



Michigan Association of Mathematics Teacher Educators

# Conversations Among Colleagues 2019

Maas Conference Center 264 Columbia Ave, Holland, MI

Hope College

3/16/19

Holland, Michigan



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# Campus Map

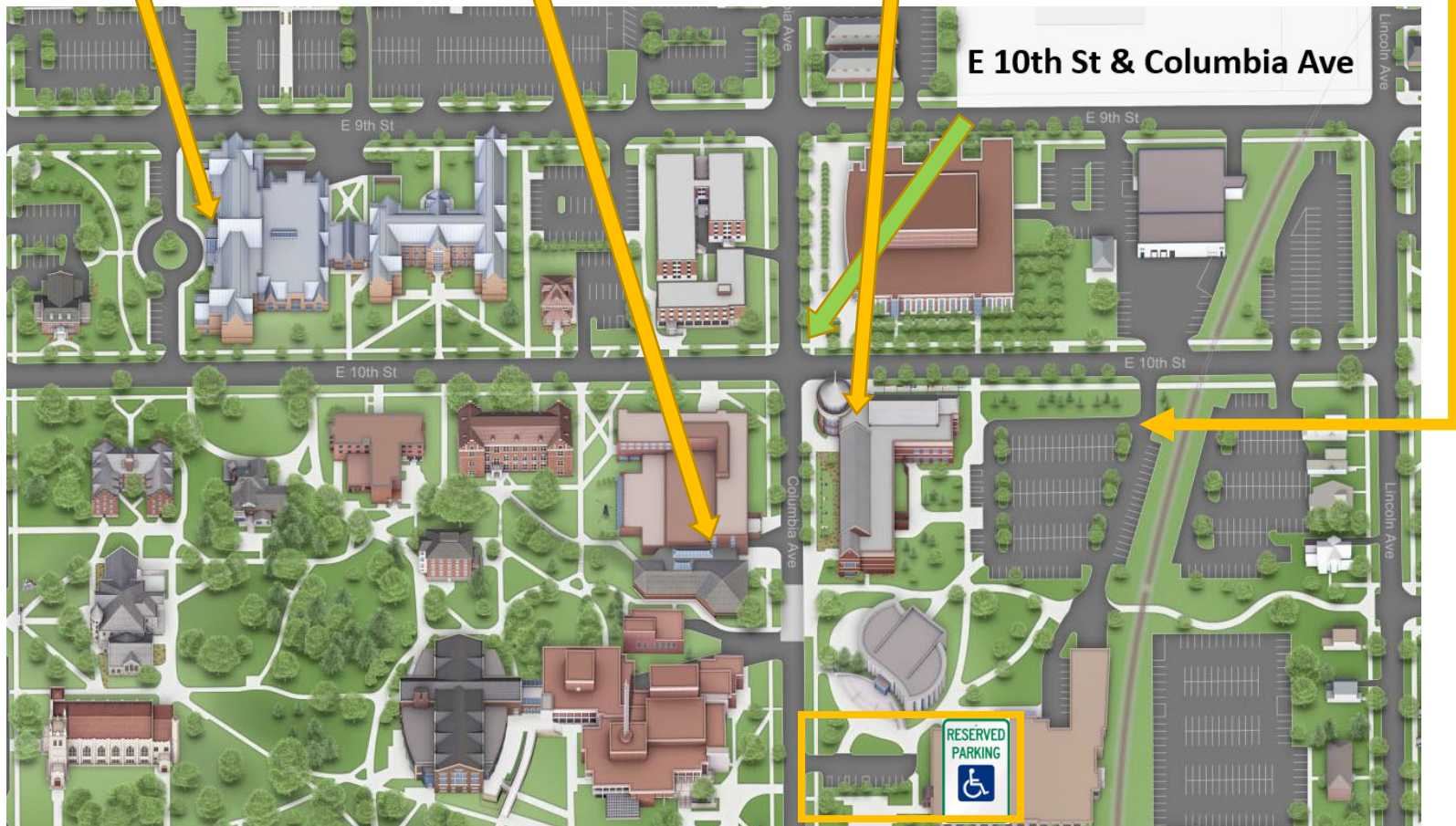
As Hope students are on spring break, parking is available in any campus lot.

**Haworth Inn**

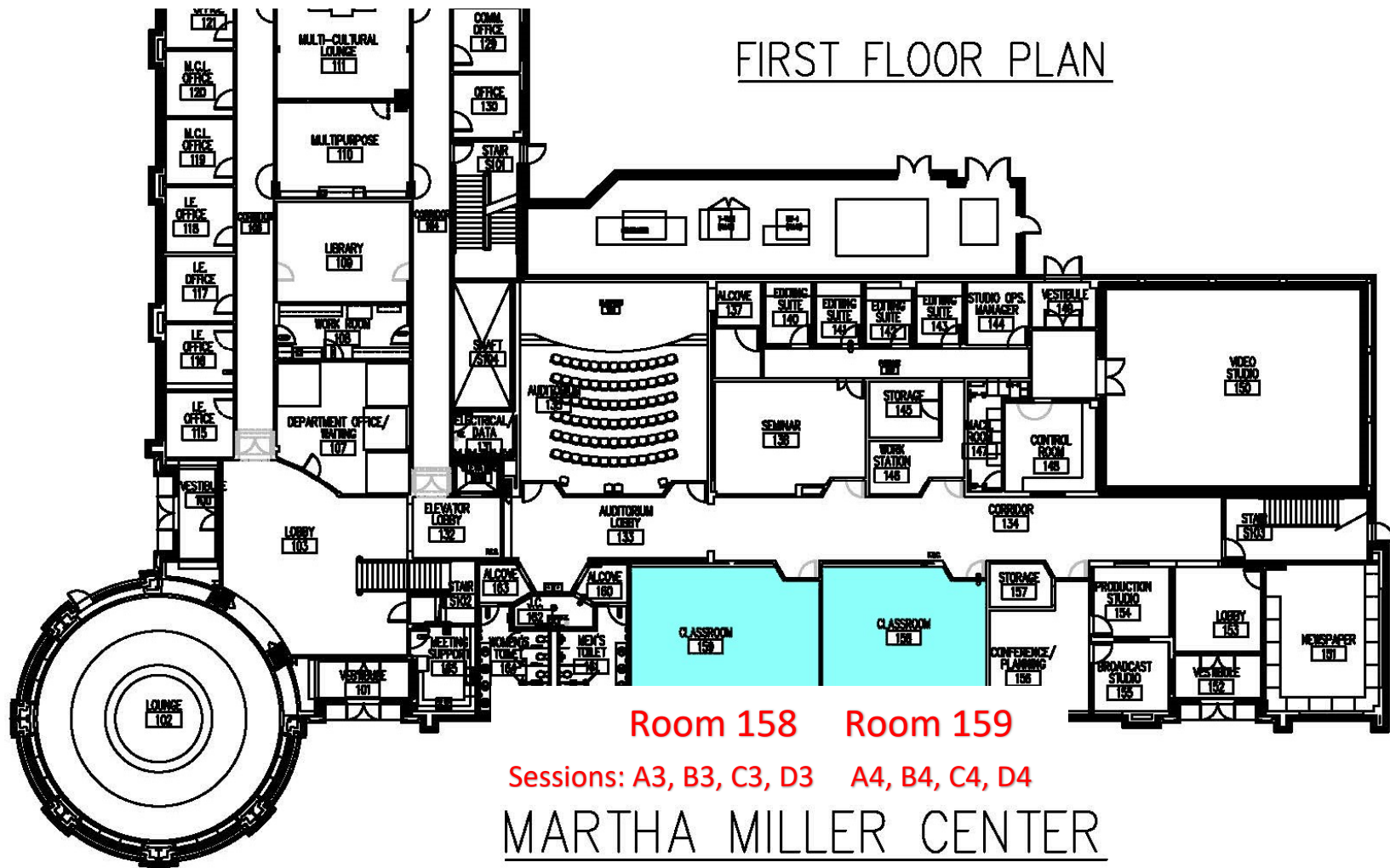
**Maas Conference Center**  
264 Columbia Ave, Holland, MI  
**Registration**

**Martha Miller Center**  
**Breakout sessions**

**Recommended Parking**



# Floor Plans for Martha Miller Center Breakout rooms



## FIRST FLOOR PLAN

**Room 158    Room 159**

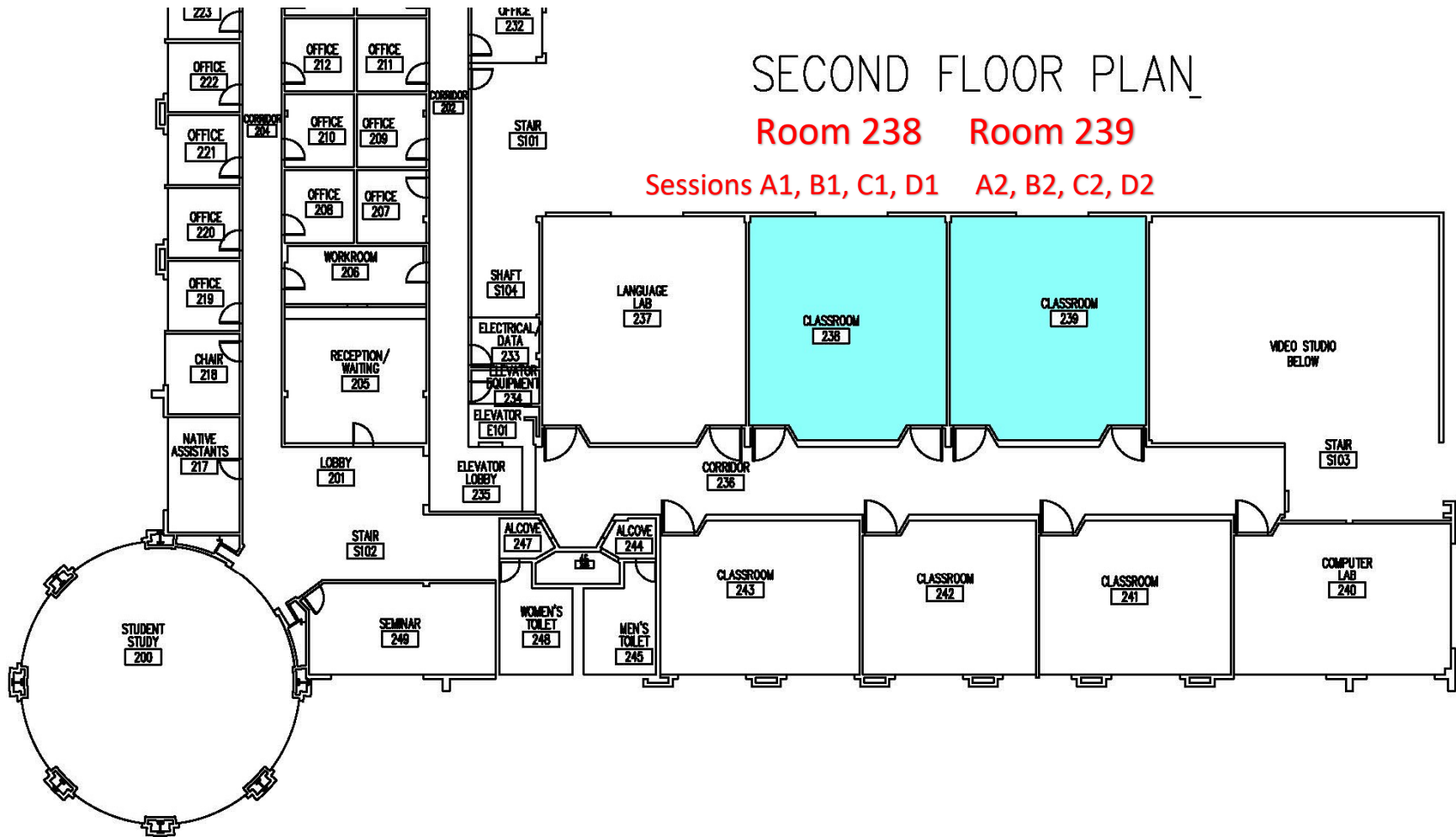
**Sessions: A3, B3, C3, D3    A4, B4, C4, D4**

MARTHA MILLER CENTER  
257 COLUMBIA AVE

# SECOND FLOOR PLAN

Room 238 Room 239

Sessions A1, B1, C1, D1 A2, B2, C2, D2



*Conversations Among Colleagues 2019*  
*A Solid Foundation: Developing a Shared Vision for Professional Growth*  
March 16, 2019

Check in and Registration 7:30 – 8:15

**Continental Breakfast**

Opening Session 8:15 – 9:30 Maas Conference Center

**Welcome**

**Dr. Stephanie Edwards**  
Chair, Hope College Mathematics Department

**Dr. Matt Wyneken**  
President, MI-AMTE

**AMTE Standards for Preparing Teachers of Mathematics:  
Implications for Preparation and Induction**

**Dr. Mike Steele**  
President, AMTE

The AMTE Standards for Preparing Teachers of Mathematics describes an ambitious, aspirational vision for the work of mathematics teacher preparation across the PK-12 spectrum. This document has significant implications for how we design, enact, and assess teacher preparation programs and the candidates we are preparing to teach mathematics. I highlight some key ideas in the standards that have profound implications for revising teacher preparation programs for the 21st century, and articulate the ways in which Standards provide a possible roadmap for induction supports for early-career teachers of mathematics.

## Breakout Session A 9:40 – 10:30

<b>Room 238</b>	<b>A1</b>	<b>Redesigning Elementary Teacher Prep to Meet New MDE Standards Part 1: Current thinking across different campuses (TeMaCC SIG)</b>	<b>Dr. Nina White</b> , University of Michigan <b>Dr. Nesrin Cengiz-Phillips</b> , U of M - Dearborn <b>Dr. Theresa Grant</b> , Western Michigan University
		In this session faculty from 3 institutions will share where their institution is in the process of redesigning their programs to meet the new MDE Standards. Participants will discuss these ideas, as well as ideas from their institutions. Together we will brainstorm questions to pose to MDE in Break-Out Session B.	
		<b>Secondary Rehearsals: How Might the Structure of Instructional Activities Differ with a Complex Mathematical Topic?</b>	<b>Dr. John Gruver</b> , Michigan Technological University Dr. Casey Hawthorne, Furman University (tentative)
<b>Room 239</b>	<b>A2</b>	To support teachers in developing effective teaching practices, practice-based models of professional preparation have emerged. As part of these programs, some mathematics teacher educators (MTEs) have begun to use rehearsals, which simulate teaching situations by having peers play the role of students. To date, the majority of research investigating rehearsals has been at the elementary level, focused on supporting students to develop number sense. In such models, while pedagogical decisions around students' mathematical contributions are at the forefront, the main focus is a designated core practice. In contrast, we wondered about using rehearsals to support effective teaching of a particular mathematical topic. To investigate this, we developed an instructional activity (IA) aimed at supporting middle school teachers in fostering quantitative understanding of algebraic notation. To explore the use of this IA, we implemented it in a 20-hour professional development session for experienced middle school teachers. In this presentation, we will explore the IA structure and discuss how it could be modified for other topics. With the use of rehearsals growing, we believe MTEs will benefit from alternative models of IAs, especially at the secondary level involving complex mathematical topics. We will also report from the research we conducted around the PD and follow-up classroom instruction to explore the effectiveness of the IA. In the session, participants will have the opportunity to personally explore the IA and engage in an activity which will help them reflect on what they would do if they were a MTE using the IA.	



**Unpacking growth in teacher identity across  
course-embedded field experiences in a  
middle school methods course**

**Mr. Randall Willis**, Western Michigan University  
**Ms. Caroline Jones**, Western Michigan University  
**Dr. Mariana Levin**, Western Michigan University

**Room  
158    A3**

Becoming an effective mathematics teacher is an ongoing process that extends over many years (AMTE, 2017). In addition to developing specialized mathematical knowledge for teaching (Ball, Thames, Phelps, 2008), and high leverage teaching practices (TeachingWorks, 2018), individuals develop their identities as mathematics teachers over the course of their experiences in teacher education programs (Richmond, Juzwik & Steele, 2011). This presentation will examine ways in which it is possible to observe growth in teacher identity across field experiences embedded in a mathematics methods course for pre-service middle grades teachers. The middle school methods course in question is the first of a sequence of three courses devoted to the teaching of grades 6-12 mathematics and is a requirement for both elementary and secondary mathematics education majors. The course focuses on teaching mathematics for understanding, as articulated by NCTM (2014), and instruction that incorporates student thinking is a recurring theme throughout the course. The course includes two course-embedded field experiences in a local middle school. The course provides opportunities for PSTs to engage in a Cycle of Enactment and Investigation (Kazemi, Ghouseini, Cunard, & Turrou, 2016), each with a different instructional activity (Lampert, Beasley, Ghouseini, Kazemi, & Franke, 2010). In this session, we will share our analysis of video records of PST practice across the cycles of enactment and investigation within the methods course. We will engage conference participants in analysis and discussion of these records of changing PST practice and what they offer for understanding PSTs' developing teacher identities.

**Exploring Students' Learning of Trigonometry with Different Instructional Methods** Dr. Mustafa Demir, University of Detroit Mercy

**Room  
159**    **A4**

The findings of a quasi-experimental study exploring the effects of using online math applets on Pre-Calculus students' learning of trigonometric functions will be presented. In the study, one class of students used a set of web-based math applets that emphasize unit circle approach while working on their trigonometry project in their Pre-Calculus course. However, the other class of Pre-Calculus students tried to learn trigonometry by mostly focusing on right-triangle approach throughout the course sessions. All students' solutions to trigonometry problems on their final exam were analyzed.

First of all, a brief review of empirical research on students' learning of trigonometry will be presented. Second, the effects of each instructional approach (used in the study) on students' knowledge of trigonometric functions will be discussed. Finally, students' sample answers will be shared to exemplify their common difficulties in learning trigonometry.

**Audience Engagement:** A set of trigonometry problems will be given to each participant of the session. Then, the participants will work in pairs (or groups) to identify the concept(s) that underlie the solution of the each problem. Second, each pair (or group) will work on identifying the type of instruction (e.g., right-triangle, unit-circle) they would use to teach each of the concept(s). Finally, each pair (or group) will share and discuss their answers with the other participants. The presenter will guide the discussion.



*coffee break*

**10:30: Fresh coffee and snacks in Maas Conference Center**

## Breakout Session B 10:45 – 11:30

### **Meeting the expectations of the new Upper Elementary and Lower Elementary math standards**

**Ms. Darcy McMahon**, Michigan Dept. of Education  
Higher Education Consultant, Educator Preparation Unit

Room

238

**B1**

This session will detail the shifts required by elementary Teacher Education Programs as a result of the new Teacher Certification structure and the Upper Elementary and Lower Elementary math standards. Participants will develop understanding of these shifts including the framework of the newly adopted standards, overlap and differences between the elementary grade bands, and potential implications for programs including credits, courses, and needed clinical experiences.

### **Practice-based professional development: a model partnership for improving elementary mathematics instruction**

**Dr. Melissa Kemmerle**, University of Michigan

Room

239

**B2**

In this session, we present a model for practice-based professional development focused on improving the quality of elementary math instruction. Implemented as part of a partnership with districts, elementary schools, and post-secondary institutions in the Grand Rapids area, the model includes:

- (1) a focus on high-leverage teaching practices and their decompositions that both detail specific practice-able skills and provide a shared language of instruction
- (2) a focus on issues of equity, maintaining an eye toward the ways in which teaching practices can either disrupt or reinforce inequitable patterns of mathematics instruction
- (3) a foundational experience in the summer, the Elementary Mathematics Lab, which grounds instructional dialogue and analysis in a shared vision of good teaching
- (4) sustained professional development across the school year that integrates monthly day-long workshops with coaching and practice opportunities in teachers'™ classrooms in iterative learning cycles

(5) video workshops in which small groups of teachers analyze and discuss specific elements of their own practice with peer feedback

To engage participants with this model, our session will be organized in two parts. In the first part, we will engage participants in a series of short activities to provide concrete examples of how we work with teachers to develop their professional vision, judgment, and skill to enact equitable and just mathematics instruction. In the second part, participants will discuss in small groups how key elements of the model are or could be utilized in their own contexts.

**Reading Mathematics**

**Mr. Gregory Beaudine**, Michigan State University

Room  
158

**B3**

Students in mathematics spaces must effectively read the mathematical text to successfully complete assigned tasks. The focus on mathematical literacy, though, has been centered on verbal and written mathematical discourse. This study explores the reading strategies used by ten middle school students as they attempt to work through a series of standardized test-styled prompts and how these reading strategies aided the completion of one of the tasks. This presentation identifies 35 of 40 strategies for constructively responsive reading observed by the researcher during these students' participation in a clinical interview that followed a verbal reading protocol. This presentation will also explore how these reading strategies are used to move the participants from task to solution. These students made predictable decisions when given options about which task to solve and implemented similar reading strategies to each-another. The results found through the use of these strategies led to solutions that differ greatly from student to student.

**Using High-Leverage Practices to Build  
University-District Coherence**

**Ms. Nicole Garcia**, University of Michigan

Room  
159

**B4**

University-based teacher preparation programs in Michigan have collaborated over the past five years to center teacher preparation programs on building skill with high-leverage teaching practices alongside the development of content knowledge for teaching and foundational and ethical knowledge. The Michigan Department of Education has recently integrated work on high-leverage practices into the standards for teacher preparation programs. Together we will consider how the high-leverage practices could serve as

a basis for a coherent program of support and integration for novice teachers entering the profession. We will investigate how this common language could be used as a means for mentor teachers, coaches, and practicing teachers to build communities of practice focused on the work of teaching and systems for professional learning, feedback and support that exist from pre-service through teachers' career trajectory. Together we will view examples of supports that have been implemented in pilot districts with mentor and practicing teachers, try out activities together, and consider how they might be adapted for use in each of our contexts.

**Lunch 11:40 – 1:00 Maas Conference Center**

## **MI-AMTE Business Meeting**

**What Should We Focus On in Content Courses for Prospective Elementary Teachers?**

**Dr. Ziv Feldman**  
Boston University, Wheelock College of Education  
& Human Development

The demands placed upon K-12 teachers to cover content standards in their classrooms each year pose a significant challenge if the goal is for students to develop deep and connected mathematical understanding. In order to prepare teachers to achieve this goal, we need to provide them with repeated opportunities to grapple with the key mathematical ideas that their future students will study. In this talk, I share lessons learned from the Elementary Mathematics Project (EMP), a curriculum research and development project in which a group of math teacher educators worked to address this need within its mathematics content courses for prospective elementary teachers

## Breakout Session C 1:10 – 2:00

<b>Room</b> <b>238</b>	<b>C1</b>	<b>Redesigning Elementary Teacher Prep to Meet New MDE Standards Part 2: Co-Constructing Courses (TeMaCC SIG)</b>	<b>Dr. Nina White</b> , University of Michigan <b>Dr. Nesrin Cengiz-Phillips</b> , U of M - Dearborn <b>Dr. Theresa Grant Western</b> , Michigan University
		<p>This session will build on the first session. With a better understanding of the MDE Standards, and the progress made at different institutions, we will work together to flesh out ideas for a series of mathematics education courses to meet the standards. We will conclude with plans to continue this collaboration over the next year.</p>	
<b>Room</b> <b>239</b>	<b>C2</b>	<b>Exploring Components of Professional Development that Lead to Change in Teaching Practice</b>	<b>Dr. Meghan Shaughnessy</b> , University of Michigan <b>Ms. Nicole Garcia</b> , University of Michigan <b>Dr. Jillian Mortimer</b> , University of Michigan
		<p>Our project addresses the challenge of supporting the learning of practice situating professional development in a common activities case of elementary mathematics instruction. The approach uses this classroom as a “common text” for working on practice, where participants are not only watching and discussing, but are engaged in developing and refining teaching practice. Participants’ engagement approximates a form of legitimate peripheral participation, (Lave &amp; Wenger, 1991) through structured Conversations s about the lesson plans, close observation, analysis of student tasks, and examination of records of teaching and learning.</p> <p>Our research explores the impact of participation in these structured ways on teachers’ practice, as well as on their knowledge and dispositions. We study the impact of our professional model to determine whether and how the work transfers into classrooms. Specifically, our initial study seeks to answer the following questions: What do teachers learn from structured participation in the class accompanied by</p>	

professional development focused on a particular teaching practice? Does their participation impact their own teaching practice, and if so, in what ways?

In this session, we will engage participants in examining the professional development design with explicit focus on the learning opportunities for teachers who participate as well as ways in which the research could capture such shifts in teaching practice. Participants will have opportunities to engage with artifacts from the professional development itself. We then share early findings from one study aimed at understanding the ways in which participation in the professional development impacts teaching practice.

**A Strategy for Addressing Elementary Pre-Service Teachers' Math Anxiety**      **Dr. Monica Karunakaran**, Michigan State University

**Room**  
**158    C3**

Mathematics anxiety among elementary preservice teachers (PSTs) is a well-documented phenomenon that greatly affects their ability to engage in teacher preparation courses (e.g., Dutton, 1951; Gresham, 2007; Sloan, 2010). One way for instructors to engage with PSTs is to interact with them informally (Lampton, 1993). Informal Conversations s present an opportunity to increase PSTs'™ confidence and address their anxiety regarding mathematics content. A potential venue for informal Conversations s are office hours; however, it can be difficult to encourage the PST population to attend. This session will describe preliminary results of a policy designed to increase instances of informal interactions between PSTs and their instructors during office hours, by solely providing homework solutions to students during office hours. Student are provided the option to silently check their work without interacting with their instructor. Initial evidence from surveys and course evaluations suggest that students who come into office hours end up engaging more with the instructor on topics they did not intend to discuss before coming to office hours. These Conversations s have the potential to help reduce mathematics anxiety. After a presentation of the policy and initial findings, participants will be asked to reflect on and provide feedback regarding the office hour policy, and to consider ways in which they might include informal Conversations s in their own interactions with students as a way to help reduce mathematics anxiety.

**Teachers' Support for Students' Productive  
Disciplinary Engagement**

**Ms. Taren Going**, Michigan State University  
**Ms. Kathryn Appenzeller**, Michigan State University  
**Ms. Merve Kursav**, Michigan State University

Room  
159

**C4**

Productive disciplinary engagement (PDE; Engle & Conant, 2002) occurs when students publicly engage in the disciplinary practices of mathematics. Students can be productive in their disciplinary engagement when they are progressing intellectually and refining their disciplinary learning goal over time (Hatano & Inagaki, 2003), developing towards “big ideas.” This is important because PDE can lead to deep conceptual learning of mathematics for students. As a representative of the discipline of mathematics in the classroom, teachers have the potential to play a powerful role in promoting PDE. Given the rapid changes in both curriculum and technology use in mathematics classrooms, however, supporting students’ PDE effectively is an ongoing challenge for teachers and teacher educators. In this session, we plan to discuss the ways teachers can support students in problem-solving in a digital collaborative platform. We will provide instances of teacher actions that promote greater problematizing, authority, accountability, and use of resources. Through these classroom examples, participants may consider teachers’ motivation and purposes for their actions and potentially new ways to support PDE in mathematics classrooms.



**Conversations and Refreshments 2:00 – 2:20**

**Maas Conference Center**



## Breakout Session D 2:20 – 3:10

### Looking forward: development of 5-9 and 7-12 mathematics preparation standards

**Ms. Darcy McMahon**, Michigan Dept. of Education  
Higher Education Consultant, Educator Preparation Unit

#### Room

**238**

**D1**

This session will explore the process currently underway for development of 5-9 and 7-12 mathematics preparation standards as a result of the new Teacher Certification structure. Participants will develop understanding of the process including the goals, timelines, likely impact on current programs, and opportunities for involvement.

### Working Together - Improving the Transition from Preservice to In-service

**Mr. Rusty Anderson**, Kent ISD  
**Mr. Marcus Deja**, Kent ISD  
**Mr. Andrew Smith**, Kent ISD

#### Room

**239**

**D2**

It is our role to ensure that all teachers, both preservice and in-service, are set up for success and have the supports they might need to be successful in their educational journey. Learning to teach is complex and during this time of transition with new standards and program requirements (grade-level certifications, INTASC, central practices) there are new spaces for stronger alignment and partnerships to form between those preparing the future of the teaching force. The specific area of focus for this session addresses the partnerships that may be formed between entities to encourage development in adapting from preservice to in-service. A question for consideration: *In what ways might higher education institutions and PK-12 organizations work together to better support the vital transition from preservice to in-service?* This session will provide an opportunity to share how one PK-12 organization and multiple higher education institutions have partnered to bridge the gap from preservice to in-service. We will share stories in our journey and allow for those in the room to grapple with what this important work might look and sound like in their context.

**Developing Student and Teacher Inscriptional Practices: Implications for Teacher Education**

**Mr. David M. Bowers**, Michigan State University  
**Mr. Amit Sharma**, Michigan State University  
**Mr. Chuck Fessler**, Michigan State University

**Room  
158**

**D3**

Inscriptions, as the physical representations of one's thinking, can serve to co-construct meaning among students, teachers, and curricula (Roth & McGinn, 1998). In this session, we highlight ways in which a digital platform serves as a collaborative discursive space to explore and make sense of inscriptions and their entailments. Specifically, we will share two experiences of students collaborating in a digital platform from middle school mathematics classrooms. We then briefly discuss how the development and communication of mathematical understanding is potentially enhanced by using inscriptional resources for constructing meaningful records of student thinking. We will then connect the experience to a broader discussion to develop a shared understanding of inscriptional practice and metapractice across the Teacher Development Continuum. By highlighting how the teachers can support the conceptual growth of big mathematical ideas mathematics as students purposefully engage in inscriptional work, we aim to foreground practical implications of this work.

**Interpreting the Common Core State Standards for Mathematical Practice**

**Dr. Jillian Mortimer**, University of Michigan

**Room  
159**

**D4**

The mathematics education community has attempted to characterize important learning goals for students that are not captured completely in specifications of mathematical content objectives. The most recent characterization of these learning goals is the Common Core Standards for Mathematical Practice (SMPs). If these important learning goals for students are to be accomplished, it is important that teachers understand what is intended to be learned and how their instruction might be tuned to promoting these outcomes.

In my research I have investigated how pre-service elementary school teachers understand and interpret the SMPs by having them complete three tasks that were intended to be approximations of key phases of actual teaching practice: planning for instruction, enacting a lesson, and assessing students. Within each task the pre-service teachers were asked to identify (a) instances during lesson planning

where students would be likely to have the opportunity to use or learn to use specific SMPs, (b) instances in a video of a lesson where students engaged in using or learning to use specific SMPs, and (c) instances in assessment items where students had an opportunity to demonstrate their proficiency in using specific SMPs.

Participants in this session will have the opportunity to engage in a task similar to that completed by the pre-service teachers. I am interested to learn how mathematics teacher educators understand and interpret these practices as people who are helping to prepare future teachers. I anticipate an interesting discussion around how these practices are seen in the context of teaching.

## **Closing Session 3:20 – 4:00 Maas Conference Center**

**Panel Discussion: Developing a Shared Vision for Professional Growth**

**Facilitator:** Dr. Meghan Shaughnessy  
**Panelists:** Ms. Nicole Garcia  
Ms. Jane Porath  
Dr. Shari Stockero  
Dr. Ziv Feldman

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## Invited Speaker Biographies

### Mike Steele

Michael D. Steele is a Professor of Mathematics Education and Chair of the Department of Teaching and Learning in the School of Education at the University of Wisconsin-Milwaukee. He is currently the President of the Association of Mathematics Teacher Educators. A former middle and high school mathematics and science teacher, Dr. Steele has worked with preservice secondary mathematics teachers, practicing teachers, administrators, and doctoral students across the country. He has published several books and research articles focused on supporting mathematics teachers in enacting research-based effective mathematics teaching practices.

Dr. Steele's work focuses on supporting secondary math teachers in developing mathematical knowledge for teaching, integrating content and pedagogy, through teacher preparation and professional development. He is the co-author of NCTM's Taking Action: Implementing Effective Mathematics Teaching Practice in Grades 6-8. He is a co-author of Mathematics Discourse in Secondary Classrooms, a research-based professional development curriculum focused on supporting secondary teachers in developing productive and powerful discourse with their students. He directs the NSF-funded Milwaukee Mathematics Teacher Partnership, an initiative focused on microcredential-based teacher professional development and leadership. His research focuses on teacher learning through case-based professional development, and he has been an investigator on several National Science Foundation-funded projects focused on teacher learning and development. He also studies the influence of curriculum and policy in high school mathematics, with a focus on Algebra I policy and practice, and is the author of *A Quiet Revolution: One District's Story of Radical Curricular Change in Mathematics*<sup>1</sup>, a resource focused on reforming high school mathematics teaching and learning.

Dr. Steele was awarded the inaugural Best Reviewer award for Mathematics Teacher Educator, and was author of the 2016 Best Article in Journal of Research in Leadership Education. He is an active member of and regular presenter for the National Council of Teachers of Mathematics, the National Council of Supervisors of Mathematics, and the Association of Mathematics Teacher Educators. He reviews regularly for major mathematics education and teacher education journals.

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- 1 **Holt High School, Holt MI.** “ we explore the case of Holt High School though an exploration of how the mathematics curriculum has shifted over the past thirty years, and the conditions and supports that have been put in place in the district to make this work fruitful and sustainable”

### Ziv Feldman

Dr. Ziv Feldman is Clinical Associate Professor of Mathematics Education at Boston University's Wheelock College of Education & Human Development. He teaches undergraduate and graduate level mathematics content courses for pre-service and in-service elementary, special education, and early childhood education teachers. He also teaches methods courses for pre-service and in-service middle and high school mathematics teachers. Dr. Feldman is also the Faculty Director of the BU Wheelock Consortium, a partnership between Wheelock and eight local school districts that provides project funding and professional development opportunities to PreK-12 educators in the greater Boston area. Prior to BU, Dr. Feldman taught middle school and high school mathematics for five years.

Dr. Feldman's research focuses on the mathematical preparation of elementary school teachers, specifically around the areas of task and curriculum design and teachers' content knowledge development. Currently, he is a Co-PI for the Elementary Mathematics Project<sup>2</sup> where he is involved in designing problem-based lessons and researching the impact of these lessons on pre-service elementary teachers' mathematical knowledge for teaching. Additional projects include investigating pre-service teachers' developing understanding of multiplicative structure in a number theory context, and the use of a task design framework to identify the ways in which pre-service elementary teachers' reason about fractions.

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2 <https://elementarymathproject.com/>

## **Darcy McMahon**

As a Higher Education Consultant in the Educator Preparation unit, Darcy works with science, mathematics, and alternative route programs in addition to others. Darcy joins the OEE team from CMU where she was Project Director for the Science, Mathematics, Technology Center. Darcy brings a wide variety of experiences to the role including: Adjunct Professor of Teacher Education at CMU, Director of Education for the Midland Center for the Arts, and Director of Phenomenal Science. Darcy holds a Master's degree in Middle Level Education from CMU. Darcy invites you to connect with her at [McMahonD2@michigan.gov](mailto:McMahonD2@michigan.gov) or 517-241-7096.