
The Mathematics Teacher Education Partnership: Six Annual Conferences and Counting

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The Mathematics Teacher Education Partnership (MTE-Partnership) was formed by the Association of Public and Land-grant Universities (APLU) in 2012 to address a major problem in secondary mathematics teacher preparation: an undersupply of new secondary mathematics teachers who are well prepared to help their students attain the goals of the Common Core State Standards for Mathematics (CCSS-M) (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010) and other rigorous state mathematics standards. This consortium of over 90 universities and over 100 school systems has a common goal of transforming secondary mathematics teacher preparation using the Networked Improvement Community (NIC) design (Bryk et al., 2015). This paper will provide a brief overview of the MTE-Partnership, the role of the conferences in general, and the particular goals for the Sixth Conference held in June 2017.

An Overview of the MTE-Partnership

The initial concept for the Partnership was formed at the 2011 SMTI Annual Conference, which focused on how higher education might respond to the just-released CCSS-M, including necessary changes in teacher preparation. University programs participate in MTE-Partnership as a part of teams that include K-12 school districts and other partners involved in secondary mathematics teacher preparation, with a requirement that teams engage mathematics teacher educators, mathematicians, and K-12 personnel in their activities. The inclusion of multiple stakeholders in the efforts reflects the focus of the Partnership on “develop[ing] and promot[ing] a common vision and goals for how to best prepare teacher candidates who can promote student success in mathematics” within a program, as well as engaging in mutual learning and sharing responsibility across the Partnership (MTE-Partnership, 2014, p. 2). There are currently 39 partnership teams across 31 states in the United States (see Figure 1).

About a year after its formation, the MTE-Partnership adopted the NIC model developed and used by the Carnegie Foundation for the Advancement of Teaching in response to several design challenges identified by the planning team, including (a) the need to maintain the engagement of the teams in the work of the Partnership and (b) the need to maintain a focus on disciplined inquiry consistent with the mission of universities (Martin & Gobstein, 2015). This design supports active collaboration by the Partnership teams to address significant issues in secondary mathematics teacher preparation using improvement science to ensure fidelity to academic standards of inquiry. NICs are distinguished by four essential characteristics (Bryk, Gomez, Brunow, & LeMahieu, 2015); each characteristic is described below, along with a discussion of how the Partnership addressed that characteristic.



Figure 1. Participation in the MTE-Partnership. Large stars represent lead institutions for a team, and small stars represent other participating universities and colleges.

Focused on a specified common aim: The Partnership is focused on the twin aims of producing mathematics teacher candidates who meet a “gold standard” of preparedness to address the Common Core and of increasing the quantity of well-prepared candidates by MTE-Partnership programs by 40 percent by 2020. Note that the improvement target was set through a collaborative process of collecting data from the individual teams and programs. Further information on the measures used to assess candidate quality is given in a later section of this chapter.

Guided by a deep understanding of the problem and the system that produces it: Over a period of nearly a year, the membership teams worked together to develop a shared vision for MTE-Partnership, which is reflected in its Guiding Principles for Secondary Mathematics Teacher Preparation (MTE-Partnership, 2014). This document then formed the based for identifying challenges in secondary mathematics teacher preparation. A multi-step process described by Martin and Strutchens (2014) led to the identification of four significant problem areas of primary importance to the Partnership. In the second column of Figure 2, these problems are restated in the positive as primary drivers, the Partnership’s main areas of influence necessary to promote movement towards achieving the aim (Bryk et al., 2015), which is given in the left-most column. Note that these primary drivers are well-aligned with the Standards for Program Characteristics and Qualities in the Standards for the Preparation of Teachers of Mathematics released by the Association of Mathematics Teacher Educators (AMTE) (2017).

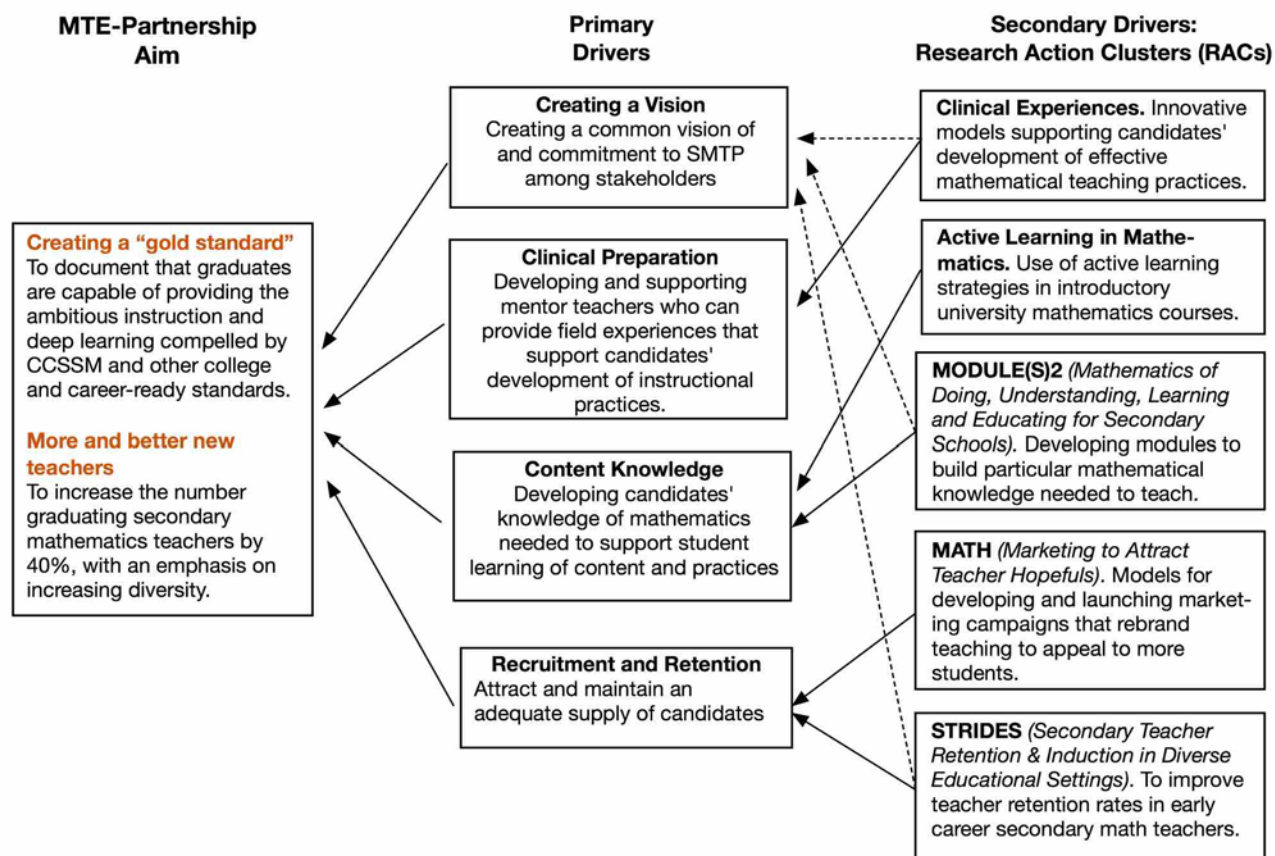


Figure 2. The MTE-Partnership driver diagram (Martin & Gobstein, 2016).

Disciplined by the rigor of improvement science: The use of evidence to guide the development of interventions ensures that the changes being proposed are actually improvements. Moreover, Plan-Do-Study-Act (PDSA) cycles (see Figure 3) are used to iteratively prototype, test, and refine interventions; use of PDSA cycles has the potential to lead to timely solutions to important problems (Bryk et al., 2015). Research Action Clusters (RACs) have been organized to carry out the development of interventions. The current RACs are summarized in the third column of Figure 2. Further discussion of their current work is given in the Research Action Cluster Reports section of the proceedings. Note that each RAC has developed its own aim statement and driver diagram, and undertakes PDSA cycles in alignment with its driver diagram. In some sense, the RACs may be considered "sub-NICs."

Networked to accelerate the development, testing, and refinement of interventions and their effective integration into varied educational contexts: Rather than trying to "control" variation, as typical in traditional educational research, the Partnership's design embraces variation to study how interventions need to be adapted to respond to the differing conditions under which they are used. As they are tested and refined, interventions can gradually spread across the network, supporting scale up (Bryk et al., 2015). Thus, rather than developing a "treatment" that is tested against a control group, the initial development and testing of an intervention begins in a small number of settings. As its efficacy is demonstrated, it is tested in an increasing number of settings, noting adaptations that are needed due to differences in the context. Eventually, the interventions designed should be useful by teams across the Partnership. Further note that the structure of the network allows a "divide and conquer" approach in which subsets of teams can address different problem areas, providing teams access to a wider range of interventions as the work of the RACs progresses.

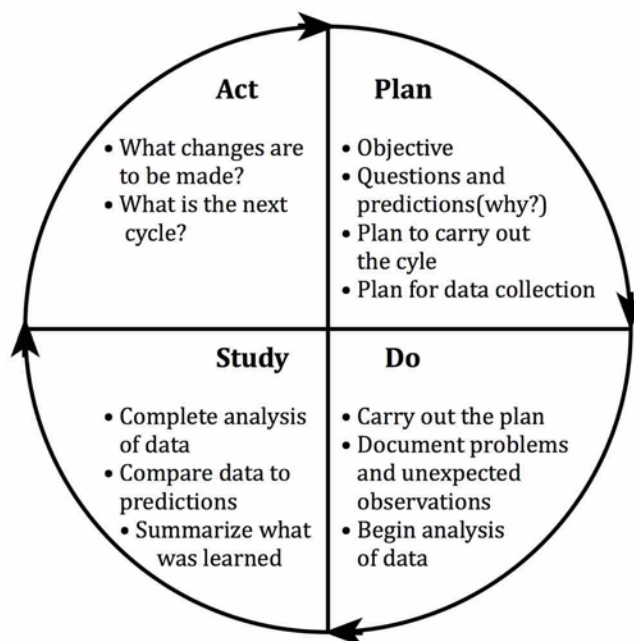


Figure 3. The Plan-Do-Study-Act (PDSA) Cycle. (Adapted from Langley, 2009)

The Role of the Annual Conferences

While the work of the MTE-Partnership carries on throughout the year, the annual conferences have served as important landmarks where many of those active with the partnership gather together to reflect on the progress that has been made and set forth plans for the coming year. A brief outline of the previous six conferences follows, following the developmental trajectory of MTE-Partnership; a more detailed account can be found in the introduction to the Proceedings of the 5th Annual MTE-Partnership Conference (Martin & Gobstein, 2016).

2012 Conference: The first conference, held in April 2012, focused on creating an initial draft of guiding principles for MTE-Partnership, which led to the Guiding Principles for Secondary Mathematics Teacher Preparation (MTE-Partnership, 2012), since updated in 2014, the central organizing document for the Partnership described above. A first attempt was also made at identifying central challenges in meeting the guiding principles; follow-up work led to the development of the four primary drivers discussed above.

2013 Conference: The second conference focused on learning more about the NIC design, which had been adopted following the 2012 conference, and developing the problem space for the Partnership in alignment with that design. Initial concepts were written for a set of 13 RACs, which were later narrowed down to an initial set of five that were launched in the fall following the conference. Teams were invited to join the RACs, and an initial “boot camp” was used to initiate their work.

2014 Conference: The third conference was focused on the work of the RACs. RAC members met in small groups to review their initial work in forming an aim and driver diagrams and to begin planning specific improvement efforts to be undertaken in the coming year using PDSA cycles. Additional sessions focused on increasing understanding of the NIC design and exploring issues related to secondary mathematics teacher preparation. The RACs continued their work throughout the following year.

2015 Conference: The fourth conference continued a primary focus on accelerating the work of the RACs. A new RAC on improving the retention of program graduates in the profession was also launched, replacing an earlier RAC which was sunsetted. This conference saw the incorporation of all 22 campuses of the California State University system that offer teacher preparation, greatly increasing the capacity of the MTE-Partnership. The 2015 conference also introduced an emerging emphasis on program transformation, reflecting the challenges programs face in moving beyond making changes based on the one or two RACs in which they are actively engaged to aggregating the findings of multiple RACs to undertake the broad-scale changes needed to ensure both the necessary quantity and quality of secondary mathematics teacher candidates.

2016 Conference: Perhaps unsurprisingly, work in the RACs was again the focal point of the 2016 conference. A newly formed working group on program transformation presented a panel discussion of issues related to transformational change at the conference and continued its work throughout the following year. In addition, a new focus on equity and social justice was launched; while these issues are embedded in the Guiding Principles and in the work of many of the RACs, members of the planning team noted that this is not visibly a part of the Partnership aim or drivers. A work session was held at the conference to discuss how to make equity and social justice a more explicit focus of the Partnership. In addition, a series of refereed brief research reports were included in the conference to enhance the sharing of ongoing work across the Partnership.

Goals of the 2017 Conference

The sixth MTE-Partnership Conference had four primary goals to continue progress toward the Partnership aim, building on the work done in previous years. Each goal is discussed in turn, along with how the structure of the conference supported that goal.

Partnership/institutional teams will plan next steps in transforming their programs: The importance of better understanding program transformation has been repeatedly emphasized by the planning committee and in surveys of the MTE-Partnership teams. A keynote by Jennifer Russell highlighted the importance of the NIC design and its role in supporting program change. Teams were consequently challenged to consider their progress toward program transformation during a working dinner. A working session on transformation was also held at the end of the second day.

Research Action Clusters (RACs) will continue their work and consider how to share it to contribute to additional teams' transformational efforts: This goal is central to the work of MTE-Partnership, given that the major work of improvement happens within the RACs. The RACs spent more than seven hours of working over the conference, central to their work in progressing toward their respective aims. The RACs were particularly asked to consider how they might contribute to the broader focus on program transformation. Updates on their progress can be found in the Research Action Cluster Reports section of the Proceedings.

The Partnership as a whole will grow its sense of joint purpose and identity as a NIC-supporting program transformation: It is critical that the Partnership to maintain a sense of common purpose and identity, since participants may tend to focus on the problems that interest them, particularly the work of the RACs in which they are involved (Martin & Gobstein, 2015). While the RACs may be their specific focus for participation, there is much to be gained by emphasizing the broader structure of the Partnership, including learning from and with the other RACs and considering the more general context for the work of the RACs. The project co-directors emphasized the overall aim and purpose of the Partnership, as well as its accomplishments, in their opening and closing remarks, and breakout sessions were devised to allow cross-RAC sharing (as well as to also orient participants new to the Partnership to the RAC in which they were participating). Brief research reports were again

included to build understanding of the work going on across the Partnership. Finally, the conference reactants provided a broader cross-RAC lens in their final remarks.

Specific focus on equity and social justice will be included throughout the proceedings: To continue the emphasis on equity and social justice, a panel discussion was held in which representatives of the RACs discussed ways in which issues related to equity and social justice occurred in their work. Nicole Joseph provided a reaction to the panel, providing further insights into how these issues might be better addressed. She subsequently visited the RACs throughout the conference and served as a conference reactant, providing further insights on equity and social justice. Each of the RACs was encouraged to further discuss ways in which equity and social justice might be included. Finally, an Equity Working Group was launched prior to the conference and organized a discussion group at the end of the first day. This group continued its work in a post-conference meeting in which it undertook the initial development of an aim and driver diagram.

Final Reflection

While much of the activity of the MTE-Partnership now occurs within the RACs, over the years the conferences have served an important role in establishing and catalyzing the Partnership's vision and direction. Moreover, they have continued to serve an important role beyond supporting the work conducted in RACs, as they have brought together participants across the RACs to share their ongoing work. This has both provided opportunities to cross-pollinate efforts across the RACs but also to develop a sense of shared identity and commitment to the broader MTE-Partnership effort, beyond participation in one aspect of its work. In addition, they have served to highlight new areas of concern for the Partnership, such as program transformation and equity and social justice.

The effectiveness of the conferences can be clearly seen in the evaluations that have been conducted each year. In thinking across the conference as a whole, participants reported the following *for each of the six annual conferences*:

- 94% or more agreed that the conference had clear goals (100% in 2017).
- 97% or more agreed that progress was made in achieving conference goals (100% in 2017).
- 92% or more agreed that the conference was informative and worthwhile (100% in 2017).
- 100% agreed that the interactions with other participants were useful and productive for all six conferences.
- 94% or more agreed that the conference was a good use of their time (100% in 2017).
- 98% or more expressed interest in participating in future MTE-Partnership events (100% in 2017).

While the planning team members were extremely heartened by these results, planning is already underway for how the 2018 conference might be made even more effective in continuing to push forward the work of the Partnership in transforming secondary mathematics teacher preparation.

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