

Mathematics Summit: For Math in the First Two Years

AMATYC/NADE: AMATYC Pre-Conference

Coronado Springs Resort: Orlando, FL

Register at: www.amatyc.org

Sessions Descriptions

1:15 – 2:35 pm, Tuesday, November 13, 2018

Panel Discussion

Moderator: Nancy Sattler

Panel Members: Paula Wilhite (AMATYC), Hunter Boylan (NCDE), Ann Edwards (Carnegie Math Pathways/WestEd), Rebecca Hartzler (Dana Center), Julie Phelps (MAA), Annette Cook (NADE), Paul Nolting (Paul Nolting)

2:45 – 3:50 pm, Tuesday, November 13, 2018

IMPACT: Improving Mathematical Prowess and College Teaching

Presenters: Julie Phelps and Nancy Sattler (AMATYC)

This presentation offers an introduction to AMATYC's newest standards guide through an active learning discussion. Participants will have an opportunity to discuss the four pillars of PROWESS: PRoficiency, OWnership, Engagement, and Student Success with other higher education stakeholders to learn how they are making contributions to support student learning for students in the first two years of college.

2:45 – 3:50 pm, Tuesday, November 13, 2018

Flipping the Equation: Transforming Monotony into Meaningful Math Experiences through Active Learning Strategies

Presenter: Andrew Sebok (NADE)

Involved math students are successful math students! This presentation will introduce active learning strategies that, in conjunction with a semi-flipped model of instruction, will engage developmental mathematics students. Additionally, participants will receive tips for successful implementation, modeling, and examples of authentic, engrossing activities that transform passive students into active learners!

2:45 – 3:50 pm, Tuesday, November 13, 2018

Developing Counter-narratives through Anti-deficit Teaching

Presenter: Aditya Adiredja (MAA)

This session focuses on anti-deficit perspectives of students' mathematical work, and their role in supporting equity goals in undergraduate mathematics. It will begin with an overview of findings from existing equity research in undergraduate mathematics education. Adiredja will note the importance of established societal narratives about students (and women) of color as both an influence on and a target for change in our work as mathematics instructors. He will draw from research about student mathematical sense-making to uncover implicit principles supporting a common deficit perspective on students' work. Challenging a system of deficit narratives about students (and women) of color, Adiredja will offer an anti-deficit perspective that accurately values and respects students' identities and their intellectual work.

4:00 – 5:05 pm, Tuesday, November 13, 2018

Strategic Integration of Support Services and Math Classrooms

Presenters: Hunter R. Boylan and Barbara Illowsky (NCDE)

Students are more likely to succeed in the math classroom if they have: a purpose for being in college, self-efficacy toward math, access to assistance when they need it, and support in confronting personal issues. Strategic integration provides a means of collaborating selectively with support services in ways that contribute to student development in these areas. This presentation describes methods for selecting support services to collaborate with, identifies the components of collaboration, and provides examples of how we can effectively collaborate with colleagues in student support services to improve student performance.

4:00 – 5:05 pm, Tuesday, November 13, 2018

Shifting Mindsets for Learning: Strategies for Promoting Students' Productive Persistence in Mathematics

Presenter: Rachel Beattie (Carnegie)

Students' mindsets about their ability to learn and belong in a college classroom setting play a critical role in the motivation to put forth effort, seek help from others, and use new learning strategies. In the Carnegie Math Pathways (CMP), this set of behaviors has been defined as productive persistence, or the tenacity to persist in the face of challenge combined with useful strategies to overcome these challenges. This session offers participants the opportunity to reflect on common classroom experiences using a shared framework to adapt practical routines that have been shown to promote and sustain academic and social mindsets in CMP classrooms across the country. Participants will also learn how they can use practical data to constantly improve their practice.

4:00 – 5:05 pm, Tuesday, November 13, 2018

Growing What Works: Taking Successful Redesign to Scale

Presenter: Tanya Madrigal (NADE)

This session will examine the steps necessary to take a successful pilot to scale for an institution. Consideration will be given to financial impact at the institution, program capacity, the comprehensive nature of the redesign in meeting state mandates, and does the pilot provide enough information to take to scale.

Wednesday

8:00 – 9:05 am, Wednesday, November 14, 2018

Throwing Out the Textbook: Creating Math Courses using Open-Source Educational Resources

Presenters: Suzanne Etheridge, Mary Monroe-Ellis, Amy Tankersley (NADE)

With the proliferation of open-source educational resources, faculty have more options for creating effective math courses than using expensive textbooks that dictate curriculum. Faculty teaching a co-requisite survey of math course share how to create online homework using free open-source websites, as well as collaborative classroom activities and applications-based projects.

8:00 – 9:05 am, Wednesday, November 14, 2018

The MAA Instructional Practices Guide: A Resource for Change

Presenters: Doug Ensley and April Strom (MAA):

The MAA Instructional Practices Guide presents evidence-based methods for engaging students. Beyond documenting active-learning classroom strategies, the guide also includes practices for assessment and course design that support these strategies. This session will give an overview of the guide and suggestions for its use in effecting change in instructional practices.

8:00 – 9:05 am, Wednesday, November 14, 2018

Beyond X and Y: Utilizing Non-cognitive Skills in Co-requisite Math Courses to Promote Success

Presenters: Mike Sieve and Heather Howington (Carnegie and AMATYC)

Co-requisite remediation is sweeping the nation. Additionally, success in a math class depends on more than just mathematical ability. In order for students to succeed, it is becoming increasingly important that they possess non-cognitive or “soft” skills. This session combines these two notions by utilizing strategies and activities developed in conjunction with the Carnegie Math Pathways. Weekly activities that help support non-cognitive skills, which enhance students’ mindset, and ways to incorporate these into co-requisite classes will be discussed.

8:00 – 9:05 am, Wednesday, November 14, 2018

Faculty Development and Equity in an Era of Mathematics Reform

Presenters: Alycia Marshall and Lucy Michal (Dana Center)

This session will present research on faculty professional development processes and findings from qualitative and quantitative analyses in equality, equity, and student success in current mathematics pathways efforts. Topics will include sustained faculty engagement, addressing equity goals, and ongoing review lead to improving student achievement.

9:15 – 10:20 am, Wednesday, November 14, 2018

Integrating Math Study Skills into the Classroom, Co-requisite and Emporium Model: Improve Grades

Presenters: Paul Nolting, Craig Hardesty, Dawn Hood (Paul Nolting)

Institutions are continuing to change or improve their math curriculum as a result of the national math redesign movement requiring students to become independent, fast and efficient learners. However, they have not been taught motivation and math study skills especially in co-requisite designs which can represent 41% of their grade. This workshop focuses on developing designs, motivation and integrating assessment, note-taking, reading, anxiety reduction, homework, test-taking and reducing procrastination strategies.

9:15 – 10:20 am, Wednesday, November 14, 2018

Transitional Math: The Next Frontier in Developmental Math Reform

Presenter: Kathy Almy (AMATYC)

Transitional math courses, which are high school courses that provide seniors the preparation and placement for college level math, are taking off around the country. Illinois is scaling them using the approach and content of pathways courses like Math Literacy. Transitional math courses complement corequisite remediation and developmental math pathways to form a successful approach to developmental education. Attendees will learn about the course content and approach as well as the implementation model being used in Illinois, a local control state with significant numbers of community colleges and high schools.

9:15 – 10:20 am, Wednesday, November 14, 2018

Increasing Active Learning in Mathematics using Daily Mathstarters, Math Games, and Exit Tickets

Presenter: Labonnie Smith (NADE)

In this session, participants will be guided through instructional strategies to increase active learning in mathematics classroom and create a collaborative setting where all are working towards a common goal of mathematical mastery using Mathstarters and Math Games. Practical instructional strategies and activities will be shared during this session.

9:15 – 10:20 am, Wednesday, November 14, 2018

Everyone But Me: Facilitating Curricular Change in Academic Isolation

Presenter: Chris Oehrlein (MAA)

Participants in this session will explore the challenges of those mathematics faculty in a small department and/or of being the sole or one of the very few mathematics faculty interested in implementing many of the best practices

and guidelines put forward by their national professional societies and supported by evidence-based scholarly research into the teaching and learning of mathematics at the college level. What resources are available for curriculum and assessment development? What supporting resources can mathematics faculty interested in transforming their courses use to present to colleagues in mathematics, partner disciplines, academic advisors and school administrators? How might the college mathematics education community better create and sustain support networks for isolated faculty?

10:30 – 11:35 am, Wednesday, November 14, 2018

Meeting Students Where They Are: Successful Co-requisite Course Design

Presenter: Connie Richardson (Dana Center)

The need for well-designed co-requisite courses has greatly increased due to recent statewide mandates eliminating prerequisite developmental courses. Participants will plan for action as they engage in activities addressing key considerations for designing successful co-requisites. These include course structure, aligned content, calendaring, placement, assessment, staffing, and examining successful case-studies.

10:30 – 11:35 am, Wednesday, November 14, 2018

Mathematics Anxiety Solutions: Current Research and Classroom Strategies

Presenters: Linda Zientek (AMATYC) and Paul Nolting (Paul Nolting)

Mathematics students around the world are exhibiting high levels of anxiety at all skills levels. Using self-efficacy, anxiety reduction and study skills strategies can reduce anxiety. This session discusses anxiety and self-efficacy research along with classroom strategies to increase the mastery, social, physiological, vicarious areas of self-efficacy and reduce anxiety.

10:30 – 11:35 am, Wednesday, November 14, 2018

Mathematics Pathways Re-design in the Florida College System

Presenters: Carrie Henderson (Florida College System) and Toby Park (Center for Postsecondary Success at Florida State)

This session will provide an overview of the current mathematics pathways redesign efforts across the Florida College System to identify strategies for better aligning high school and college instruction and content in mathematics; examine the most appropriate mathematics courses and sequences based on a student's program; and, for students intending to transfer, ensure the mechanisms are in place so courses will articulate and excess credit hours accumulation will be minimized. The Center for Postsecondary Success at Florida State University will present findings regarding student course-taking behavior and student success that have been used to inform discussions across the system. Participants will learn how to gather resources to elevate evidence-based practices in mathematics re-design efforts.

10:30 – 11:35 am, Wednesday, November 14, 2018

Bridging Upper Division and Lower Division Pathways through Activities and Experiences

Presenters: Ann Sitomer, Karen Gaines (AMATYC) Michael Dorff (MAA)

This presentation will focus on initiatives that serve as catalysts for new experiences and opportunities at the community college and universities for both faculty and students. Attendees will learn about:

- Project SLOPE - AMATYC's recently NSF-funded project, Project SLOPE (Scholarly Leaders Originating as Practicing Educators in Two-Year College Mathematics) is undertaking a feasibility study and pilot of a program within AMATYC to build and sustain a network of two-year college faculty engaged in the Scholarship of Teaching and Learning (SoTL).
- Student Research League - AMATYC's Student Research League (SRL) was created in 2017 as an opportunity to encourage students to engage in research problem solving and to motivate an interest in

extracurricular mathematics activities among two-year college students. The SRL is an annual competition modeled after Moody's Mega Math Challenge Annual High School Research Contest as organized by the Society for Industrial and Applied Mathematics.

- PIC Math - preparing students for jobs in business, industry, and government (BIG). This is an MAA program that has been used in math departments at over 100 institutions including community colleges. The program centers around a semester class run by you at your institution in which students (from freshman to seniors) spend most of their class time working in groups on an unsolved problem coming directly from BIG and then at the end of the course presenting their solution to people from the company that gave the problem.

1:00 – 2:05 pm, Wednesday, November 14, 2018

Supporting Effective Implementation of Math Reform at Scale: Lessons about Instructional and Institutional Change from the Carnegie Math Pathways

Presenter: Ann Edwards (Carnegie)

Effecting math pathways reform that provides students with meaningful learning experiences promoting student success requires support for faculty and administrators in the design and implementation of courses and programs. The Carnegie Math Pathways has developed support programs for faculty and institutional teams that have been instrumental in the effectiveness of the CMP programs. This session will share approaches taken and lessons learned in CMP about how to support: the curricular design of math pathways; student-centered and collaborative mathematics teaching practices; interventions that address students' persistence and mindset; and institutional implementation of robust and sustainable math pathways reforms.

1:00 – 2:05 pm, Wednesday, November 14, 2018

Research Review of Successful Math Strategies: How Do I Know Which Ones to Use?

Presenters: Paul Nolting and Libby Watts (Paul Nolting)

Instructors need to know which strategies are the best for different instructional designs, including online and co-requisite courses and different math students including repeaters. The workshop reviews research based strategies that improve math success. Discussion focuses on student assessments, placement, students' past math histories, motivation, different instructional strategies, academic support collaboration, and math study skills. These elements of student success also include designing math learning plans for students who struggle in math or who simply want to perform higher than their previous achievements. When students increase self-efficacy by using self-regulatory behaviors and obtain effective instruction/support, they are more likely to pass math to pursue their desired careers that involve math and science.

1:00 – 2:05 pm, Wednesday, November 14, 2018

Build Your Own Co-requisite Statistics Learning Support

Presenter: Markus Pomper (AMATYC)

The presenter will provide an example of a successful co-requisite learning support course at a community college in Tennessee. This model proved useful for a community college with eight campuses which serves a large rural area that straddles two time zones. The presentation will include a description of the structure of the co-requisite support system, and will highlight some of its successes with respect to course completion. The session will be highly interactive, and participants will be challenged to develop an outline for learning support modules for a statistics lesson of their choice. The session will close with discussion of the results of the workshop and with ample time for Q&A for audience members.

1:00 – 2:05 pm, Wednesday, November 14, 2018

Using Technology for Strategic Integration Support Services in Math Classrooms

Presenter: Barbara Illowsky (NCDE)

Attendees learned from Dr. Boylan about strategic integration support services. In his presentation, these services were delivered face-to-face. More and more, however, students are learning in online or blended environments. Even in face-to-face classes, support services can be offered online. This presentation describes methods to integrate such services via technology. Participants will learn how tutoring, counseling, and self-efficacy strategies can be effectively delivered via technology. These technology services are valuable in face-to-face classes, as well as in distance and blended courses.

2:15 – 3:20 pm, Wednesday, November 14, 2018

National Practitioners Networking Session

Meet with presenters and other practitioners about similar areas of interest on how to help the students who need community colleges the most. Topics include:

- Active Learning • Co-requisite Models • Mathematics Pathways • Multiple Measures Placement
- Affective Characteristics • Mathematical Rigor • Assessing Student Success • Learning Support

3:30 - 4:10 pm, Wednesday, November 14, 2018

Panel Discussion

Moderator: Nancy Sattler

Panel Members: Linda Zientek (AMATYC), Barbara Illowsky (NCDE), Mike Sieve (Carnegie Math Pathways), Connie Richardson (Dana Center), Julie Phelps (MAA), Patrick Saxon (NADE), Paul Nolting (Paul Nolting)

4:10 - 5:00 pm, Wednesday, November 14, 2018

Curricular Modernization in Turbulent Times: A Search for True North

Presenter: Uri Treisman - Closing Remarks

The forces reshaping postsecondary mathematics reform are arguably stronger and more varied than at any time since Sputnik, if not WWII. Gateway course structures, especially those designed to serve students deemed to need remediation, are being replaced at scale by executive orders, legislation, and, in a growing number of cases, by administrative fiat in response to changing norms of responsible professional practice. Influential philanthropies, now more powerful given a vacuum in federal and state higher education leadership and support, are shifting away from pilot studies to supporting change at scale.

The forces emanate from a potent mix of enrollment declines, financial exigencies, structural shifts in the economy affecting the demand for workers, and on the positive side, advances in mathematics education and the learning sciences. In response, individual colleges and higher education systems are implementing math pathways, co-requisite instruction, intrusive advising, guided pathways, and a host of “solutions” designed to improve institutional outcomes.

My talk will present a framework for sense making in this new environment and for anchoring necessary changes in the core missions of our institutions and professional societies. The goal: to ensure that mathematics education is worthy of our students, our institutions, and our discipline.

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