomington</p> <p>Guided by the assertion that strong conceptual understanding of quadrilaterals is possible by engaging learners in tasks involving creating definitions, constructing shapes, and exploring hierarchical relationships; we will discuss a unit designed to ensure meaningful learning experiences for the learners.</p> <p>FUNKY PROTRACTORS: EXAMINING UNCONVENTIONAL ANGLE MEASUREMENT TOOLS TO SPARK CLASSROOM CONVERSATIONS</p> <p>Hamilton Hardison, Texas State University Hwa Young Lee, Texas State University</p> <p>Could this funky protractor be right? We present a task we designed to engage preservice teachers in conversations about whether particular (unconventional) tools are appropriate for measuring angles. We report on preservice teachers' engagement with the task to support MTEs subsequent implementations.</p> <p>SUPPORTING COHERENT MEANINGS AND REPRESENTATIONS OF GEOMETRIC (IN)CONGRUENCE</p> <p>Steven Boyce, Portland State University</p> <p>I will lead a discussion of two aspects of PTs' thinking about congruence that are problematic and encouraging in relation to their preparation for teaching the axiomatic approach advocated by the CCSS and MET II.</p>	<p>Session 82 Maryvale B <i>Mathematics Pedagogy</i> <i>Individual Session</i></p> <p>EXPLORING THE MATHEMATICAL IDENTITY OF PROSPECTIVE ELEMENTARY TEACHERS</p> <p>James Chris Willingham, James Madison University Jennifer Ruef, University of Oregon Shannon P Sweeny, Northern Arizona University</p> <p>We present an analysis of prospective elementary teachers' attitudes and beliefs towards success in mathematics, through the lens of their vision of mathematics, perceived competence in mathematics, and emotional disposition towards mathematics first developed by Di Martino and Zan (2010).</p> <p>Session 83 Encanto A <i>Practice-Based Experiences for Prospective Teachers</i> <i>Discussion Session</i></p> <p>STEERING INTO THE STORM: CONFRONTING CLASSROOM REALITIES WITH PSTS TO ADDRESS ISSUES OF EQUITY</p> <p>Charlotte Dunlap Sharpe, Syracuse University Holly Henderson Pinter, Western Carolina University Melinda Knapp, Oregon State University, Cascades Dawn Woods, Oakland University Sara Rose Lynch, Westminster College Esther Marie Billings, Grand Valley State University</p> <p>What happens when MTEs steer into the storms preservice teachers usually navigate alone? Mediated Field Experiences (MFEs) position MTEs to join with preservice teachers in the authentic and worthwhile challenges of providing ambitious and equitable mathematics instruction to K-12 students.</p>
<p>Session 80 Estrella <i>Mathematics Content and Curriculum</i> <i>Discussion Session</i></p> <p>MATH WORK STATION PROJECT: SUPPORTING PRESERVICE TEACHERS TO NOTICE AND ANALYZE MATHEMATICAL THINKING IN PHOTOGRAPHS</p> <p>Sarah A. Roller, The University of Alabama in Huntsville Katherine Ariemma Marin, Stonehill College</p> <p>We share an assignment designed to assess preservice teachers' abilities to attend, interpret, and respond to students' mathematical thinking through the use of photographs. Results indicate preservice teachers' photographs focused on mathematics, but demonstrated strengths and weaknesses in learning progression use.</p>	<p>Session 84 Phoenix A <i>Equity, Social Justice, and Mathematics Teacher Education</i> <i>Individual Session</i></p> <p>IS IT CULTURALLY RELEVANT OR JUST PLAIN RACIST? EXAMINING MATHEMATICS HOMEWORK EXAMPLES IN MAINSTREAM MEDIA</p> <p>Marrielle Myers, Kennesaw State University</p> <p>After engaging in a summer book club focused on equity, culturally relevant pedagogy, and teaching mathematics for social justice, I asked preservice teachers to comment on and critique mathematical tasks from mainstream media. Examples and implications for practice are shared.</p>

Session 85 <i>Collaborations and Partnerships</i> <i>Symposium</i> COLLABORATING TO IMPROVE CLINICAL EXPERIENCES FOR SECONDARY MATHEMATICS TEACHER CANDIDATES Marilyn E. Strutchens, Auburn University Ruthmae Sears, University of South Florida Jeremy Zerkowski, The University of Alabama Charmaine Mangram, University of Hawaii Basil Conway, Columbus State University Clinical Experiences Research Action Cluster members of the Mathematics Teacher Education Partnership will present work related to early field and student teaching experiences of secondary teacher candidates. After presentations, panelists and participants will converse in small groups about clinical experiences.	Phoenix B	Session 86 <i>Committee Meetings</i> COMMUNITY, ADVOCACY, AND MATHEMATICS EDUCATION AMTE Emerging Issues Committee Engage with Advocacy Breakfast panelists to learn more about issues raised at the breakfast, including how to keep engaged in advocacy with teachers and communities. We will also share resources for doing this work so you can get started!	Phoenix E
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FRIDAY, FEBRUARY 7, 2020

8:00 AM - 10:00 AM

Session 87 <i>Equity, Social Justice, and Mathematics Teacher Education</i> <i>Extended Session</i> TEACHER AND STUDENT ANGLES: BUILDING A CRITICAL MATHEMATICS VIDEO REPOSITORY Teresa K. Dunleavy, Vanderbilt University Mary Candace Raygoza, Saint Mary's College of California Naomi Jessup, Georgia State University Cathery Yeh, Chapman University Gladys Krause, William and Mary Calls for the use of video for professional practice are prolific. However, calls for the use of video that features critical mathematics are notably absent. We seek to grow a video repository of classrooms highlighting and leveraging critical mathematics practices.	South Mountain
Session 88 <i>Professional Development</i> <i>Extended Session</i> USING THE PROCESS WRITING MODEL AS A TOOL FOR MATHEMATICS TEACHER PROFESSIONAL DEVELOPMENT V. Rani Satyam, Virginia Commonwealth University In this workshop, we will introduce participants to the process writing model, engage participants in writing and sharing their own teacher narrative, and talk about how to use the process writing model as a form of mathematics teacher professional development.	Encanto B

Session 89**Desert Sky**

Equity, Social Justice, and Mathematics Teacher Education
Individual Session

DEAR MATH... EXAMINING WOMEN'S SELF-IDENTIFIED CRITICAL EXPERIENCES IN MATHEMATICS

Claudia Marie Bertolone-Smith, California State University, Chico
 Beth L. MacDonald, Utah State University

This study investigated critical experiences in math learning from women preservice teachers. Participants wrote a letter to math and drew self-portraits of themselves learning math. Discussion will center on results and implications for mathematics education practices.

Session 90**Cave Creek**

Collaborations and Partnerships
Individual Session

PREPARING MATHEMATICS AND SPECIAL EDUCATION TEACHERS TO ENGAGE IN CONTENT-SPECIFIC CONSULTATIONS: RESEARCH ACROSS FOUR CONTINENTS

Sarah van Ingen, University of South Florida
 Samuel L. Eskelson, University of Northern Iowa

We report findings from an international team of teacher educators that developed a method of preparing mathematics and special education teachers to consult with each other to provide equitable instruction to students with special education needs in inclusive classrooms.

Session 91**Ahwatukee A**

BRIEF REPORT SESSION: RESEARCH IN TEACHER EDUCATION

TEACHER PLANNING PRACTICES: UNDERSTANDING U.S. TEACHERS' CONCEPTIONS ABOUT PLANNING

Matthew Melville, University of Delaware

A study was done to create a planning profile for U.S. teachers. This profile will allow for a comparison to Japanese teachers' planning practices. The resulting comparison will enable discussions about how to improve planning practices for U.S. teachers.

UNDERGRADUATE RESEARCH IN THE TEACHER PREPARATION PROGRAM: ANALYZING TWO MODELS

Laura Callis, Curry College
 Jennifer McNally, Curry College

Two mathematics teacher educators piloted two different models of engaging preservice teachers in teacher research to orient preservice teachers toward learner's mathematical thinking, apprentice them to the tools of teacher research, and address logistical challenges common in undergraduate research.

Session 92**Ahwatukee B**

Professional Development
Individual Session

SECOND WAVE CHALLENGES TO IMPROVING INSTRUCTION ACROSS A DISTRICT: PLATEAUS AND THREATS

Brian R. Lawler, Kennesaw State University
 Abi Leaf, Escondido Union High School District

We present a theory for changing instructional practices and beliefs that after six years, resulted in detracked course pathways and discourse-rich classrooms in one high school district. However, a plateau in teacher growth and new leadership present threats to sustaining improvement.

Session 93**Laveen A**

Teaching and Learning with Technology
Individual Session

THE ROLE OF VOICE THREAD IN SUPPORTING EFFECTIVE MATHEMATICAL DISCUSSIONS ONLINE

Chrystal Dean, Appalachian State University
 Tracy J. Goodson-Espy, Appalachian State University

This session describes backward design for teaching online (BD+); and examines use of Voice Thread to support mathematical discussions in a hybrid mathematics methods course for elementary teachers, and support statistical discussions within a doctoral research methods course.

Session 94**Laveen B**

Mathematics Pedagogy
Individual Session

LEARNING TO PLAN INSTRUCTIONAL UNITS: REEXAMINING THE GRAIN-SIZE IN TEACHER PREPARATION

Lorraine M. Males, University of Nebraska, Lincoln
 Orly Buchbinder, University of New Hampshire

Understanding by Design framework was used in two secondary methods courses in two universities to engage preservice teachers (n=64) in lesson and unit planning. Preliminary results suggest preservice teachers' increased confidence and understanding of big ideas, learning goals, and learning progressions.

<p>Session 95 Estrella</p> <p>BRIEF REPORT SESSION: DIFFERENTIATION OPPORTUNITIES TO LEARN ABOUT DIFFERENTIATION: A CASE OF ONE-ON-ONE COACHING</p> <p>Eythokia Stephanie Saclarides, The University of Alabama Kristin E. Harbour, University of South Carolina</p> <p>We explore one coach-teacher dyad's conversational learning opportunities about differentiation during a co-teaching cycle. Results indicate that even for this experienced teacher and coach who were committed to differentiating instruction, there are certain limitations that need to be overcome.</p> <p>PLANNING FOR DIFFERENTIATION OF INSTRUCTION AS A CORE PRACTICE SUPPORTING AMBITIOUS INSTRUCTION</p> <p>Leigh A. van den Kieboom, Marquette University</p> <p>This session will engage participants in conversations about planning for differentiation of instruction as a core practice supporting ambitious instruction. Research related to strategies preservice teachers used and the quality of preservice teacher planning for differentiation of will be presented.</p>	<p>Session 98 Encanto A</p> <p><i>AMTE Sponsor Session</i></p> <p>LEARN HOW TO INCORPORATE FREE PK–5 MATH CURRICULUM INTO YOUR COURSE</p> <p>Pamela Weber Harris, Texas State University</p> <p>The content of <i>Bridges in Mathematics</i> PK–5 from The Math Learning Center is available free to schools of education. Join Bridges author and university instructor Pam Harris to learn how this program can enhance your courses and field experiences for prospective and preservice teachers.</p>
<p>Session 96 Maryvale A</p> <p><i>Teaching and Learning with Technology</i> <i>Individual Session</i></p> <p>PRESERVICE TEACHERS' VIEWS OF MATHEMATICS INSTRUCTION MEDIATED BY IPADS</p> <p>Angela T. Barlow, University of Central Arkansas Victoria Groves-Scott, University of Central Arkansas</p> <p>Presenters will share the design of six video cases and the mobile-learning framework on which they were based. Preservice teachers' ideas surrounding the video cases will offer insight into preparing teachers to teach with technology.</p>	<p>Session 99 Phoenix A</p> <p><i>Practice-Based Experiences for Prospective Teachers</i> <i>Individual Session</i></p> <p>DEVELOPING PROSPECTIVE TEACHERS' ABILITY TO ENGAGE CHILDREN IN ARGUMENT IN AN ELEMENTARY METHODS COURSE</p> <p>Kate Kline, Western Michigan University</p> <p>We share practice-based activities along with a clinical experience from an elementary methods course used to develop prospective teachers' abilities to facilitate productive argumentation with children. How the clinical experience was linked to class activities will be highlighted.</p>
<p>Session 97 Maryvale B</p> <p><i>Equity, Social Justice, and Mathematics Teacher Education</i> <i>Discussion Session</i></p> <p>TOWARD AN ANTIRACIST MATHEMATICS TEACHER EDUCATOR PRACTICE: A REFLECTIVE RESOURCE</p> <p>Brent Jackson, Michigan State University Molade Osibodu, Michigan State University Sunghwan Byun, Michigan State University Beth Herbel Eisenmann, Michigan State University Missy Cosby, Michigan State University</p> <p>We share a reflective resource designed for use by mathematics teacher educators (MTEs) as they seek to move toward an antiracist pedagogy. The resource considers four domains of power (disciplinary, institutional, cultural, and intrapersonal) in which MTEs can practice antiracism.</p>	<p>Session 100 Phoenix B</p> <p><i>Mathematics Education Policy and Program Issues</i> <i>Individual Session</i></p> <p>ENGAGING ALUMNI: LINKING LONGITUDINAL RESEARCH TO PROGRAM EVALUATION AND INNOVATION</p> <p>Suzanne R. Harper, Miami University Dana C. Cox, Miami University</p> <p>We will focus on program evaluation and longitudinal research. Through the lens of a recent study on the impact of early-career experiences on beliefs about teaching with technology, we explore the obstacles to, methodologies, and limitations of conducting longitudinal research.</p> <p>Session 101 Phoenix E</p> <p><i>Mathematics Pedagogy</i> <i>Discussion Session</i></p> <p>BEGINNING TEACHERS' AMBITIOUS INSTRUCTION: PROMISING PRACTICES AND PLACES TO GROW</p> <p>Jillian M. Cavanna, University of Hartford Tutita M. Casa, University of Connecticut Holly Henderson Pinter, Western Carolina University</p> <p>What is ambitious mathematics instruction for first-year teachers? In this session, we share findings from video analyses of promising practices and challenges for beginning teachers. Participants will discuss ways to support their preservice teachers to develop future ambitious practices.</p>

Session 102

Desert Sky

*Professional Development
Symposium***SCALING PROFESSIONAL DEVELOPMENT PROGRAMS:
TRANSITIONING FROM FACE-TO-FACE TO ONLINE
ENVIRONMENTS**

Paola Sztajn, North Carolina State University
 Cynthia D. Carson, University of Rochester
 Angela Knotts, WestEd
 Cathy E. Carroll, WestEd
 Stephanie Martin, University of Rochester
 Reema Alnizami, North Carolina State University
 Nanette Seago, WestEd

Three face-to-face professional development projects that have shown significant positive impact on teachers discuss their work and design decisions in transitioning into online environments. One project has moved to asynchronous, one to synchronous, and one to hybrid online and face-to-face model.

Session 103

Cave Creek

*Mathematics Pedagogy
Symposium***INVESTIGATIONS INTO CONNECTIONS BETWEEN
TEACHERS' PROFESSIONAL NOTICING AND TEACHERS'
COGNITIVE RESOURCES: LOOKING BACK AND MOVING
FORWARD**

Raymond LaRochelle, University of Delaware
 Lara Dick, Bucknell University
 Lisa Skultety, University of Central Arkansas
 Jonathan Thomas, University of Kentucky

Professional noticing is an important but challenging expertise for teachers to develop. One way to better understand its development is by understanding what cognitive resources teachers utilize when "professionally noticing" a student's work, which is the goal of this symposium.

Session 104

Ahwatukee A

*Mathematics Education Policy and Program Issues
Symposium***QUANTITATIVE RESEARCH INSTRUMENTS RELEVANT TO
MATHEMATICS TEACHER EDUCATORS**

Erin Elizabeth Krupa, North Carolina State University
 Jonathan David Bostic, Bowling Green State University
 Laurie Cavey, Boise State University
 Leigh Harrell-Williams, University of Memphis
 Margret Hjalmarsen, George Mason University
 Temple A. Walkowiak, North Carolina State University

We will share five instruments developed for use by MTEs that focus on various outcomes related to the teaching and learning of mathematics. We will discuss the development and validation of the instruments and ways to inform MTEs' work.

Session 105

Ahwatukee B

*Mathematics Content and Curriculum
Symposium***FRAMING AND ASSESSING MATHEMATICAL KNOWLEDGE
FOR TEACHING PROOF**

Orly Buchbinder, University of New Hampshire
 Kristin Lesseig, Washington State University, Vancouver
 Michelle Cirillo, University of Delaware
 Alice Hempel, University of New Hampshire

We present, compare, and contrast three frameworks for Mathematical Knowledge for Teaching Proof (MKT-P). We will share measurement tools and data of secondary preservice and inservice teachers' MKT-P and discuss affordances and challenges of measuring this specialized teacher knowledge.

Session 106

Laveen A

*Development of Mathematics Teacher Educators
Symposium***LEVERAGING DIVERSE TOOLS TO MEASURE
COMPONENTS OF MATHEMATICALLY PRODUCTIVE
CLASSROOMS**

Erica G. Litke, University of Delaware
 Eva Thanheiser, Portland State University
 Ruth M. Heaton, Teachers Development Group
 Daniel Lee Reinholz, San Diego State University

We apply three observation tools to one focal lesson, considering what information they provide about mathematics teaching. We note how each contributes to understanding instruction and consider the relationship between goals, the information provided, and use by mathematics teacher educators.

Session 107

Laveen B

*Collaborations and Partnerships
Symposium***BRINGING TEACHER EDUCATION OUTDOORS**

Tracy Weston, Middlebury College
 Katherine Baker, Elon University

Teaching outdoors with nature-based pedagogies facilitates STEM literacy and environmental mindedness. We will present examples of supporting prospective and practicing teachers' outdoor teaching. Participants will discuss opportunities and challenges, and generate action steps to begin or improve outdoor teacher education.

Session 108

South Mountain

*2020 AMTE NTLI Award***LEVERAGING COMMUNITY FUNDS OF KNOWLEDGE TO
TEACH MATHEMATICS WITH TECHNOLOGY**

Frances K. Harper, University of Tennessee, Knoxville
 Nicholas Kim, University of Tennessee, Knoxville

This session explores how prospective elementary teachers learn to leverage both technological tools and community funds of knowledge for equitable mathematics learning. Session participants engage with prospective teachers' design, implementation, and reflection of STEM activities situated within students' local community.

Session 109 <i>Equity, Social Justice, and Mathematics Teacher Education Symposium</i> A MATHEMATICS SELECTIVE ALTERNATIVE TEACHER CERTIFICATION PROGRAM (ATCP) FOR URBAN SCHOOLS: TRAJECTORIES, PREPARATION, AND CONSEQUENCES Laurel Cooley, Brooklyn College, CUNY Andrew Brantlinger, University of Maryland Alicia Lochard, University of Pennsylvania Deena Khalil, Howard University Erika C. Bullock, University of Wisconsin, Madison We present quantitative (three surveys of ~620 ATCP math teachers) and qualitative (nine case studies) data from a ten-year study that examines interactions that predict teacher retention, illustrated with in-class observations and in-depth interviews of nine ATCP mathematics teachers.	Estrella
Session 110 <i>Professional Development Symposium</i> NEW DIRECTIONS FOR VIDEO-BASED PEDAGOGIES TO ENHANCE TEACHER NOTICING Elizabeth A. van Es, University of California, Irvine Tracy Dobie, University of Utah Presenters share how video has been situated in professional development to gain insight into and support teachers' noticing practices. We consider issues related to video capture and discuss variations in clip features for different uses of video.	Maryvale A
Session 111 <i>AMTE Committee Session</i> STRATEGIES FOR SUPPORTING TECHNOLOGY IN MATHEMATICS TEACHER EDUCATION AMTE Technology Committee In this session, the AMTE Technology Committee will address multiple topics relating to technology and mathematics teacher educators including online teaching, coding bots, digital equity, and an opportunity for members to exchange their own ideas about technology integration in their practice. In addition to an overview of challenges and topics for each of the strands, participants will have an opportunity to engage more deeply with topics of their choosing during breakouts within the session.	Maryvale B
Session 112 <i>Equity, Social Justice, and Mathematics Teacher Education Discussion Session</i> NATIONAL SCIENCE FOUNDATION PROPOSALS FOR EQUITY, DIVERSITY, AND INCLUSION IN MATHEMATICS TEACHER EDUCATION Sandra Richardson, National Science Foundation This session will allow attendees to gain insight into the policies and research considerations of NSF in supporting research on equity, diversity, and inclusion in mathematics teacher education.	Encanto A
Session 113 <i>AMTE Committee Session</i> PUBLISHING YOUR SCHOLARLY WORK IN AN AMTE PUBLICATION: OPPORTUNITIES EXPLORED AND QUESTIONS ANSWERED AMTE Publications Division This session includes editors from AMTE's publications: <i>Mathematics Teacher Educator</i> , <i>Contemporary Issues in Technology and Teacher Education-Math, Connections</i> , and book series. Focus will be on clarification of expectations, differences among venues, and breakout time for individual questions and feedback.	Encanto B
Session 114 <i>Mathematics Content and Curriculum Symposium</i> MATHEMATICAL MODELING IN K-12 MATHEMATICS TEACHER PREPARATION Julia Aguirre, University of Washington, Tacoma Erin E. Turner, The University of Arizona In this multifaceted symposium, four mathematics teacher educators discuss concrete strategies and theoretical frameworks for integrating mathematical modeling in methods and content courses for K-12 teachers. Participants will increase their understanding of how modeling contributes to equitable mathematics instruction.	Phoenix A
Session 115 <i>AMTE Committee Session</i> I AM NEW TO MATHEMATICS TEACHER EDUCATION: REALITIES OF TEACHING, SCHOLARSHIP, AND SERVICE AMTE Professional Development Committee This session is designed to provide opportunity for novice mathematics teacher educators to interact with experienced mathematics teacher educators. The roundtable structure of the session allows small groups to discuss topics of interest around research, teaching, and service.	Phoenix B
Session 116 <i>Mathematics Content and Curriculum Symposium</i> TASKS FOR TEACHERS: APPROACHES TO THE DESIGN OF TASKS FOR PRESERVICE AND INSERVICE LEARNERS Chandra Orrill, University of Massachusetts, Dartmouth Dana Olanoff, Widener University Melissa Boston, Duquesne University Rachael E. Brown, Pennsylvania State University, Abington Jennifer M. Tobias, Illinois State University Neet Priya Bajwa, Illinois State University Eva Thanheiser, Portland State University Rachael M. Welder, Texas A&M University Amber Grace Candela, University of Missouri, St. Louis How can we create mathematical experiences that engage preservice or inservice teachers to develop new understandings about mathematics they may already know? In this session, we look across three existing efforts to design such tasks.	Phoenix E

**LUNCH**

AMTE provides a buffet lunch in Phoenix C. Please join your colleagues for lunch and good conversation in advance of the Poster Session and other afternoon sessions.

PHOENIX C**POSTER SESSION**

Join us for the 5th Annual AMTE Poster Session. The Poster Session is intended to facilitate sharing information and research through a visual display of material. This session allows an opportunity for informal discussions and interactions between the presenter(s) and the audience. Please note the set-up, viewing, and take-down times outlined below.

9:00 AM – 11:00 AM

11:00 AM – 1:00 PM

1:00 PM – 2:00 PM

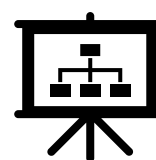
2:00 PM – 2:30 PM

Presenters set up posters

Posters available for viewing

Poster presentations

Presenters remove posters

PHOENIX D

Session 117

Phoenix D

POSTER SESSION

A1. AN INTEGRATED, IMMERSIVE SUMMER PROGRAM IN MATHEMATICS PEDAGOGY FOR UNDERGRADUATES

Charles Steinhorn, Vassar College

Victor Donnay, Bryn Mawr College

Ellyn Rose Goldberg, The University of Texas, Austin

The Teaching Experiences for Undergraduates (TEU) Program is an innovative summer program for undergraduate STEM majors integrating a STEM pedagogy course and teaching practicum. We describe TEU, present evaluation and research findings, and discuss TEU's potential as a scalable model.

A2. CHANGING THE MATHEMATICS CURRICULAR NARRATIVE TO REFLECT TRANSGENDER AND GENDER NON-CONFORMING STUDENTS' IDENTITIES AND EXPERIENCES

Joseph Antonides, The Ohio State University

Our goal is to share practical recommendations for teachers and teacher educators based on findings of current research on gender-complex education: that is, education acknowledging and valorizing the existence and experiences of transgender and gender non-conforming students.

A3. ENHANCING PROSPECTIVE TEACHERS' EXPERIENCES REGARDING THE PROGRESSION & COHERENCE OF TOPICS IN MATHEMATICS EDUCATION CONTENT COURSES

Shahabeddin Abbaspour Tazehkand, University of Central Florida

Farshid Safi, University of Central Florida

The focus is on the role of mathematics content classes in teacher preparation programs on prospective mathematics teachers' experiences across a progression of mathematical topics, ways these classes address the coherence of mathematical topics, and such experiences impact the preservice teachers' impressions.

A4. EQUITABLE MATHEMATICS CLASSROOM DISCOURSE

Liza Bondurant, Delta State University

This poster will focus on lessons learned from a self-study on equitable mathematics classroom discourse. The background, purpose, methodology, and findings will be shared. Transformations in the author's goals, definition of equity, and practice will be presented.

A5. EQUITY ISSUES IN ESTABLISHING SOCIOMATHEMATICAL NORMS OF MATHEMATICAL LANGUAGE

Hochieh Lin, The Ohio State University

This qualitative study investigated equity issues that emerge as a class is establishing sociomathematical norms of mathematical language. The findings highlighted how a teacher attended to students' unique identities and dealt with their questions to achieve equitable teaching practices.

A6. EXAMINING PRESERVICE TEACHERS' THEORIES OF INTELLIGENCE RELATED TO MATHEMATICS: IMPLICATIONS FOR EQUITY

Melissa Warner Hale, Michigan State University

This session examines findings about preservice teachers' beliefs about intelligence, in relationship to their mathematics experiences and backgrounds. Preservice teachers' beliefs about intelligence are more nuanced than indicated by survey measures of growth and fixed theories of intelligence.

A7. EXPLORING APPROACHES TO SUPPORT EQUITABLE MATHEMATICS INSTRUCTION

Brian Bowen, West Chester University

This exploratory study examines the perceptions of and practices of K-8 teachers and administrators related to supporting an equitable mathematics classroom.

A8. FROM KINDERGARTEN TO COLLEGE: CONNECTING FIELDWORK AND METHODS CLASSES IN TEACHING MATHEMATICS

Lakesia L. Dupree, University of South Florida

This poster will illustrate a contextual based kindergarten mathematics lesson created by a teacher candidate that was subsequently enacted in a mathematics methods classroom. It will highlight the lessons learned about the development of teacher candidates' mathematical equitable pedagogical practices.

B9. INTEGRATING CHILDREN'S LITERATURE IN ELEMENTARY MATH METHODS: FOSTERING UNDERSTANDINGS AND CONNECTIONS

Dittika Gupta, Midwestern State University

This poster shares results and implications of a qualitative research study examining change in attitudes and perceptions of preservice teachers towards integrating children's literature in elementary mathematics methods. Intervention used provides an integration model for developing connections for preservice teachers.

B10. INTRODUCING TEACHER CANDIDATES TO A PROFESSIONAL NETWORK: DIVERSE CONFERENCE EXPERIENCES

Katherine Ariemma Marin, Stonehill College

Sarah A. Roller, The University of Alabama in Huntsville

We will share how we engaged preservice teachers with conferences during coursework, including our virtual conference assignment and data evaluating the conference experience for preservice teachers. Results indicate conference experiences influenced preservice teachers' thinking about attending conferences and joining professional organizations.

B11. LAUNCH REHEARSALS AS A PLANNING TOOL IN SECONDARY MATHEMATICS TEACHER PREPARATION

Rob Matyska, Indiana University

This study targets one approximation of practice in preservice teacher education, the rehearsal—a robust pedagogy supporting novice teacher learning and practice. This poster presents findings from a semester-long methods block taken by undergraduate students in an initial-licensure program.

B12. LEARN ABOUT THE AMTE STAR PROGRAM

AMTE STaR Program Committee

If you are a doctoral student or in your first year of a tenure track position, come learn about the AMTE Service, Teaching, and Research (STaR) program. STaR is an early-career induction program for faculty in the first or second year of their position.

B13. MAKING SENSE OF MATHEMATICAL ARGUMENTATION IN THE CONTEXT OF ELEMENTARY SCHOOL MATHEMATICS: PRE-SERVICE TEACHERS' INTERPRETATIONS

Marta T. Magiera, Marquette University
Hyejin Park, Marquette University

We discuss how elementary preservice teachers make sense of mathematical argumentation. We share how they define mathematical argumentation and how they make meanings of mathematical argumentation as a pedagogical tool in teaching elementary school mathematics.

B14. MEDIATED FIELD EXPERIENCE STRUCTURES FOR DUAL EARLY CHILDHOOD AND SPECIAL EDUCATION MAJORS

Sararose Lynch, Westminster College

This poster will share a variety of structures for Mediated Field Experiences (MFEs) in both mathematics methods and special education courses for dual majors. Research, grounded in AMTE's Standards, on preservice teachers' experiences and instructional decisions will be shared.

B15. PRESERVICE TEACHERS' EXPERIENCES WITH MATHEMATICAL MODELING ACTIVITIES

Young Rae Kim, Texas A&M University, San Antonio
Hartono Tjoe, Pennsylvania State University, Berks

The purpose of this study is to investigate preservice teachers' experiences in modeling activities. We are interested in examining the extent to which model-eliciting activities might facilitate transfer knowledge from mathematics content knowledge to mathematics pedagogical and instructional practice knowledge.

B16. PRESERVICE TEACHERS' SOLVING OF AN OPEN-ENDED TRIGONOMETRY PROBLEM

Kristi R. Martin, North Carolina State University

Research shows trigonometry is difficult for preservice teachers. This research examines how seven preservice teachers solve a single open-ended trigonometry problem.

C17. PROSPECTIVE TEACHERS' BELIEFS AND MATHEMATICAL KNOWLEDGE FOR TEACHING

Nesrin Sahin, University of Central Arkansas

This longitudinal study investigates the changes in prospective teachers (PTs) beliefs and mathematical knowledge for teaching (MKT) as they take three math content/methods courses during their teacher education program as well as the relationship between PTs' beliefs and MKT

C18. REIMAGINING PARTNERSHIPS WITH SCHOOL DISTRICTS: TEACHER EDUCATORS' ROLES IN SUPPORTING AMBITIOUS AND EQUITABLE MATHEMATICS TEACHING

Courtney Flessner, Indiana University
Ryan Flessner, Butler University

Ambitious and equitable mathematics teaching requires buy-in at the classroom, school, and district level. This poster highlights our partnership with one school district's Mathematics Leadership Team as they collaborated to create a district implementation plan to improve elementary mathematics instruction.

C19. TEACHER CANDIDATES' ADAPTIVE EXPERTISE IN MATHEMATICS TEACHING AS DEMONSTRATED IN TEACHER CANDIDATE ASSESSMENT OF PERFORMANCE

Diana Sherman, Saint Anselm College

Case study analysis of 31 teacher candidates' work on a comprehensive performance assessment of learning to teach elementary mathematics reveals the positive impact of specific interventions (course sessions and materials) on candidates' development of the practice of eliciting student thinking.

C20. TEACHING INQUIRY-BASED MATHEMATICS: TOWARD A LEARNING TRAJECTORY TO GUIDE MATHEMATICS TEACHER-EDUCATOR PRACTICE IN THE METHODS COURSE

Barbara Kinach, Arizona State University

The intent of this project was to develop a model learning trajectory to guide mathematics teacher educator (MTE) practice related to the development of preservice teachers' inquiry-based mathematics teaching practice in the mathematics methods course.

C21. THE CONCEPTUAL HEART OF A LESSON: THE IMPACT OF TEACHER PRACTICES IN AN ELEMENTARY ALGEBRA LESSON

Ingrid G. Ristroph, The University of Texas, Austin
Karisma Morton, University of North Texas

This study is an examination of how teacher practices support their students' conceptual understanding. An analysis of the teacher's use of visualization, productive struggle, and explicit attention to concept is made for 19 observations of the same early algebra lesson.

C22. USING MIXED-REALITY SIMULATIONS WITH PRESERVICE TEACHERS IN A MATHEMATICS METHODS COURSE: PRELIMINARY STUDY OF PERCEPTIONS

Jair J. Aguilar, The University of Texas, Rio Grande Valley
James Anthony Telese, The University of Texas, Rio Grande Valley

The poster presented here depicts preliminary results of an ongoing study of perceptions of preservice elementary mathematics teachers when exposed to the use of Mixed-Reality Simulations in a mathematics methods course.

C23. VISUALIZATION AND VERBALIZATION IN GROUP COMMUNICATION DURING A VECTOR CALCULUS TASK

Tasnim Alshuli, The University of Arizona
Marcy B. Wood, The University of Arizona

This poster explores how students' mathematical talk shifted as they made sense of a task involving a gradient field. As the students discussed what mathematical objects told them (rather than what they saw), their talk became more mathematically desirable.

OVERVIEW OF FRIDAY AFTERNOON, FEBRUARY 7, 2020

	2:15 PM - 3:00 PM	3:30 PM - 4:30 PM
Desert Sky	118. <i>Designing Statistics Preparation for Preservice Elementary Teachers</i> - Naresh, Prasad, & Vallines Mira	133. <i>Brief Report Session: Teacher Noticing</i> - Fisher, Thomas, & Schack; Rassi & Barker; White & Lawler
Cave Creek	119. <i>Brief Report Session: Online Professional Development</i> - Gordon & Dula; Dobie	134. <i>Supporting Prospective Teachers' Conceptions of Fractions as Measures in an Online Environment</i> - MacDonald, Moss, Boyce, & Bertolone-Smith
Ahwatukee A	120. <i>Brief Report Session: Lesson Study</i> - Kasten & Noblitt; Koester	135. <i>Brief Report Session: Number Talks</i> - Wohlhuter & Swarthout; Kirschner & Baker
Ahwatukee B	121. <i>Investigating Teachers' Practice of Anticipating</i> - Wilson & Wonsavage	136. <i>Professional Noticing of Coaches and Teachers using Video Annotations</i> - Amador, Gillespie, & Carson
Laveen A	122. <i>Statistics Topics to Be Taught by K-12 Teachers so Students Are Prepared for College</i> - Kozak	137. <i>Secondary Math Program Design Effects on edTPA/Praxis2 Exams - A Multi-year Longitudinal Study</i> - Zelkowski
Laveen B	123. <i>Using Regular and Constructive Feedback to Support Teacher Candidate Learning and Growth</i> - Kulow & Rigelman	138. <i>Examining Instructional Activities Used in Practice-Embedded Learning Experiences that Support Student and Educator Learning</i> - Knapp & Gibbons
South Mountain	124. <i>Brief Report Session: State Standards and Teacher Preparation</i> - McMahon & Krebs; Grant & Kline	139. <i>Addressing the SPMTs: Critical Conversations about Preparing Mathematics Teachers to Utilize Technology in Their Instruction</i> - McCulloch, Leatham, Bailey, & Reed
Estrella	125. <i>Catalyzing Change: Initiating Critical Conversations in Mathematics Teaching and Learning</i> - Berry	140. <i>Using Curriculum to Move Teachers' Curricular Reasoning from Sequencing to Learning Trajectories</i> - Teuscher, Dingman, & Shulman
Maryvale A	126. <i>"A Coming of Age Story for the Diagonals": Mathematics Teacher Learning via Collaborative Lesson Design</i> - Riling & Starks	141. <i>Brief Report Session: Equity and Social Justice in Mathematics Teacher Education 2</i> - Neil & Hummel; Sanchez, Edwards, & Glassmeyer; Warburton
Maryvale B	127. <i>Using Self-Directed Learning to Engage with Culture and Funds of Knowledge</i> - Molitoris Miller	142. <i>Examining Prospective Secondary Mathematics Teachers' Noticing on Two Tasks</i> - Chandler
Encanto A	128. <i>Developing Pre-Service Teachers' Understanding of Mathematical Mindsets: Influences of an Online Gamification Tool</i> - Layton	143. <i>Developing Mathematics Teachers' Political Knowledge for Teaching: The Remix</i> - Gutierrez, Kokka, & Myers
Encanto B	129. <i>Which is the Tool? Elementary Teacher Candidates' Analysis of Instruction in STEM Experiences</i> - Burton	144. <i>Real-Time Coaching During Secondary PSTs' Teaching Episodes: The Practices of Mathematics Teacher Educators</i> - Arbaugh, Cirillo, LaRochelle, & Do
Phoenix A	130. <i>LGBTQQ+ Responsive Mathematics Teacher Education: Comparing Experiences Across Contexts</i> - Dubbs, Koestler, & Whipple	145. <i>Implementing a High-cognitive Demand Task: Prospective Teachers' Generated Task Dialogues</i> - Foster
Phoenix B	131. <i>Supporting Teachers' Understanding of Learning Trajectories with Data-Driven PD</i> - Shah	146. <i>Preservice Teachers' Design of Technology-Enhanced Statistical Tasks</i> - Hudson, Casey, Barker, & Harrison
Phoenix D		147. <i>Achieving "Strategic Outcomes" through Discrete Mathematics: Developing Content Knowledge, Designing Curriculum, and Addressing Equity Issues</i> - Gatz, Tillema, & Burch
Phoenix E	132. <i>Examining Preservice Teachers' Beginning Practices of Integrating the Standards for Mathematical Practices with Content Standards</i> - Gichobi	148. <i>A Community-Engaged Approach to Advance Teacher Noticing for Equity</i> - van Es

Session 118**Desert Sky***Mathematics Content and Curriculum
Individual Session***DESIGNING STATISTICS PREPARATION FOR PRESERVICE ELEMENTARY TEACHERS**

Nirmala Naresh, University of North Texas

Priya Vinata Prasad, The University of Texas, San Antonio

Raquel Vallines Mira, The University of Texas, San Antonio

We share key aspects of a statistics project for elementary preservice teachers designed using the Continuous Improvement iterative task design framework. We engaged preservice teachers in the four-step statistical problem-solving process using data from the U.S. Census at School project.

Session 119**Cave Creek****BRIEF REPORT SESSION: ONLINE PROFESSIONAL DEVELOPMENT****MATHEMATICS IMMERSION PROFESSIONAL DEVELOPMENT IN AN ONLINE CLASSROOM WITH IN-PERSON SCHOOL GROUPS: RESEARCH RESULTS**

Evelyn M. Gordon, Horizon Research, Inc.

Jessica Dula, Horizon Research, Inc.

Teacher groups engaged in synchronous online sessions designed to enact mathematics immersion. Findings from quasi-experimental research address the success of enactments in promoting immersion and impacts on teachers' mathematical habits of mind, beliefs about teaching and learning, and classroom practice.

SUPPORTING PRODUCTIVE TEACHER DISCOURSE IN ONLINE PROFESSIONAL DEVELOPMENT

Tracy Dobie, University of Utah

Presenters share analyses of teachers' conversation patterns in online professional development courses. We explore how using the sentence stems "I notice" and "I wonder" shifted discourse, considering affordances of stems for developing productive discourse norms in online teacher learning communities.

Session 120**Ahwatukee A****BRIEF REPORT SESSION: LESSON STUDY****PROSPECTIVE TEACHERS LEARNING TO USE REAL-WORLD CONTEXTS IN A LESSON STUDY**

Sarah Kasten, Northern Kentucky University

Bethany Noblitt, Northern Kentucky University

To understand the struggles of PTs attempting to incorporate real-world contexts into lessons, we conducted a case study of a two-cycle lesson study in a middle grades mathematics methods course. The result was a classification of ways PTs use contexts.

WHAT DO SECONDARY MATHEMATICS PRESERVICE TEACHERS LEARN DURING LESSON STUDY CYCLES?

Mark Koester, Metropolitan State University of Denver

We will share and discuss our methodology and research findings of a study with eight secondary mathematics preservice teachers who participated in Lesson Study during their Fall 2018 semester of student teaching.

Session 121**Ahwatukee B***Mathematics Pedagogy
Individual Session***INVESTIGATING TEACHERS' PRACTICE OF ANTICIPATING**

Holt Wilson, University of North Carolina, Greensboro

F. Paul Wonsavage, University of North Carolina, Greensboro

In this session, we share progress in developing a coding scheme for investigating secondary mathematics teachers' practices of anticipating students' mathematical approaches to cognitively demanding tasks in multiple domains of mathematics.

Session 122**Laveen A***AMATYC President Exchange Session***STATISTICS TOPICS TO BE TAUGHT BY K-12 TEACHERS SO STUDENTS ARE PREPARED FOR COLLEGE**

Kathryn Kozak, AMATYC

Statistics is a growing field in today's workforce. Thus, it is necessary to introduce statistics in K-12. This presentation will describe the skills teachers need to introduce basic statistics in a K-12 environment and will include some useful technology.

Session 123**Laveen B***Practice-Based Experiences for Prospective Teachers
Individual Session***USING REGULAR AND CONSTRUCTIVE FEEDBACK TO SUPPORT TEACHER CANDIDATE LEARNING AND GROWTH**

Torrey Kulow, Portland State University

Nicole Rigelman, Portland State University

Participants discuss the supports mentor teachers and university supervisors need to provide "regular" and "constructive" feedback to teacher candidates through learning about a recent study on mentor teacher feedback and a Field Evaluation Tool used in one teacher education program.

Session 124**South Mountain****BRIEF REPORT SESSION: STATE STANDARDS AND TEACHER PREPARATION****CAN STATE MATHEMATICS TEACHER PREPARATION STANDARDS DRIVE REFORM? ONE STATE'S EXPERIENCES IN DEVELOPING CUTTING EDGE STANDARDS**

Darcy McMahon, Michigan Department of Education

Angela Krebs, University of Michigan, Dearborn

Recently, Michigan developed new Mathematics Teacher Preparation Standards with the AMTE's SPTM as a primary source. They are integrated across three areas: pedagogy, content, and dispositions. This session will share the development process and the potential impact for reform.

REDESIGNING AN ELEMENTARY EDUCATION PROGRAM IN RESPONSE TO STATE STANDARDS

Theresa Jean Grant, Western Michigan University

Kate Kline, Western Michigan University

We will discuss the ways in which we are using new state standards as an opportunity to create a new sequence of courses for prospective elementary teachers. These courses will integrate both practice-based experiences and scaffolded clinical experiences throughout.

Session 125 Estrella
NCTM President Exchange Session

CATALYZING CHANGE: INITIATING CRITICAL CONVERSATIONS IN MATHEMATICS TEACHING AND LEARNING

Robert Berry, National Council of Teachers of Mathematics & University of Virginia

The National Council of Teachers of Mathematics formed three writing teams at the early childhood/elementary, middle school, and high school levels with the intent to initiate the critical conversations needed to address issues in school mathematics. The *Catalyzing Change* series focuses on recommendations in school mathematics with the purpose of initiating critical conversations for improving mathematics teaching and learning in school mathematics. This talk is intended to initiate critical conversations based on the key recommendations from the *Catalyzing Change* series.

Session 126 Maryvale A
Collaborations and Partnerships
Individual Session

"A COMING OF AGE STORY FOR THE DIAGONALS": MATHEMATICS TEACHER LEARNING VIA COLLABORATIVE LESSON DESIGN

Meghan Riling, Boston University
Rachel Starks, Boston University

Through describing meetings in which teachers and researchers designed a high school geometry lesson, we explain how both collaboration and the concept of mathematical stories supported practicing teachers' lesson design and opportunity to learn about enacting aesthetically engaging lessons.

Session 127 Maryvale B
Mathematics Content and Curriculum
Individual Session

USING SELF-DIRECTED LEARNING TO ENGAGE WITH CULTURE AND FUNDS OF KNOWLEDGE

Susanna Molitoris Miller, Kennesaw State University

Self-directed learning activities provide opportunities for preservice teachers to engage with ideas related to their culture and building on their own funds of mathematical knowledge, by exploring ways they and their peers implicitly and explicitly use mathematics in their lives.

Session 128 Encanto A
Mathematics Pedagogy
Individual Session

DEVELOPING PRE-SERVICE TEACHERS' UNDERSTANDING OF MATHEMATICAL MINDSETS: INFLUENCES OF AN ONLINE GAMIFICATION TOOL

Rebecca Doty Layton, University of Tennessee, Knoxville

This session presents findings of a study examining how preservice teachers' understandings of mathematical mindsets are influenced by using an online gamification tool. Aspects of the online gamification tool that preservice teachers perceived as benefiting and limiting their learning will be discussed.

Session 129 Encanto B
Practice-Based Experiences for Prospective Teachers
Individual Session

WHICH IS THE TOOL? ELEMENTARY TEACHER CANDIDATES' ANALYSIS OF INSTRUCTION IN STEM EXPERIENCES

Megan Burton, Auburn University

Preservice teachers experience challenges and wonderings when planning STEM lessons with intentional focus on mathematics learning as opposed to being a tool for other content. Explore ways to support preservice teachers' STEM lesson planning that advances student learning in mathematics.

Session 130 Phoenix A
Equity, Social Justice, and Mathematics Teacher Education
Individual Session

LGBTQQ+ RESPONSIVE MATHEMATICS TEACHER EDUCATION: COMPARING EXPERIENCES ACROSS CONTEXTS

Christopher Dubbs, Michigan State University
Courtney Koestler, Ohio University
Kyle S. Whipple, University of Wisconsin, Eau Claire

We present a study of prospective teachers reading brief vignettes about LGBTQQ+ people in mathematics education settings, discussing how they might respond, and performing role plays for their peers. We share findings and describe similarities and differences among three institutions.

Session 131 Phoenix B
Professional Development
Individual Session

SUPPORTING TEACHERS' UNDERSTANDING OF LEARNING TRAJECTORIES WITH DATA-DRIVEN PD

Meetal Shah, North Carolina State University

Come see what we've learned from our partnering teachers about their needs for effective data-driven professional development and support around Learning Trajectories (LTs). You will have an opportunity to analyze sample diagnostic assessment data, test items, and their related LTs.

Session 132 Phoenix E
Mathematics Content and Curriculum
Discussion Session

EXAMINING PRESERVICE TEACHERS' BEGINNING PRACTICES OF INTEGRATING THE STANDARDS FOR MATHEMATICAL PRACTICE WITH CONTENT STANDARDS

Mary N. Gichobi, University of Wisconsin, Green Bay

This session will discuss activities used in an integrated mathematics content and methods course and explicate the extent to which the activities developed preservice teachers' practices of integrating SMPs and content standards. Please join us for a productive learning opportunity!

**FRIDAY AFTERNOON BREAK****PHOENIX BALLROOM FOYER
& ENCANTO FOYER**

This is a great time to stretch, network with colleagues, and visit the exhibitors.

**Session 133****Desert Sky****BRIEF REPORT SESSION: TEACHER NOTICING****MATHEMATICAL TEACHER DECISIONS: THE ANALYTICAL LENS MATTERS**

Molly Fisher, University of Kentucky
Jonathan Thomas, University of Kentucky
Edna O'Brien Schack, Morehead State University

We analyze the deciding component of professional noticing of elementary preservice teachers. In order to gauge whether decisions are productive, the SMP's and MTP's are used as a new coding guide and results are compared to previous research in this area.

OPPORTUNITIES TO NOTICE AND TEACHER NOTICING

Darl Rassi, Olivet Nazarene University
David D. Barker, Illinois State University

Teacher noticing of student mathematical thinking is an essential, yet complex, phenomenon. This study compared secondary preservice teachers' reports of their noticing to their actual lesson videos to identify three types of noticing: actual, dismissed, and phantom.

PRESERVICE TEACHERS' NOTICING OF MIDDLE SCHOOL STUDENTS' MATHEMATICAL STRENGTHS

Dorothy Y. White, University of Georgia
Brian R. Lawler, Kennesaw State University

We report our efforts to develop asset-based pedagogical orientations in preservice teachers. In this session, we describe the ways in which preservice teachers identify and attend to middle school students' mathematical strengths during the implementation of a group-worthy task.

Session 134**Cave Creek**

*Mathematics Content and Curriculum
Individual Session*

SUPPORTING PROSPECTIVE TEACHERS' CONCEPTIONS OF FRACTIONS AS MEASURES IN AN ONLINE ENVIRONMENT

Beth L. MacDonald, Utah State University
Diana L. Moss, Utah State University
Steven Boyce, Portland State University
Claudia Marie Bertolone-Smith, California State University, Chico

We present an instructional sequence in an online mathematics methods course for supporting prospective teachers' (PTs) construction of fractions as measures. We explore PTs' fractions reasoning with the goal of informing modifications in the course to support measurement conceptions.

Session 135**Ahwatukee A****BRIEF REPORT SESSION: NUMBER TALKS****LESSONS LEARNED THROUGH INSTRUCTIONAL USE OF NUMBER TALKS FOR DEVELOPING NUMBER SENSE**

Kay A. Wohlhuter, University of Minnesota, Duluth
Mary B. Swarthout, Sam Houston State University

Two educators will share the process and research results from their collaborative study that examined the instructional use of Number Talks with preservice teachers across the early childhood to secondary spectrum.

USING NUMBER TALKS TO EXPLORE PRESERVICE TEACHERS' MATHEMATICAL KNOWLEDGE FOR TEACHING

Sara Kirschner, George Mason University
Courtney Baker, George Mason University

We explored the use of number talks in a methods course to probe and extend preservice elementary teachers' knowledge of fractions concepts. We found that number talks revealed preservice teacher's misconceptions and allowed them to experience new ways of conceptualizing fractions.

Session 136 **Ahwatukee B**
Teaching and Learning with Technology
Individual Session

PROFESSIONAL NOTICING OF COACHES AND TEACHERS USING VIDEO ANNOTATIONS

Julie Amador, University of Idaho
Ryan Gillespie, University of Idaho
Cynthia D. Carson, University of Rochester

We will describe our online coaching model that integrates video and annotations and will share research findings about the professional noticing of coaches and teachers. Attendees will engage with video annotations and how the process relates to teacher noticing.

Session 137 **Laveen A**
Mathematics Education Policy and Program Issues
Individual Session

SECONDARY MATH PROGRAM DESIGN EFFECTS ON EDTPA/PRAXIS2 EXAMS - A MULTI-YEAR LONGITUDINAL STUDY

Jeremy Zekowski, The University of Alabama

Empirical findings of a six-year, five-cohort, structural equation modeling path-analysis study of the direct/indirect effect sizes of capstone math courses, sequenced methods courses, and key hallmark assessments on edTPA/Praxis2 exams. Implications for local implementation are shared and discussed.

Session 138 **Laveen B**
Professional Development
Discussion Session

EXAMINING INSTRUCTIONAL ACTIVITIES USED IN PRACTICE-EMBEDDED LEARNING EXPERIENCES THAT SUPPORT STUDENT AND EDUCATOR LEARNING

Melinda Knapp, Oregon State University, Cascades
Lynsey Gibbons, Boston University

This session will engage teacher educators working with preservice or inservice teachers who aim to design practice-embedded learning experiences that utilize instructional activities (IAs). We examine the critical components of IAs that are productive in supporting mathematics teachers' learning and student learning.

Session 139 **South Mountain**
Mathematics Education Policy and Program Issues
Individual Session

ADDRESSING THE SPMTs: CRITICAL CONVERSATIONS ABOUT PREPARING MATHEMATICS TEACHERS TO UTILIZE TECHNOLOGY IN THEIR INSTRUCTION

Allison McCulloch, University of North Carolina, Charlotte
Keith Rigby Leatham, Brigham Young University
Nina Gabrielle Bailey, University of North Carolina, Charlotte
Samuel Douglas Reed, Middle Tennessee State University

We will share the results from a survey focused on how programs are preparing secondary mathematics teachers to teach with technology and use these results to frame a discussion about how our programs are meeting the goals of the SPMTs.

Session 140 **Estrella**
Mathematics Content and Curriculum
Individual Session

USING CURRICULUM TO MOVE TEACHERS' CURRICULAR REASONING FROM SEQUENCING TO LEARNING TRAJECTORIES

Dawn Teuscher, Brigham Young University
Shannon W. Dingman, University of Arkansas
Jonah Shulman, University of Nevada, Las Vegas

Teachers are using more online materials and often modify their existing textbook sequences as they plan and enact lessons. These decisions impact the scope and sequence of the mathematics for students. We will discuss teachers' reasoning for these decisions.

Session 141 **Maryvale A**
Equity, Social Justice, and Mathematics Teacher Education

BRIEF REPORT SESSION: EQUITY AND SOCIAL JUSTICE IN MATHEMATICS TEACHER EDUCATION 2

EMBEDDING AN EQUITY STANCE INTO A MATH LEADERSHIP PROGRAM: LESSONS, IMPLICATIONS, AND LINGERING QUESTIONS

Bisola Neil, Bank Street College of Education
Robin Ellen Hummel, Bank Street College of Education

This presentation shares lessons learned from the journey of embedding an equity stance into a math leadership program. Implications of this stance for the recruitment and retention of teachers and leaders of color will be addressed through an engaged discussion.

SUPPORTING TRADITIONALLY-UNDERSERVED STUDENTS IN MATHEMATICS TEACHER EDUCATION PROGRAMS

Wendy Burleson Sanchez, Kennesaw State University
Belinda Pickett Edwards, Kennesaw State University
David Glassmeyer, Kennesaw State University

In this session, participants will learn results of research designed to understand challenges traditionally-underserved students encounter in teacher education programs and factors that support or hinder students' sense of belonging. They will brainstorm ways of supporting their own traditionally-underserved students.

TENSIONS OF RESPONSIBILITY: PREPARING PRESERVICE MATH TEACHERS TO TEACH FOR SOCIAL JUSTICE

Trevor Warburton, Utah Valley University

This report analyzes framings of responsibility to understand how (mostly) white preservice mathematics teachers are caught by responsibility. These discourses lead teachers to locate responsibility elsewhere or enact social justice problematically. I propose a tension (Gutiérrez, 2009) between taking and sharing responsibility.

Session 142 **Maryvale B**
Mathematics Pedagogy
Individual Session

EXAMINING PROSPECTIVE SECONDARY MATHEMATICS TEACHERS' NOTICING ON TWO TASKS

Kayla Chandler, East Carolina University

During this session, results from an exploratory multi-case study will be shared where prospective secondary mathematics teachers were asked to engage in noticing by examining artifacts of practice from a paper and pencil task and a technology task.

Session 143 **Encanto A**
Equity, Social Justice, and Mathematics Teacher Education
Individual Session

DEVELOPING MATHEMATICS TEACHERS' POLITICAL KNOWLEDGE FOR TEACHING: THE REMIX

Rochelle Gutierrez, University of Illinois, Urbana-Champaign
Kari Kokka, University of Pittsburgh
Marrielle Myers, Kennesaw State University

Preservice teachers need opportunities to critique initiatives and leverage resources to make significant changes in their schools. Two universities expanded the ways they are using "scenarios" to prepare teachers for politics of teaching. Participants will explore findings and experience activities.

Session 144 **Encanto B**
Development of Mathematics Teacher Educators
Individual Session

REAL-TIME COACHING DURING SECONDARY PSTs' TEACHING EPISODES: THE PRACTICES OF MATHEMATICS TEACHER EDUCATORS

Fran Arbaugh, Pennsylvania State University
Michelle Cirillo, University of Delaware
Raymond LaRochelle, University of Delaware
Seonmi Do, Pennsylvania State University

We engaged in real-time coaching during our secondary preservice teachers' teaching episodes across three institutions. We present findings from a study of our MTE practices and engage participants in discussions of the early field experience model and this type of coaching.

Session 145 **Phoenix A**
Practice-Based Experiences for Prospective Teachers
Individual Session

IMPLEMENTING A HIGH-COGNITIVE DEMAND TASK: PROSPECTIVE TEACHERS' GENERATED TASK DIALOGUES

Jonathan Foster, University of Georgia

We discuss our use of an approximation of practice called task dialogues to understand how first-semester prospective secondary mathematics students would implement a high-cognitive demand task during small group instruction.

Session 146 **Phoenix B**
Teaching and Learning with Technology
Individual Session

PRESERVICE TEACHERS' DESIGN OF TECHNOLOGY-ENHANCED STATISTICAL TASKS

Rick A. Hudson, University of Southern Indiana
Stephanie Casey, Eastern Michigan University
Heather Barker, North Carolina State University
Taylor Harrison, North Carolina State University

An assignment where preservice teachers designed statistical tasks utilizing the dynamic statistical tool CODAP will be shared. Participants will learn about the assignment's components, examine examples of preservice teachers' work, and apply and discuss a framework for analyzing statistical tasks.

Session 147 **Phoenix D**
Mathematics Content and Curriculum
Symposium

ACHIEVING "STRATEGIC OUTCOMES" THROUGH DISCRETE MATHEMATICS: DEVELOPING CONTENT KNOWLEDGE, DESIGNING CURRICULUM, AND ADDRESSING EQUITY ISSUES

Andrew Gatza, Indiana University
Erik Tillema, Indiana University
Lori Burch, Indiana University

This symposium uses data from three projects to illustrate benefits of discrete mathematics in secondary curricula and necessary supports for pre- and in-service teachers, building connections between discrete mathematics and other components of curricula as well as broader social phenomena.

Session 148 **Phoenix E**
Collaborations and Partnerships
Individual Session

A COMMUNITY-ENGAGED APPROACH TO ADVANCE TEACHER NOTICING FOR EQUITY

Elizabeth A. van Es, University of California, Irvine

The presenter will share an overview of a participatory action research approach to collectively develop a framework and professional learning model to support noticing for equity. We will focus on reflective experiences and insights gained from teachers and community members.

FRIDAY, FEBRUARY 7, 2020

5:00 PM - 6:30 PM



JUDITH E. JACOBS LECTURE

PHOENIX C

Research and Mathematics Teacher Education: Triumphs, Trials, and Transitions

Paola Sztajn, North Carolina State University

In this presentation, I share triumphs, trials, and transitions of a career dedicated to connecting research and practice in mathematics teacher education. I consider how lessons learned can impact the work of mathematics teacher educators and teacher education researchers.



FRIDAY, FEBRUARY 7, 2020

6:30 PM - 7:30 PM



RECEPTION FOR ALL CONFERENCE ATTENDEES

PHOENIX D & 3rd STREET FOYER

Please join your colleagues for informal conversation and light refreshments immediately following the Judith Jacobs Lecture.

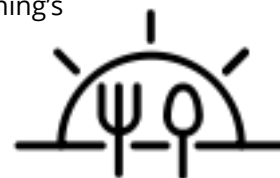




AMTE BREAKFAST AND AFFILIATE MEETINGS

PHOENIX C

Tables will be designated for AMTE Affiliate groups to meet during Saturday morning's breakfast.



WESTERN REGION

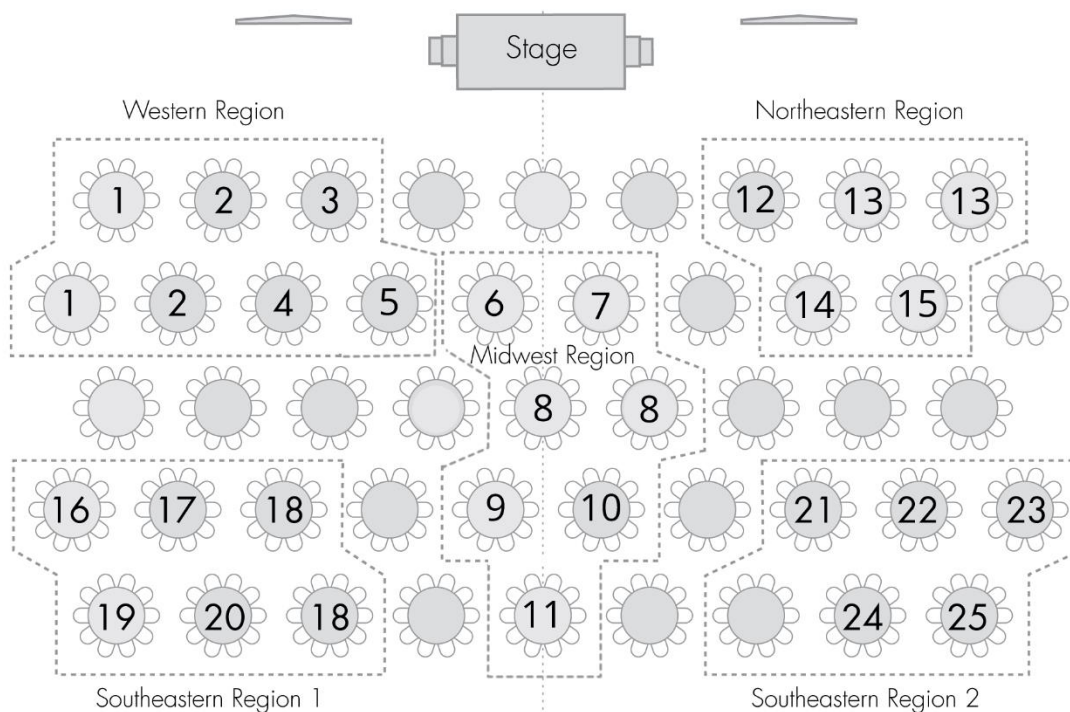
1. CAMTE (California)
2. AMTE-TX (Texas)
3. UAMTE (Utah)
4. TOTOM (Oregon)
5. Women & Mathematics Education

MIDWESTERN REGION

6. IMTE (Illinois)
7. HAMTE (Indiana)
8. MI-AMTE (Michigan)
9. (MAT)^2 (Missouri)
10. IAMTE (Iowa)
11. WI-AMTE (Wisconsin)

NORTHEASTERN REGION

12. AMTEC (Connecticut)
13. PAMTE (Pennsylvania)
14. MassMATE (Massachusetts)
15. NJAMTE (New Jersey)



SOUTHEASTERN REGION 1

16. AMMTE (Maryland)
17. SCAMTE (South Carolina)
18. AMTE-NC (North Carolina)
19. GAMTE (Georgia)
20. VA-AMTE (Virginia)

SOUTHEASTERN REGION 2

21. FAMTE (Florida)
22. TAMTE (Tennessee)
23. MAMTE (Mississippi)
24. AMTEA (Alabama)
25. KAMTE (Kentucky)

OVERVIEW OF SATURDAY MORNING, FEBRUARY 8, 2020

	8:00 AM - 9:00 AM	9:15 AM - 10:15 AM
Desert Sky	150. <i>Brief Report Session: Beliefs and Ways of Thinking-</i> Sweeny & Nabours; Slavit & Lesseig	166. <i>Brief Report Session: Mathematical Practices-</i> LaMar; Mortimer; Wood
Cave Creek	151. <i>Letting Go: Cultivating Agency and Authority through Number Talks in the Secondary Mathematics Classroom-</i> Humphreys	167. <i>Sharing our Way out of Isolation-</i> Candela & de Araujo
Ahwatukee A	152. <i>Brief Report Session: Interdisciplinary Teacher Preparation-</i> Reiten; Zonnefeld & Zonnefeld; Ruef & Chavez	168. <i>Brief Report Session: Integrated STEM Instruction-</i> Appelgate, Jackson, & Jurgenson; Jurgenson & Appelgate
Ahwatukee B	153. <i>Preparing Teachers to Teach Statistics and the Role of Heteronormative Critique-</i> Parise Schmidt	169. <i>Three Lenses on Equity for Mathematics Content Teachers-</i> Zavala, Seashore, Simic-Muller, & Felton-Koestler
Laveen A	154. <i>Collaborating for Change: A Longitudinal Professional Development Project for Inclusive Elementary Classrooms-</i> Harbour & Livers	170. <i>Multiplicative Structure: Helping Prospective Elementary Teachers Shed their Dependence on Guess-and-Check Methods-</i> Feldman
Laveen B	155. <i>Brief Report Session: Elementary Teacher Learning and Assessment-</i> O'Kelley; Kurz & Lee; Kerrigan & Ulrich	171. <i>Brief Report Session: Developing Mathematical Knowledge for Teaching-</i> Corven; Ghosh Hajra & Ozturk; Tyminski & Castro Superfine
South Mountain	156. <i>Practicing Purposeful Questioning: Alignment Between Secondary Prospective Teachers' Planned and Enacted Questions During Early Field Experiences-</i> Orr, Bieda, Hale, & Voogt	172. <i>Promoting Curiosity and Wonder Through Family Mathematics and Science Nights-</i> Aqazade, Bofferding, Richardson, & Simpson
Estrella	157. <i>Incorporating Immersive 360 Video in Mathematics Teacher Education: Potential and Challenges-</i> Kosko, Weston, & Amador	173. <i>Leveraging the edTPA and Standards for Preparing Teachers of Mathematics: Supporting PSTs' Development of Practice-</i> Nitta, Moscatelli, & Roth McDuffie
Maryvale A	158. <i>Developing Equity Literacy in the Statistical Education of Teachers-</i> Casey & Wilson	174. <i>Tracking Preservice Teachers' Gesturing on Riemann Sum Tasks-</i> LaCroix
Maryvale B	159. <i>Grace in Learning: A Necessary Condition of Equitable Practices in the Mathematics Classroom-</i> Amidon, Marshall, & Smith	175. <i>Collaborating Nationally and Acting Locally to Enhance Clinical Experiences Using Coteaching Strategies-</i> Stone, Oloff-Lewis, Castro-Minnehan, Junor Clarke, & Cayton
Encanto A	160. <i>Why Do You Ask...?-</i> Hardamon	176. <i>Middle and Secondary Prospective Teachers' Motivations to Implement Social Justice Mathematics Lessons-</i> Id-Deen, Baldinger, Sun, & Waller
Encanto B	161. <i>Re-Envisioning Mathematics Education Programs to Build Equitable Teaching Practices-</i> Hughes, Miller, & Gallivan	177. <i>Understanding and Developing Skills Needed to Build on Student Mathematical Thinking-</i> Leatham, Stockero, Peterson, & Van Zoest
Phoenix A	162. <i>Behind the Curtain: Technology Use in Schools-</i> Wieman, Bowen, Hollebrands, & Males	178. <i>Integrating a Justice Focus into a Practice-Based Math Methods Course: Redesign Efforts and Open Questions-</i> Ball & DeFino
Phoenix B	163. <i>Addressing the Needs of Mathematics Teacher Educators through Collaborative Leadership between AMTE and AMTE Affiliates-</i> Stephan, Franz, Tjoe, & Kulow	179. <i>Cultivating Positive Mathematical Dispositions via Teaching: Building PSTs' Mathematical Dispositions through Early Mediated Field Experiences-</i> Billings & Swartz
Phoenix D	164. <i>Facilitating Productive Mathematical Discussions: Digging Deeper into the Five Practices-</i> Smith	180. <i>A Case of Differentiating Instruction for Prospective Secondary Teachers-</i> Hackenberg, Borowski, & Jones
Phoenix E	165. <i>Coming to Know Number Talks: Elementary PSTs' Mathematical Discourse Practices-</i> Raymond	181. <i>Secondary Mathematics Education Program Recruitment and Retention across US IHEs in the MTE-Partnership-</i> Fernandez, McNamara, Franz, Barrett, & Fry Bohlin

	10:30 AM - 11:30 AM
Desert Sky	182. <i>Exploring Mathematical Knowledge for Teaching Secondary Mathematics: Engaging with Experts-</i> Zimmerman & Wilson
Cave Creek	183. <i>Using Modeling & Simulation Applications to Help Develop TPACK In Preservice Mathematics Teachers-</i> Enderson & Watson
Ahwatukee A	184. <i>Developing a Typology for “Real World” Mathematics Problems-</i> Simic-Muller & Fernandes
Ahwatukee B	185. <i>Brief Report Session: Discussions and Dilemmas-</i> Leshin & LaMar; Woods; King & Smith
Laveen A	186. <i>Brief Report Session: Reflection and Interaction with Elementary Prospective Teachers-</i> Karunakaran & Voogt; Meiners; Gerstenschlager & Wessman-Enzinger
Laveen B	187. <i>Making Sense of Numbers: A Mixed-Methods Study of Preservice Elementary Teachers’ Number Concepts Knowledge-</i> Starks, Feldman, & Gibbons
South Mountain	188. <i>Rich Mathematics Curricula Brought to you by CPM, an Educational Nonprofit! -</i> Rendon
Estrella	189. <i>Using Lesson Plays to Assess Prospective Teachers’ Pedagogical Understandings in Mathematics Methods Courses-</i> Moss & Divis
Maryvale A	190. <i>Hybrid Courses for Preparing Elementary Mathematics Specialists: Challenges, Successes, and Lessons Learned-</i> Pitvorec & Tavormina
Maryvale B	191. <i>Preparing Teachers to Build on Families’ Mathematical Experiences-</i> Civil, Stoehr, & Salazar
Encanto A	192. <i>Learning to Question in Lesson Debriefing-</i> Kastberg, Chen, Richardson, & Aqazade
Encanto B	193. <i>Enacting the Standards for Preparing Teachers of Mathematics: What Are We Learning?-</i> Martin, Bay-Williams, Bezuk, & Clements
Phoenix A	194. <i>Exploring the Use of Book Writing to Improve Student and PST Mathematical Understanding-</i> Wheeler & Mallam
Phoenix B	195. <i>The Design, Development, and Implementation of Online Courses for Mathematics Teacher Education-</i> Browning, Fede, Chauvot, Dean, & Silverman
Phoenix D	196. <i>Facilitating Critical Conversations among Mathematics Teachers with Rehearsals and Scenario Cards-</i> Marshall, McCloskey, & Chao
Phoenix E	197. <i>Sanctioned vs Unsanctioned: Navigating Online Resources and Preparing Teachers to Become Critical Curators and Adapters-</i> Dick

Session 150

Desert Sky

BRIEF REPORT SESSION: BELIEFS AND WAYS OF THINKING**PROSPECTIVE ELEMENTARY TEACHERS' SENSE OF BELONGING IN MATHEMATICS AND SCIENCE**

Shannon P Sweeny, Northern Arizona University
Gina Marie Nabours, Northern Arizona University

Our study aims to understand how prospective elementary teachers' sense of belonging in mathematics and science might be impacted by participating in a nontraditional practicum experience with a STEM-focused summer camp.

STEM WAYS OF THINKING IN MATHEMATICS TEACHER EDUCATION

David Slavit, Washington State University, Vancouver
Kristin Lesseig, Washington State University, Vancouver

We explore the question: How can STEM Ways of Thinking (SWoT) be made visible to prospective teachers, and what might this look like in the constraints of typical teacher education programs. Future collaborations with session attendees will be sought.

Session 151

Cave Creek

Mathematics Pedagogy
Individual Session

LETTING GO: CULTIVATING AGENCY AND AUTHORITY THROUGH NUMBER TALKS IN THE SECONDARY MATHEMATICS CLASSROOM

Cathy Humphreys, Mathematics Education Collaborative

This session documents a study of two preservice teachers who, supported by guided peer collaboration, enacted ten Number Talks over five weeks. The findings suggest that as the teachers learned to elicit students' thinking, students' intellectual authority and agency emerged.

Session 152

Ahwatukee A

BRIEF REPORT SESSION: INTERDISCIPLINARY TEACHER PREPARATION**ADDRESSING TENSIONS WHEN TEACHING WITH TECHNOLOGY**

Lindsay Reiten, University of Northern Colorado

This session identifies tensions secondary mathematics teachers faced when shifting their practice towards teaching with technology. Addressing tensions within PD and teacher preparation, and using tensions as a catalyst for shifting teachers' practices towards teaching with technology, will be discussed

MIND THE GAP: CAPITALIZING ON PRE-SERVICE TEACHER'S MATHEMATICAL GIFTS TO MEET SECONDARY SCHOOL NEEDS

Valorie L. Zonnefeld, Dordt University
Ryan Zonnefeld, Dordt University

Innovative teacher preparation programs are essential to ensure that secondary school students receive instruction from a certified teacher. This brief report explores interdisciplinary mathematics degrees that result in licensure in mathematics and physics, engineering, or computer science.

PREPARING INTERDISCIPLINARY PRACTITIONERS: AN INNOVATIVE APPROACH IN SECONDARY TEACHER PREPARATION

Jennifer Ruef, University of Oregon
Rosa Del Carmen Chavez, Stanford University

Interdisciplinary teaching is often promoted yet rarely supported within secondary teacher education. This presentation shares research on one university-based interdisciplinary curriculum and instruction program, including the structure of its mathematics course, resultant teacher learning, and tensions that arose in implementation.

Session 153

Ahwatukee B

Equity, Social Justice, and Mathematics Teacher Education
Individual Session

PREPARING TEACHERS TO TEACH STATISTICS AND THE ROLE OF HETERONORMATIVE CRITIQUE

Megan Parise Schmidt, University of Minnesota

I will share results from a study which examined the role of sex, gender, and heteronormativity in statistics textbooks using critical discourse analysis. Participants will learn strategies to critique curriculum content while engaging preservice teachers in developing statistical thinking skills.

Session 154 **Laveen A**
Collaborations and Partnerships
Individual Session

COLLABORATING FOR CHANGE: A LONGITUDINAL PROFESSIONAL DEVELOPMENT PROJECT FOR INCLUSIVE ELEMENTARY CLASSROOMS

Kristin E. Harbour, University of South Carolina
Stefanie D. Livers, Missouri State University

A change in instructional and collaborative practices is critical for creating equitable mathematics instruction. We highlight a framework and results from a longitudinal professional development project with elementary general and special education teachers addressing coteaching, differentiation, and high quality tasks.

Session 155 **Laveen B**

BRIEF REPORT SESSION: ELEMENTARY TEACHER LEARNING AND ASSESSMENT

LEARNING FROM PRESERVICE EARLY CHILDHOOD/ELEMENTARY TEACHERS IN MATHEMATICS CONTENT COURSES

Sharon K. O'Kelley, Francis Marion University

Results will be presented from a study that tracked 12 elementary preservice teachers through three content courses as they documented their experiences in questionnaires. A theme to be discussed is the role lesson presentation may play in developing productive disposition.

PRESERVICE TEACHERS' INACCURACIES WHEN CONSTRUCTING AND ANALYZING ALGEBRAIC PATTERNS

Terri L. Kurz, Arizona State University
Mi Yeon Lee, Arizona State University

Preservice teachers created patterns using color tiles, which included quadratic pattern generalization problems as well as linear and geometric pattern problems. Their difficulties with spatial misconceptions, challenges in explaining and analyzing patterns, and improper use of algebraic language are discussed.

UNITS COORDINATING ASSESSMENT OF PRESERVICE TEACHERS: CHALLENGES AND INSIGHTS

Sarah Kerrigan, Virginia Tech
Catherine Ulrich, Virginia Tech

Units coordination (UC) helps characterize student thinking in several mathematical learning standards including fractions and algebra. We discuss the construct, how it is used by teachers and teacher educators, and recent research findings in challenges with assessing preservice teachers.

Session 156 **South Mountain**
Mathematics Pedagogy
Discussion Session

PRACTICING PURPOSEFUL QUESTIONING: ALIGNMENT BETWEEN SECONDARY PROSPECTIVE TEACHERS' PLANNED AND ENACTED QUESTIONS DURING EARLY FIELD EXPERIENCES

Sheila Orr, Michigan State University
Kristen N. Bieda, Michigan State University
Melissa Warner Hale, Michigan State University
Kevin Voogt, Michigan State University

Participants will learn about and discuss how secondary mathematics preservice teachers incorporate purposeful questions into instruction during early field experiences. We will analyze alignment between questioning from plan to enactment relating to cognitive demand of planned and enacted tasks.

Session 157 **Estrella**
Teaching and Learning with Technology
Discussion Session

INCORPORATING IMMERSIVE 360 VIDEO IN MATHEMATICS TEACHER EDUCATION: POTENTIAL AND CHALLENGES

Karl W. Kosko, Kent State University
Tracy Weston, Middlebury College
Julie Amador, University of Idaho

Participants will engage in activities and discussions about using 360 video in elementary mathematics teacher education. Following a brief overview and video experience, participants will examine connections with AMTE standards and evaluate the potential and challenges of using such media.

Session 158 **Maryvale A**
Equity, Social Justice, and Mathematics Teacher Education
Individual Session

DEVELOPING EQUITY LITERACY IN THE STATISTICAL EDUCATION OF TEACHERS

Stephanie Casey, Eastern Michigan University
Melody Wilson, University of Michigan

The MODULE(S2) Project has developed free teacher education materials that develop knowledge for teaching statistics along with equity literacy. Come learn about the materials, engage in selected activities, and learn about research results from field testing the materials.

Session 159 **Maryvale B**
Equity, Social Justice, and Mathematics Teacher Education
Individual Session

GRACE IN LEARNING: A NECESSARY CONDITION OF EQUITABLE PRACTICES IN THE MATHEMATICS CLASSROOM

Joel Amidon, University of Mississippi
Anne Marie Marshall, Lehman College
Rebecca E. Smith, University of North Alabama

In this session, we explore the role of Grace in learning (GiL), as a necessary condition to promote equitable practices in the mathematics classroom. We argue GiL provides novices inroads to respond to calls towards equitable mathematics teaching practices.

<p>Session 160 Encanto A <i>Professional Development</i> <i>Individual Session</i></p> <p>WHY DO YOU ASK...? Kaili Hardamon, Detroit Public Schools Community District</p> <p>What impact do your beliefs have on your question-asking practices? This session will allow participants to engage in reflection on their beliefs about mathematics teaching and learning and discuss the implications of beliefs for question-asking during instruction.</p>	<p>Session 163 Phoenix B <i>Mathematics Education Policy and Program Issues</i> <i>Symposium</i></p> <p>ADDRESSING THE NEEDS OF MATHEMATICS TEACHER EDUCATORS THROUGH COLLABORATIVE LEADERSHIP BETWEEN AMTE AND AMTE AFFILIATES AMTE Affiliate Connections Committee Michelle Stephan, University of North Carolina, Charlotte Dana Pomykal Franz, Mississippi State University Hartono Tjoe, Pennsylvania State University, Berks Torrey Kulow, Portland State University</p> <p>The purpose of this session is to engage AMTE affiliate leaders and members in a discussion with ATME Board of Directors to build seamless collaboration.</p>
<p>Session 161 Encanto B <i>Equity, Social Justice, and Mathematics Teacher Education</i> <i>Discussion Session</i></p> <p>RE-ENVISIONING MATHEMATICS EDUCATION PROGRAMS TO BUILD EQUITABLE TEACHING PRACTICES Elizabeth Hughes, University of Northern Iowa Catherine Miller, University of Northern Iowa Heather Gallivan, University of Northern Iowa</p> <p>We will discuss strategies for moving from a few activities in select courses taught only by faculty who do research in equity to a mathematics education program where equity and social justice are part of its identity.</p>	<p>Session 164 Phoenix D <i>Mathematics Pedagogy</i> <i>Individual Session</i></p> <p>FACILITATING PRODUCTIVE MATHEMATICAL DISCUSSIONS: DIGGING DEEPER INTO THE FIVE PRACTICES Margaret Smith, University of Pittsburgh</p> <p>This session will focus on the challenges teacher encounter when they engage in orchestrating classroom discussions and provide insights into how teachers can address these challenges.</p>
<p>Session 162 Phoenix A <i>Teaching and Learning with Technology</i> <i>Symposium</i></p> <p>BEHIND THE CURTAIN: TECHNOLOGY USE IN SCHOOLS Rob Wieman, Rowan University Brian Bowen, West Chester University Karen Hollebrands, North Carolina State University Joshua R. Males, Lincoln Public Schools</p> <p>When it comes to instructional technology, what does the gap between research and practice look like? Three panelists representing a wide range of practical experience will answer this question and think with us about what we can do in response.</p>	<p>Session 165 Phoenix E <i>Practice-Based Experiences for Prospective Teachers</i> <i>Individual Session</i></p> <p>COMING TO KNOW NUMBER TALKS: ELEMENTARY PSTS' MATHEMATICAL DISCOURSE PRACTICES Kate M. Raymond, University of Oklahoma</p> <p>Number talks can serve as a tool for developing discourse. This session examines the discourse components preservice teachers attended to when developing and implementing number talks as part of a field placement. Participants will analyze changes in the preservice teachers' discourse practices.</p>

Session 166

Desert Sky

BRIEF REPORT SESSION: MATHEMATICAL PRACTICES**CONNECTING TEACHER'S PRIORITIZATION OF MATHEMATICAL PRACTICES AND STUDENTS' RELATIONSHIPS WITH MATHEMATICS**

Tanya LaMar, Stanford University

This presentation will share the findings of a case study on which mathematical practices two teachers prioritize in their recently de-tracked algebra one classrooms. We will also share how these practices are reflected in the students' relationships with mathematics.

PRACTICES IN PRACTICE: INTERPRETING THE COMMON CORE MATHEMATICAL PRACTICES IN THE CONTEXT OF TEACHING PRACTICE

Jillian Peterson Mortimer, University of Michigan

Participants will explore the Common Core State Standard for Mathematical Practice and how they can be seen in curriculum materials. Participants will discuss the implications of these practices on the work beginning teachers do and how to best support them.

TEACHER UNDERSTANDING OF THE MATHEMATICAL PRACTICES: A LAY OF THE LAND

Marcy B. Wood, The University of Arizona

In this study, we explore teachers' understanding of two mathematical practices (making sense of problems and persevering in solving them and constructing viable arguments) and trace how teachers' understanding might limit or enhance the implementation of these practices in everyday classrooms.

Session 167

Cave Creek

*Development of Mathematics Teacher Educators
Discussion Session*

SHARING OUR WAY OUT OF ISOLATION

Amber Grace Candela, University of Missouri, St. Louis
Zandra de Araujo, University of Missouri

We provide an opportunity for mathematics teacher educators to come together and share best practices from methods courses. We seek to create a collaborative community of teacher educators that will extend beyond the conference to share lessons and activities.

Session 168

Ahwatukee A

BRIEF REPORT SESSION: INTEGRATED STEM INSTRUCTION**DEVELOPING AN INTEGRATED STEM CURRICULUM IN PARTNERSHIP WITH ENGINEERS AND TEACHERS**

Mollie Appelgate, Iowa State University
Christa Jackson, Iowa State University
Kari Nicole Jurgenson, Iowa State University

In this session, we will share the benefits and challenges of designing and implementing an integrated STEM curriculum in collaboration with engineers and teachers over three years, including processes supportive of productive collaboration and how we addressed issues that arose.

THE EVOLUTION OF TEACHERS' PERCEPTIONS OF INTEGRATED STEM EDUCATION OVER THREE YEARS

Kari Nicole Jurgenson, Iowa State University
Mollie Appelgate, Iowa State University

This study investigates how teachers' implementation of an integrated STEM curriculum over three years influenced their perception of STEM instruction. Although the teachers had some initial concerns, as they implemented the integrated STEM curriculum their perceptions of STEM evolved.

Session 169

Ahwatukee B

*Equity, Social Justice, and Mathematics Teacher Education
Individual Session*

THREE LENSES ON EQUITY FOR MATHEMATICS CONTENT TEACHERS

Maria del Rosario Zavala, San Francisco State University
Kimberly Seashore, San Francisco State University
Ksenija Simic-Muller, Pacific Lutheran University
Mathew D. Felton-Koestler, Ohio University

This interactive workshop will support new and experienced mathematics content teachers to reflect deeply on how equity is framed in their own teaching and provide concrete ideas of how to expand notions of equity in new directions.

Session 170

Laveen A

*Mathematics Content and Curriculum
Individual Session*

MULTIPLICATIVE STRUCTURE: HELPING PROSPECTIVE ELEMENTARY TEACHERS SHED THEIR DEPENDENCE ON GUESS-AND-CHECK METHODS

Ziv Feldman, Boston University

This session examines pre- and post-assessments of 496 prospective elementary teachers who experienced the same set of lessons in their mathematics content courses. Attendees will analyze lesson materials and participants' written work to better understand how to support PTs' learning.

<p>Session 171 Laveen B</p> <p>BRIEF REPORT SESSION: DEVELOPING MATHEMATICAL KNOWLEDGE FOR TEACHING</p> <p>MODELING PROSPECTIVE TEACHERS' SCK DEVELOPMENT FOR DIVISION OF WHOLE NUMBERS</p> <p>Julien Corven, University of Delaware</p> <p>This study examined factors that might predict attainment and growth of SCK for division of whole numbers among 59 prospective teachers. Prior knowledge of rational number concepts emerged as a strong predictor, and implications of this finding will be discussed.</p> <p>PRESERVICE TEACHERS' KNOWLEDGE OF CONTENT AND STUDENTS: THE CASE OF AREA MEASUREMENT</p> <p>Sayonita Ghosh Hajra, California State University, Sacramento Ayse Ozturk, The Ohio State University</p> <p>We examine connections made by preservice teachers among their knowledge of area measurement, the meaning of multiplication, and their interpretation of a child's reasoning about the area formula for a rectangle.</p> <p>USING A LEARNING TRAJECTORY TO DEVELOP PROSPECTIVE ELEMENTARY TEACHERS' KCS IN AN INTRODUCTORY CONTENT COURSE</p> <p>Andrew Tyminski, Clemson University Alison Castro Superfine, University of Illinois, Chicago</p> <p>We present results of our study of an intervention in a first semester content course utilizing the Ongoing Assessment Project (OGAP) multiplication framework to scaffold elementary PTs' Knowledge of Content and Students (KCS) using a trajectory of children's multiplicative reasoning.</p>	<p>Session 174 Maryvale A</p> <p><i>Mathematics Content and Curriculum</i> <i>Individual Session</i></p> <p>TRACKING PRESERVICE TEACHERS' GESTURING ON RIEMANN SUM TASKS</p> <p>Tiffany LaCroix, Virginia Tech</p> <p>The purpose of this presentation is to share the qualitative results and implications from examining the gestures preservice teachers use on Riemann sum tasks, and if gesturing is linked to a more sophisticated conception of the definite integral.</p>
<p>Session 172 South Mountain</p> <p><i>Mathematics Pedagogy</i> <i>Individual Session</i></p> <p>PROMOTING CURIOSITY AND WONDER THROUGH FAMILY MATHEMATICS AND SCIENCE NIGHTS</p> <p>Mahtob Aqazade, Purdue University Laura C. Bofferding, Purdue University Sue Ellen Richardson, Purdue University Amber Simpson, Binghamton University, SUNY</p> <p>We explored how prospective elementary teachers planned activities to promote curiosity and wonder for a family mathematics and science night. Based on reflections of their activities, their conceptions of how to promote curiosity and wonder often became more nuanced.</p>	<p>Session 175 Maryvale B</p> <p><i>Collaborations and Partnerships</i> <i>Individual Session</i></p> <p>COLLABORATING NATIONALLY AND ACTING LOCALLY TO ENHANCE CLINICAL EXPERIENCES USING COTEACHING STRATEGIES</p> <p>Jamalee Stone, Black Hills State University Jennifer Oloff-Lewis, California State University, Chico Cynthia Ann Castro-Minnehan, University of South Florida Pier Angeli Junor Clarke, Georgia State University Charity Cayton, East Carolina University</p> <p>We will discuss how eleven mathematics teacher educators, in six states, collaborated to transform their mathematics education programs' clinical experiences using coteaching strategies. The mathematics teacher educators used plan-do-study-act (PDSA) cycles to facilitate institutional changes over time.</p>
<p>Session 173 Estrella</p> <p><i>Mathematics Education Policy and Program Issues</i> <i>Discussion Session</i></p> <p>LEVERAGING THE EDTPA AND STANDARDS FOR PREPARING TEACHERS OF MATHEMATICS: SUPPORTING PSTS' DEVELOPMENT OF PRACTICE</p> <p>Kathleen Nitta, Gonzaga University Maria Moscatelli, Washington State University Amy Roth McDuffie, Washington State University</p> <p>A majority of states require the edTPA as part of teacher licensure. We present two approaches that leverage the edTPA to support preservice teachers' development and discuss connections to AMTE's Standards for Preparing Teachers of Mathematics.</p>	<p>Session 176 Encanto A</p> <p><i>Equity, Social Justice, and Mathematics Teacher Education</i> <i>Discussion Session</i></p> <p>MIDDLE AND SECONDARY PROSPECTIVE TEACHERS' MOTIVATIONS TO IMPLEMENT SOCIAL JUSTICE MATHEMATICS LESSONS</p> <p>Lateefah Id-Deen, Kennesaw State University Erin E. Baldinger, University of Minnesota Kathy Sun, Santa Clara University Patrice Parker Waller, California State University, Fullerton</p> <p>After preservice teachers engaged in our module across our institutions, they self-reported beliefs indicating enthusiasm for integrating social justice in their mathematics instruction. Our session discusses ways to create opportunities towards actual implementation of social justice tasks into their mathematics instruction.</p> <p>Session 177 Encanto B</p> <p><i>Professional Development</i> <i>Individual Session</i></p> <p>UNDERSTANDING AND DEVELOPING SKILLS NEEDED TO BUILD ON STUDENT MATHEMATICAL THINKING</p> <p>Keith Rigby Leatham, Brigham Young University Shari L. Stockero, Michigan Technological University Blake E. Peterson, Brigham Young University Laura Van Zoest, Western Michigan University</p> <p>We will discuss the teaching practice of building on student mathematical thinking, unpacking important nuances of this practice. Together we will consider how we as mathematics teacher educators can help teachers to develop skills related to these nuances.</p>

<p>Session 178 Phoenix A <i>Equity, Social Justice, and Mathematics Teacher Education</i> <i>Individual Session</i></p> <p>INTEGRATING A JUSTICE FOCUS INTO A PRACTICE-BASED MATH METHODS COURSE: REDESIGN EFFORTS AND OPEN QUESTIONS</p> <p>Deborah Loewenberg Ball, University of Michigan Rosalie DeFino, University of Michigan</p> <p>This session presents collaborative redesign efforts to interweave a justice focus into a practice-based elementary math methods course. Tensions, challenges, and questions for future work will be discussed.</p>	<p>Session 180 Phoenix D <i>Mathematics Pedagogy</i> <i>Individual Session</i></p> <p>A CASE OF DIFFERENTIATING INSTRUCTION FOR PROSPECTIVE SECONDARY TEACHERS</p> <p>Amy Jeanne Hackenberg, Indiana University, Bloomington Rebecca Sue Borowski, Indiana University Robin Jones, Indiana University, Bloomington</p> <p>In this session, participants will engage in a video case of differentiating instruction (DI) for prospective secondary teachers developed from a research project on DI for middle school students. The case highlights the close connection between formative assessment and differentiation.</p>
<p>Session 179 Phoenix B <i>Practice-Based Experiences for Prospective Teachers</i> <i>Individual Session</i></p> <p>CULTIVATING POSITIVE MATHEMATICAL DISPOSITIONS VIA TEACHING: BUILDING PSTS' MATHEMATICAL DISPOSITIONS THROUGH EARLY MEDIATED FIELD EXPERIENCES</p> <p>Esther Marie Billings, Grand Valley State University Barbara Ann Swartz, McDaniel College</p> <p>We describe how the use of mediated field experiences, a practice-based teacher education design grounded in AMTE's SPTE, motivates, develops, and deepens preservice elementary teachers' mathematical dispositions and understanding of what it means to do and teach mathematics.</p>	<p>Session 181 Phoenix E <i>Mathematics Education Policy and Program Issues</i> <i>Symposium</i></p> <p>SECONDARY MATHEMATICS EDUCATION PROGRAM RECRUITMENT AND RETENTION ACROSS US IHEs IN THE MTE-PARTNERSHIP</p> <p>Maria L. Fernandez, Florida International University Julie McNamara, California State University, East Bay Dana Pomykal Franz, Mississippi State University Diane Barrett, University of Hawaii, Hilo Carol Fry Bohlin, California State University, Fresno</p> <p>Various IHEs will discuss strategies, approaches, toolkits, and guides for successful recruitment and retention of prospective mathematics teachers. Attendees will use a student-centric logic model to analyze and discuss strengths and areas for growth in their program recruitment and retention.</p>

Session 182

Desert Sky

*Mathematics Content and Curriculum
Individual Session*

**EXPLORING MATHEMATICAL KNOWLEDGE FOR
TEACHING SECONDARY MATHEMATICS: ENGAGING
WITH EXPERTS**

Stacey C. Zimmerman, University of North Carolina, Greensboro
Holt Wilson, University of North Carolina, Greensboro

We share findings from a research project designed to elicit aspects of secondary mathematical knowledge for teaching from participants that have demonstrated expertise in the secondary mathematics field.

Session 183

Cave Creek

*Teaching and Learning with Technology
Individual Session*

**USING MODELING & SIMULATION APPLICATIONS TO
HELP DEVELOP TPACK IN PRESERVICE MATHEMATICS
TEACHERS**

Mary C. Enderson, Old Dominion University
Ginger S. Watson, University of Virginia

This session will address the impact modeling & simulation applications may have on preservice mathematics teachers' development of TPACK. These teachers interact with applications as learners and then transition into creating experiences for middle and high school students.

Session 184

Ahwatukee A

*Equity, Social Justice, and Mathematics Teacher Education
Individual Session*

**DEVELOPING A TYPOLOGY FOR "REAL WORLD"
MATHEMATICS PROBLEMS**

Ksenija Simic-Muller, Pacific Lutheran University
Anthony Fernandes, University of North Carolina, Charlotte

This session presents preliminary results of a study that investigates how preservice K-8 teachers relate to different real-world contexts presented to them and proposes a typology that can help gauge their openness to using similar contexts in their own teaching.

Session 185

Ahwatukee B

BRIEF REPORT SESSION: DISCUSSIONS AND DILEMMAS

**DILEMMAS: GRAPPLING WITH THEORY AND PRACTICE
IN A CURRICULUM & INSTRUCTION CLASS**

Miriam Simone Leshin, Stanford University
Tanya LaMar, Stanford University

Learning to teach involves navigating dilemmas, which do not have a clear answer. This presentation explores how one Curriculum & Instruction course supported teacher candidates to manage, rather than resolve, the dilemmas that surfaced from their student teaching and coursework.

**PREPARING PRESERVICE TEACHERS TO LEAD
MATHEMATICAL DISCUSSIONS BY EMBEDDING MIXED
REALITY SIMULATIONS INTO METHODS COURSEWORK**

Dawn Woods, Oakland University

In this study, I examined how mixed reality simulations support preservice teachers in learning how to lead group discussions. Findings suggest that questioning strategies shifted from a funneling to a focusing approach since they had opportunities for feedback and reflection.

**USING THE CO-DEVELOPMENT OF APPROXIMATIONS OF
PRACTICE TO IMPROVE TEACHING**

Barbara King, Florida International University
Carmen Smith, University of Vermont

We investigated how inservice teachers' (ISTs') understanding of classroom discussions evolved while co-creating approximations of practice activities. Our results showed an improvement in ISTs' use of effective discussion strategies. Specific aspects that potentially contributed to the change are discussed.

BRIEF REPORT SESSION: REFLECTION AND INTERACTION WITH ELEMENTARY PROSPECTIVE TEACHERS

ADDRESSING ELEMENTARY PRE-SERVICE TEACHERS' MATHEMATICS ANXIETY

Monica Karunakaran, Michigan State University
Kevin Voogt, Michigan State University

Elementary preservice teachers' mathematics anxiety is a well-documented phenomenon. This presentation describes a policy that increased informal interactions between students and instructor during an elementary mathematics content course, and how such interactions have the potential to decrease students' mathematics anxiety.

PRESERVICE TEACHERS' PERSISTENCE: WHAT HAPPENS WHEN CHALLENGING TASKS ARE USED?

Amanda Meiners, University of Iowa

This study investigates how preservice teacher's learning experiences and opportunities influence their persistence during challenging mathematics tasks. One intervention showing promising results is a mindset intervention. Results indicate that two themes developed: influences that advance and influences that hinder persistence.

SUPPORTING PRESERVICE TEACHERS' REFLECTION ABOUT CONCEPTUAL MISTAKES

Natasha Gerstenschlager, Western Kentucky University
Nicole M. Wessman-Enzinger, George Fox University

We will discuss results from a project where elementary preservice teachers reflected on conceptual mistakes in mathematics content courses. Participants will examine this project, including a rubric, for their potential use and gain insight into how preservice teachers perceive mistakes.

Session 187

Laveen B

Mathematics Content and Curriculum
Individual Session

MAKING SENSE OF NUMBERS: A MIXED-METHODS STUDY OF PRESERVICE ELEMENTARY TEACHERS' NUMBER CONCEPTS KNOWLEDGE

Rachel Starks, Boston University
Ziv Feldman, Boston University
Lynsey Gibbons, Boston University

This session explores curriculum materials surrounding number concepts and test data collected from 592 preservice teachers who experienced this curriculum. Session participants will examine the lesson and preservice teachers' work, considering how to support their own preservice teachers in developing understanding of number.

Session 188

South Mountain

AMTE Sponsor Session

RICH MATHEMATICS CURRICULA BROUGHT TO YOU BY CPM, AN EDUCATIONAL NONPROFIT!

Sharon Rendon, CPM

Looking for ideas to incorporate NCTM's eight teaching practices in your courses? Experience CPM's student-centered, problem based curricula, which encourages thinking, persevering, and sense-making. You can have CPM's 6-12 curriculum for your library or to use in your methods courses

Session 189

Estrella

Mathematics Pedagogy
Individual Session

USING LESSON PLAYS TO ASSESS PROSPECTIVE TEACHERS' PEDAGOGICAL UNDERSTANDINGS IN MATHEMATICS METHODS COURSES

Diana L. Moss, Utah State University
Danielle Rose Divis, Utah State University

In this session, we present insights about using lesson plays for examining prospective teachers' pedagogical understandings in an online mathematics methods course and discuss modifications of the lesson play method for effective implementation in other mathematics methods courses.

Session 190

Maryvale A

Teaching and Learning with Technology
Individual Session

HYBRID COURSES FOR PREPARING ELEMENTARY MATHEMATICS SPECIALISTS: CHALLENGES, SUCCESSES AND LESSONS LEARNED

Kathleen Pitvorec, University of Illinois, Chicago
Mary Jo Tavormina, University of Illinois, Chicago

In this individual session, we will engage in exploring online course activities for a set of hybrid courses designed to prepare teachers to be elementary mathematics specialists. We will debrief the activities by reflecting on and discussing the course design.

Session 191

Maryvale B

Equity, Social Justice, and Mathematics Teacher Education
Individual Session

PREPARING TEACHERS TO BUILD ON FAMILIES' MATHEMATICAL EXPERIENCES

Marta Civil, University of Arizona
Kathleen Jablon Stoeher, Santa Clara University
Fany Salazar, The University of Arizona

This session reports on a research and outreach project that engaged parents and teachers in dialogues about mathematics to uncover the learning opportunities that exist in the homes and communities of diverse students. Study protocols will be shared with participants.

Session 192

Encanto A

Development of Mathematics Teacher Educators
Discussion Session

LEARNING TO QUESTION IN LESSON DEBRIEFING

Signe Kastberg, Purdue University
Lizhen Chen, Purdue University
Sue Ellen Richardson, Purdue University
Mahtob Aqazade, Purdue University

Using excerpts from a prospective teacher's (PT) lesson plan and audio/transcript of her lesson description, participants will explore how caring relations can inform mathematics teacher educators' questioning practice during debriefing discussions of PTs' lessons taught in a clinical setting.

Session 193 **Encanto B**
Mathematics Education Policy and Program Issues
Discussion Session

ENACTING THE STANDARDS FOR PREPARING TEACHERS OF MATHEMATICS: WHAT ARE WE LEARNING?

W. Gary Martin, Auburn University
Jennifer Bay-Williams, University of Louisville
Nadine Bezuk, San Diego State University
Douglas H. Clements, University of Denver

Since the release of the Standards for Preparing Teachers of Mathematics, AMTE members have begun to consider its implications for their practice. In this session, participants will share their personal journeys with the Standards and reflect on further actions needed.

Session 194 **Phoenix A**
Mathematics Content and Curriculum
Discussion Session

EXPLORING THE USE OF BOOK WRITING TO IMPROVE STUDENT AND PST MATHEMATICAL UNDERSTANDING

Ann Wheeler, Texas Woman's University
Winifred Mallam, Texas Woman's University

During this discussion session, we will detail a book project between 8th grade students and preservice teachers. Participants will discuss student and preservice teacher learning outcomes from the book project, as well as potential assignment modifications.

Session 195 **Phoenix B**
Teaching and Learning with Technology
Individual Session

THE DESIGN, DEVELOPMENT, AND IMPLEMENTATION OF ONLINE COURSES FOR MATHEMATICS TEACHER EDUCATION

Christine Browning, Western Michigan University
Bryan Fede, Marquette University
Jennifer B. Chauvot, University of Houston
Chrystal Dean, Appalachian State University
Jason Silverman, Drexel University

Various topic work stations will have participants engage in thinking about how to use effective teaching practices and address relevant standards when designing and implementing online mathematics teacher education courses. For maximum participation, please bring a laptop and earbuds.

Session 196 **Phoenix D**
Equity, Social Justice, and Mathematics Teacher Education
Individual Session

FACILITATING CRITICAL CONVERSATIONS AMONG MATHEMATICS TEACHERS WITH REHEARSALS AND SCENARIO CARDS

Anne Marie Marshall, Lehman College
Andrea McCloskey, Pennsylvania State University
Theodore Chao, The Ohio State University

Participants will examine a revised set of conversation cards that have been used to engage mathematics teachers in critical conversations. A set of cards will be provided to each participant and difficult teacher conversations will be explored through rehearsal.

Session 197 **Phoenix E**
Mathematics Content and Curriculum
Individual Session

SANCTIONED VS UNSANCTIONED: NAVIGATING ONLINE RESOURCES AND PREPARING TEACHERS TO BECOME CRITICAL CURATORS AND ADAPTERS

Lara Dick, Bucknell University

We discuss teachers' online searches for math resources, including cognitive demand, from unsanctioned (e.g. Pinterest) and sanctioned (e.g. NCTM) sites. We will rate resources and engage in activities for preservice teachers and teachers to become critical consumers and adapters.

SATURDAY, FEBRUARY 8, 2020

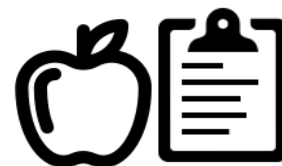
11:30 AM - 1:15 PM

AMTE

LUNCH AND BUSINESS MEETING

Please join us for lunch, organizational updates, and official AMTE proceedings.

PHOENIX C



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Bailey, Nina Gabrielle	<i>University of North Carolina, Charlotte</i>	nbaile15@uncc.edu	78, 139
Bajwa, Neet Priya	<i>Illinois State University</i>	nbajwa@ilstu.edu	116
Baker, Courtney	<i>George Mason University</i>	cbaker@gmu.edu	135
Baker, Katherine	<i>Elon University</i>	kbaker17@elon.edu	41, 107
Baldinger, Erin E.	<i>University of Minnesota</i>	eebaldinger@umn.edu	17, 176
Ball, Deborah Loewenberg	<i>University of Michigan</i>	dball@umich.edu	72, 178
Bannister, Nicole	<i>Clemson University</i>	nbannis@clemson.edu	60
Barker, David D.	<i>Illinois State University</i>	dbarker@ilstu.edu	47, 133
Barker, Heather	<i>North Carolina State University</i>	habarker@ncsu.edu	146
Barlow, Angela T.	<i>University of Central Arkansas</i>	abarlow5@uca.edu	96
Barnes, David	<i>National Council of Teachers of Mathematics</i>	dbarnes@nctm.org	23
Barrett, Diane	<i>University of Hawaii, Hilo</i>	barrett9@hawaii.edu	181
Bartell, Tonya	<i>Michigan State University</i>	tbartell@msu.edu	51
Bay-Williams, Jennifer	<i>University of Louisville</i>	j.baywilliams@louisville.edu	193
Berry, Robert	<i>National Council of Teachers of Mathematics & University of Virginia</i>	rbq3e@virginia.edu	23, 125
Bertolone-Smith, Claudia Marie	<i>California State University, Chico</i>	cmbertolone-smith@csuchico.edu	89, 134
Bezuk, Nadine	<i>San Diego State University</i>	nbezuk@sdsu.edu	193
Bharaj, Pavneet Kaur	<i>Indiana University, Bloomington</i>	pkbharaj@iu.edu	24, 79
Bieda, Kristen N.	<i>Michigan State University</i>	kbieda@msu.edu	73, 156
Billings, Esther Marie	<i>Grand Valley State University</i>	billinge@gvsu.edu	83, 179
Birkhead, Sara	<i>George Mason University</i>	sbirkhea@gmu.edu	29, 75
Bofferding, Laura C.	<i>Purdue University</i>	lbofferd@purdue.edu	172
Bondurant, Liza	<i>Delta State University</i>	lbondurant@deltastate.edu	117
Bonner, Emily	<i>The University of Texas, San Antonio</i>	emily.bonner@utsa.edu	43
Borowski, Rebecca Sue	<i>Indiana University</i>	rborowsk@indiana.edu	180
Bostic, Jonathan David	<i>Bowling Green State University</i>	bosticj@bgsu.edu	104
Boston, Melissa	<i>Duquesne University</i>	bostonm@duq.edu	116
Bowen, Brian	<i>West Chester University</i>	bbowen@wcupa.edu	117, 162
Boyce, Steven	<i>Portland State University</i>	sboyce@pdx.edu	79, 134
Boyd, Brian	<i>Wright State University</i>	brian.boyd@wright.edu	33, 54
Bradshaw, Laine	<i>University of Georgia</i>	laineb@uga.edu	5
Brantlinger, Andrew	<i>University of Maryland</i>	amb@umd.edu	28, 109
Brasel, Jason	<i>University of Michigan</i>	jtbrasel@umich.edu	27
Brown, Rachael E.	<i>Pennsylvania State University, Abington</i>	reb37@psu.edu	116
Browning, Christine	<i>Western Michigan University</i>	christine.browning@wmich.edu	195
Buchbinder, Orly	<i>University of New Hampshire</i>	orly.buchbinder@unh.edu	94, 105
Buchheister, Kelley	<i>University of Nebraska, Lincoln</i>	kbuchheister2@unl.edu	71, 74
Bullock, Erika C.	<i>University of Wisconsin, Madison</i>	ecbullock@wisc.edu	109
Burch, Lori	<i>Indiana University</i>	ljburch@iu.edu	147
Burton, Megan	<i>Auburn University</i>	megan.burton@auburn.edu	129
Byun, Sunghwan	<i>Michigan State University</i>	byunsun3@msu.edu	74, 97

C

Callis, Laura	Curry College	laura.callis@curry.edu	91
Candela, Amber Grace	University of Missouri, St. Louis	candela@umsl.edu	116, 167
Cannon, Susan Ophelia	Mercer University	sosophelia@gmail.com	50
Capen, Laurie M.	George Mason University	lcapen@gmu.edu	75
Carroll, Cathy E.	WestEd	ccarrol@wested.org	102
Carson, Cynthia D.	University of Rochester	cynthiacarson17@gmail.com	102, 136
Casa, Tutita M.	University of Connecticut	tutita.casa@uconn.edu	30, 101
Casey, Stephanie	Eastern Michigan University	scasey1@emich.edu	146, 158
Castro-Minnehan, Cynthia Ann	University of South Florida	ccastrominne@mail.usf.edu	67, 175
Castro Superfine, Alison	University of Illinois, Chicago	amcastro@uic.edu	15, 171
Cavanna, Jillian M.	University of Hartford	cavanna@hartford.edu	101
Cavey, Laurie	Boise State University	lauriecavey@boisestate.edu	104
Gayton, Charity	East Carolina University	gaytonc@ecu.edu	78, 175
Chandler, Kayla	East Carolina University	chandlerk@ecu.edu	142
Chao, Theodore	The Ohio State University	chao.160@osu.edu	196
Chauvot, Jennifer B.	University of Houston	jchauvot@uh.edu	195
Chavez, Rosa Del Carmen	Stanford University	rdchavez@stanford.edu	152
Che, S. Megan	Clemson University	sche@clemson.edu	47
Chen, Lizhen	Purdue University	lizchen@purdue.edu	192
Chesler, Joshua	California State University, Long Beach	josh.chesler@csulb.edu	77
Christensen, Sharon	Brigham Young University	sharonc@mathed.byu.edu	55
Cirillo, Michelle	University of Delaware	mcirillo@udel.edu	105, 144
Civil, Marta	University of Arizona	civil@math.arizona.edu	191
Clements, Douglas H.	University of Denver	douglas.clements@du.edu	193
Cloward, Janessa	Brigham Young University	cloward.janessa@gmail.com	53
Colonnese, Madelyn	University of North Carolina, Charlotte	mcolonn1@uncc.edu	30
Conner, AnnaMarie	University of Georgia	aconner@uga.edu	81
Conway, Basil	Columbus State University	conway_basil@columbusstate.edu	85
Cook, Alice L.	Johns Hopkins University	cookie.teach@gmail.com	31
Cooley, Laurel	Brooklyn College, CUNY	lcooley@brooklyn.cuny.edu	28, 109
Corven, Julien	University of Delaware	jcorven@udel.edu	171
Cosby, Missy	Michigan State University	mcosby@msu.edu	97
Cox, Dana C.	Miami University	dana.cox@miamioh.edu	100
Creager, Mark A.	University of Southern Indiana	macreager@usi.edu	52
Cullen, Craig	Illinois State University	cjculle@ilstu.edu	62

D

Davis, Ashley Renaire	The Graduate Center, CUNY	ashleyrenaire@gmail.com	3
Day, Roger	Illinois State University	day@ilstu.edu	62
de Araujo, Zandra	University of Missouri	dearaujo@missouri.edu	22, 167
Dean, Chrystal	Appalachian State University	deanco@appstate.edu	93, 195
DeFino, Rosalie	University of Michigan	rdefino@umich.edu	178
Diamond, Jaime	University of Georgia	diamond@uga.edu	14
Dick, Lara	Bucknell University	lara.dick@bucknell.edu	103, 197
Dingman, Shannon W.	University of Arkansas	sdingman@uark.edu	61, 140
Divis, Danielle Rose	Utah State University	danielledivis21@gmail.com	189
Do, Seonmi	Pennsylvania State University	skd5312@psu.edu	144
Dobie, Tracy	University of Utah	tracy.dobie@utah.edu	110, 119
Donnay, Victor	Bryn Mawr College	vdonnay@brynmawr.edu	117
Driskell, Shannon	University of Dayton	sdriskell1@udayton.edu	20
Dubbs, Christopher	Michigan State University	dubbschr@msu.edu	130
Dula, Jessica	Horizon Research, Inc.	j.dula@horizon-research.com	119
Dunleavy, Teresa K.	Vanderbilt University	teresa.kathleen.dunleavy@gmail.com	60, 87
Dupree, Lakesia L.	University of South Florida	ldupree@mail.usf.edu	67, 117
Dyer, Penny	Arizona State University	padye@asu.edu	28

E

Ebby, Caroline B.	University of Pennsylvania	cbe@upenn.edu	39
Edenfield, Kelly	University of Georgia	kedenfield@uga.edu	55
Edwards, Belinda Pickett	Kennesaw State University	bedwards@kennesaw.edu	36, 141
Enderson, Mary C.	Old Dominion University	menderso@odu.edu	183
Erickson, Ander	University of Washington, Tacoma	awerick@uw.edu	19
Eskelson, Samuel L.	University of Northern Iowa	samuel.eskelson@uni.edu	90

F			
Fede, Bryan	Marquette University	bryan.fede@marquette.edu	195
Feldman, Ziv	Boston University	zfeld@bu.edu	170, 187
Felton-Koestler, Mathew D.	Ohio University	felton@ohio.edu	169
Fernandes, Anthony	University of North Carolina, Charlotte	anthony.fernandes@uncc.edu	36, 184
Fernandez, Maria L.	Florida International University	mfernand@fiu.edu	181
Ferry, Deborah	Macomb Independent School District	dferry@misd.net	8
Fisher, Molly	University of Kentucky	molly.fisher@uky.edu	133
Flessner, Courtney	Indiana University	cflessne@iu.edu	117
Flessner, Ryan	Butler University	rflessne@butler.edu	117
Foster, Jonathan	University of Georgia	fosterjk@uga.edu	145
Franke, Megan	University of California, Los Angeles	mfranke@ucla.edu	46
Franz, Dana Pomykal	Mississippi State University	df76@colled.msstate.edu	163, 181
Fry Bohlin, Carol	California State University, Fresno	carolb@csufresno.edu	181
Fye, Kristen	University of North Carolina, Charlotte	krfye@uncc.edu	78
G			
Galindo, Enrique	Indiana University	egalindo@indiana.edu	24
Gallagher, Melissa A.	University of Louisiana, Lafayette	magallagher27@gmail.com	13, 65
Gallivan, Heather	University of Northern Iowa	heather.gallivan@uni.edu	161
Ganesh, Tirupalavanam G.	Arizona State University	tganesh@asu.edu	28
Garcia, Nicole M.	University of Michigan	nmgarcia@umich.edu	72
Garner, Brette	University of Denver	brette.garner@du.edu	57
Gatza, Andrew	Indiana University	agatza@iu.edu	147
Gay, Susan	University of Kansas	sgay@ku.edu	37
Gerstenschlager, Natasha	Western Kentucky University	natasha.gerstenschlager@wku.edu	186
Ghosh Hajra, Sayonita	California State University, Sacramento	sayonita.ghoshhajra@csus.edu	171
Gibbons, Lynsey	Boston University	lgibbons@bu.edu	138, 187
Gichobi, Mary N.	University of Wisconsin, Green Bay	gichobim@uwgb.edu	132
Gillespie, Ryan	University of Idaho	gill6762@vandals.uidaho.edu	136
Glassmeyer, David	Kennesaw State University	dglassme@kennesaw.edu	141
Goldberg, Ellyn Rose	The University of Texas, Austin	ellie.goldberg@utexas.edu	117
Goldsmith-Markey, Lindsay Thompson	University of Pennsylvania	litho@gse.upenn.edu	39
Gomez, Carlos Nicolas	Clemson University	carlos@clemson.edu	44, 74
Gonzalez, Monica	East Carolina University	gonzalezmo18@ecu.edu	27
Goodson-Espy, Tracy J.	Appalachian State University	goodsonespyt@appstate.edu	93
Gordon, Evelyn M.	Horizon Research, Inc.	egordon@horizon-research.com	119
Graif, Foster	University of Minnesota	fgraif@umn.edu	50
Grant, Theresa Jean	Western Michigan University	terry.grant@wmich.edu	124
Groves-Scott, Victoria	University of Central Arkansas	vickigs@uca.edu	96
Gruver, John	Michigan Technological University	jgruver@mtu.edu	4
Gupta, Dittika	Midwestern State University	dittika.gupta@msutexas.edu	117
Gutierrez, Rochelle	University of Illinois, Urbana-Champaign	rg1@illinois.edu	143
H			
Hackenberg, Amy Jeanne	Indiana University, Bloomington	ahackenb@indiana.edu	180
Hale, Melissa Warner	Michigan State University	halemeli@msu.edu	117, 156
Hansen, Heidi B.	Bemidji State University	hhansen@bemidjistate.edu	70
Harbour, Kristin E.	University of South Carolina	kharbour@mailbox.sc.edu	95, 154
Hardamon, Kaili	Detroit Public Schools Community District	kaili7d7@yahoo.com	160
Hardison, Hamilton	Texas State University	hhardison@txstate.edu	79
Harper, Frances K.	University of Tennessee, Knoxville	francesharper@utk.edu	59, 108
Harper, Suzanne R.	Miami University	harpersr@miamioh.edu	100
Harrell-Williams, Leigh	University of Memphis	leigh.williams@memphis.edu	104
Harris, Pamela	Arizona State University	harris9@asu.edu	28
Harris, Pamela Weber	Texas State University	pwh385@txstate.edu	98
Harrison, Taylor	North Carolina State University	trharri2@ncsu.edu	146
Hawthorne, Casey W.	Furman University	casey.hawthorne@furman.edu	4
Heaton, Ruth M.	Teachers Development Group	ruth.heaton@teachersdg.org	106
Heid, Mary Kathleen	Pennsylvania State University	mkh2@psu.edu	68
Hempel, Alice	University of New Hampshire	aah2017@wildcats.unh.edu	105
Herbel Eisenmann, Beth	Michigan State University	bhe@msu.edu	12, 97
Hertel, Joshua	University of Wisconsin, La Crosse	jhertel@uwlax.edu	6
Hillman, Susan L.	Saginaw Valley State University	shillman@svsu.edu	25
Hinojosa, Denise Maribel	The University of Texas, San Antonio	denisseh66@gmail.com	43
Hjalmarson, Margret	George Mason University	mhjalmar@gmu.edu	104

Hollebrands, Karen	<i>North Carolina State University</i>	kfolleb@ncsu.edu	162
Howell, Heather	<i>Educational Testing Service</i>	hhowell@ets.org	2
Hudson, Rick A.	<i>University of Southern Indiana</i>	rhudson@usi.edu	146
Hughes, Elizabeth	<i>University of Northern Iowa</i>	elizabeth.hughes@uni.edu	161
Hummel, Robin Ellen	<i>Bank Street College of Education</i>	rhummel@bankstreet.edu	141
Humphreys, Cathy	<i>Mathematics Education Collaborative</i>	cathy.j.humphreys@gmail.com	151
I			
Id-Deen, Lateefah	<i>Kennesaw State University</i>	liddeen@kennesaw.edu	176
J			
Jackson, Brent	<i>Michigan State University</i>	bjackson@msu.edu	12, 97
Jackson, Christa	<i>Iowa State University</i>	jacksonc@iastate.edu	74, 168
Jacobson, Erik	<i>Indiana University</i>	erdajaco@indiana.edu	5
Jensen, Jess	<i>California Polytechnic State University, San Luis Obispo</i>	jjense11@calpoly.edu	56, 65
Jessup, Naomi	<i>Georgia State University</i>	njessup@gsu.edu	87
Jett, Christopher C.	<i>University of West Georgia</i>	cjett@westga.edu	9
Johnson, Nicholas Charles	<i>San Diego State University</i>	nicko@ucla.edu	46
Jones, Dusty	<i>Sam Houston State University</i>	dljones@shsu.edu	49
Jones, Robin	<i>Indiana University, Bloomington</i>	robijone@indiana.edu	180
Jones, Stacy R.	<i>Clemson University</i>	stacy9@clemson.edu	44, 74
Junor Clarke, Pier Angeli	<i>Georgia State University</i>	pjunor@gsu.edu	175
Jurgenson, Kari Nicole	<i>Iowa State University</i>	karij@iastate.edu	168
K			
Kalinec-Craig, Crystal	<i>The University of Texas, San Antonio</i>	crystal.kalinec-craig@utsa.edu	43, 60
Karunakaran, Monica	<i>Michigan State University</i>	karunak2@msu.edu	186
Kaschner, Scott	<i>Butler University</i>	skaschne@butler.edu	34
Kastberg, Signe	<i>Purdue University</i>	skastber@purdue.edu	25, 192
Kasten, Sarah	<i>Northern Kentucky University</i>	kastens1@nku.edu	120
Kelley, Traci	<i>The University of Texas, San Antonio</i>	traci.kelley@utsa.edu	43
Kerrigan, Sarah	<i>Virginia Tech</i>	stk123@vt.edu	155
Khalil, Deena	<i>Howard University</i>	deena.khalil@howard.edu	109
Kim, Nicholas	<i>University of Tennessee, Knoxville</i>	nkim2@vols.utk.edu	108
Kim, Young Rae	<i>Texas A&M University, San Antonio</i>	youngrae.kim@tamusa.edu	117
Kimmerling, Christina	<i>California State University, Long Beach</i>	christina.kimmerling@csulb.edu	77
Kinach, Barbara	<i>Arizona State University</i>	barbara.kinach@asu.edu	117
King, Barbara	<i>Florida International University</i>	bking@fiu.edu	185
Kirschner, Sara	<i>George Mason University</i>	skirschn@gmu.edu	135
Kirwan, J. Vince	<i>Kennesaw State University</i>	jkirwan@kennesaw.edu	47
Kline, Kate	<i>Western Michigan University</i>	kate.kline@wmich.edu	99, 124
Knapp, Melinda	<i>Oregon State University, Cascades</i>	melinda.knapp@osucascades.edu	83, 138
Knotts, Angela	<i>WestEd</i>	angelaknotts@gmail.com	102
Koester, Mark	<i>Metropolitan State University of Denver</i>	koester@msudenver.edu	120
Koestler, Courtney	<i>Ohio University</i>	koestler@ohio.edu	51, 130
Kokka, Kari	<i>University of Pittsburgh</i>	kokka@pitt.edu	143
Kosko, Karl W.	<i>Kent State University</i>	kkosko1@kent.edu	157
Kozak, Kathryn	<i>AMATYC</i>	kathryn.kozak@coconino.edu	122
Krause, Gladys	<i>William and Mary</i>	ghkrause@wm.edu	87
Krebs, Angela	<i>University of Michigan, Dearborn</i>	askrebs@umich.edu	124
Krupa, Erin Elizabeth	<i>North Carolina State University</i>	eekrupa@ncsu.edu	104
Kulow, Torrey	<i>Portland State University</i>	kulow@pdx.edu	123, 163
Kurtz, Brianna Ashley	<i>University of Central Florida</i>	brianna.kurtz@ucf.edu	44
Kurz, Terri L.	<i>Arizona State University</i>	terri.kurz@asu.edu	28, 155
L			
LaCroix, Tiffany	<i>Virginia Tech</i>	tlacroix@vt.edu	174
LaMar, Tanya	<i>Stanford University</i>	tlamar@stanford.edu	166, 185
Lamb, John H.	<i>The University of Texas, Tyler</i>	jlamb@uttyler.edu	49, 76
LaRochelle, Raymond	<i>University of Delaware</i>	rlaroch@udel.edu	103, 144
Lawler, Brian R.	<i>Kennesaw State University</i>	blawler4@kennesaw.edu	92, 133
Layton, Rebecca Doty	<i>University of Tennessee, Knoxville</i>	rdoty1@vols.utk.edu	128
Leaf, Abi	<i>Escondido Union High School District</i>	aleaf@euhsd.org	92
Leatham, Keith Rigby	<i>Brigham Young University</i>	kleatham@mathed.byu.edu	139, 177
Lee, Hwa Young	<i>Texas State University</i>	hylee@txstate.edu	69, 79
Lee, Jean S.	<i>University of Indianapolis</i>	jslee@uindy.edu	40
Lee, Mi Yeon	<i>Arizona State University</i>	mlee115@asu.edu	6, 155
Leshin, Miriam Simone	<i>Stanford University</i>	mleshin@stanford.edu	185

Lesseig, Kristin	<i>Washington State University, Vancouver</i>	kristin.lesseig@wsu.edu	105, 150
Lewis, Jennifer M.	<i>Wayne State University</i>	jmlewis@wayne.edu	8
Liebars, Cathy S.	<i>The College of New Jersey</i>	liebars@tcnj.edu	2
Lin, Hochieh	<i>The Ohio State University</i>	lin.2532@osu.edu	117
Lischka, Alyson E.	<i>Middle Tennessee State University</i>	alyson.lischka@mtsu.edu	25, 59
Litke, Erica G.	<i>University of Delaware</i>	litke@udel.edu	106
Liu, Jinqing	<i>Indiana University, Bloomington</i>	jinqliu@iu.edu	24
Livers, Stefanie D.	<i>Missouri State University</i>	stefanielivers@missouristate.edu	154
Lloyd, Gwendolyn	<i>Pennsylvania State University</i>	lloyd@psu.edu	47
Lochard, Alicia	<i>University of Pennsylvania</i>	lochard@sas.upenn.edu	109
LopezLeiva, Carlos A.	<i>University of New Mexico</i>	callopez@unm.edu	22, 36
Louie, Nicole L.	<i>University of Wisconsin, Madison</i>	nlouie@wisc.edu	60
Lucas, Carol	<i>University of Central Oklahoma</i>	clucas@uco.edu	37
Luebeck, Jennifer	<i>Montana State University</i>	jennifer.luebeck@montana.edu	1
Lynch, Sararose	<i>Westminster College</i>	lynchsd@westminster.edu	83, 117
M			
MacDonald, Beth L.	<i>Utah State University</i>	beth.macdonald@usu.edu	89, 134
Madis, Carlee Elizabeth	<i>Western Michigan University</i>	carlee.e.hollenbeck@wmich.edu	27
Magiera, Marta T.	<i>Marquette University</i>	marta.magiera@marquette.edu	117
Makowski, Martha	<i>The University of Alabama</i>	mbmakowski@ua.edu	19
Males, Joshua R.	<i>Lincoln Public Schools</i>	joshmales@gmail.com	162
Males, Lorraine M.	<i>University of Nebraska, Lincoln</i>	lmales2@unl.edu	59, 94
Mallam, Winifred	<i>Texas Woman's University</i>	wmallam@twu.edu	194
Malzahn, Kristen	<i>Horizon Research, Inc.</i>	kmalzahn@horizon-research.com	42
Mangram, Charmaine	<i>University of Hawaii</i>	cmangram@hawaii.edu	85
Manouchehri, Azita	<i>The Ohio State University</i>	manouchehri.1@osu.edu	1
Marin, Katherine Ariemma	<i>Stonehill College</i>	kmarin@stonehill.edu	80, 117
Marmur, Ofer	<i>Simon Fraser University</i>	omarmur@sfu.ca	6
Marshall, Anne Marie	<i>Lehman College</i>	anne.marshall@lehman.cuny.edu	159, 196
Martin, Kristi R.	<i>North Carolina State University</i>	kmartin8@ncsu.edu	117
Martin, Stephanie	<i>University of Rochester</i>	smartin@warner.rochester.edu	102
Martin, Tami	<i>Illinois State University</i>	tsmartin@ilstu.edu	62
Martin, W. Gary	<i>Auburn University</i>	martiwg@auburn.edu	23, 193
Matyska, Rob	<i>Indiana University</i>	matyskar@iu.edu	117
McCloskey, Andrea	<i>Pennsylvania State University</i>	avm11@psu.edu	196
McCulloch, Allison	<i>University of North Carolina, Charlotte</i>	amccul11@uncc.edu	78, 139
McGraw, Rebecca	<i>The University of Arizona</i>	rmcgraw@math.arizona.edu	34, 58
McMahon, Darcy	<i>Michigan Department of Education</i>	mcmahond2@michigan.gov	124
McMillan, Brandon	<i>University of California, Los Angeles</i>	brandon.g.mcmillan@gmail.com	46
McNally, Jennifer	<i>Curry College</i>	jmcnally@curry.edu	91
McNamara, Julie	<i>California State University, East Bay</i>	julie.mcnamara@csueastbay.edu	181
Meiners, Amanda	<i>University of Iowa</i>	amanda-meiners@uiowa.edu	186
Melville, Matthew	<i>University of Delaware</i>	melbob@udel.edu	91
Miller, Catherine	<i>University of Northern Iowa</i>	catherine.miller@uni.edu	161
Miller, Emily	<i>West Chester University</i>	emiller@wcupa.edu	56
Molitoris Miller, Susanna	<i>Kennesaw State University</i>	smolitor@kennesaw.edu	127
Mortimer, Jillian Peterson	<i>University of Michigan</i>	jbpeter@umich.edu	72, 166
Morton, Karisma	<i>University of North Texas</i>	karisma.morton@unt.edu	117
Moscatelli, Maria	<i>Washington State University</i>	mmoscatelli@wsu.edu	173
Moss, Diana L.	<i>Utah State University</i>	diana.moss@usu.edu	134, 189
Munson, Jen	<i>Northwestern University</i>	jmunson@northwestern.edu	17
Myers, Marrielle	<i>Kennesaw State University</i>	mmyers22@kennesaw.edu	84, 143
N			
Nabours, Gina Marie	<i>Northern Arizona University</i>	gina.nabours@gmail.com	150
Naresh, Nirmala	<i>University of North Texas</i>	nirmala.naresh@unt.edu	118
Neihaus, Aubrey	<i>The University of Arizona</i>	aneihaus@gmail.com	3, 34
Neil, Bisola	<i>Bank Street College of Education</i>	bneil@bankstreet.edu	141
Nielsen, Porter	<i>Brigham Young University</i>	porternielsen@gmail.com	53
Nirode, Wayne	<i>Miami University</i>	nirodew@miamioh.edu	33, 54
Nitta, Kathleen	<i>Gonzaga University</i>	nitta@gonzaga.edu	173
Noblitt, Bethany	<i>Northern Kentucky University</i>	noblittb@nku.edu	120
Novak, Jodie	<i>University of Northern Colorado</i>	jodie.novak@unco.edu	63

O

O'Kelley, Sharon K.	Francis Marion University	sokelley@fmarion.edu	155
Olanoff, Dana	Widener University	dolanoff@widener.edu	26, 116
Oloff-Lewis, Jennifer	California State University, Chico	joloff-lewis@csuchico.edu	175
Orr, Sheila	Michigan State University	sheilafrederixon@gmail.com	156
Orrill, Chandra	University of Massachusetts, Dartmouth	corrill@umassd.edu	116
Ortiz, Nickolaus A.	Michigan State University	ortizni2@msu.edu	73
Osibodu, Molade	Michigan State University	mosibodu@msu.edu	97
Ozgun-Koca, S. Asli	Wayne State University	aokoca@wayne.edu	8
Ozturk, Ayse	The Ohio State University	ozturk.25@osu.edu	1, 171

P

Parise Schmidt, Megan	University of Minnesota	pari0071@umn.edu	153
Park, Hyejin	Marquette University	hyejin.park@marquette.edu	117
Parrish, Christopher W.	University of South Alabama	parrish@southalabama.edu	52
Patterson, Cody L.	Texas State University	codypattersonmath@gmail.com	64
Peters, Susan A.	University of Louisville	s.peters@louisville.edu	11
Peterson, Blake E.	Brigham Young University	peterson@mathed.byu.edu	27, 177
Pinter, Holly Henderson	Western Carolina University	hhpinter@wcu.edu	83, 101
Pitvorec, Kathleen	University of Illinois, Chicago	kapitvor@uic.edu	15, 190
Poling, Lisa	Appalachian State University	polingll@appstate.edu	10, 32
Prasad, Priya Vinata	The University of Texas, San Antonio	priya.prasad@utsa.edu	26, 118
Przybyla-Kuchek, Julia	University of Georgia	juliapk@uga.edu	67

R

Rassi, Darl	Olivet Nazarene University	dsrassi@olivet.edu	133
Raygoza, Mary Candace	Saint Mary's College of California	mcr13@stmarys-ca.edu	59, 87
Raymond, Kate M.	University of Oklahoma	kate.m.raymond@ou.edu	165
Reed, Samuel Douglas	Middle Tennessee State University	sdr4m@mtmail.mtsu.edu	78, 139
Reeder, Stacy	University of Oklahoma	reeder@ou.edu	47
Reinholz, Daniel Lee	San Diego State University	daniel.reinholz@sdsu.edu	106
Reinke, Luke T.	University of North Carolina, Charlotte	lreinke@uncc.edu	65
Reiten, Lindsay	University of Northern Colorado	lindsay.reiten@unco.edu	152
Remillard, Janine	University of Pennsylvania	janiner@upenn.edu	39
Rendon, Sharon	CPM	sharonrendon@cpm.org	188
Rhine, Steve	Pacific University	steverhine@pacificu.edu	20
Rice, Courtney	Pennsylvania State University	c.lynn.rice@gmail.com	47
Richardson, Sandra	National Science Foundation	srichard@nsf.gov	112
Richardson, Sue Ellen	Purdue University	richa114@purdue.edu	172, 192
Rigelman, Nicole	Portland State University	rigelman@pdx.edu	18, 123
Riling, Meghan	Boston University	mriling@bu.edu	126
Ristroph, Ingrid G.	The University of Texas, Austin	ingrid.ristroph@utexas.edu	117
Roller, Sarah A.	The University of Alabama in Huntsville	sarah.roller@uah.edu	80, 117
Roth McDuffie, Amy	Washington State University	mcduffie@wsu.edu	29, 173
Rougee, Annick	Washington State University, TriCities	annick.rougee@wsu.edu	13
Ruef, Jennifer	University of Oregon	jruef@uoregon.edu	82, 152
Ruk, Joshua Michael	Western Michigan University	jzf5431@wmich.edu	27

S

Sachs, Deb	University of Indianapolis	dsachs@uindy.edu	40
Saclarides, Evthokia Stephanie	The University of Alabama	essaclarides@ua.edu	95
Safi, Farshid	University of Central Florida	Farshid.Safi@ucf.edu	117
Sahin, Nesrin	University of Central Arkansas	nesrins@uca.edu	117
Salazar, Fany	The University of Arizona	fanyasalazar@email.arizona.edu	191
Sanchez, Wendy Burleson	Kennesaw State University	wsanchez@kennesaw.edu	141
Sanjari, Azin	Arkansas Tech University	ssanjari@mahaleh@atu.edu	1
Satyam, V. Rani	Virginia Commonwealth University	vsatyam@vcu.edu	88
Schack, Edna O'Brien	Morehead State University	e.schack@moreheadstate.edu	133
Scroggins, Ashley	University of Colorado, Boulder	ashley.scroggins@colorado.edu	12
Danielle Seago, Nanette	WestEd	nseago@wested.org	102
Sears, Ruthmae	University of South Florida	ruthmaeseas@usf.edu	67, 85
Seashore, Kimberly Shah,	San Francisco State University	kimseash@sfsu.edu	169
Meetal	North Carolina State University	mshah2@ncsu.edu	131
Sharpe, Charlotte Dunlap	Syracuse University	cjsharp@sy.edu	83
Shaughnessy, Meghan	University of Michigan	mshaugh@umich.edu	72
Sherman, Diana	Saint Anselm College	disherma@anselm.edu	117
Shulman, Jonah	University of Nevada, Las Vegas	Shulmj1@unlv.Nevada.edu	61, 140
Silverman, Jason	Drexel University	silverman@drexel.edu	195

Simic-Muller, Ksenija	<i>Pacific Lutheran University</i>	simicmka@plu.edu	169, 184
Simpson, Amber	<i>Binghamton University, SUNY</i>	asimpson@binghamton.edu	172
Skultety, Lisa	<i>University of Central Arkansas</i>	lisa.skultety@gmail.com	103
Slavit, David	<i>Washington State University, Vancouver</i>	dslavit@wsu.edu	150
Smith, Carmen	<i>University of Vermont</i>	carmen.smith@uvm.edu	185
Smith, Margaret	<i>University of Pittsburgh</i>	pegs@pitt.edu	164
Smith, Rebecca E.	<i>University of North Alabama</i>	rsmith27@una.edu	159
Snider, Rachel B.	<i>The College of New Jersey</i>	rsnider@umich.edu	52
Sokoll, Amy	<i>University of Nebraska, Lincoln</i>	asokoll2@huskers.unl.edu	71
Starks, Rachel	<i>Boston University</i>	rnstarks@bu.edu	126, 187
Steinhorn, Charles	<i>Vassar College</i>	steinhorn@vassar.edu	117
Stephan, Michelle	<i>University of North Carolina, Charlotte</i>	michelle.stephan@unc.edu	21, 163
Stockero, Shari L.	<i>Michigan Technological University</i>	stockero@mtu.edu	27, 177
Stoehr, Kathleen Jablon	<i>Santa Clara University</i>	kstoehr@scu.edu	36, 191
Stone, Jamalee	<i>Black Hills State University</i>	jami.stone@bhsu.edu	59, 175
Strutchens, Marilyn E.	<i>Auburn University</i>	strutme@auburn.edu	85
Sugimoto, Amanda T.	<i>Portland State University</i>	asugimo2@pdx.edu	18
Suh, Jennifer M.	<i>George Mason University</i>	jsuh4@gmu.edu	29, 75
Sullivan, Patrick Lane	<i>Missouri State University</i>	patrick.sullivan@missouristate.edu	59
Sun, Kathy	<i>Santa Clara University</i>	ksun@scu.edu	176
Swarthout, Mary B.	<i>Sam Houston State University</i>	swarthout@shsu.edu	135
Swartz, Barbara Ann	<i>McDaniel College</i>	bswartz@mcDaniel.edu	7, 179
Sweeny, Shannon P	<i>Northern Arizona University</i>	shannon.sweeny@nau.edu	82, 150
Sztajn, Paola	<i>North Carolina State University</i>	psztajn@ncsu.edu	102, 149
T			
Tanck, Hilary	<i>Clemson University</i>	htanck@clemson.edu	44
Tanner, Amy	<i>Brigham Young University</i>	atanner@mathed.byu.edu	59
Tavormina, Mary Jo	<i>University of Illinois, Chicago</i>	mjtav@uic.edu	190
Taylor, Cynthia E.	<i>Millersville University of Pennsylvania</i>	cynthia.taylor@millersville.edu	74
Telese, James Anthony	<i>The University of Texas, Rio Grande Valley</i>	james.telese@utrgv.edu	117
Teuscher, Dawn	<i>Brigham Young University</i>	dawn.teuscher@byu.edu	53, 140
Thanheiser, Eva	<i>Portland State University</i>	thanheisere@gmail.com	106, 116
Thomas, Amanda	<i>University of Nebraska, Lincoln</i>	amanda.thomas@unl.edu	71
Thomas, Jonathan	<i>University of Kentucky</i>	jonathan.thomas1@uky.edu	103, 133
Tillema, Erik	<i>Indiana University</i>	etillema@indiana.edu	147
Tjoe, Hartono	<i>Pennsylvania State University, Berks</i>	hht1@psu.edu	117, 163
Tobias, Jennifer M.	<i>Illinois State University</i>	jtobias@ilstu.edu	116
Toncheff, Mona	<i>NCSM: Leadership in Mathematics Education</i>	mona.toncheff@gmail.com	38
Turner, Erin E.	<i>The University of Arizona</i>	eturner@email.arizona.edu	29, 114
Turrou, Angela C.	<i>University of California, Los Angeles</i>	achan@gseis.ucla.edu	46
Tyminski, Andrew	<i>Clemson University</i>	amt23@clemson.edu	171
U			
Ulrich, Catherine	<i>Virginia Tech</i>	culrich@vt.edu	155
Utlej, Juliana	<i>Oklahoma State University</i>	juliana.utley@okstate.edu	47
V			
Vallines Mira, Raquel	<i>The University of Texas, San Antonio</i>	raquel.vallinesmira@utsa.edu	118
van den Kieboom, Leigh A.	<i>Marquette University</i>	leigh.vandenkieboom@marquette.edu	95
van Es, Elizabeth A.	<i>University of California, Irvine</i>	evanes@uci.edu	110, 148
van Ingen, Sarah	<i>University of South Florida</i>	vaningen@usf.edu	90
Van Zoest, Laura	<i>Western Michigan University</i>	laura.vanzoest@wmich.edu	27, 177
Voogt, Kevin	<i>Michigan State University</i>	voogtkev@msu.edu	156, 186
W			
Walkowiak, Temple A.	<i>North Carolina State University</i>	tawalkow@ncsu.edu	5, 104
Waller, Patrice Parker	<i>California State University, Fullerton</i>	pwaller@fullerton.edu	176
Walters, C. David	<i>Weber State University</i>	cdavidwalters@weber.edu	48
Warburton, Trevor	<i>Utah Valley University</i>	trevor.warburton@uvu.edu	141
Ward, Jennifer	<i>Kennesaw State University</i>	ward.jennifer.k@gmail.com	3
Warshauer, Hiroko K.	<i>Texas State University</i>	hw02@txstate.edu	64
Watson, Ginger S.	<i>University of Virginia</i>	ginger.watson@virginia.edu	183
Watson, Lucy	<i>Belmont University</i>	lucywatson@gmail.com	76
Weiland, Travis	<i>Appalachian State University</i>	weilandtj@appstate.edu	10, 32
Welder, Rachael M.	<i>Texas A&M University</i>	rachael@rachaelwelder.com	26, 116
Wessman-Enzinger, Nicole M.	<i>George Fox University</i>	nenzinger@georgefox.edu	186
Weston, Tracy	<i>Middlebury College</i>	tweston@middlebury.edu	107, 157

Wheeler, Ann	<i>Texas Woman's University</i>	awheeler2@twu.edu	194
Whipple, Kyle S.	<i>University of Wisconsin, Eau Claire</i>	whippkls@uwec.edu	130
White, Dorothy Y.	<i>University of Georgia</i>	dywhite@uga.edu	133
White, Janet A.	<i>Millersville University</i>	jwhite@millersville.edu	66
Wiemann, Rob	<i>Rowan University</i>	gomathman@yahoo.com	162
Wilkerson, Trena	<i>National Council of Teachers of Mathematics & Baylor University</i>	twilkerson@nctm.org	23
Willingham, James Chris	<i>James Madison University</i>	willinjc@jmu.edu	82
Wilson, Holt	<i>University of North Carolina, Greensboro</i>	phwilson@uncg.edu	121, 182
Wilson, Melody	<i>University of Michigan</i>	melody@umich.edu	158
Wohlhuter, Kay A.	<i>University of Minnesota, Duluth</i>	kwohlhut@d.umn.edu	135
Wonsavage, F. Paul	<i>University of North Carolina, Greensboro</i>	fpwonsav@uncg.edu	121
Wood, Marcy B.	<i>The University of Arizona</i>	mbwood@email.arizona.edu	117, 166
Woods, Dawn	<i>Oakland University</i>	dr.dawn.woods@gmail.com	83, 185
Y			
Yanisko, Emily J.	<i>Urban Teachers, Baltimore</i>	eyanisko@gmail.com	31
Yao, Xiangquan	<i>Pennsylvania State University</i>	xzy73@psu.edu	45
Yeh, Cathery	<i>Chapman University</i>	yeh@chapman.edu	87
Yoder, Gina Borgioli	<i>Indiana University - Purdue University Indianapolis</i>	gbyoder@iupui.edu	24
Z			
Zambak, Vecihi Serbay	<i>Monmouth University</i>	vzambak@monmouth.edu	45
Zavala, Maria del Rosario	<i>San Francisco State University</i>	mza@sfsu.edu	22, 60, 169
Zazkis, Rina	<i>Simon Fraser University</i>	zazkis@sfu.ca	6
Zelkowski, Jeremy	<i>The University of Alabama</i>	jzelkowski@ua.edu	85, 137
Zimmerman, Stacey C.	<i>University of North Carolina, Greensboro</i>	sczimmer@uncg.edu	182
Zonnefeld, Ryan	<i>Dordt University</i>	ryan.zonnefeld@dordt.edu	152
Zonnefeld, Valorie L.	<i>Dordt University</i>	valorie.zonnefeld@dordt.edu	152

PROPOSAL REVIEWERS FOR 2020 ANNUAL AMTE CONFERENCE

Abbaspour Tazehkand, Shahabeddin	<i>University of Central Florida</i>	Creager, Mark A.	<i>University of Southern Indiana</i>
Allen, Jessica S.	<i>University of South Carolina</i>	DeFino, Rosalie	<i>University of Michigan</i>
Amador, Julie	<i>University of Idaho</i>	Disney, Andria	<i>Georgia Southern University</i>
Apraiz, Kristen	<i>University of Florida</i>	Dobie, Tracy	<i>University of Utah</i>
Arnold, Liz	<i>James Madison University</i>	Dubbs, Christopher	<i>Michigan State University</i>
Atabas, Sebnem	<i>Florida State University</i>	Eddy, Colleen M.	<i>University of North Texas</i>
Aydeniz, Fetiye	<i>Indiana University, Bloomington</i>	Edenfield, Kelly	<i>University of Georgia</i>
Bailey, Nina Gabrielle	<i>University of North Carolina, Charlotte</i>	Edgington, Cyndi	<i>North Carolina State University</i>
Bailey, Pamela R.	<i>Mary Baldwin University</i>	Eli, Jennifer	<i>The University of Arizona</i>
Baldinger, Erin E.	<i>University of Minnesota</i>	Elliott, Lucas	<i>University of Louisville</i>
Barlow, Angela T.	<i>University of Central Arkansas</i>	Elliott, Rebekah	<i>Oregon State University</i>
Bay-Williams, Jennifer	<i>University of Louisville</i>	Enderson, Mary C.	<i>Old Dominion University</i>
Berry, Betsy	<i>Purdue University, Fort Wayne</i>	Farmer, Rachelle Romero	<i>George Mason University</i>
Bharaj, Pavneet Kaur	<i>Indiana University, Bloomington</i>	Foster, Jonathan	<i>University of Georgia</i>
Bolyard, Johnna	<i>West Virginia University</i>	Fox, Ryan David	<i>Belmont University</i>
Bondurant, Liza	<i>Delta State University</i>	Franz, Dana Pomykal	<i>Mississippi State University</i>
Boston, Melissa	<i>Duquesne University</i>	Freeland, Sean	<i>West Virginia University</i>
Bowen, Diana L.	<i>University of Maryland</i>	Gay, Susan	<i>University of Kansas</i>
Bowers, David Matthew	<i>Michigan State University</i>	Gearing, Nicole Venuto	<i>Utah Valley University</i>
Brown, Rachael E.	<i>Pennsylvania State University, Abington</i>	Gerardo, Juan Manuel	<i>The University of Alabama</i>
Burch, Lori	<i>Indiana University</i>	Ghosh Hajra, Sayonita	<i>California State University, Sacramento</i>
Burton, Megan	<i>Auburn University</i>	Gomez Johnson, Kelly	<i>University of Nebraska, Omaha</i>
Carreras-Jusino, Angel	<i>University of Georgia</i>	Gomez, Carlos Nicolas	<i>Clemson University</i>
Cavanna, Jillian M.	<i>University of Hartford</i>	Gonzalez, Monica	<i>East Carolina University</i>
Chandler, Kayla	<i>East Carolina University</i>	Gordon, Evelyn M.	<i>Horizon Research, Inc.</i>
Chesler, Joshua	<i>California State University, Long Beach</i>	Graif, Foster	<i>University of Minnesota</i>
Chiu, Thomas K. F.	<i>The Chinese University of Hong Kong</i>	Grosser-Clarkson, Dana	<i>University of Maryland</i>
Conner, AnnaMarie	<i>University of Georgia</i>	Hallman-Thrasher, Allyson	<i>Ohio University</i>
Cook, Alice L.	<i>Johns Hopkins University</i>	Harbour, Kristin E.	<i>University of South Carolina</i>
Corven, Julien	<i>University of Delaware</i>	Harper, Suzanne R.	<i>Miami University</i>
Costner, Kelly M.	<i>Winthrop University</i>	Hawthorne, Casey W.	<i>Furman University</i>
Cox, Dana C.	<i>Miami University</i>	Hjalmarson, Margret	<i>George Mason University</i>

Hodges, Thomas	<i>University of South Carolina</i>	Patterson, Cody L.	<i>Texas State University</i>
Hoover, Mark	<i>University of Michigan, Ann Arbor</i>	Peters, Susan A.	<i>University of Louisville</i>
Hudson, Rick A.	<i>University of Southern Indiana</i>	Pinchback, Carolyn	<i>University of Central Arkansas</i>
Jacobson, Erik	<i>Indiana University</i>	Pitvorec, Kathleen	<i>University of Illinois, Chicago</i>
Jessup, Naomi	<i>Georgia State University</i>	Poling, Lisa	<i>Appalachian State University</i>
Kar, Avijit	<i>Georgia State University</i>	Powers, Robert	<i>University of Northern Colorado</i>
Karagöz Akar, Gülseren	<i>Boğaziçi University</i>	Pynes, D'Anna	<i>University of Michigan, Ann Arbor</i>
Karr, Josh	<i>West Virginia University</i>	Rahman, Zareen	<i>James Madison University</i>
Kelley, Traci	<i>The University of Texas, San Antonio</i>	Rakes, Christopher	<i>University of Maryland, Baltimore County</i>
King, Nicholas	<i>University of Tennessee</i>	Rassi, Darl	<i>Olivet Nazarene University</i>
Kirwan, J. Vince	<i>Kennesaw State University</i>	Raygoza, Mary Candace	<i>Saint Mary's College of California</i>
Klein, Valerie	<i>Drexel University</i>	Riling, Meghan	<i>Boston University</i>
Knapp, Melinda	<i>Oregon State University, Cascades</i>	Saclarides, Evthokia Stephanie	<i>The University of Alabama</i>
Kulow, Torrey	<i>Portland State University</i>	Safi, Farshid	<i>University of Central Florida</i>
Kurtz, Brianna Ashley	<i>University of Central Florida</i>	Sears, Ruthmae	<i>University of South Florida</i>
LaCroix, Tiffany	<i>Virginia Tech</i>	Shah, Meetal	<i>North Carolina State University</i>
LaRochelle, Raymond	<i>University of Delaware</i>	Sharpe, Charlotte Dunlap	<i>Syracuse University</i>
Leatham, Keith Rigby	<i>Brigham Young University</i>	Sherman, Diana	<i>Saint Anselm College</i>
Lee-Hassan, Alexa W. C.	<i>University of Illinois, Chicago</i>	Simic-Muller, Ksenija	<i>Pacific Lutheran University</i>
Lee, Alees	<i>University of Northern Colorado</i>	Siy, Eric	<i>University of Georgia</i>
Lee, Carrie W.	<i>East Carolina University</i>	Smith, Wendy	<i>University of Nebraska</i>
Liebars, Cathy S.	<i>The College of New Jersey</i>	Snider, Rachel B.	<i>The College of New Jersey</i>
Lin, Hochieh	<i>The Ohio State University</i>	Somers, John W.	<i>University of Indianapolis</i>
Lischka, Alyson E.	<i>Middle Tennessee State University</i>	Stockero, Shari L.	<i>Michigan Technological University</i>
Litke, Erica G.	<i>University of Delaware</i>	Stone, Jamalee	<i>Black Hills State University</i>
LoPresto, Kevin	<i>Francis Marion University</i>	Strickland, Sharon	<i>Texas State University</i>
Lynch, Sararose	<i>Westminster College</i>	Swartz, Barbara Ann	<i>McDaniel College</i>
Madis, Carlee Elizabeth	<i>Western Michigan University</i>	Tanner, Amy	<i>Brigham Young University</i>
Makowski, Martha	<i>The University of Alabama</i>	Tyminski, Andrew	<i>Clemson University</i>
Maldonado, Luz Angelica	<i>Texas State University</i>	Utlej, Juliana	<i>Oklahoma State University</i>
Manouchehri, Azita	<i>The Ohio State University</i>	Vargas, Gabriela E.	<i>University of Illinois, Urbana-Champaign</i>
Marin, Katherine Ariemma	<i>Stonehill College</i>	Ward, Jennifer	<i>Kennesaw State University</i>
Marynowski, Richelle	<i>University of Lethbridge</i>	Weiland, Travis	<i>Appalachian State University</i>
Massey, Johanna Lee Fuller	<i>Alabama A&M University</i>	Weston, Tracy	<i>Middlebury College</i>
Matyska, Rob	<i>Indiana University</i>	Whipple, Kyle S.	<i>University of Wisconsin, Eau Claire</i>
McCloskey, Andrea	<i>Pennsylvania State University</i>	White, Dorothy Y.	<i>University of Georgia</i>
McGraw, Rebecca	<i>The University of Arizona</i>	Wilburne, Jane	<i>Pennsylvania State University, Harrisburg</i>
Merritt, Monica	<i>Mount Saint Mary College</i>	Wilson, Holt	<i>University of North Carolina, Greensboro</i>
Miller, Erica Rose	<i>Virginia Commonwealth University</i>	Wonsavage, F. Paul	<i>University of North Carolina, Greensboro</i>
Moldavan, Alesia Mickle	<i>Fordham University</i>	Woods, Dawn	<i>Oakland University</i>
Morgan, Michelle A.	<i>Western Colorado University</i>	Yao, Xiangquan	<i>Pennsylvania State University</i>
Moss, Diana L.	<i>Utah State University</i>	Yoder, Gina Borgioli	<i>Indiana University - Purdue University</i>
Myers, Marrielle	<i>Kennesaw State University</i>		<i>Indianapolis</i>
Nirode, Wayne	<i>Miami University</i>	Zambak, Vecihi Serbay	<i>Monmouth University</i>
Olanoff, Dana	<i>Widener University</i>	Zbiek, Rose Mary	<i>Pennsylvania State University</i>
Ozturk, Ayse	<i>The Ohio State University</i>	Zelkowski, Jeremy	<i>The University of Alabama</i>
Park, Hyejin	<i>Marquette University</i>	Zhang, Yu	<i>University of Southern California</i>
Parrish, Christopher W.	<i>University of South Alabama</i>		

2020 AMTE BUSINESS MEETING AGENDA

Saturday, February 8, 2020

Phoenix C Ballroom, Sheraton Phoenix Downtown Hotel, AZ

A. WELCOME

MIKE STEELE, *AMTE PRESIDENT*, PRESIDING

B. APPROVAL OF THE MINUTES

SANDI COOPER

C. TREASURER AND MEMBERSHIP REPORT

SARAH QUEBEC FUENTES, TIM HENDRIX

D. CONFERENCE REPORT

TRENA WILKERSON & COLLEEN EDDY

E. DIVISION REPORTS AND RECOGNITIONS

Headquarters Division

Membership Division

Professional Learning Division

Publications Division

Advocacy, Equity, and Research Division

Communications and Outreach Division

Tim Hendrix, Executive Director

Maggie McGatha, Vice-President

Lynn Breyfogle, Vice-President

Babette Benken, Vice-President

Sarah van Ingen, Vice-President

Dustin Jones, Vice-President

F. NEW BUSINESS

G. INSTALLATION OF NEW BOARD MEMBERS

H. DISCUSSION: AMTE “LOOKING DOWN THE ROAD” TO THE FUTURE FOR MTE’S

AMTE is currently engaged in long-term planning to identify important priorities for the board of directors to work on over the next 3-5 years. Reflecting on this year’s opening session and your conference experience, please discuss the following questions with your table:

1. What do you see as the most significant challenges facing mathematics teacher education in the next 5-10 years?
2. What actions would you like to see AMTE take in the short term (12-18 months) to better support members and address challenges?
3. What actions would you like to see AMTE take in the long term (3-5 years) to better support members and address challenges?
4. Are there things that AMTE should not take on or should stop doing to better focus on the current needs of our membership?

I. ADJOURNMENT

2019 AMTE BUSINESS MEETING MINUTES

Saturday, February 9, 2019

11:45am – 1:15pm (EST)

Rosen Plaza, Ballroom B, Orlando Florida

Randy Philipp, President, called the meeting to order at 12:06 pm (EST).

I. WELCOME

RANDOLPH PHILIPP, *AMTE PRESIDENT, PRESIDING*

Randy started with a few announcements. The *Mathematics Teacher Educator* Journal seeks feedback from AMTE members to improve journal access and visibility, on an anonymous three-minute survey (link found at <https://www.surveymonkey.com/r/m6dp33z>). The Math Learning Center has two job opportunities and the links to these positions were shared with the membership. Randy pointed out that copies of the 2018 AMTE Annual Report were available on each table and this report provides a quick overview of what board and committees have been engaged in last year.

II. APPROVAL OF THE MINUTES

SANDI COOPER, *SECRETARY*

Sandi Cooper presented the minutes from last year's business meeting from 2018 conference. Motion to accept the minutes as presented moved by Maggie McGatha and seconded by Anita Wager. Motion passed unanimously.

III. TREASURER AND MEMBERSHIP REPORT

ANITA WAGER, *TREASURER*

TIM HENDRIX, *EXECUTIVE DIRECTOR*

Anita Wager shared the treasurer report which included the operating budget and the conference budget. The 2018 YTD Income is \$65,406 and Expenses is \$49,111. Current cash reserves are \$272,327. For the 2018 Conference in Houston, the conference income was \$232,129 and expenses were \$199,733, with a net income of \$32,356.

Tim Hendrix reported that current membership is 981, which is fairly consistent in last two or three years with a little fluctuation. There are 152 graduate student members and 30 Emeritus members. Current members are from ALL 50 states in the U.S., plus DC, Puerto Rico, and 4 Canadian provinces. In addition, there are members from Australia, Germany, India, Jamaica, Malta, Malaysia, Netherlands, and Saudi Arabia.

Tim reminded everyone to complete the conference survey and indicated that participants would receive an email with a link.

IV. CONFERENCE REPORT

SUSAN GAY, *CONFERENCE DIRECTOR*

Susan Gay, AVP for Conferences, Conference Director, offered thanks to all of the presenters and shared that there was a record number of sessions at this year's conference. She shared that she will send a letter on our behalf to express our thanks to hotel staff for their gracious hospitality. She announced that the 2020 conference will be in Phoenix, Arizona and the call for proposals will be available on March 1.

Randy acknowledged the local arrangements committee (names below) and Sarah Bush, Co-Chair for Registration, Farshid Safi, Co-Chair for Registration, and Megan Nickels, Co-Chair for Audio-Visual.

- Aline Abasssian
- Tuyin An
- Janet Andreassen
- Shahab Abbaspour
- Taylor Bousfield
- Angela Broaddus
- Lisa Brooks
- Jennifer Caton
- Siddhi Desai
- Daniel Edelen
- Heidi Eisenreich
- Bethany Fralish
- Gina Gresham
- Erhan Haciomeroglu
- Jeanine Hastings
- Adele Handlong
- Brianna Kurtz
- Carrie La Voy
- Carol Lucas
- Cathrine Maiorca
- Margaret Mohr-Schroeder
- Enrique Ortiz
- Katrina Rothrock
- Katie Salamanca
- Eryn Stehr
- Makini Sutherland
- Mathew Taylor
- Taylar Wenzel

Tim once again thanked Carol Lucas and Susan Gay for their service and presented them with a box of notes and plaque to recognize their years of service as Conference Director and Assistant Conference Director.

V. DIVISION REPORTS AND RECOGNITIONS

a. HEADQUARTERS DIVISION

TIM HENDRIX, EXECUTIVE DIRECTOR

Tim recognized outgoing AVP for Constitution & By-Laws, Sararose Lynch and incoming AVP, Megan Burton. He recognized AVP for Nominations and Elections, Toya Frank, who will continue in this role. Tim also announced that this committee would seek nominations for President-Elect, Secretary, and one Board Member-at-Large for 2020. (Report for this division can be found on pages 4-6 of the 2018 Annual Report located at <https://amte.net/sites/default/files/Annual-Report-2018-AMTE.pdf>)

b. MEMBERSHIP DIVISION

MAGGIE MCGATHA, VICE-PRESIDENT

Maggie recognized the three AVPs for this division which includes AVP for Affiliates: outgoing, *Tom Evitts*, incoming *Michelle Stephan*; AVP for Awards: outgoing *Lisa Poling*, incoming *Amanda Sawyer*; and AVP for Membership: *Nicole Rigelman*, who will continue in this role. Maggie encouraged members to consider four ways they can engage in AMTE. One was to join their state affiliate or if there was not a state affiliate to start one. Another was to nominate colleagues for the various awards that are available and indicated that information is found on the AMTE web site. And she invited members to share ideas about how AMTE can better support them. (Report for this division can be found on pages 11-12 of the 2018 Annual Report located at <https://amte.net/sites/default/files/Annual-Report-2018-AMTE.pdf>)

c. PROFESSIONAL LEARNING DIVISION

LYNN BREYFOGLE, VICE-PRESIDENT

Lynn shared the benefits of the recent restructuring of AMTE Leadership and how it created a more intentional collaboration across committees in each division. Out of this collaboration emerged several new initiatives such as manuscript review groups, TechTalk spots, and new webinars. She encouraged members to provide feedback on the conference evaluation and reminded them of the volunteer form found on the AMTE website site. Lynn formally thanked Susan Gay and Carol Lucas for their years of work organizing the annual conferences. Moving forward the plans are to organize an entire conference committee to organize the conference and take on the tasks that Susan and Carol have coordinate for years. This committee will be led by incoming AVP for Annual

Conferences, Trena Wilkerson. Lynn recognized the other AVPs for this division, which include: AVP for 2019 Conference program, outgoing *Dana Cox*, and incoming 2020 Conference Program, *AnnaMarie Conner*; AVP for professional development, outgoing *Sam Ekelson*, and incoming *Sararose Lynch*; AVP for STaR program, outgoing *Jeff Shih* and incoming AVP *Keith Leatham*; AVP for Technology, outgoing *Ryan Smith* and incoming *Amanda Thomas*. (Report for this division can be found on pages 13-15 of the 2018 Annual Report located at <https://amte.net/sites/default/files/Annual-Report-2018-AMTE.pdf>)

d. **PUBLICATIONS DIVISION**

BABETTE BENKEN, VICE-PRESIDENT

Tim Hendrix, on behalf of VP Babette Benken, recognized AVPs of this division which includes: AVP and Chair of Editorial Panel of MTE, outgoing *Gloriana Gonz  les-Rivera*, and incoming, *Jan Yow*; Editor of *Mathematics Teacher Educator* (MTE), outgoing, *Sandra Crespo* and incoming, *Karen Hollebrands*, and Associate Editor, outgoing, *Kristen Bieda* and incoming, *Valerie Faulkner*; AVP for Connections Newsletter, *James Telese*, who will continue in this role; Co-AVPs for the CITE Journal, outgoing, *S. Asli   zg  n-Koca*, continuing, *Beth Bos*, and incoming *Shannon Driskill*; AVP for Publications Review, *LouAnn Lovin*, who will continue in this role. (Report for this division can be found on pages 16-18 of the 2018 Annual Report located at <https://amte.net/sites/default/files/Annual-Report-2018-AMTE.pdf>)

e. **ADVOCACY, EQUITY AND RESEARCH DIVISION**

PAOLA SZTAJN, VICE-PRESIDENT

Paola thanked Randy for asking her to serve as VP for this division. With the new structure, she shared that it was fascinating to see how this group came together, much like a thinking tank, a space to consider the challenges and opportunities to think about how to work toward the future. Paola recognized the AVPs for this division which includes: AVP for Emerging Issues, outgoing *Shari Stockero*, and incoming *Zandra de Araujo*; AVP for Equity, outgoing *Marta Civil*, and incoming, *Carlos Lopes Leiva*; AVP for Research, outgoing *Blake Peterson*, and incoming *Megan Shaughnessy*. (Report for this division can be found on pages 19-20 of the 2018 Annual Report located at <https://amte.net/sites/default/files/Annual-Report-2018-AMTE.pdf>)

Randy recognized Paola Sztajn as outgoing VP and welcomed Sarah van Ingen as new VP for this division.

f. **COMMUNICATIONS AND OUTREACH DIVISION**

SUZANNE HARPER, VICE-PRESIDENT

Suzanne recognized AVPs for this division which includes: AVP for Web Development, *Joe Champion*; AVP for Sponsorship, *Damon Bahr*; AVP for STaR Fundraising, *Denise Spangler*; and AVP for Marketing, *Joel Amidon*. All of these AVPs will continue for 2019-2020 (Report for this division can be found on pages 21-22 of the 2018 Annual Report located at <https://amte.net/sites/default/files/Annual-Report-2018-AMTE.pdf>)

Randy recognized Suzanne Harper as outgoing VP of Communications and Outreach and welcomed Dusty Jones as incoming VP of this division.

VI. INSTALLATION OF NEW BOARD MEMBERS

RANDOLPH PHILIPP

Randy recognized outgoing board members, Anita Wager, outgoing treasurer, and Dorothy White, outgoing board member-at-large. Randy recognized incoming board members, Enrique Galindo, Board Member-at-Large, Sarah Quebec-Fuentes, Secretary, and Mike Steele, President.

Mike recognized the service of President, Randy Philipp, for the past three years and thanked him on the behalf of the entire membership for his outstanding leadership.

VII. DISCUSSION OF AMTE PRIORITIES

MIKE STEELE

Mike presented the 2019 Two-Year Strategic Priorities and provided an overview of each.

1. Explore multiple avenues for AMTE members to recognize and address inequities, building toward equitable practices.
2. Identify and engage a broader constituency for AMTE.
3. Engage membership in strategic planning for the organization.

Mike asked the group to engage in a brief discussion and provide feedback based on the following questions:

- What would you like to see AMTE focus on with respect to the three strategic priorities?
- What ideas do you not see represented here that we should be thinking about?

Members captured their ideas on index cards and shared in small groups discussions. Mike then facilitated a brief discussion with members to provide an opportunity to share some ideas that emerged in small groups with the entire group. Ideas that were verbalized included: we need to consider how to better integrate the AMTE Standards into the conference and our scholarship; researchers are often frustrated with policy makers not really listening, so it might be good to consider how to include policy makers in future conferences; Mike pointed out that we may need to consider how we engage policy makers locally through affiliates; we need to think about how to include more diversity at the conference and in the scholarship that is shared through presentations; we need to be cautious when reaching out to engage with a broader constituency (referring to priority #2) that we are careful not to compete with sister organizations, but to focus on ways to collaborate.

VIII. NEW BUSINESS

MIKE STEELE

Mike asked if there was any new business to consider. None was offered.

IX. ADJOURNMENT

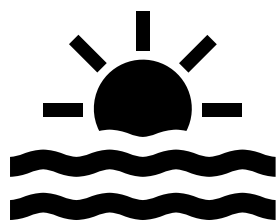
MIKE STEELE

Motion: To adjourn the 2019 AMTE Annual Business Meeting. Moved by Judith Jacobs, and seconded by Matthew Felton-Koestler. Motion passed unanimously.

MORE INFORMATION ON AMTE.NET

- AMTE Leadership, including members serving on committees and task forces
- AMTE Awards, including the Excellence in Teaching in Mathematics Teacher Education Award and the Early Career Award
- Susan Gay Graduate Student Conference Travel Scholarship
- Elementary Mathematics Specialist (EMS) Scholarship
- Call for Manuscripts, Reviewers, Readers, & Comments for *CITE-Math Journal*
- Call for Manuscripts for *Mathematics Teacher Educator*
- Call for Manuscripts for *Connections*

2021 ANNUAL AMTE CONFERENCE



See you in Orlando

We invite you to attend and present at the
Twenty-Fifth Annual AMTE Conference, to be held
February 11-13, 2021, at the Rosen Centre Hotel
in **Orlando, FL**.

The Call for Proposals will be available on the AMTE website (amte.net) by March 1, 2020, and in the next issue of *AMTE Connections*. The Program Chair is Rick Hudson, University of Southern Indiana (programchair@amte.net).

**THE DEADLINE FOR SUBMITTING PROPOSALS
FOR THE 2021 ANNUAL CONFERENCE IS MAY 15, 2020.**

Visit **amte.net/conferences** for updated information about past and future conferences.

FUTURE AMTE CONFERENCES

2021 AMTE Conference	Rosen Centre Hotel Orlando, FL	February 11 – 13, 2021
2022 AMTE Conference	Hilton Las Vegas Resort & Spa Las Vegas, NV	February 10 – 12, 2022
2023 AMTE Conference	Crowne Plaza New Orleans French Quarter New Orleans, LA	February 2 – 4, 2023


SHERATON
 Phoenix Downtown

