Thursday, February 14, 2019

Registration: 3:00 – 6:00 MTSU Student Union, West Entrance, Second Floor, Outside Ballroom
Reception: 4:00 – 6:00 MTSU Student Union, Second Floor Ballroom Hallway
Poster Presentations: 4:00 – 6:00 MTSU Student Union Second Floor Ballroom Hallway
(See poster presentation details below.)
Banquet: 6:00 – 8:00 Student Union Ballroom A/B
Keynote Address: If We Know so Much about Good Math and Science Teaching, Why is it so Hard to Do?
Dr. Ilana Horn, Vanderbilt University

Poster Presentations:
1. “3D Biology Lessons: Designing across biology, data modeling, and argumentation.” Anna Grinath, Ryan Seth Jones, Casey Whitworth, Angela Google, Harlee Morphis (MTSU)
2. “Assessing biology proficiency as a multifaceted construct.” Brock Couch, Anna Grinath (MTSU), Partick Enderle (Georgia State), Jonathon Grooms (The George Washington Univ), Victor Sampson (The University of Texas at Austin)
3. “Biology Graduate Teaching Assistants as Novice Educators: Similarities Between Teaching Ability and Practice Beliefs Between Teaching Assistants and K-12 Teachers.” Grant Gardner (MTSU), Jennifer Parish (University of Northern Colorado)
4. “A Social Network Analysis of Introductory Biology Students' In-and-Out-of-Class Study Group Interactions.” Gina Bishara, Grant Gardner, Joshua Reid (MTSU)
6. “Post-exam Reflection Activity: Beneficial for Both Student and Teachers.” Joshua Forakis (U. of AL, Birmingham)
7. “The Middle Tennessee MTE Partnership: Research-Based Growth and Improvement.” Alyson Lischka, Jeremy Strayer, Sally Millsap, Ryan Seth Jones (MTSU)
12. “Developing Teachers' Mathematics Instructional Expertise Through Vertical Lesson Study.” Rongjin Huang, Dovie Kimmins, Jeremy Waters, Jennifer Seat (MTSU)
13. “X-ray Crystallography and Experimental Labwork (XCEL) for Minority and Low Income Chemistry and Biochemistry Students: A TRB Student.” Andrienne Friedli, Keying Ding (MTSU)
15. “HABPi – A Cross Discipline Hands On Adventure.” Robert E. Lowe (Maryville College), Sarah M. Graham (Pellissippi State)
17. “Evaluating Teacher Professional Development in Robotics.” Deborah McAlister (University of Tennessee – Chattanooga)
18. “Partnership with a Purpose: A Model of a School-University Collaboration.” Aimee Govett, Jamie Price (ETSU)
22. “Waves & Spirals of Teacher Assistant (TA) Change.” Tina Carter, Anna Grinath (MTSU)
Friday, February 15, 2019

9:00 – 10:15  Mathematics Education Research 1 (Facilitator: -----------------------)  Room Ballroom C
- 9:00 – 9:20  Calculus II Students and the Function Machine: Making Sense of the Two-Can Scenario.
  Candice M. Quinn, Samuel D. Reed, Cecelia Anne Wanner O.P., Nina Bailey, Jennifer N. Lovett, Allison
  W. McCullough, Milan F. Sherman (MTSU)
- 9:20 – 9:40  Undergraduate Students’ Covariational Reasoning Ability when Solving Mathematics Problems.
  Amdeberhan Tessema (MTSU)
- 9:40 – 10:00  Supporting Proof Learners in the Dance of Agency: The Role of Instructor Authority.
  Sarah Bleiler-Baxter, Samuel Reed (MTSU); Jeffrey Pair (California State University. Long Beach)
- 10:00 – 10:15  Discussion Across Sessions

9:00 – 10:15  Science Education Research 1 (Facilitator: -----------------------)  Room 224
- 9:00 – 9:20  Teaching Assistant (TA) Instructional Supports for Rigor and Responsiveness in Undergraduate Biology
  Anna S. Grinath, Tina B. Carter, Angela Google, Zhigang Jia (MTSU)
- 9:20 – 9:40  Studying Behaviors and Engagement in Metacognition in Undergraduate Biology Majors
  Jaime L. Sabel, Rand Alqirem, and Kathryn Parsley (University of Memphis)
- 9:40 – 10:00  “I Drew a Model Because You Told Me To”: Understanding How Undergraduate Students Perceive
  Opportunities for Learning in a Large Biology Lecture Class
  Angela Google (MTSU)
- 10 – 10:15  Discussion Across Sessions

9:00 – 10:15  STEM Education Research 1 (Facilitator: -----------------------)  Room 210
- 9:00 – 9:20  Utilizing Immersion Activities to Enhance the Foundry Experience: Preliminary Findings From a Quality
  Enhancement Plan Curricular Re-Design
  Stephanie Jorgensen, Andrea Arce-Trigatti, J. Robby Sanders, Pedro E. Arce (Tennessee Tech)
- 9:20 – 9:40  How Effective are Old School Games on Generation Z’s Learning?
  Vichuda Hunter (Cumberland University) and Samuel Karanja (MTSU)
- 9:40 – 10:00  Flipped Classroom Experiences
  Wieb VanDerMeer (Western Kentucky University)
- 10:00 – 10:15  Discussion Across Sessions

9:00 – 12:00  High School Physics Teacher Workshop  Room 227
- Learning Cycle: Gravitational Field Strength, Robert Haddard (Stewarts Creek HS)

9:00 – 12:00  High School Chemistry/Physical Science Teacher Workshop B  Room 218
- Modeling Stoichiometry Using BCA Tables, Chris Manor (Independence HS)

9:00 – 3:30  STEM School Designation Workshop  Room 221
- Sandy Watkins and Brandi Stoecker (TSIN), Don Bartz & Faculty (Overall Creek Elementary), Jeremy Lewis &
  Faculty (Croft Design Center Middle Prep), Kelly Chastain (Rutherford County Schools)

10:15 - 10:45  Coffee/Tea Break  Student Union Hallway

10:45 – 11:45  Mathematics Education Research 2 (Facilitator: -----------------------)  Room Ballroom C
- 10:45-11:05  High School Mathematics Teachers Beliefs and Perceptions of Integrated Mathematics.
  Holly Anthony, Miguel Perez, Meghan Clemons, Carey Wilson (Tennessee Tech)
  Meghan Clemons, Jennifer Meadows (Tennessee Tech)
- 11:25–11:45  Action Research and Lessons Learned from a Three-Year Professional Development Project Supporting
  Elementary Teachers in Mathematics Education
  Gale Stanley, Erma Hatmaker (Campbell County Schools), Shande King, Nick Kim, and Lynn Hodge
  (University of Tennessee, Knoxville)
### 10:45 – 12:00  Science Education Research 2 *(Facilitator: -----------------------)*  
**Room 224**

- **10:45-11:05**  
  *A Mixed Methods Evaluation of Plant Blindness and Botanical Literacy in Undergraduate Botany Students.*  
  Kathryn M. Parsley, Jaime L. Sabel (University of Memphis), Laura Zangori (University of Missouri), Jason Koonzt (Augustana University)  

- **11:05–11:25**  
  *Leveraging Student Ideas About Measurement and Variation in Biology*  
  Ryan Seth Jones, Anna Grinath, Zhigang Jia, Lindsay Czap, Angela Google (MTSU)  

- **11:25–11:45**  
  *Problem Solving Through STEM Applications at a Rural and Remote School: Observations of An Ongoing Research Project*  
  Cephas Ablakwa, Jennifer Meadows, Kelly Moore, Andrea Arce-Tragitti, Megan Clement, Julie Baker (Tennessee Tech)  

### 10:45 – 12:00  STEM Education Research 2 *(Facilitator: -----------------------)*  
**Room 210**

- **10:45-11:05**  
  *Outsourcing the STEM Talent: Is Outsourcing the Solution?*  
  Murat Arik (MTSU), Kali Thompson (Tennessee Small Business Center), Patrick Geho (MTSU)  

- **11:05–11:25**  
  *Broadening Participation in STEM*  
  Dale McCready (MTSU, Discovery Center, Murfreesboro)  

- **11:25 – 11:45**  
  *Investigating the role of network bridging in teacher retention dispositions*  
  Samuel J. Polizzi, Yicong Zhu, Brandon Ofem, Sara Salisbury, Gregory T. Rushton  

### 12:00 – 1:30  Lunch & Keynote Address  
**Ballroom C**

*Reinventing the Foundations,* Dr. Vicente Talanquer, University of Arizona

### 1:30 – 3:30  Middle and High School STEM Teachers Technology Workshop  
**Room 218**

*Integrating Vernier Technology into the STEM Classroom.* Dave Carter (STEM Training Director, Vernier)

### 1:30 – 3:45  Mathematics Education Research 3 *(Facilitator: -----------------------)*  
**Room Parliamentary**

- **1:30–1:50**  
  *Strategic Tasks Pre-Service Mathematics Teachers Experience in an Introductory STEM Inquiry-Based Learning Course*  
  Nick Kim, Shande King, Lynn Hodge (University of Tennessee – Knoxville)  

- **1:50–2:10**  
  *Latent Class Modeling of Whole Class Discussions about Data, Statistics, and Probability*  
  Ryan Seth Jones (MTSU) and Joshua Rosenberg (University of Tennessee)  

- **2:10–2:30**  
  *Research Experiences for Teachers in Mathematics*  
  Anant Godbole (East Tennessee State University)  

- **2:30–2:50**  
  *Teaching Comparison Word Problems Informed by Learning Trajectory in China and the US*  
  Rongjin Huang, Dovie Kimmins, Jeremy Winters, Jennifer Seat, Monica Frizczeky (MTSU)  

- **2:50–3:10**  
  *Observing and Interpreting Prospective Secondary Teachers’ Development of Mathematical Knowledge for Teaching—It is Possible?*  
  Jeremy F. Strayer, Alyson E. Lischka, Candice M. Quinn (MTSU)  

### 1:30 – 3:45  Science Education Research 3 *(Facilitator: -----------------------)*  
**Room 224**

- **1:30–1:50**  
  *The Effect of Stereoscopic 3D Visualization Laboratory Exercises on Learning in Organic Chemistry*  
  Eric Oslund, Andrienne Friedli, Anatoly Volkov (MTSU)  

- **1:50–2:10**  
  *Automation and Flight Education: Software Design and Behavior*  
  Tyler A. Babb (MTSU)  

- **2:10–2:30**  
  *Using Low Cost Drones to Increase Student Interest in Aerospace STEM Subjects*  
  Kevin Corns, C. Hiers (MTSU)  

- **2:30–2:50**  
  *Biology Graduate Teaching Assistants as Novice Educators: Similarities Between Teaching Ability and Practice Beliefs between Teaching Assistants and K-12 Teachers*  
  Grant E. Gardner (MTSU), Jennifer Parrish (University of Northern Colorado)  

- **2:50–3:10**  
  *Better Together? Findings from a Combined, Integrated STEM Unit With Pre-Service Mathematics and Science Teachers*  
  Michael Lawson, Joshua Rosenberg, and Michael Camponovo (University of Tennessee – Knoxville)  

- **3:10–3:30**  
  Discussion Across Sessions
1:30 – 3:45 STEM Education Research 3 (Facilitator: -----------------------) Room 210

- 1:30–1:50 STEM Teacher Summit: Helping Teachers Develop STEM Literacy Among Their Students
  Adriane Sheffield (Coastal Carolina University), Marcus Ashford (University of Alabama, Tuscaloosa), Rosianna Gray (University of Alabama, Birmingham)

- 1:50 – 2:10 Overview of the Integrating STEM and Literacy with Computation in Elementary Education (i-SLICEE) Program
  Ryan Andrew Nivens, Chihche Tai, Laura Robertson, Reneé Rice Moran, Karin Keith, Thomas Jones

- 2:10 – 2:30 Using Primary Literature to Address Scientific Literacy Goals
  Heather Corban

- 2:30 – 2:50 Introducing Inquiry Via Task-Based Performance to Pre-Service Teachers in an Introductory Methods Course
  Shande King, Nick Kim, Lynn Hodge (University of Tennessee – Knoxville)

- 2:50-3:10 STEM Education Research and Outreach in the Upper Cumberland
  Holly Anthony, Sally Pardue, Jennifer Meadows (Tennessee Tech)

- 3:10 – 3:30 Discussion Across Sessions