Stronger Together: A Collaborative Triad Approach to Middle School STEM Teacher Preparation

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ABSTRACT: In this conceptual piece, we offer a new definition of triad in the context of clinical experiences and describe the collaborative triad model developed for a middle school STEM teacher preparation program. We propose our model as a more viable option than traditional student-teaching triads to support the formation and sustainability of school-university partnerships. We argue that clearly delineating the roles and responsibilities of each triad member up front leads to improved functioning of the triad and, ultimately, a better experience for the preservice teacher.

NAPDS Essentials Addressed: #4/A shared commitment to innovative and reflective practice by all participants; #7/A structure that allows all participants a forum for ongoing governance, reflection, and collaboration; #8/Work by college/university faculty and P–12 faculty in formal roles across institutional settings

The student-teaching experience, often hailed as the most valuable aspect of a teacher's initial preparation (Clarke, Triggs, & Nielsen, 2014), requires a shared commitment between schools and universities. A cooperating teacher (CT) from the school, a university supervisor (US) from the university, and a preservice teacher (PST) make up a group commonly referred to as the triad. While student-teaching triads have existed for many years, the recent heightened focus on clinical practice in teacher preparation has created a need for a reappraisal of the function of each triad member.

Potential Problems with Traditional Student-Teaching Triads

In 1967, Albert H. Yee and other leaders in the field of education at the time, such as Nathaniel L. Gage, prepared a report on student-teaching triads for the U.S. Office of Education. In his report, Yee (1967) explained no common lexicon existed in the educational literature on student teaching and offered perhaps the first clear, albeit simplistic, definition of a triad, "the small group made up of a [PST] and the [CT] and [US] to whom he is assigned" (p. iii). Yee was one of the first to document the potentially problematic nature of the relationships among the members of the student-teaching triad. His analysis of a combination of attitude surveys, questionnaires, and classroom observation data from 124 triads revealed the relationships were more often "competitive" than "cooperative" and that this dynamic was detrimental to the PSTs' success (p. 110).

In more than 50 years since the publication of Yee's (1967) report, issues with the triad still persist. For example, ill-defined roles of participants can lead to the development of a hierarchy within the triad (Johnson & Napper-Owen, 2011) and ultimately the imbalance of power creates strained triad relationships that negatively impact preservice teachers' clinical experiences (Bullough & Draper, 2004). Some suggest the university supervisor does more harm than good and could be eliminated altogether (Gimbert & Nolan, 2003) while others, such as Burns, Jacobs, and Yendol-Hoppey (2016) suggest we reconsider the role of the supervisor in teacher preparation programs.

Powerful Partnerships Further Complicate Triad Roles

In a 2018 report, the American Association of Colleges for Teacher Education Clinical Practice Commission (AACTE CPC) reiterates the 2010 call of NCATE Blue Ribbon Panel to revamp teacher preparation programs to place clinical practice at the forefront of teacher preparation. AACTE CPC asserts the formation of school-university partnerships is essential in order for clinical experiences to be effective and the roles/responsibilities of the partners need to be shared and clearly defined. Indeed, the recent renewed emphasis on the restructuring of teacher preparation programs warrants the reexamination of triad roles. In many ways, the triad serves as an indicator of the overall strength of the partnership. The US acts on behalf of the university; the CT represents the K-12 school; and, the PST relies on both institutions for a successful transition into the teaching profession.

In Professional Development Schools (PDSs), or robust school-university partnerships that satisfy all nine of the essential elements detailed by National Association of Professional Development Schools (NAPDS, 2008), the roles of triad members are often "boundary-spanning in nature" (Burns & Baker, 2016, p. 28). For example, a CT may co-teach a university-based course or a US may co-facilitate a school-based professional development session. In this way Zeichner's (2010) proposed "third space", where the practical knowledge of schools and the academic knowledge of universities comes together to create meaningful learning experiences for PSTs, is realized. However, as Burns and Baker (2016) suggest, the

introduction of these boundary-spanning roles further complicates our understanding of the positions of each triad member.

Due to the fact that the strength and nature of school-university partnerships varies widely from preparation program to preparation program and the lack of shared language in the literature on CTs and USs, it can be difficult to determine the ways existing boundary-spanners are performing their roles. What's clear, however, is that when schools and universities unite forces the faculty that work in these spaces step into new and different roles than held prior to the joining of the two institutions. CTs no longer *just* work for the school and USs no longer *just* work for the university. Rather, these two key triad players work across contexts to support the successful development of PSTs. Because both parties may act in supervisory capacities, it is imperative that the responsibilities each boundary-spanner will assume are explicitly defined early on in the process to prevent any "stepping on each other's toes" that may be counterproductive to the PST's success.

Need for High-Quality Clinically-based Middle School STEM Teacher Preparation

It is now widely recognized that clinical experiences are vital to the effective preparation of student teachers. As AACTE CPC (2018) states, "clinical practice has advanced to a point of being nearly non-negotiable as a model for teacher preparation" (p. 9). Perhaps no PSTs are in more dire need of successful clinical experiences than those in middle school STEM teacher preparation programs. National (NAEP) and international (PISA) studies have shown that middle school students in the United States are not up to par in math or science. Despite the fact that student performance in STEM areas hinges on teachers' abilities, there is a national shortage of qualified middle school STEM teachers (Ingersoll & May, 2012). Without middle school STEM preparation centered around clinical practice, these problems will persist. Clinical preparation depends on the establishment of school-university partnerships and the relationships within those partnerships. Thus, there is a pressing need to reconsider the roles of the triad, a central component to the partnership.

A Collaborative Triad Approach to Middle School STEM Teacher Preparation

In an effort to address the shortage of qualified middle school STEM teachers, University of XXX's College of Education (COEDU) collaborated with XXX County Public Schools to design a middle school STEM residency program organized around clinical practice. Although the program does not currently meet all of the criteria of a full-fledged PDS (NAPDS Essential #9: Dedicated and shared resources and formal rewards and recognition structures), it has a well-established and solid partnership component. We have CTs and USs who act in boundary-spanning roles. To circumvent any confusion about responsibilities or power struggles, our boundary-spanners act as co-faculty members, attending shared professional development sessions and collaborating to determine the best ways to deliver instruction to our PSTs through their co-planning and co-teaching of multiple education courses.

Other unique aspects of this program include but are not limited to its early and ongoing rich clinical focus (two semester-long field placements and a yearlong residency that expose PSTs to three different schools and three different grade levels), specially focused middle grades coursework, strategic connections between coursework and clinical experiences, and multiple opportunities afforded to our PSTs throughout the program such as participating in mock interviews with middle school principals and attending district professional development programs. In the paragraphs that follow, we will discuss the district-university partnership, the collaborative triad approach, the first coming-together as a triad, and ongoing shared professional development.

District-university partnership. This partnership was developed as a result of a planning and implementation grant funded by XXX designed to reimagine STEM education for the middle grades. The university and school district had a well-established relationship prior to partnering on this middle school STEM teacher program that made this opportunity to build a new program for middle grades STEM a natural and pleasurable process. The success of our partnership lies in our shared commitment to "grow our own" high quality middle school STEM teachers who are equipped to effectively meet the demands of the middle school STEM classroom within our partner district and eventually come back to work in the teacher preparation program in a mentoring capacity as CTs. We measure the impact of our partnership through the hiring and retention of our graduates in our partner district, their track record of success once they enter the classroom, and the relationships we have with our graduates that leads to continued involvement in our teacher preparation program.

The majority of our graduates make the decision to apply to teach in our partner school district and our partner district has consistently hired 100% of all our graduates who apply. Once employed, our graduates remain in the district, with few exceptions such as marriage that moves them out of the district/state. Our alumni consistently demonstrate their competency by receiving top scores on school and district evaluations, awards received as a result of their students' performance on statewide assessments (i.e., high impact award winners), and school and district recognition such as teacher of the month/year and other accolades. Further, our strong collaborative relationship with our students continues well beyond graduation. We are constantly in contact with our graduates and hold multiple events throughout the year to continue to nurture our relationship. For instance, we host alumni get togethers and invite our alumni to serve as guest presenters in our undergraduate courses. Additionally, our alumni are returning to work in the program as CTs. Essentially, our students move from aspiring teacher to teacher to teacher educator.

The collaborative triad approach. Because the program is built on the foundation of the clinical experience, the quality of this

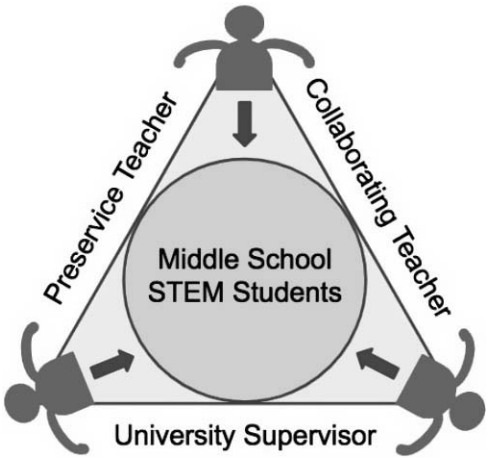

Figure 1. A Collaborative Triad Model for Middle School STEM Teacher Preparation

experience heavily depends upon the strength of the triad. Therefore, in this preparation program we have implemented a truly collaborative triad approach to quell the problems associated with the traditional student-teaching triad. As Strouse (1971) stated:

> A triangle may be an exceptionally stable geometric configuration but it tends to be very unstable as a social arrangement...a triad, as with any other group, remains viable only if all its members are united in, and mutually benefit from, participation in such a group. (p. 12)

Hence, we offer an alternative definition of triad in the context of clinical experiences: a group consisting of a PST (a teacher candidate enrolled in our residency program), CT (expert classroom teacher in our partner district), and US (College of Education faculty member or graduate assistant) who work together to achieve the common goals of continuing their own professional growth and providing high quality educational experiences for students.

The first formal introduction of the PST, CT, and US occurs during the summer before the yearlong residency experience begins. As illustrated in Figure 1, the triad is represented by an equilateral triangle. The triad members all participate in a professional development session together, thus immediately placing them on an equal playing field. Although backgrounds and experience levels vary, the members of the triad can learn and grow together as they all progress on their own continuum of teacher learning (Feiman & Nemser, 2001). At this initial meeting the roles and responsibilities of the triad are delineated by the program coordinator and discussed among triads (see Figure 2). By clearly defining the expectations of each triad member early on, we avoid the development of the hierarchical relationships others have described (Bullough & Draper, 2004) and ensure each triad member be viewed as having equal value and importance.

Preparing the triad for the residency year. The culminating yearlong residency experience takes place during PSTs' senior year. Prior to this, in their junior year, the PSTs engage in two semester-long early field experiences. The methods courses and seminars that accompany the field experiences provide extensive training in the use of co-planning and co-teaching approaches. The instructors of these courses co-plan and co-teach to model the approaches for the PSTs. For example, in spring of PSTs junior year, they engage in three co-planned and co-taught

<table>
<tr><th>Preservice Teacher (PST)</th><th>Collaborating Teacher (CT)</th><th>University Supervisor (US)</th></tr>
<tr><td>Willingly takes on new responsibilities</td><td>Allows for a gradual release of teaching responsibilities</td><td>Helps determine when, how, and what responsibilities will be turned over</td></tr>
<tr><td>Willingly attempts new instructional strategies</td><td>Provides opportunities for experimentation with different instructional strategies</td><td>Shares evidence-based strategies and helps determine appropriate usage</td></tr>
<tr><td colspan="2">Engage in daily co-planning and co-teaching</td><td>Co-plan and/or co-teach as needed (i.e., to assist with first implementation of a new instructional strategy)</td></tr>
<tr><td>Is open to feedback and suggestions</td><td colspan="2">Conduct both formal and informal evaluations and provide detailed feedback based on observations, not opinions</td></tr>
<tr><td colspan="3">Engage in ongoing reflective dialogue aimed at improving practice</td></tr>
<tr><td colspan="3">Use student needs to drive all instructional decisions</td></tr>
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Figure 2. Roles and Responsibilities of the Triad

courses taught on the same day during one large block of time (middle school math methods II, classroom management, and practicum II seminar). Course content is fused together in such a way that it is not possible to discern one class from another.

The mathematics content and pedagogy, classroom management techniques, and application to practice are all integrated seamlessly just as they would be in the real classroom setting. When they enact the various co-plan and co-teach approaches in their instruction, the instructors also have meaningful conversations with the PSTs. The instructors challenge the PSTs to consider when it is appropriate to use each approach and why for certain activities one particular approach may be more effective than another. Because PSTs experience a co-taught class firsthand, they begin to recognize the benefits from a student's perspective and are eager to apply what they learn in their early field teaching experience with their practicum partner (a fellow PST who is placed in the same early field classroom) and their CT. By the time the PSTs complete their junior year and prepare to embark on their residency experience, they have received instruction specifically in the use of co-plan/co-teach approaches, have seen the approaches modeled through their participation as a student in co-planned/co-taught courses, and experienced numerous opportunities to practice implementing the approaches themselves in their field placements.

In order to act as a CT or US for the program, one must first complete an online clinical education training course. Since both new CTs and new USs take this course together prior to the start of the residency year, they have an opportunity to participate in shared professional development before they actually work side by side with the PSTs. The course is discussion-based, so all participants must read and respond to each other's posts. The participants share their own and learn from others' experiences. Right away, the CTs and USs are placed on the same level — as peers. Both hold equal status as teacher educators and are equally necessary for the successful preparation of PSTs. This point is communicated throughout the course.

In addition, CTs and USs learn to recognize that PSTs bring a wealth of knowledge to the table too and can push them to step outside of their comfort zones, incorporate innovative instructional techniques, reflect more deeply on their own practices, and remind them of why they do what they do. In choosing to work with a PST, they can reinvigorate themselves by renewing their commitments to be modelers of best practices and lifelong learners. The course provides the CTs and USs with training in balancing the competing roles of supervisor and evaluator, holding successful collaborative planning and coaching conferences, gradual release of responsibility, and the co-teaching approaches.

Both new and returning CTs must also participate in a program-based online course before they can host a PST. This "Residency 101" course gives a complete overview of the residency experience including a suggested timeline for gradual release and description of the CTs' responsibilities for co-planning and co-teaching. Through this course, it is reiterated that the residency is a team effort with the CT and PST alternating their roles for teaching and planning as the year progresses and as the PST gains more experience. Classroom responsibilities are handed over to the PST only after the members of the triad have had a conversation about what the PST is ready to take on and are all in agreement. Even in the second half of the year when the PST has assumed the responsibilities of lead teacher for most of the class periods, the CT is still expected to co-teach and co-plan. The content of the course is also contained within the program handbook, which is distributed to the US and PST who must sign to indicate they have read and reviewed all of the information.

The residency placements are finalized in early summer. The program coordinator sends emails to the PSTs, CT, and US outlining placement details (assigned CT, US, school site, and grade level/s). Members of the triad then initiate contact with one another prior to the formalized face-to-face meeting. Veteran CTs and USs (those who have been with the program for at least a year) work closely with the program coordinator to determine where to place the PSTs. During the PSTs' junior year, they go on frequent site visits and participate in shadowing days (in addition to their field experiences) at the partner middle schools.

These experiences provide opportunities for them to visit their potential residency CTs' classrooms. The US, who typically already knows the CTs and PSTs, gets feedback from them on their impressions of one another. The US uses this information and his/her/their own knowledge of the CTs' and PSTs' teaching styles, philosophies, personalities, etc. to assist the program coordinator in determining the placements. The goal is to match CTs and PSTs who will not clash, but rather complement each other so that they are able to form the relationship needed to work hand in hand for the entirety of the school year.

The power of three: The first coming-together as a triad. In late summer, just a few weeks before pre-planning begins the PST, CT, and US have their first official triad meeting in the form of an in-person all day professional development session. The program coordinator serves as the facilitator for the professional development while the members of the triad engage in every aspect together as equal participants. They all sign in, make name tags, sit at the same table, eat breakfast and lunch together, receive identical information packets, etc. The program coordinator opens the session with a brief overview of program and residency experience before jumping right into a detailed explanation of the roles and responsibilities of each triad member (See Figure 2).

A large chunk of time is allotted for this explanation and the program coordinator make sure she addresses any and all questions. The remaining content is presented in an open-dialogue fashion and the voices of all triad members are represented. In an expert panel format, veteran CTs come up to share their prior experiences, then veteran USs, and then recent program graduates (former PSTs). Everyone in the audience has

the chance to ask the panel questions or offer their own ideas and suggestions to the group. For example, the program coordinator explains that PSTs are not to be introduced as interns but rather as co-teachers.

The CT panel may discuss how they helped ensure the students viewed the PSTs as teachers from day one by putting their name on the door, giving them their own teacher desk, etc. The US panel may share anecdotes about the various ways they have explained their presence to the students without blowing the PSTs' cover so to speak. The graduate panel may talk about how it made them feel empowered and strengthened their confidence when the members of the school community thought of them as teachers as opposed to interns. The audience will then add to the conversation. A CT might ask for advice about how to handle questions from parents. A US might share that it is important to make sure the PST gets a district identification badge. The PSTs might express their relief that the students will not know they are interns.

When all of the information has been presented and the panels and audience are afforded an opportunity to weigh in, the whole group discussion stops, and the individual triads are able to spend the rest of the day getting to know each other. Before they leave, they decide on when they will hold their next meeting with the expectation that it should occur prior to the first student day. They must ensure they are all on the same page, especially with how the co-planning and co-teaching will be rolled out, before the middle schoolers arrive.

Ongoing shared professional development. Throughout the residency year, the members of the triad continue to participate in shared professional development. The nature of the professional development depends on the needs of the middle school students and the needs of the PST. For example, let's say the triad recognizes a decline in student motivation and identifies planning more engaging lessons as an area of focus for the PST. The PST may go do some research on the factors that impact motivation and ways to promote engagement. The CT may seek out the support of a Professional Learning Community (PLC) group. The US may reach out to another teacher in the partner district who excels with engagement and ask him/her/them for advice. The CT and US may arrange opportunities for the PST to observe classrooms with high levels of student motivation and engagement.

Then, the PST, CT, and US come back together and share what they learned from their professional development activities. Then, they would hold a targeted planning session where they all sat down to create a lesson that took into consideration what they learned. Next, the CT and PST and possibly the US (if deemed appropriate) would co-teach the lesson. Afterwards, the triad would meet again to reflect on the efficacy of the lesson and determine next steps. All triad members benefit from this type of personalized professional development. The CT and the PST improve their teaching skills. The US and CT improve their mentoring skills. The CT and PST can apply their newfound knowledge to future instruction. The US and CT can apply what they learned with future mentees. Lastly, the triad can share instructional strategies, tips, and tricks they learned with other triads in the program.

Conclusion

Working in a collaborative triad is messy business. As alluded to in this paper, terminology in this area can be confusing, roles and responsibilities can be blurred, and expectations ill-aligned. All of this ambiguity can affect the success of the triad. In 1967, Yee pointed to the need for a shared language in the field of teacher preparation. Fast forward half a century later and the field is still working toward this goal. AACTE CPC (2018) argues the development of a common nomenclature leads to "a shared understanding of the roles, responsibilities, and experiences essential to high-quality clinical preparation" (p. 38). While it is unlikely teacher educators and researchers across the globe will ever come to a complete agreement on terminology, school and university partners have a responsibility to ensure all those actively involved in clinical preparation — particularly the members of the triad — understand their role and responsibilities. By making the roles and responsibilities of each member explicit, we have been able to eliminate possible tensions and enable our triad to function as a cohesive unit. We credit our success to our collaborative approach and shared commitment to ongoing professional growth. We are stronger together. SUP

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