APLU MTE-Partnership
MATHEMATICS TEACHER EDUCATION PARTNERSHIP

The Partnership Pipeline

Fall 2016

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The Partnership Pipeline *is a quarterly newsletter for MTE-Partnership members and those interested in the work and aims of the partnership -- parties dedicated to the responsibility of mathematics and mathematics teacher education. The purpose of the Pipeline is:*

- *To share updates from the Partnership, its Research Action Clusters, and its member institutions that are relevant to the work of the Partnership.*
- *To serve as a sounding board for suggestions from the membership. As exciting events happen for you, your RAC, and/or your institution, please share that information to Mary Leskosky (mleskosky@aplu.org),* Partnership Pipeline *editor, so we can include it in our next newsletter. We also welcome your input on the overall focus and format of the Pipeline.*

About Us

The MTE-Partnership is working to transform secondary mathematics teacher preparation. Organized by the Association of Public and Land-grant Universities, it includes 39 partnership teams comprised of over 90 universities and 100 school districts across 31 states.

2016 MTE-Partnership Annual Conference

The fifth annual MTE-Partnership Conference was held June 26 - 28, 2016 in Atlanta, Georgia. We had about 90 participants register and take part in the proceedings, representing 27 states. Goals of the conference were to accelerate the work of the five Research Action Clusters (RACs) towards their aims, build focus on the transformational change needed for teams and programs to achieve the partnership aim, make equity and social justice more explicit as an essential component of the partnership aim, and build a sense of joint purpose and identity across the partnership. During the conference, RACs had 8 hours of dedicated worktime to continue their work and to make plans for the following year. Breakout sessions in which participants presented updates on research related to the Partnership goal were also included.

Suzanne Wilson, professor and director of the Naeg School of Education at the University of Connecticut, delivered the keynote entitled "Keeping the Course: Transforming Mathematics Teacher Preparation in Responsive, Responsible Ways."

Karen King (National Science Foundation), Jim Lewis (University of Nebraska-Lincoln), and Diana Suddreth (past president, Association of State Supervisors of Mathematics; Utah State Department) provided stimulating reactions at the close of the conference.

Note that for the first time we will be compiling a Conference Proceedings, which will be published on the APLU website later this fall. Thanks to Brian Lawler, Margaret Mohr-Schroeder, and Bob Ronau for their work in editing this volume!

Suzanne Wilson addressing Institutional Change at the 2016 Conference

Data Request Coming Soon*. In the coming weeks, each program will receive its annual request for production data for 2015-2016, as well as the Program Progress Survey. Later this fall, programs will receive a request to participate in collecting data about their program completers.*

Mark your Calendar! 2017 MTE-Partnership Conference

Plans for the 2017 Conference are already under way! Please hold **June 25-27, 2017** as the dates for the conference, which will be held in conjunction with APLU's annual meeting of the Science and Mathematics Teaching Imperative. Details will be announced soon!

MATH RAC Update

The goal of the Mathematics to Attract Teacher Hopefuls (MATH) RAC is to support the development of campaigns to purposefully market mathematics teaching as a career opportunity, thus increasing the number of students entering secondary mathematics teacher preparation programs in order to address the shortage of mathematics teachers across the country. The group is giving special attention recruiting from diverse and underrepresented groups to better represent the student population.

Over the two years, the MATH RAC has created a *Mathematics Teacher Recruitment Campaign Implementation Guide* that provides comprehensive guidance for programs looking to improve their recruitment efforts. At the 2016 MTE-Partnership Conference, members of the RAC explored how to best support use of the guide; see http://bit.ly/MATHImplGuide. They also created a plan for documenting the impact of various recruitment strategies and tools in a Mathematics Teacher Recruitment Padlet (https://padlet.com/ed_dickey/vhle4gisbq82).

Ed Dickey has been the stalwart leader of the MATH RAC since its founding in 2013. He has new leadership duties at the University of South Carolina and will retire from the faculty later this year, so a team is being formed to provide the leadership required for this important initiative of our Partnership. We appreciate all his contributions over the past year and wish him the best with this new endeavor and career transition.

Ed Dickey presenting updates from the MATH RAC at the 2016 Annual Conference in Atlanta

Other participating institutions include California State University System (including Fresno State, San José State, Chico State, San Diego State, Monterey Bay, and East Bay), Boise State University, Mississippi State University, University of Kentucky, Florida International University, University of Arizona, Middle Tennessee State University, University of Hawaii, and Texas A&M University.

All interested in contributing to this important endeavor are encouraged to participate, whether you are beginning your work with recruitment or have extensive experience to share. Please contact Laurie Cavey if interested!

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MODULE(S^2) RAC Update

The goal of the MODULE(S^2) RAC is to develop materials that can be used to help prospective secondary mathematics teachers build deep understanding of and knowledge for teaching the mathematics they will be asked to teach. To do this, they are building communities among mathematicians, mathematics educators, and K-12 collaborators who work together to establish common content course materials for mathematics teachers relevant to their professional needs.

At the Summer Conference, the RAC worked on refining three geometry modules in development, as well as an introductory module for modeling. An additional module is currently being developed for statistics. These modules are each about 5 weeks long and can be used in a variety of ways, such as using the three geometry modules in a geometry course, using a sampling of units across the areas in a "capstone" course, or incorporating one or more modules into a methods class. It is planned that each module will include instructor guides, sample work, and other supports.

The RAC is led by Emina Alibegovic, Rowland Hall School, and Alyson Lischka, Middle Tennessee State University. Other partnering institutions include Utah State University, University of Utah, Georgia State University, University of Nebraska-Lincoln, Purdue University, Kennesaw State University, University of Arizona, and Eastern Michigan University.

The MODULE(S^2) RAC will be presenting Building Mathematical Knowledge for Teaching in Content Courses for Secondary Teachers: Geometry and Beyond at the 2017 AMTE Conference in Orlando, Florida. In addition, the revision of a proposal for NSF IUSE funding for the work is in progress.

There are multiple opportunities for those interested in this work to get involved, including reviewing or editing the materials they are developing or piloting them in a course to provide feedback. **They are particularly looking for instructors to pilot their Geometry materials this spring semester; see attached flyer!** Please contact Alyson Lyschka if interested in other aspects of the RAC.

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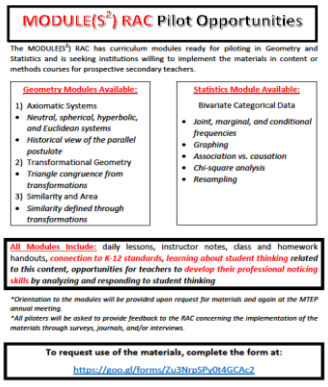
MODULES FOR SPRING 2017 PILOT

MODULE(S^2) is looking for instructors to pilot their Geometry materials this spring semester; see attached flyer! (click icon below for flyer)



MODULE(S^2) RAC Pilot Opportunities

The MODULE(S^2) RAC has curriculum modules ready for piloting in Geometry and Statistics and is seeking institutions willing to implement the materials in content or methods courses for prospective secondary teachers.

Geometry Modules Available:

1) Axiomatic Systems
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All Modules Include: daily lessons, instructor notes, class and homework handouts, *connection to K-12 standards, learning about student thinking related to this content, opportunities for teachers to develop their professional noticing skills by analyzing and responding to student thinking*

*Orientation to the modules will be provided upon request for materials and again at the MTEP annual meeting.
*All piloters will be asked to provide feedback to the RAC concerning the implementation of the materials through surveys, journals, and/or interviews.

To request use of the materials, complete the form at:
https://goo.gl/forms/Zu3NrpSPy0t4GCAc2

Questions? Contact Alyson Lischka at Alyson.Lischka@mtsu.edu

MTE-Partnership at ICME-13

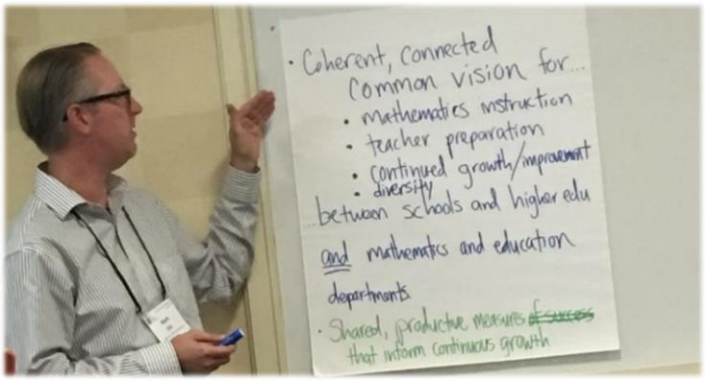
The MTE-Partnership was well-represented at the 13th International Congress on Mathematics Education (ICME-13) held in Hamburg, Germany. Chris Rasmussen (San Diego State) and Marilyn Strutchens (Auburn University) organized topic study groups on calculus and clinical experiences respectively. Margaret Mohr-Schroeder, David Webb, Ruthmae Sears, Bob Ronau, and W. Gary Martin all presented papers. For more information about the ICME-13, click here. [Back to Top]

Ruthmae Sears (center) gave a presentation on "A COLLABORATIVE EFFORT TO EXAMINE CO-PLANNING AND CO-TEACHING DURING CLINICAL EXPERIENCES" at ICME-13. She is accompanied by Gladis Kersaint (left), one of the founding members of MTE-Partnership, now Dean of Education at the University of Connecticut, and Marilyn Strutchens.

Clinical Experiences RAC Update

The Clinical Experiences RAC is composed of higher education faculty, partnering school district personnel, and school personnel working together to actively recruit, develop, and support in-service master secondary mathematics teachers who can serve as mentors across the teacher development continuum from preservice to beginning teachers. Moreover, the clinical experiences RAC helps to ensure that teacher candidates have the knowledge, skills, and dispositions needed to implement educational practices found to be effective in supporting all secondary students' success in mathematics as defined in the CCSS-M and other college- and career-ready standards. In fact the aim for the RAC is: "During student teaching teacher candidates will use each of the eight Mathematics Teaching Practices (NCTM, 2014) at least once a week during full time teaching.

This RAC is divided into three sub-RACs: Methods, Co-Planning and Co-Teaching (CPCT), and Paired Placement. The leadership of the RAC is provided by Marilyn Strutchens, Auburn University, chair of the RAC as a whole and leader of the Paired Placement sub-RAC; Ruthmae Sears, University of South Florida, leader of the CPCT sub-RAC; Michele Iiams, University of North Dakota, leader of the Methods sub-RAC; and Mark Ellis, California State University, Fullerton.



Mark Ellis during Clinical Experiences RAC worktime at the Annual Conference

The work of the Methods sub-RAC has been the development of modules linking the theoretical aspect of teacher candidates' on-campus methods course with their school-based clinical experience. Each module includes (or will include) activities in which the teacher candidate and mentor teacher examine the theory in practice. The teacher candidate - mentor teacher conversations are guided by rubrics and specific questions with the intent of deepening the understanding of both. In response to data gathered through our PDSA cycles we continue to refine our Standards of Mathematical Practices module. We are ready to scale-up the use of this module, which can be downloaded from the Clinical Experiences Library on Trellis. Work is underway on the development of a Lesson Design module with a focus on the NCTM (2014) Mathematics Teaching Practices and access and equity. We hope to run our first PDSA cycle on this module in the spring of 2017. Future plans include developing a module on assessment.

The co-planning and co-teaching (CPCT) sub-RAC has actively engaged in disseminating their work via conference presentations and a publication. Members of the sub-RAC will be presenting at the National Conference on Co-teaching, at the Hawaii International Conference, and at the Association of Mathematics Teacher Educators annual meeting. Additionally, the sub-RAC article entitled, Using Improvement Science to Transform Internship Experiences, will be published in the 2017 Annual Perspectives in Mathematics Education (APME). For the 2016-2017, the members of the sub-RAC, plan to create publishable online modules, share short YouTube videos, engage in instruments refinement, and will examine the variance of implementation across their respective institutions. Thus, as the sub-RAC scales up its efforts, members will also seek to share what was learned with the wider community.

The Paired Placement sub-RAC plans to revise syllabi and workshop guidelines for implementation of the paired placement model fall semester for spring 2017 implementations. Sub-RAC members are also working on an article to share what they have learned from implementing the paired placement model. Members of the sub-RAC plan to conduct PDSA cycles more often during the spring semester implementations in order to improve and monitor the approach. Also two new university teams joined the sub-RAC: the University of South Alabama and Jacksonville State University.

In order to address equity and social justice, the RAC plans pay more explicit attention to equity issues during observations of teacher candidates across the sub-RAC. Members of the RAC are highlighting and explicating indicators related to equity on observation protocols so that they are monitored more rigorously.

There are multiple opportunities for those interested in this work to get involved, including implementing models, modules, measures, and workshops in a course to provide feedback. Please contact us if interested: Marilyn Strutchens, Ruthmae Sears, and Michele Iiams.

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Actively Learning Math RAC Update

The goal of the Actively Learning Math RAC is to decrease failure rates in entry-level undergraduate mathematics courses, which has a tremendous impact on persistence in postsecondary education, pursuit of STEM majors and related careers, and ultimately the development of future secondary math teachers. The ALM RAC is committed to increasing student understanding of undergraduate mathematics and performance in the pre-calculus through Calculus 2 sequence.

At the annual conference, RAC members focused on laying out plans for scaling up the activity, given the growth in size of the group, as well as on measures institutions can use to track their progress. Several sub- RACs are being established, based on the area of focus as well as institutions' trajectory of change. These sub- RACs will conduct site visits this fall as a basis for continuing their work. They are also working on increasing participation in their measures, including collecting data on DFW rates and persistence, using a common observation protocol, and using "CALCS," a student attitude survey that the RAC has adapted from the CLASS survey developed at the University of Colorado Boulder.

The ALM RAC recently heard from NSF that their IUSE grant proposal ("Collaborative Research: Student Engagement in Mathematics through an Institutional Network for Active Learning", or SEMINAL) has been awarded, and work officially began September 1, 2016. More information on this grant will follow in the next newsletter.

The ALM RAC is led by David Webb, University of Colorado Boulder, and Wendy Smith, University of Nebraska-Lincoln. Other membership institutions include CSU Fresno, CSU Fullerton, San Diego State University, Auburn University, Tuskegee University, University of Nebraska-Omaha, University of South Carolina, West Virginia University, and Western Michigan University.

There are multiple opportunities for those interested in this work to get involved, including collecting local data (e.g., student grades and persistence in calculus, CALCS survey, observation data, etc.), contributing to the development and revision of resources, and communicating department level challenges and success with improving calculus instruction with ALM RAC partners. Please contact David Webb if interested. [Back to Top]

STRIDES RAC Update

The STRIDES RAC has an aim of increasing the retention of mathematics educators entering their third year of teaching to 85% by 2022 by developing methods to monitor and provide support for secondary mathematics teachers just beginning their careers.

At the Summer Conference, the STRIDES working group analyzed baseline data from a pilot survey disseminated in 2015-16 to better understand the kinds of professional support beginning mathematics teachers in the MTE-P network are receiving and how impactful it is on their teaching practice and likelihood to continue teaching. From the survey data the group identified three interventions that sub-groups are currently exploring:

- Creating Long-Term, Collaborative Groups for Early Career Teachers
- Bolstering the role of "Administrators" in Early Career Teacher Support
- Training and Supporting the Mentors of Early Career Teachers

The RAC is led by James Martinez, California State University Channel Islands, Megan W. Taylor, Trellis Education, and Lisa Amick, University of Kentucky. Other partnering institutions include CSU Los Angeles, Monterey Bay, and San Marcos, Georgia State University, San Diego State University, San Francisco State University, South Dakota State University, Texas A&M University, and the University of South Carolina. School districts involved with the STRIDES RAC include Montebello Unified School District, Sioux Falls School District, Sonoma Valley Unified School District, and Ventura Unified School District.

STRIDES working group at the 2016 Annual Conference in Atlanta, GA

The STRIDES working group will meet again in October to review a revision of the survey and to update one another on intervention work. A full, iterated version of the pilot survey will be sent to early career mathematics teachers across the MTE-P network in November, February, and April.

Please contact Lisa Amick if interested. [Back to Top]

AMTE Standards for Mathematics Teacher Preparation

The Association of Mathematics Teacher Educators (AMTE) is the premier organization for those working in mathematics teacher preparation. It has released a draft of its upcoming Standards for Mathematics Teacher Preparation — see https://amte.net/form/2016/feedback-mtp-standards

Several members of the MTE-Partnership leadership team are also on the standards writing team, including Gary Martin (Auburn University, lead writer for high school), Ed Dicky (University of South Carolina), Jim Lewis (University of Nebraska-Lincoln), and Marilyn Strutchens (Auburn University).

We encourage members of MTE-Partnership RACs and teams to read and provide feedback on the draft standards, either individually or collectively. It is our hope that this document will stimulate continued dialogue within our Partnership.

MTE-Partnership at ATME 2017

Its 2017 Annual Conference of the Association of Mathematics Teacher Educators (AMTE) will be held February 9-11, 2017 in Orlando, FL. MTE-Partnership will have several high-profile sessions, including:

- Marilyn Strutchens has been invited to present the Judith E. Jacobs Lecture. Congratulations, Marilyn!
- The MODULE(S^2) RAC will be presenting “Building Mathematical Knowledge for Teaching in Content Courses for Secondary Teachers: Geometry and Beyond.”
- The CoPlan/CoTeach subRAC will be presenting “Measuring Co-teaching during Clinical Experiences.”

For more information about the conference, click here.

Focus on Transformational Change

As teams work to begin to integrate the findings developing across the five Research Action Clusters (RACs) to make broad-scale, transformative changes to their secondary mathematics teacher preparation programs, many will hit a wall in terms of time, resources, and other support available. In fact, in the 2016 Conference evaluation, 100% of the respondents identified this as an important concern, with 89% identifying it as “very important."

To address this major issue, the MTE-Partnership has established a Transformational Change Working Group, which has as its goal to devise ways that the Partnership can support teams in developing (and implementing) “strategic pathways” to scale up their incorporation of strategies being developed by the RACs. The group has met twice — once following the 2016 Conference and again in October — and will be submitting an application to form a new RAC focused on program transformation. Stay tuned for more information in the coming months, including an opportunity for teams to participate in this new RAC.

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Transformation working group at APLU in DC on October 23, 2016

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