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Seeking Bridges between Theory and Practice: A Report from the Scholarly Inquiry and Practices Conference on Mathematics Methods Education

Alyson E. Lischka, *Middle Tennessee State University*
Wendy B. Sanchez, *Kennesaw State University*
Signe Kastberg, *Purdue University*
Andrew M. Tyminski, *Clemson University*

Abstract

This paper reports on the NSF-funded Scholarly Inquiry and Practices Conference on Mathematics Education Methods (Grant No. 1503358), held in Atlanta, Georgia on September 30 through October 2, 2015. Conference participants from three different theoretical perspectives (socio-political, cognitive, and situative) discussed the goals and activities of methods courses with a focus toward developing more scholarly inquiry and practices in the work of methods instruction. Conference participants discussed ways of building partnerships between K-12 schools and university teacher education programs. Implications of the conference for mathematics supervisors and leaders are provided.

Introduction

The elements involved in the preparation of prospective K-12 mathematics teachers and the support of in-service mathematics teachers are complex and managed by a variety of interested parties, from teacher educators in university settings to mathematics education leaders and mentor teachers in school settings. The collective work of leaders in mathematics education is generally guided by the goal of improving student achievement in the learning of mathematics for all students (National Council of Supervisors of Mathematics [NCSM], 2014; National Council of Teachers of Mathematics [NCTM], 2014). In order to progress, multiple efforts in improving teaching for both practicing and prospective teachers are warranted. In his Judith Jacobs Lecture at the 2016 Annual Conference of the Association of Mathematics Teacher Educators [AMTE], Skip Fennell challenged the members of AMTE to broaden the scope of the organization to include all who participate in the preparation and development of teachers. In addition, he encouraged teacher preparation programs and school districts to envision teacher preparation as a shared responsibility. As this collective work toward improved mathematics instruction and learning is carried out in both universities and K-12 settings, it is important to attend to the ways in which the workers and activities in each setting can learn with and support the other.

At the university level, the preparation and support of mathematics teachers often includes both content-specific and pedagogically focused activities, offered in a variety of ways. Teacher preparation programs include field experiences, mathematics content courses, and methods courses that typically focus on developing the practices and pedagogy of teaching mathematics. However, variation in teacher preparation and professional learning programs can be seen in the structure of and courses in different

programs (Seago, 2008). Research has also shown variation in the structure, content, activities, and goals of mathematics methods courses (Harder & Talbot, 1997; Kastberg, Tyminski, & Sanchez, in press; Taylor & Ronau, 2006; Watanabe & Yarnevich, 1999). Amid this variation, mathematics teacher educators are urged to move toward more scholarly practices, which are "adapted from empirical studies of the teaching and learning of mathematics and the preparation of mathematics teachers" (Lee & Mewborn, 2009, p. 3), as they design curriculum and experiences for prospective mathematics teachers during their preparation programs.

Toward the goal of developing scholarly practices and the scholarly inquiry (Lee & Mewborn, 2009) that supports the design of such practices in mathematics methods courses, the Scholarly Inquiry and Practices [SIP] Conference for Mathematics Education Methods, funded by the National Science Foundation (Grant No. 1503358), was convened September 30 through October 2, 2015 in Atlanta, Georgia. Conference participants were university mathematics teacher educators and researchers, many of whom teach methods courses and provide teacher professional development in K-12 schools and classrooms. The purpose of this article is to review the conference discussions and outcomes that highlighted the need to situate experiences in K-12 settings and illuminate the importance of partnerships with mathematics education leaders and K-12 faculty that are needed to build scholarly inquiry and practice.

Description of Conference Events

The SIP conference included 53 participants from 29 states who were either university mathematics education faculty or mathematics education doctoral students. Participants were selected, in part, because of their experiences working with practicing teachers in professional development, supervising prospective teachers' field experiences, and/or developing partnerships with K-12 schools.

The activities of the conference were focused on six goals:

1. Discuss important goals for methods [courses] based on theoretical orientations, the participants' experiences, and the literature;
2. Identify the nature of activities that might be useful in methods [courses] to meet important goals;
3. Discuss the evolution of methods instructors' practices within and across individuals;
4. Discuss and suggest protocols for research and reporting practices that would make the literature more useful for building scholarly practices in methods [courses];
5. Discuss and establish a research agenda for improving and determining the impact and residue of methods courses; and
6. Form working or writing groups to progress the research agenda and an action plan for creating and disseminating the agenda. (Sanchez, Kastberg, Tyminski, & Lischka, 2015, p. 9)

Activities were also informed by three theoretical perspectives, which undergird much of the research in mathematics education: socio-political, cognitive, and situative. The socio-political perspective is based on critically examining the process of schooling and its capacity to educate all learners equitably. In order to prepare prospective teachers to examine their own contexts using a critical lens, mathematics teacher educators need to help prospective teachers develop a knowledge base about and skills for promoting equitable learning environments for their future students. The cognitive perspective questions what it means to learn mathematics, both individually and through social interactions, and processes through which this learning occurs. The situative perspective stresses the importance of teacher preparation being conducted within increasingly authentic school contexts, with prospective teachers learning ambitious teaching, which "requires that teachers teach in response to what students do as they engage in problem solving performances, all while holding students accountable to learning goals that include procedural fluency, strategic competence, adaptive reasoning, and productive dispositions" (Kazemi, Franke, & Lampert, 2009, p. 1). Conference participants self-identified with one of these perspectives and then worked within perspective groups for three of the four breakout sessions that comprised the conference.

Keynote Addresses

Next, we report on the content of keynote addresses delivered by leading researchers in each of the three perspectives, along with outcomes of subsequent breakout sessions that composed the remainder of the working time of the conference.

Socio-political perspective. Representing the socio-political perspective, Rochelle Gutiérrez challenged conference participants to recognize the political nature of education and to attend to the development of political knowledge for teaching or *political conocimiento*. In her previous writings, Gutiérrez (2013) described characteristics of teachers who have such knowledge.

> Among other things, political conocimiento involves: understanding how oppression in schooling operates not only at the individual level but also the systemic level; deconstructing the deficit discourses about historically underserved and/or marginalized students; negotiating the world of high-stakes testing and standardization; connecting with and explaining one's discipline to community members and district officials; and buffering oneself, reinventing, or subverting the system in order to be an advocate for one's students. (p. 11)

Such knowledge supports mathematics teachers' role as "identity workers" (Gutiérrez, 2015) who situate ways in which mathematics is reproduced and therefore contribute to how learners position themselves in school and society.

Teacher education programs that support the development of political knowledge for teaching begin with strong partnerships with schools, professional development within those schools, and opportunities for prospective teachers to interact with learners in both school and non-school settings. In addition, prospective teachers need opportunities to envision, practice, and reflect on challenging situations. Gutiérrez described two such opportunities. "In My Shoes" (Gutiérrez, 2012, 2015) is a task that allows prospective teachers to envision situations where they might want to challenge a political notion (e.g., a discussion on tracking in mathematics during a faculty meeting) and then practice responses they might give in those situations. This structured practice allows prospective teachers to build language and ways of interacting that support the growth of political knowledge for teaching. As a second example, "The Mirror Test" (Gutiérrez, 2015) asks an educator to reflect by asking, "Am I doing what I said I wanted to do in education when I set out to be in this profession and, if I'm not, what am I going to do about that?" Gutiérrez argued that these opportunities and others empower prospective teachers to see teaching as a profession where colleagues and community work together to advocate for learners.

Cognitive perspective. Representing the cognitive perspective, Martin Simon began his keynote by challenging the conference participants to consider whether current practices in teacher preparation were fostering induction into the current system or supporting "new teachers [to] be eventual leaders of a different way of teaching mathematics" (Simon, 2015). Simon identified barriers to enacting change in mathematics teaching, including structures of mathematics content courses, time allotted for methods and content courses, insufficient support structures for field experiences, and a lack of knowledge of teacher development. Simon further argued that the key issue to be addressed in the preparation of teachers is the identification of a model of teaching and challenged participants with the question, "If I ask you, how do you help somebody learn something that they don't already know or understand — are you prepared with an answer?" (Simon, 2015).

To explore this question, Simon described two major assimilatory structures prospective teachers develop over years of experiences: perception-based structures and conception-based structures. Teachers who have a perception-based structure interpret learning of new ideas (mathematical or pedagogical) as observing characteristics of phenomena. Problems and models to teach mathematics are chosen because they allow a learner to see a mathematics concept (i.e., the use of base-ten blocks to see relationships between powers of ten). Teachers with a conception-based structure view existing knowledge as impacting what learners know and how they make sense. "Knowledge affects what we see and the sense we make. . . What we know affects what we pay attention to, what we see, and the sense we make of what we see" (Simon, 2015). In addition, the conception-based structure includes the notion that "we learn by building on prior knowledge. We don't take it in from materials, we don't take it in from somebody else, but rather we have to work with what we have" (Simon, 2015). Simon argued that changing prospective teachers' approaches to mathematics teaching and learning involves changing their major assimilatory structures. According to Simon, this change can result in the re-conceptualization of teaching and mathematics learning.

To support teacher development, Simon proposed that mathematics educators consider *pedagogical concepts* such as the negotiation of classroom norms or the meaning of developing a new mathematical operation (Simon, 2015). Simon defined a pedagogical concept in the context of teaching prospective teachers as "the particular understandings we want our [prospective teachers] to come away with" (Simon, 2015). He advocated for the clear

articulation of pedagogical concepts and an exploration of how these concepts are learned. Simon returned repeatedly to asking the fundamental question of how someone comes to know something they did not know before. Mathematics education researchers have made substantial progress addressing this question for learning mathematics, but the process of learning to teach mathematics has been largely un-theorized.

Situative perspective. Elham Kazemi began her discussion of the situative perspective by posing three questions:

1. How do you make school a worthwhile place to be (for both teachers and students)?
2. What kinds of learning environments get you inside practice, with others, to pay careful attention to the content and to students as learners and as people?
3. How can you design and carry out powerful ways to learn together as adults?

Kazemi espoused a broader goal of schooling, beyond determining what students "can and can't do in life [and] how and why and what they contribute to society" (Kazemi, 2015). Drawing from the work of Greeno (2006), Kazemi adopts a situative perspective in which understandings are shaped by an activity system. Activity systems are collections of people and other systems, within which we study interactions and relationships between actors in the systems (Kazemi, 2015). Such systems are dynamic and involve the development of collaborative discourse, positioning of all actors within the system, and knowledge that is visible in representations of practice. Research in activity systems shapes Kazemi's work within methods instruction.

Kazemi described the activity system in which she works with colleagues, prospective teachers, and teachers in schools to develop and support her methods instruction. Tenets of her methods course that make the practice of teaching public and provide opportunities for learning include:

- Teachers must position students as sense-makers and knowledge generators who desire to invest and succeed in school;
- Teaching is both intellectual work and a craft;
- Teachers must design equitable learning environments in which all children are engaged in robust and consequential learning;
- Teachers' instruction and student learning is always conducted within the context of larger social systems, structures, and hierarchies; and
- What we do and say matters and must be analyzed. (Kazemi, 2015)

The course is situated in an elementary school context and involves time divided between academic course instruction and interactions with students and school personnel. Activities in the course are designed to incorporate playfulness and build community through sharing and practicing the work of teaching.

The major work of her methods course is focused on planning and enacting lesson activities selected by Kazemi and supervised by a network of teacher educators and mentor teachers. Kazemi emphasized this as an opportunity to "put ourselves in situations where we can learn together instead of thinking we have to wait for the perfect mentor-teacher in order for our [prospective teachers] to have good experiences out in the field" (Kazemi, 2015). Prospective teachers rehearse lessons, question each other, provide critiques, and then enact lessons with a group of students. Prospective teachers are urged to use learners' reactions to mathematical experiences as a lens into their thinking about the mathematics. In this way, the prospective teachers examine the complex work of teaching and have opportunities to develop and reflect on their practices.

After sharing videos of activities from the methods course, Kazemi explained how she works to challenge typical structures of teacher preparation to build connections between university preparation programs and the schools with which they work. She argued that situating methods courses in school settings and including teachers enables teacher educators to grow a profession that is "connected rather than isolated" (Kazemi, 2015).

Summary. The three keynote addresses encouraged participants to focus on ways in which a perspective influences methods course goals and activities, as well as what constitutes evidence of teacher development. Participants referred to ideas drawn from the keynote addresses throughout the conference discussions. In three of the four breakout sessions that structured the conference activities, participants worked within their selected perspective group. The outcomes of these sessions are described next.

Table 1: Goals for Methods Courses Identified by Each Perspective Group

Perspective Group	Methods Course Goals Identified
Socio-Political	• Develop strategies for disrupting current mathematics education norms and agency for pushing back • Become aware of and draw on knowledge of context in which prospective teachers work, including families and communities • Develop a critical orientation to mathematics • Critique discourses of education (schools are failing, achievement gap is really about achievement) • Critically analyze and develop personal mathematics teacher identity
Cognitive	• Enable prospective teachers to become learners from their practice ◦ Develop prospective teachers' abilities to anticipate student responses, based on prior analysis of student thinking. Knowledge required to anticipate student responses includes: the mathematics concept (the discipline), task, and students' prior knowledge.
Situative	• Develop skills, knowledge, and dispositions for building on student thinking using an asset mindset to meet students where they are • Facilitate meaningful mathematical discourse and communication • Plan, enact, and reflect on a lesson that focuses on student thinking and promotes reasoning and problem-solving • Reframe personal relationship with mathematics • Identify evidence that supports being able to say what students understand and do not understand • Learn specific classroom structures, routines, and activities • See the role of teaching and learning mathematics in addressing issues of educational inequity and opportunity

Note: All goals are drawn from slides presented during the conference (Cognitive Perspective, October, 2015; Situative Perspective, October, 2015; Socio-political Perspective, October, 2015).

Learning Goals for Methods Courses (Breakout Session 1)

In the first breakout session, participants were asked to identify learning goals associated with methods courses. The socio-political and situative groups developed extensive lists of goals, a selection of which is provided in Table 1. The cognitive group focused on one overarching goal with one identified sub-goal and sought to clarify how existing knowledge and assimilatory structures might be changed.

Although the goals across groups differ in significant ways, there are commonalities. For example, each group attended to the "learners' mathematics and context as an asset" (Kastberg, Lischka, Tyminski, & Sanchez, 2015). Differences in the three perspectives, however, influenced language of the goals and brought different emphases to the foreground. The socio-political group emphasized knowledge of student culture; whereas the cognitive group emphasized knowledge of student thinking. In contrast, the situative group described knowledge of students as a prerequisite for instruction within a community of learners, thus emphasizing the role of the activity system in the work of teacher preparation. Participants' discussions of the goals highlighted ways in which each perspective influenced the goals identified by the group.

Activities for Methods Courses (Breakout Session 2)

In Breakout Session 2, participants returned to their perspective groups (i.e., socio-political, cognitive, situative) and considered activities that provided opportunities to address the previously identified learning goals. The socio-political group discussed role-play or rehearsal activities (e.g., In My Shoes (Gutiérrez, 2012, 2015)), to develop practices that support social justice goals. Activities that engage prospective teachers in building understanding of and empathy for diverse learners were discussed in order to attend to the group's second stated goal (Table 1). For example, participants discussed tasks that involved teachers experiencing instruction in a

language other than English to develop empathy for English language learners. Community walks (e.g., Koestler, 2012), in which prospective teachers walk around the school and neighborhood with a student in order to learn about students' lives outside of school, were also discussed as an activity that can build prospective teachers' understanding of diverse learners and also attend to the second goal stated by this group.

The cognitive group focused on designing an activity to develop prospective teachers' abilities to anticipate learner responses based on prior analysis of learner thinking. The activity involved several tasks. First, prospective teachers solve a mathematics task designed for mathematics learners. Second, they analyze learner conceptions as represented in provided learner responses. After analyzing and discussing learner responses, prospective teachers anticipate learner responses on a similar task. This cycle of completing the task, analyzing learner responses, and then predicting responses on another task attended to the group's goal of developing prospective teachers' abilities to anticipate learner thinking.

The situative group, which was the largest group, divided into six sub-groups, each focusing on a single activity supporting one of the identified goals. Across the sub-groups, an emphasis on approximations of practice (Grossman et al., 2009) was evident. One sub-group focused their discussion on rehearsals, in which prospective teachers practice specific pedagogical moves. A second sub-group focused on analysis of curriculum materials, building prospective teachers' knowledge for choosing resources to meet the needs of learners. Yet another sub-group discussed the use of videos or other approximations of practice to develop prospective teachers' noticing of questioning techniques. Each of these activities focused on the desire to provide opportunities for prospective teachers to experience teaching activities in controlled situations. One sub-group extended this idea and discussed the ways in which providing methods instruction in K-12 school settings could enrich the approximations of practice that prospective teachers experience. This sub-group explored the evolution of relationships with schools and situating methods courses in schools. They described this evolution in levels from interacting with after-school groups to moving the methods course into an actual classroom of learners for a portion of each day.

Across the perspective groups, activities described as attending to goals for methods courses required prospective teachers to think about and interact with K-12 mathematics learners. Participants discussed the importance of developing experiences that approximate important components of practice through which prospective teachers can build their knowledge, skills, and dispositions for teaching mathematics.

Common emphases across perspectives, however, should be interpreted carefully because similar language does not necessarily imply similar understandings. For example, the project's external evaluator observed,

> It is interesting to note that different [perspective] groups identified similar activities (such as rehearsal) for different purposes, suggesting that there could be some value in cross-perspective discussions. This commonality also suggests the need for practitioners and scholars to be explicit about their perspectives as people with different theoretical orientations might think they are talking about the same idea because they use the same term (such as *rehearsal*) when, in fact, they are talking about very different ideas. (D. Spangler, personal communication, October 3, 2015)

This observation demonstrates a need for a common language and shared understandings of central ideas relevant to mathematics teacher preparation. Moreover, working across the complicated boundaries between K-12 schools and universities introduces even more opportunities for different interpretations of similar sounding ideas.

Researching Effectiveness of Activities (Breakout Sessions 3 and 4)

In Breakout Session 3, participants considered the types of evidence that would indicate teacher growth in the direction of the stated learning goals. Following this, writing teams formed with the purpose of developing a chapter for a potential publication disseminating the work of the SIP conference (Breakout 4). Across both breakout sessions, participants focused discussions on the ways in which mathematics education researchers could learn from and report on their practice to support mathematics teacher educator development and scholarly practice.

The effectiveness of methods course activities was discussed using the ideas of experience, impact, and residue (Kastberg, Sanchez, Tyminski, Lischka, & Lim, 2013). The

experiences of an activity are the concepts or ideas taken up by prospective teachers as a result of their interaction with the course activity. The impact of a course activity is the evidence of prospective teachers' use of the concepts developed in the stated activity within other aspects of the methods course. Residue refers to evidence of prospective teachers' continued use or application of concepts from an activity after the course has been completed. In many cases, prospective teacher performance in a subsequent course activity in relation to an initial activity was identified as a way to assess impact. For example, the situative perspective group assessed prospective teachers' internalization of a task analysis framework by observing their use of curriculum materials in later lesson planning activities. Alternatively, participants proposed that research on residue take place during student teaching or in the induction phase of teaching. Research of this type will require collaboration with and access to learners and teachers in schools. As mathematics education researchers work to gain evidence of impact and residue of methods course activities, universities and schools will need to form partnerships that extend beyond traditional field experience components of teacher education programs.

Important Conference Conversations for Mathematics Education Leaders

Reflecting on the events of the conference, three themes emerged as relevant for all stakeholders involved in the successful preparation and ongoing support of mathematics teachers and mathematics education leaders. First, ***The preparation of teachers is best enacted by and within a community.*** Elham Kazemi identified this potential, sharing: "What's interesting about the way this [conference] is organized is that I think our perspectives and our work actually all need each other" (Kazemi, 2015). Participants expressed the desire to work across perspectives, explaining that a researcher working from a situative perspective might implement an activity designed to address goals identified by cognitive or socio-political groups. The need to extend the community of educators working with prospective teachers to more fully include school-based personnel, including practicing teachers and mathematics education leaders, was frequently expressed by participants. Through the discussions of methods activities that build on student thinking and focus on interactions with students, the value that practicing teachers, mathematics education leaders, and students bring to the process of teacher preparation was noted. In describing the community impact of teacher preparation, Rochelle Gutiérrez said, "It's not just what you learn in a pre-service teacher education program, but it's actually how you learn it that matters" (Gutiérrez, 2015). Immersing prospective teachers in the professional culture of teaching while providing access to the community of schools and learners was deemed essential to progress in methods education.

The second theme from the discussion was, ***Teachers need opportunities to attend to learning from and within practice.*** Kazemi described,

> It is intellectual work to teach — to actually be interested in learning is intellectual work and it requires specialized knowledge. It's more than just being a student yourself of the subject matter. It is about being a student of your students. (Kazemi, 2015)

Across all three perspectives, conference participants viewed teaching as an evolving practice from which educators and prospective teachers should learn. Simon (2015) began his address by explaining that he has taught methods courses for 25 years and is still dissatisfied with his approaches. He further explained that he is still learning about how prospective teachers learn, specifically through the lens of major assimilatory structures, and that mathematics teacher educators should continue in investigations of the learning of prospective teachers. Many of the activities described by participants provide opportunities for prospective teachers to engage in approximations of practice (Grossman et al., 2009) and reflect on their actions to more clearly understand them. In some cases, the approximations are made more relevant by enacting them with learners of mathematics in K-12 settings. In any form, the importance of learning from and within practice was highlighted and extends to the learning of all involved: practicing teachers, prospective teachers, mathematics education leaders, university faculty, and K-12 learners.

The final theme draws from the first two: ***Partnerships between teacher preparation programs and the K-12 schools they serve are essential for engaging in scholarly inquiry that supports the development of scholarly practice.*** The authors of *It's TIME* (NCSM, 2014) emphasized the need for mathematics education leaders to "cultivate connections with the postsecondary mathematics and mathematics education communities" (p. 17). In her keynote address, Kazemi described a model of methods instruction that takes place in schools and encourages

learning on the part of all involved: university faculty, classroom teacher, and prospective teachers. She explained that they "invite the mentor teachers to be part of that process with us when we're in their classrooms and we'll invite the supervisor and the principal at that school" (Kazemi, 2015). In this way, they have forged a partnership with potential benefits for all participants. Rather than experiencing field placements as disconnected from university coursework, the prospective teachers experience learning in the context of multiple perspectives on teaching and learning. In this program, the faculty and school system acknowledged, "It's those little kinds of ways that we grow a profession that is better connected rather than isolated." (Kazemi, 2015).

Gutiérrez described a similar picture and argued for the blending of professional work with both prospective and practicing teachers.

> If I'm learning through rehearsals and out-of-school spaces, if I'm attending conferences and movies with veteran teachers and novices, if I'm debriefing with others, it means that I'm not going to expect to do this work on my own as a teacher. It also means that I'm going . . . to want to debrief with other people. It means that I'm not just going to look to textbooks or professors or peers and that I will imagine that I'll continue to do this work in community with a diverse group of people. (Gutiérrez, 2015)

These statements create a vision of learning to teach as a collaborative practice with practicing teachers, prospective teachers, and university faculty.

Building Bridges between Theory and Practice

The themes and discussions from the SIP Conference echo the leadership framework set forth in *It's TIME: A Leadership Framework for Common Core Mathematics* (NCSM, 2014). In particular, this document sets forth imperatives for mathematics education leaders, which contain elements of the three perspectives undergirding the SIP Conference. Authors of *It's TIME* stated, "The beliefs teachers have about students, society, and education can result in certain populations of students having limited access to the high level of rigor, depth of mathematics content, and breadth of practice" (NCSM, 2014, p. 13). Leaders are charged with helping mathematics teachers develop productive beliefs about all learners and to expect higher order thinking from all learners. Gutiérrez's ideas about political conocimiento and her suggestions about activities to help develop such knowledge are useful to mathematics education leaders in their work which aims to affect teachers' beliefs about learners and schooling. Role-playing scenarios such as Gutiérrez's (2012) "In My Shoes" activity are meaningful during mathematics teacher professional development. Teachers need support as they develop ways of interrogating institutional structures and deficit discourses that are counterproductive to helping all learners reach their full potential.

In addition to knowing, advocating for, and having high expectations for their students, teachers also need knowledge of their students' mathematical thinking. NCSM (2014) explained, "Pedagogical content knowledge includes an understanding of what makes concepts easy or difficult to learn and which models or representations work best for individual students" (p. 23). They also stressed that an effective mathematics curriculum can only be delivered if teachers "develop and deepen understandings of learning progressions" (p. 24). When a teacher deeply knows how his or her learners think and what they know, that teacher is better positioned to help learners build new understanding based on current knowledge. Based upon these assertions, Simon's ideas about *perception-based* and *conception-based* major assimilatory structures can be useful for mathematics education leaders to consider in work with mathematics teachers aimed at developing and using knowledge needed to realize the vision in *It's TIME*.

Kazemi also provided insights useful for mathematics education leaders. In her keynote address at the SIP conference, she emphasized, "What we do and say matters and must be analyzed" (Kazemi, 2015). Therefore, she structures her methods courses in schools where prospective teachers are provided the opportunity to learn about a routine, practice it with students, and then reflect on their work. Echoing this sentiment, the *It's TIME* authors (NCSM, 2014) stated, "It is critical that teachers possess knowledge and understanding that support [the mathematical practices] as well as the ability necessary to first envision them and then translate them into actions" (p. 29). Mathematics education leaders can support mathematics teachers' uses of these practices by setting up structures for collaboration, observation, rehearsal, and reflection.

Finally, *It's TIME* authors asserted, "The surest way to limit one's impact is to attend to only one piece of a

system. . . without regard to how it affects the other pieces and systems" (NCSM, 2014, p. 9). Goos (2015) conceptualized the space of community boundaries, in this case the boundaries between school communities and teacher preparation programs, as a space that is "generative of new practices – and therefore, new learning" (p. 276). It is in this space that both university mathematics teacher educators and school-based mathematics education leaders can achieve their separate goals, where each is a knowledgeable other and offers learning opportunities to strengthen the work of the other. Consideration of the ways methods course activities might enrich the work of mathematics education leaders and the ways in which mathematics education leaders can contribute to methods courses can encourage knowledge growth in both communities and the boundaries between them. Throughout discussions at the SIP conference, participants explored the connections between teacher preparation and school settings as a boundary where learning can and should occur for all parties involved. ✪

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