2015

OHIO STUDENT SUCCESS SUMMIT:
Defining Mathematics Practices and Pathways

Friday, April 24, 2015
Greater Columbus Convention Center
EVENT PROGRAM

Agenda........................................................................................................4
About...........................................................................................................6
Speaker Biographies..................................................................................10
Notes..........................................................................................................14
9:00 AM
REGISTRATION

9:30 AM
WELCOME
Stephanie Davidson
Ohio Board of Regents

9:40 AM
OHIO MATHEMATICS INITIATIVE OVERVIEW AND SUMMIT OVERVIEW AND GOALS
Bradford Findell
The Ohio State University
Ricardo Moena
University of Cincinnati, Chair, Ohio Transfer Module, Mathematics
Brian Roget
Ohio Department of Education
Michelle Younker
Terra State Community College

10:45 AM
BREAK

11:00 AM
MATHEMATICS ACROSS THE P-16 CONTINUUM
Fred Dillon
National Council of Teachers of Mathematics

12:00 PM
LUNCH AND SHARED DISCUSSION

12:45 PM
GREETINGS FROM CHANCELLOR JOHN CAREY AND SUPERINTENDENT RICHARD ROSS

1:00 PM
PLENARY PRESENTATION: NATIONAL PERSPECTIVES ON MATHEMATICS PRACTICES AND PATHWAYS
Joan Ferrini-Mundy
National Science Foundation

2:00 PM
BREAK
### 2:15 PM
**CONCURRENT DISCUSSION/WORK SESSIONS**

1. **Use of Calculators**  
   Douglas Dosky and Christina Therkelsen

2. **21st Century Mathematical Skills**  
   Larisa Russell and Jené Drage

3. **Instructional Design: Embedding Mathematical Practices**  
   Tony Xenos, Bradford Findell, and Endora Kight

4. **12th Grade Transitional Courses**  
   Krista Maxson and Deidra Davis

5. **Advanced Credit Opportunities in HS: College Credit Plus, AP, International Baccalaureate**  
   Kristin MacDonald, Todd Eisworth, and Brian Roget

6. **Advising and Counseling in Mathematics Pathways to Support Individual Goals and Plans**  
   Sandy Siegrist and Sarah Collins

7. **Assessment**  
   Andrew Tonge and Jim Wright

8. **Facilitated Shared Mathematics Work Interactive Session**  
   Bowen Kerins

### 3:15 PM
**PLENARY PRESENTATION: PERSPECTIVES FROM THE DAY**

Susan Wood, Dana Center  
University of Texas at Austin

### 3:45 PM
**CLOSING REMARKS**

Uri Treisman, Dana Center  
University of Texas at Austin  
Stephanie Davidson  
Ohio Board of Regents
THE OHIO MATHEMATICS INITIATIVE

The Ohio Mathematics Initiative is a collaborative effort of mathematics faculty members from Ohio public colleges and universities (University System of Ohio) who have come together to revisit and rethink mathematics courses, curricula, and their relationships with other disciplines. One catalyst for the initiative was the establishment of Ohio’s remediation-free standards, guaranteeing placement into college credit-bearing courses to all Ohio students achieving at or above a benchmark assessment score and matriculating to an Ohio public college or university. Additional motivations for this work were increasing difficulties among mathematics faculty with processes and criteria for course and credit transfer within the Ohio Transfer Module (OTM). Another need for change lies in implementation of Ohio’s new learning standards for K-12 students and the effect those rigorous standards will have on the preparation of incoming college students.

The Ohio Mathematics Initiative work began with the Ohio Mathematics Steering Committee, a convening of 12 mathematics faculty members from Ohio public institutions, five ex-officio members, and Ohio Board of Regents (OBR) staff. It was chaired by Dr. Joan Leitzel, professor emeritus of mathematics at The Ohio State University. The Chancellor’s charge to the steering committee was to develop expectations and processes that result in each campus offering pathways in mathematics that yield:

- increased success for students in the study of mathematics;
- a higher percentage of students completing degree programs; and
- effective transferability of credits for students moving from one Ohio public institution to another.
The steering committee’s resulting core action plan is structured around five strategies:

1. Develop high-quality entry-level courses and pathways connected to coherent academic programs of study for students majoring in
   - mathematics,
   - other mathematics-intensive majors, and
   - academic majors that are not mathematics intensive;

2. Develop transfer policies and processes that foster effective transfer of course credits while encouraging course innovation on all public campuses;

3. Support constructive engagement of mathematics chairpersons and faculty within campus communities and across campuses to shape curricular policy, improve instruction, and bolster student support and advising;

4. Develop high-quality measures for improving mathematics course offerings and instruction; and collect, analyze, and share relevant data; and

5. Improve student success in college-level mathematics courses by aligning postsecondary expectations and high school practices.

The work to implement these recommendations is led by mathematics department chairpersons and their colleagues in USO institutions across the state. They have the support of an emerging statewide mathematics community and work in partnership with campus administrators and the Ohio Board of Regents. The OBR will: (a) help USO campuses as they rethink and reshape their entry-level mathematics courses; (b) assist in the redesign of OTM course criteria and processes to focus on student learning outcomes; (c) provide support in collecting, assimilating, and analyzing course-level and student-level data that can be used to assess, and ultimately improve, campuses mathematics course offerings; (d) lead efforts to identify and secure grants and the foundation funding needed to fully implement these changes at the campus and statewide levels; and (e) work collaboratively with the Ohio Department of Education to promote improved alignment between secondary and postsecondary mathematics content and instruction, and support implementation of both College Credit Plus and the state’s remediation-free standards.
Because the broader issues are not unique to our state, Ohio is participating in a multi-state collaborative coordinated by Complete College America (CCA), in collaboration with the Charles Dana Center at the University of Texas-Austin. This CCA Alliance of States has joined in a two-year initiative to dramatically increase the percentage of students who pass gateway math courses and enter programs of study in one academic year by building math pathways.

Educators across the country now recognize undergraduate mathematics requirements are shaped more by the weight of history than by advances in mathematics or by the needs of today’s primary users of mathematics. Neither STEM nor non-STEM students are well served by traditional gateway courses and long sequences of remedial mathematics courses that are misaligned to the programs of study of many students. Further, mathematics is typically taught as decontextualized skills rather than concepts to be applied flexibly when students are asked to solve problems in unfamiliar contexts. Modernization of undergraduate mathematics is not only our professional responsibility, it is also a key lever for improving college completion. Faculty must be at the forefront of this reform effort, working in coordination at the system level.
Math Pathways are a system for dramatically increasing the percentage of students who pass gateway math courses and enter programs of study in their first academic year. They include the following components:

Differentiated gateway math courses offered by two-year and four-year institutions, which deliver instruction in the math skills students need to succeed in their chosen program of study. Typical courses include:

- **STEM** - College algebra or equivalent course preparing students for programs of study that require pre-calculus or calculus.
- **Transfer, Non-STEM** – Quantitative reasoning and/or statistics courses that fulfill math requirements for programs of study that do not require pre-calculus or calculus and fully articulate to math requirements for programs of study at receiving institutions for transfer.
- **Non-Transfer** – Technical or other math courses that fulfill math requirements for programs of study at the institution offering the course – but do not transfer into programs of study at other institutions.
- Gateway math courses are clearly articulated for each program of study and are outlined in an academic map and included in degree plans for students.
- STEM and transfer, non-STEM math courses are fully articulated for transfer into programs of study at receiving institutions –not simply for general education credit.
- Academic support/remedial instruction is focused on the skills essential for success in the gateway math course within a given program of study.
- Academic support/remedial instruction is provided to students while they learn gateway course math content as a co-requisite, ensuring that students can complete a gateway math course in one academic year.
- Students receive support to make well-informed decisions about academic and career goals and are advised into the appropriate gateway mathematics pathways based on those goals. States gather and report data on the number and percentage of students who complete gateway math courses.
John Carey was appointed Chancellor of the Ohio Board of Regents by Gov. John R. Kasich in April, 2013. As Chancellor, Carey oversees the University System of Ohio and its public two-year and four-year institutions and Ohio Technical Centers, and, with the advice of the nine-member Board of Regents, provides policy guidance to the Governor and the Ohio General Assembly, and carries out state higher education policy. He served nine years in the Ohio House of Representatives and eight years in the Ohio Senate. Prior to his appointment as Chancellor, Carey served as assistant to the president for government relations and strategic initiatives for Shawnee State University in Portsmouth. Chancellor Carey is a graduate of Ohio University with a degree in political science, and is a first-generation college graduate.

Dr. Stephanie Davidson is the vice chancellor of academic affairs for the Ohio Board of Regents. In that role she oversees the units within the agency that: facilitate the creation of seamless, affordable academic pathways; ensure the quality and integrity of the post-secondary academic programming; and coordinate initiatives related to college access, readiness and educator preparation. She also serves as the academic affairs lead in agency-wide initiatives in college completion and workforce development. Prior to joining the Board of Regents, Stephanie served as a faculty member in the Department of Speech and Hearing Science at The Ohio State University for over 20 years. Dr. Davidson received her B.A. in audiology and speech sciences from Michigan State University and her M.A. and Ph.D. in audiology and hearing science from The Ohio State University.

Fred Dillon is a mathematics educator, having taught middle and high school mathematics in Strongsville, Ohio. He also has taught college courses and provided professional development for mathematics educators. He is a former member of the board of directors for the National Council of Teachers of Mathematics, as well as of the editorial panel of Mathematics Teaching in the Middle School. Mr. Dillon’s awards include the Christofferson-Fawcett Award for Outstanding Contributions to Mathematics Education in Ohio, the Presidential Award for Excellence in Science and Mathematics Teaching, the U.S. Department of Education’s American Star of Teaching, and the Ohio Council of Teachers of Mathematics Buck Martin Award for Exemplary High School Mathematics Teaching. He was also selected as the Most Influential Teacher in Strongsville Schools by students seven times. Fred is a co-author of NCTM’s Principles to Actions as well as several journal articles. He is currently a mathematics coach at Maple Heights, as well as serving as an instructional facilitator with Cleveland’s Ideastream.
Dr. Joan Ferrini-Mundy is assistant director of the National Science Foundation (NSF) for Education and Human Resources, a position she has held since February 2011. She is responsible for the leadership of the NSF Directorate for Education and Human Resources (EHR). From 1999 to 2011, Ferrini-Mundy held an appointment at Michigan State University (MSU), where she was a University Distinguished Professor of Mathematics Education in the departments of mathematics and teacher education, and associate dean for science and mathematics education in the College of Natural Science. Her research interests include calculus teaching and learning, mathematics teacher learning, and mathematics and science education policy at the K-12 level. Ferrini-Mundy holds a PhD in mathematics education from the University of New Hampshire. She was elected a fellow of the American Association for the Advancement of Science in 2011.

Dr. Bradford Findell serves as associate director, mathematics programs for teachers, in the Department of Mathematics at The Ohio State University, where he develops and teaches mathematics courses for teachers. He was a member of the Mathematics Work Team that wrote the Common Core State Standards and is a former president of the Association of State Supervisors of Mathematics. Previously, Brad was the mathematics initiatives administrator at the Ohio Department of Education. Before moving to Ohio, he was on the faculty in mathematics education at the University of Georgia, where he was deeply involved in drafting, revising, elaborating, and implementing the Georgia performance standards in mathematics. He has also served as a staff member at the National Research Council (NRC), working on various mathematics education projects, including Adding It Up: Helping Children Learn Mathematics (NRC, 2001) – a synthesis of the research literature on the teaching and learning of mathematics in grades K-8. He has taught mathematics courses and lessons in elementary through graduate school, focusing mostly on high school and undergraduate mathematics and on the preparation and professional development of teachers.

Bowen Kerins is an EDC research scientist and senior curriculum designer and a core member of the author team for the CME Project high school mathematics curriculum. He is highly experienced in current techniques and procedures used in the design, development, and implementation of curriculum, curriculum-based professional development, instruction, and assessments. Since 2001, Kerins has taught and designed the curriculum for the Park City Mathematics Institute’s program for high school teachers. For many years, he has worked with the PROMYS program at Boston University. As a core advisor on all five strands of New England Public Broadcasting WGBH’s Learning Math—a website and video series—he advanced goals to help teachers learn more mathematical content. Before joining EDC, Kerins was a high school mathematics teacher for four years, teaching all grades and all levels from Algebra I to AP Calculus. He has a BS in mathematics from Stanford University and an MA in teaching secondary mathematics from Boston University.
Serita McGunia is an Assistant Professor of Mathematics at Cuyahoga Community College. Ms. McGunia recently served as Math Chairperson for the Cleveland Foundation’s College Success Program Curriculum Alignment Project - a groundbreaking curriculum alignment project between Cuyahoga Community College and the Cleveland Metropolitan School District. She serves as Co-Chairperson of the Ohio Mathematics Initiative subgroup focused on alignment between secondary and postsecondary mathematics content and instruction. Ms. McGunia is currently pursuing her doctorate in Higher Education Administration at National American University and is a George Boggs Scholar. Her research and professional interests include mathematics education, urban education, developmental education and education policy.

Dr. Ricardo Moena is an associate professor of mathematics at the University of Cincinnati. He serves as the director of entry level mathematics. His statewide leadership roles include chairperson of the Ohio Board of Regents Ohio Transfer Module (OTM) Committee and co-chairperson of the Ohio Mathematics Initiative subgroup focused on redesigning the OTM course criteria and processes to focus on student learning outcomes; increasing departmental flexibility in determining pre-requisite courses and credit hour requirements for OTM courses; and defining what distinguishes a course as college-level.

Brian Roget is associate director in the Ohio Department of Education office of curriculum and assessment. Prior to joining the department he served as a mathematics teacher in the Dayton Public Schools for 12 years. He completed his master’s degree at the University of Dayton and his baccalaureate degree at Cedarville University.

Dr. Richard Ross was selected by the State Board of Education as State Superintendent of Public Instruction in March 2013. He had been leading Governor John Kasich’s Office of 21st Century Education where he successfully moved several education initiatives through the legislative process. These include the Cleveland Transformation Plan, the Third Grade Reading Guarantee, revisions to the Teacher and Principal Evaluation Systems, and the A-F Local Report Card. He also played a key role in the development of the state education budget and the school funding model. Previously, Dr. Ross was superintendent at Bryan City schools and Ottawa-Glandorf Local Schools, was an instructor at Bowling Green State University and served as high school principal at Jonathan Alder Local School District. He also served as chairman of the Youngstown Academic Distress Commission and was an instructor for the Ohio University Educational Leadership Program. Dr. Ross earned an undergraduate degree in social studies and a Master’s of Educational Administration from The Ohio State University, and a Doctorate in Educational Administration from Bowling Green State University.
Dr. Andrew Tonge serves as chair and professor of mathematics at Kent State University. He completed his doctorate at Cambridge University and has worked in universities in several countries. In addition to his primary focus on mathematical analysis, his research and teaching interests include mathematics education. He is working with cognitive psychologists on how to promote effective learning in mathematics, has helped to develop mathematics programs for middle school and secondary teachers, and has participated in a variety of state initiatives to promote mathematics and mathematics education. Andrew serves as co-chairperson of the Ohio Mathematics Initiative subgroup focused on alignment between secondary and postsecondary mathematics content and instruction.

Dr. Philip Uri Treisman is professor of mathematics and of public affairs at The University of Texas at Austin. He is the founder and executive director of the University's Charles A. Dana Center, an organized research unit of the College of Natural Sciences. Dr. Treisman has received numerous honors and awards for his efforts to improve American education. For his research at the University of California at Berkeley on the factors that support high achievement among minority students in mathematics, he received the 1987 Charles A. Dana Award for Pioneering Achievement in American Higher Education. In 1992, he was named a MacArthur Fellow. In December 1999, the magazine Black Issues in Higher Education named him one of the outstanding leaders in higher education in the 20th century. The Harvard Foundation of Harvard University named him “2006 Scientist of the Year” for his outstanding contributions to mathematics.

Dr. Susan Wood serves as a national consultant to the Building Math Pathways Initiative with the Charles A. Dana Center at the University of Texas at Austin. She is a charter faculty member and professor emeritus at J. Sargeant Reynolds Community College in Virginia. She joined the system office for the state's 23 community colleges in 2005. Dr. Wood retired in 2014 as the chief academic officer for the system after 40 years of service to Virginia’s community colleges. She recently served as lead staff supporting the development of a statewide strategic plan for higher education for the State Council of Higher Education for Virginia. She is a past president of the American Mathematical Association of Two-Year Colleges (AMATYC) and the National Association of Community College Teacher Education Programs (NACCTEP). She holds degrees in mathematics and mathematics education from Virginia Tech and the University of Virginia. In acknowledgement of her contributions, the Virginia Foundation for Community College Education recently established an endowment called the “Susan S. Wood Visiting Professorship for Teaching Excellence.”

Dr. Michelle Younker is an associate professor of mathematics at Terra State Community College. She serves as co-chair of the Ohio Mathematics Initiative Communication, Outreach, and Engagement Subgroup.
A VERY SPECIAL THANK YOU TO:
Charles Dana Center at the University of Texas-Austin; Complete College America; Joan Leitzel, Professor Emeritus, The Ohio State University; Kathryn Shipley, Conference Planner, Ohio Board of Regents; Barry Schieferstein, Conference Planner, Ohio Board of Regents; Ohio Department of Education, Race to the Top; Ohio Articulation and Transfer Network; and the Ohio Mathematics Initiative Members.