
Development of a University-School Partnership for Secondary Mathematics Education

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Abstract

Kennesaw State University (KSU) has developed a close partnership with one local high school with several goals in mind, serving both KSU and the school partner. At KSU, we pursued this opportunity to (1) provide teacher candidates a real context to examine instruction and become comfortable in new roles as teachers in an urban context; (2) to increase the relevance of instruction during the junior year coursework; (3) to create the opportunity for students to rehearse brief instructional routines with high school students; and (4) to create professional, mentoring relationships between certified teachers and our teacher candidates. The school welcomed us for two primary reasons: (1) to provide tutors and (2) to enhance professional learning opportunities of their mathematics faculty.

Introduction

There is common agreement among mathematics teacher educators on the importance of creating learning opportunities for teacher candidates to develop pedagogical methods grounded in practice-based teaching within a clinical field experience (Forzani, 2014; Yow et al., 2018). Historically, there has been a divide between teacher education coursework and the field experience (Darling-Hammond, 2010; Turley & Stevens, 2015; Zeichner, 2010). However, more recently there has been a shift in teacher education programs from a focus on the knowledge teacher candidates' need for effective teaching to an increased emphasis on their use or implementation of that knowledge in practice (McDonald, Kazemi, & Kavanagh, 2013). In an effort to bridge the divide between theory and practice, some educator preparation programs across the country are beginning to look more closely at benefits associated with building university-school partnerships in ways that support the collaborative development of authentic practice-based teaching opportunities for teacher candidates.

This paper describes the process to establish a university-school partnership, the work to maintain, and aspirations for continued enhancements. The purpose of the university-school partnership is to build mutual trust and respect, shared responsibility and accountability, and to enable teacher candidates to develop contextualized knowledge of teaching and learning. We describe specific activities to enhance the yearlong methods course held at the school, for which we serve as instructors. We also present informal assessments of the impact of the collaboration, specifically the experiences of the teacher candidates.

Background

Kennesaw State University (KSU) is a comprehensive university with approximately 38,000 students, 91% being undergraduates. The undergraduate mathematics teacher-education program is housed in the College of

Education with approximately 15 to 20 graduates in secondary mathematics education each year. Teacher candidates enrolled in the mathematics education program complete a practicum field experience throughout their junior year and a yearlong student teaching field experience during their senior year. The focus of this paper is on the practicum field experience that takes place during the junior year.

Teacher preparation programs are often structured into content courses, foundations and methods courses, and the field experience. This structure often presents a divide between teacher education coursework and the field experience (Darling-Hammond, 2010; Turley & Stevens, 2015; Zeichner, 2010). As a result, when teacher candidates enter the field experience, mentor teachers often complain that learning in methods courses is “too removed from the day-to-day work of teaching” (Putnam & Borko, 2000, p. 6). A number of research studies on teacher learning suggests that there are some crucial elements of teacher development that can only be learned in the context of a classroom under the guidance of a supportive mentor teacher (Baratz-Snowden, 2005; Darling-Hammond, 2010; Feiman-Nemser, 2012; Grossman, 2010; Howey, 2007). For example, this teacher development can be learned through in-the-moment coaching; assessment for promoting student learning; building relationships with students, families, and certified teachers; learning from scaffolded practice; and developing a teacher identity as it relates to redefining what it means to teach mathematics.

These developmental experiences can occur as a result of collaborative partnerships among a teacher preparation program and a local school district or individual schools (AMTE, 2017; CAEP, 2010; NCATE, 2010) provided the partnership provides a supportive environment in which teacher candidates engage in teaching practices early on in their preparation. In an effort to develop a high-quality, early field experience, KSU’s mathematics teacher education program sought to build a collaborative partnership with a local high-need high school. The partnership is a shared endeavor with a dual focus on: (1) improving the preparation of teachers coupled with increased student learning and (2) a commitment to developing a professional learning community among the school’s mathematics teachers and KSU’s teacher educators.

Structure of the Partnership

The structure of the collaborative partnership between KSU and a local high-need high school is built upon a field experience embedded in each of two methods courses that occur during the fall and spring semesters of the junior year.

Purpose and Benefits of the Partnership

The partnership affords our program an opportunity to provide teacher candidates: (a) a real urban context to examine instruction, (b) an increased relevance of instruction, (c) time to build professional mentoring relationships with certified teachers, (d) opportunities to rehearse instructional routines with high school students, and (e) increased comfort in new roles as teachers in an urban context. Further, benefits for our partner school included: (a) teacher candidates serve as tutors and mentors for high school students, (b) enhanced professional learning for the mathematics community, and (c) community, district, and national recognition for the partnership model. Table 1 outlines the organization and structure of the methods courses and early practicum field experience.

Within the college of education at KSU, there is generally a positive attitude toward building school partnerships and teaching at the high school site. Before this partnership began, the mathematics teacher education department chair, methods instructors, and program coordinator met with the school administrators to discuss both partners’ needs. Our aim was to establish a bidirectional partnership that was mutually beneficial, where communication flowed in both directions, and both partners had some share of decision-making, monitoring, and revisions of the model. Once agreements were made, there was a need to formalize the

relationship with a Memorandum of Understanding (MOU) outlining the partnership terms and details, including expectations and responsibilities of the university and high school. The MOU provided for a KSU faculty member to teach methods courses at the high school and for teacher candidates enrolled in these methods courses to serve as tutors in the school's Advancement Via Individual Determination program and to assist in a mathematics teacher's classroom. School administrators always had the opportunity to make suggestions and changes to the embedded field experience portions of the model as described in Table 1.

Table 1

University-School Partnership Model

Secondary Mathematics Methods 1	Secondary Mathematics Methods 2
Fall Semester, Junior Year, 2 credits	Spring Semester, Junior Year, 3 credits
<i>Course Content: Knowledge and Practice-based Learning</i>	
<ul style="list-style-type: none"> • Establishing teacher identity • Building relationships with students, families, and teachers at the host school • Creating a different image of who they will be as teachers: manager of discourse rather than transmission of information • Introduction to instructional routines • Four of the 8 Math Teaching Practices (NCTM, 2014): developing conceptual understanding from procedural fluency, rich tasks, establish goal, questioning • Interactions with individual students • Fostering geometric thinking 	<ul style="list-style-type: none"> • Rehearse small instructional routines (i.e., contemplate then calculate) • Approximations of practice • Half of the 8 Math Teaching Practices (NCTM, 2014): facilitate discourse, use and connect representations, productive struggle, elicit and use evidence • Complex Instruction (Horn, 2012) • Small group (vs. individual) interactions • Fostering algebraic thinking • Video critique of teaching • Lesson Planning/Learning Segment
<i>Embedded Field Experience 1 day/week</i>	
<ul style="list-style-type: none"> • 1 block – AVID Tutoring • 1 block – Mathematics Classroom 	<ul style="list-style-type: none"> • 1 block – AVID Tutoring • 1 block – Mathematics Classroom

The school welcomed our teacher candidates and methods instructor because of the support our candidates provided as tutors in the Advancement Via Individual Determination program. During the first year of the partnership, all stakeholders met at the end of each semester to reflect on the process, evaluate progress, and refine goals. The high school administrators, mathematics classroom teachers, and AVID coordinator are amazingly patient and supportive; they want our teacher candidates in their school. The teachers feel “special” in the way that they all are mentors, to some degree, to our candidates.

The majority of secondary mathematics teacher candidates at KSU are White people and middle class. The partnership with the high-need school affords them the opportunity to notice issues of equity, confront or reject deficit ideology, embrace and asset view of disadvantaged students and families, and build a sense of comfort in an unfamiliar environment. Further, teacher candidates have a direct link to view theory in practice at the high school site, as well as multiple opportunities to engage in more structured field experiences, observations, and more frequent and sustained supervision and feedback. The experiences for the teacher candidates have been invaluable in their preparation and growth toward becoming an effective teacher. Both the university and the

school partners believed that the primary beneficiaries of the partnership would be the high school students and teacher candidates.

Partnership Challenges and Recommendations

While university-school partnerships provide great opportunities and benefits to both partners, they can also present challenges. However, any challenges encountered can be addressed as the partnership progresses during each semester. As you consider developing your own partnership with a local high-need school, there are a few recommendations to consider. Institutional support, or buy-in, is critical to preventing disconnect between competing faculty expectations and university priorities. Therefore, it is important to have university administrator (i.e., Dean and Chair) support. Every year, we have found it to be demanding to coordinate schedules for teacher candidates in their embedded field experience. Fortunately, our school partners have been patient and supportive when the lines of communication remain open.

Selecting a school-based mathematics teacher who can serve as a liaison can also assist with pairing teacher candidates with mathematics mentor teachers for purposes of collaboration and support. Clear communication in the context of a respectful and trusting relationship among key members of the partnership (for example, in our case: school principals, AVID lead teacher, mathematics teacher liaison, university program coordinator, university field experience coordinator, and methods instructor) can go a long way when conflicts arise, such as changes in an initially selected mentor teacher or available time in the school.

At the beginning of each school year, reach out to school administrators to get a better understanding of their needs. We are committed to developing a culture of professional learning with our partner school. However, we are also sensitive to existing demands on teachers' available time and energies. A continued commitment to nurturing the partnership by attending mathematics teachers' collaborative planning meetings to listen and provide support and resources is needed. As the methods instructors at the school site, we plan to continue to nurture the partnership in ways that will enable and support collegial activities such as course co-planning, co-teaching, and mentoring. Finally, be open and flexible to making changes based on reflections from all parties.

Conclusion

We have had tremendous success at KSU in achieving a university-school partnership that serves to nurture the early development of our secondary mathematics teachers. The partnership provides our teacher candidates with (a) an urban context to examine mathematics instruction, (b) an increased relevance of the methods coursework, (c) mentoring relationships with certified teachers, (d) rehearsals of instructional routines, and (e) increased comfort in new roles as teachers in an urban context. Our partner school receives numerous benefits as well, including: (a) tutors and mentors for high-school students, (b) professional learning for the mathematics community, and (c) recognition for the partnership model.

A key element to both establishing the partnership and maintaining its success has been regular conversations, as well as collaborative design of the partnership with key stakeholders, from both the university and partner school. And, while this level of commitment to ongoing nurturing of the partnership is demanding, the benefits have proven to be tremendous, not only for the teacher candidates, students, and partner teachers but for us as well. We have found great joy in collectively working to improve the mathematics experiences for the high school students, teacher candidates, and teachers involved in the project. Furthermore, our close collaboration with the school partner has helped us bridge the so-called "divide" between the "theory" learned in university coursework and the "practice" teacher candidates experience in the field.

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