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Taking Action

(Re)Imagining Professional Development Through the Teacher Research Project

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Teachers are considered the most important factor in student achievement (Haycock, 1998). In today's educational climate of standards and accountability, teachers are under increased pressure and scrutiny to raise academic achievement and make Adequate Yearly Progress (AYP). As part of professional development, teachers are often presented with suggestions from a well-intentioned external "expert" in one-off sessions. Teachers are told they must do something or have something done to them and their students in hopes of seeing this academic improvement. However, single short workshops that are common to teacher professional development days have little follow-up and little effect on a teacher's development (Pianta, 2011; Whitworth & Chiu, 2015). Teachers frequently feel as though professional development is something done to them, instead of something done for them (NCTM, 2014). Consequently, the message appears to be that these outside "experts," and not the teachers themselves, are the authorities on what works in a teacher's classroom (Mills, 2014). For professional development to be meaningful and effective, it must be something in which teachers feel inspired and not put upon, because those external constituents do not know their students and their unique classroom needs; furthermore, it should result in increased student achievement (Guskey, 2002).

Professional development in the United States is costly, at approximately \$1,000,000,000 to \$4,000,000,000 a year (Wilson, 2013). Since not all professional development results in teacher change and very little explicitly links to student outcomes (Desimone, 2009; Yoon, Duncan, Lee, Scarloss, & Shapley, 2007), it is critical to understand what factors contribute to teacher change and increase student achievement (Whitworth & Chiu, 2015).

Guskey (2003) provides an analysis of 13 lists of what characterizes effective professional development, drawn from publications put out by organizations such as the American Federation of Teachers, the Association for Supervision and Curriculum Development, Educational Research Service, Educational Testing Service, the National Governors Association, the National Staff Development Council, and the U.S. Department of Education, with the goal of finding out the extent to which the lists agreed on what characterizes effective professional development. He concludes that although they may be "research based" (p. 749), that research rarely includes rigorous investigations of the relationship between noted characteristics and improvements of instructional practice or student learning outcomes. Some common characteristics which he found in his analysis include enhancement of teachers' content and pedagogical knowledge,

provision of sufficient time and other resources, promotion of collegiality and collaborative exchange, and inclusion of evaluation procedures. Fewer than half the lists mentioned the importance of using an analysis of student learning data to guide professional development activities. It is time to move toward professional development's goal of improvements in students' learning outcomes.

Researchers generally agree that professional development should include active learning, have a strong content focus, be coherent and of significant duration, and involve collective participation (Desimone, 2009). To support teacher growth, teachers should be actively engaged in their own learning (Desimone, 2009; Guskey, 1999; NCTM, 2014) and reflect upon their own understanding and practice. Longer professional development spread out over time, such as a semester or full year, tends to be characterized by more active learning, content focus, and coherence than shorter activities and is more effective in changing teacher practices (Gerard, Varma, Corliss, & Linn, 2011). Meaningful professional development before and after one enters the teaching field are indicators of student success and teacher sustainability in the profession (Nieto, 2013). Having teachers engage in sustained action research as form of (re)imagined professional development could bring about student achievement, since it is designed to address specific classroom issues and solve problems with a focus on improving practice (Foulger, 2010) over a longer period of time.

This article presents an overarching action research study connected by individual action research studies to explore what a cohort of urban preservice elementary master of arts in teaching (MAT) candidates learned from the process of action research as a (re)imagined form of authentic professional development to aid with student achievement. This study is unique in its dual approach: to glean what teacher candidates have learned from the process of conducting a requisite action research study in their urban student teaching classrooms and simultaneously to learn how that information can help to strengthen an urban teacher education program which is under new leadership. The importance of this study lies in listening to teachers' voices when it comes to their classroom needs, which is often ignored in educational conversations (Gujarati, 2010; Nieto, 2013).

Frameworks

Action Research

Addressing the need for professional development spread out over time, this study is grounded in teacher action research. Although varying definitions exist, at the heart of teacher action research is the idea of teachers seeking change by reflecting on their practice (Dana, 2013); it is change research (Pine, 2009). According to Cochran-Smith and Lytle (2009), teacher research is a systematic, intentional study of one's professional practice. In brief, the cyclical process of action research involves identifying an area of focus, collecting data, analyzing and interpreting data, and developing an action plan (Mills, 2014). Action researchers engage in multiple cycles of inquiry as they reflect on each phase. Action research is done by teachers for themselves; it is not imposed upon them by someone else. It assumes that teachers are the agents and source of educational reform and not the objects of reform (Pine, 2009). Action research differs from other research methods because of the dual role assumed by the actioner researcher; the practitioner is

also the researcher investigating actions in order to address issues and solve problems with a focus on improving practice (Foulger, 2010).

Reflective Practice

Since action research is also about incorporating a reflective stance into daily routine, a willingness to critically examine one's teaching in order to improve or enhance it (Mills, 2014), this study is also grounded in reflective practice. Schön (1983) posits the notions of *reflection-in-action* and *reflection-on-action*. The former is sometimes described as "thinking on [one's] feet." It entails building new understandings to inform one's actions in the midst of the situation that is unfolding. The latter is done after the encounter. It enables one to spend time exploring why one acted as one did. In doing so, one develops sets of questions and ideas about one's activities and practice to propel one forward. The power of these processes is when *reflection-in* and *on-action* are taken together as action is an integral component of reflective practice. The degree to which teachers' instructional practice improves depends, in part, on how well and how frequently they reflect on their instructional practice (Artzt, Armour-Thomas, Curcio, & Gurl, 2015). To improve instructional practice, teachers need to devote more time to intentional and structured reflection (NCTM, 2014).

Critical Friends

This study also incorporates Critical Friends Groups (CFGs) as an integral part of the research and reflective processes. CFGs are a form of Professional Learning Community (PLC) that have been generally utilized more in K–12 education rather than higher education (Moore & Carter-Hicks, 2014). However, this study uses CFGs in higher education (graduate education). CFGs are typically comprised of 8–12 educators who meet regularly to discuss issues of practice and improve student learning (Fahey, 2011; Moore & Carter-Hicks, 2014). The CFG model is characterized by two essential elements: regular, intentional use of protocols that build the skills of collaboration and reflection as well as focus on teaching and learning; and skilled facilitation that supports the professional learning of the group (School Reform Initiative, 2010). Although the concept of a critical friend in action research methodology is nebulous and needs greater clarification (Swaffield, 2007; Swaffield & MacBeath, 2005), the critical friend can provide alternate perspectives, support, and protection from bias (Foulger, 2010). Sagor (2005) suggests that a critical friend is someone who does not have a stake in the problem, but is committed because of a complementary personal agenda. Limited studies demonstrate concrete evidence of the contributions of critical friends in action research studies (Foulger, 2010).

Overall, this current study seeks to address gaps in the literature by focusing on student achievement in professional development and the role of the critical friend in the action research process as part of (re)imagined professional development.

Methodology

Context of the Study

This study was contextualized in an Analysis Class, taught by the researcher, at a liberal arts institution in an urban city in the Northeast United States. Participants were a cohort of 12 elementary master of arts in teaching (MAT) candidates who were in their final student teaching

semester during the 2015–2016 academic year in which a weekly three-hour Analysis Class (analysis of teaching practices) was attached to their student teaching practicum. This particular cohort was selected because it was the first cohort that the researcher had the privilege of simultaneously serving as their new director, professor, advisor, and field supervisor, and she wanted to learn more about how this study could impact future cohorts. As a requirement of the MAT program, teacher candidates completed an intense four-month Teacher Research Project (TRP) during their student teaching semester. The individual student teaching contexts and action research questions for the study's 12 participants can be found in Table 1. Pseudonyms are used for all names in this study.

Table 1: *Student Teaching Contexts and Action Research Questions*

MAT Candidate	Grade Level	School Type	Overarching Research Question
Alyssa	1	Urban Public Charter	What mindfulness/relaxation strategies are effective in reducing stress and frustration displays for first graders as they face their weekly math assessments?
Amelia	1	Urban Public	How does a multisensory approach impact my first-grade students' sight word recognition?
Bella	2	Urban Public	What strategies can help my second-grade students to value challenge and persevere through their math classwork before assuming "it's too hard, I need help"?
Melinda	2	Urban Public	How does project-based learning in literacy with a small group of second graders strengthen their skills (reading, writing, speaking, listening, researching, teamwork) needed for the 21st century?
Katie	3	Urban Public (bilingual classroom)	How can I use conceptual models of teaching mathematics to better support my students' understanding of mathematical word problems?
Vanessa	3	Rural Public	How will introducing metacognitive strategies support students' growth mindset and affect their perceptions of themselves as problem solvers?
Hilary	3	Urban Dual Language Charter	How will the implementation of third-grade book clubs affect the completion of students' nightly reading homework?
Janelle	4	Urban Dual Language Charter	Does creative drama have a positive effect on students' understanding of social studies content knowledge?
Hannah	5	Urban Dual Language Charter	How can teaching comprehension strategies through poems provide students with the tools they need to increase their comprehension of poems and text with figurative language?
Sandra	5	Urban Girls' Independent (serving underprivileged youth)	What is the academic impact of prompted positive thinking through entrance tickets on students who are struggling emotionally?
Maria	5	Urban Independent (serving students with language-based learning differences)	How does text-to-speech technology affect students' reading comprehension?
Camille	6	Urban Girls' Independent (serving underprivileged youth)	How can I foster an inclusive classroom that promotes solidarity across intersectional identities?

Data Sources and Analysis

All MAT candidates (a) went through the action research cycle in their student teaching practicum placement (identified an area of focus, collected multiple sources of qualitative and/or quantitative data, analyzed and interpreted data through qualitative and/or quantitative means, developed an action plan for the duration of their student teaching placement and/or for their future classrooms relative to their topics); (b) participated in three Critical Friends Groups (CFGs) to share and receive feedback on major steps in the process (Formulating Research Questions, Data Collection Procedures, and Methods of Analysis) [see Appendices A–C for protocols]; (c) presented their TRP to the cohort in the form of a PowerPoint or Prezi, and then at a research conference to other MAT cohorts and guests in the form of a poster; and (d) lastly wrote a final reflection paper on their process of conducting teacher research. In this final reflection paper, MAT candidates needed to include: introduction, research question(s), literature review, data collection procedures, data analysis procedures, findings and impact on student learning, action plan, and reflection on the teacher action research process in which they responded to the following questions:

- What major takeaways did you have from conducting your Teacher Research Project?
- If you were to conduct your study again, what would you do the same? What would you do differently? Why?
- What did you learn about yourself in the process?
- How might the process of conducting teacher action research be valuable to you in your careers?
- Any other thoughts you have about the process of conducting teacher action research that you would like to share?

It is from this reflection paper, notably the reflection on the teacher action research process, where most data for this article stems. What follows is the process the researcher used to analyze the reflection papers.

Using qualitative research design (Creswell, 2013; Guba & Lincoln, 1989), analysis of data began as soon as it was collected. Data were manually analyzed within and across cases utilizing Grounded Theory (Strauss, 1987; Strauss & Corbin, 1998) where theorizing grows from the data rather than from a pre-existing framework used to confirm or disconfirm a theory. Analytic memos (Saldaña, 2016) were utilized in this process. The reflection papers were analyzed by reading and rereading them, paying close attention to what was learned from the process of reflection on the experience. Inductive coding methods were primarily utilized during the first and second cycles of the coding process. Professional development emerged as a salient theme. Since this is a broad category, during the second cycle of coding, themes which emerged within professional development were: individual, student, community network, pedagogy, and empowerment. To ensure trustworthiness of the data, member-checking (Guba & Lincoln, 1989) was utilized, as needed, where the researcher made sure to ask participants any clarifying questions to ensure that she was understanding the intention behind the quotes in the reflection papers.

Findings

All 12 MAT candidates noted a positive change in student outcomes relative to their research questions as a result of engaging in their Teacher Research Projects (TRP). The interventions they designed with feedback from their Critical Friends in the process had positive effects on their elementary students' academic and/or social-emotional achievement. Although it is out of the scope of this article to detail all 12 individual studies, a snapshot of the findings from each study is presented in Table 2 to show evidence of success of each project relative to the needs of their classrooms and initial research questions. Those findings were ascertained through MAT candidate's individual qualitative and/or quantitative data analysis utilizing multiple sources of data and feedback from their Critical Friends to ensure credibility (Guba & Lincoln, 1989) of those data. As noted in the literature review, action research is change research (Pine, 2009) and there were positive changes in student outcomes in all MAT candidates' studies.

Table 2: Summary of Action Research Studies

MAT Candidate	Snapshot of Findings
Alyssa	Students demonstrated improvements in their ability to sustain attention with the mindfulness/relaxation strategies (music, glitter bottle, yoga, deep breathing) throughout the intervention. Although the strategies did not completely eliminate stress or meltdowns in the classroom, they provided a common language around which to discuss these frustrations.
Amelia	From this multisensory sight word intervention, over 50% of students mastered at least one complete Dolch Sight Word list. Fewer students remained on the Pre-Primer or Primer lists and more were working on First-, Second-, and Third-Grade words.
Bella	Learning about their brains through books and fun videos, combined with reflecting on their learning process, was an effective strategy. Intervention increased the number of students who believed that mistakes and challenges are good things. It also increased the number of students who read a challenging problem again and thought about it before asking for help.
Melinda	The 11 students involved viewed project-based learning (PBL) very favorably and preferred it over the traditional teacher-directed, lecture-style of learning. PBL made learning fun and valued that it allowed them to both communicate and express themselves in a different way. The greatest skill strengthened was their public speaking.
Katie	Through Schematic-Based Instruction, on the end-of-unit assessment, there was a 14% increase in the number of students who correctly answered the <i>change</i> problem and a 35% increase in the number of students who correctly answered the <i>compare</i> problem.
Vanessa	Many students had a shift toward a more positive view of themselves as problem solvers, and fewer held a negative view; a shift towards more independence and acceptance of struggle as a good thing, indicating progress and growth.
Hilary	Reading motivation, as measured in the completion of nightly reading homework, was positively impacted by both promoting literacy in the classroom, and even more so, by the implementation of book clubs. It was motivational to the third-grade students because of their choice in reading materials and because of the social nature of the book club meetings.
Janelle	The introduction of the dramatic games helped students become more open to acting in front of their peers. Creative drama seemed to get students interested in the topic (the Industrial Revolution) they were learning about during social studies.
Hannah	Using poems seemed to be helpful in that students learned to look for a message or lesson in poems and texts as well. Teaching figurative language using poems also seemed to be helpful with comprehension; knowing how to break down figurative language and read beyond the literal meaning to understand the deeper meaning.
Sandra	Mood scores were always highest on Fridays and may have varied depending on the prompt from the first portion of the entrance ticket.
Maria	Data indicated a positive correlation between use of text-to-speech technology (TTS) and students' reading comprehension, specifically their factual recall and inferential comprehension. Eight out of the 10 students improved in their comprehension scores from the silent read to the TTS read.
Camille	For those students who are typically marginalized, representation and a safe space to talk in the classroom not only increased their self-confidence and self-esteem, but it also positively affected their motivation and engagement. There was a difference in the way some students who were often distracted became invested in these real-world issues and were willing to enter the conversation.

An integral part of this study and action research was the process of reflective practice. In analyzing their reflections on the process of conducting a Teacher Research Project (TRP), all MAT candidates remarked how important this project was to their own professional development because it was an authentic experience unlike any form of professional development they had encountered before. Professional development is a broad term with varied connotations. Data analysis reveals that their conceptions within professional development were disaggregated into five subthemes: individual, student, community network, pedagogy, and empowerment.

Individual

On an individual level, the TRP allowed MAT candidates to gain confidence in themselves as a teacher. As one candidate, Janelle, noted:

I really learned a lot about myself as teacher and how I also like to learn. I believe I also gained a bit more confidence with my teacher presence because I found a style that meshed well with me personally.

Additionally, it was a rewarding experience, as exemplified by Melinda's reflection:

I found this process to be highly rewarding and important to me as a teacher. There were times it was stressful, but for the most part, I was motivated by my research and intrigued to learn what benefits project-based learning had for my students. Since there is little research on project-based learning within elementary school classrooms, I was very excited to see the potential it could have with the students that I worked with.

Furthermore, it afforded the candidates opportunities to become greater reflective practitioners, as evidenced by Maria's quote:

Implementing this research allowed one of my "wonderings" to become tangible and directly applicable in a classroom setting. It helped me to become more reflective as a practitioner and more active in my seeking of answers. The TRP forced me to deeply consider my students, their learning needs, and my own strategies and practices. This is a practice I will surely take with me in the future.

As a cohort, these teacher candidates noted that they were able to hone their craft while exploring a topic which they were passionate about. Since they were not restricted to any particular topic or any particular data collection tool, they explored topics and utilized data collection tools in which they were invested yet saw a genuine need in their classrooms, serving a dual purpose: impacting student achievement, as evidenced in Table 2, and advancing their own knowledge on a particular topic.

Student

Through the TRP, MAT candidates remarked at the intentionality of this project in focusing on their students' needs in more authentic ways. This is exemplified in Hannah's reflection:

It was a really great experience to be even more intentionally aware of my students' learning needs as I considered something to research, and think about how their needs and my passions meet.

In their weekly Analysis Class coursework, the candidates had read about different types of diagnostic, formative, and summative assessments. However, they could bridge theory and practice with this project, and see the positive impact meaningful assessments can have on student outcomes. As Sandra noted:

I was able to practice thinking critically and reflectively on my teaching practice in a way that I had not previously attempted. I was also able to strengthen my assessment skills, and knowledge of my students, which ultimately improved my instruction. I will definitely use the skills I learned throughout my teacher research project in the future and throughout my career.

As Amelia reflected:

When I noticed that the students were struggling with sight word acquisition and retention, I was yearning to figure out how to go about implementing an intervention to remediate this issue. The teacher action research process taught me how to go about carrying out this kind of intervention successfully in a classroom. I hope to continue to use this process in my own classroom.

Overall, at the heart of their studies was authentic assessment. All candidates noted its importance in their studies. They plan to take their knowledge, skills, and dispositions gleaned from their studies and use them moving forward in their future classrooms.

Community Network

As part of the action research process, all candidates participated in three Critical Friends Groups (CFGs) during Analysis Class (Formulating Research Questions, Data Collection Procedures, and Methods of Analysis) in which they received feedback from peers, and some additional feedback from their student teaching mentors (cooperating teachers), and supervisors. The CFG structure with specific protocols allowed cohort members to bounce ideas off each other and, with their mentor teachers, to create a network of professional support. Although each candidate was working on an individual TRP, the network of support from peers, mentors, and supervisors was invaluable, as it had short- and long-term benefits. In the short term, it helped MAT candidates locate invaluable resources, as exemplified in Bella's reflection:

Collaborating with my colleagues throughout the process was important since it helped me find some of the resources that I used and gave me ideas for how to collect data. . . . I look forward to using these strategies to promote growth mindset in my future classrooms as well as using the inquiry process to find more strategies that will help my students succeed.

Since the candidates were afforded opportunities to internalize the process of action research in a safe space with continuous feedback, in the long term, they can take what they have learned from these experiences moving forward, as noted in Camille's reflection:

It was crucial to have the support of my colleagues and supervisors in developing the research question and action plan, and I hope that I will continue to seek out the advice of fellow educators who dream of a world where every bouquet of selves can bloom and grow.

Due to the overall positive firsthand experience with community networks, the MAT candidates will be more apt to seek out support because they see how invaluable it can be for themselves and their students.

Pedagogy

MAT candidates remarked that engaging in the TRP was an authentic way to gain pedagogical knowledge. They learned more teaching and assessment techniques as they grappled with meeting their students' needs. This is exemplified in Katie's quote:

This Teacher Research Project presented me with the opportunity to reflect on my teaching practices, gain experience analyzing trends in student performance, and strengthen my pedagogical knowledge. Through this research, I was introduced to new instructional methods, and had the opportunity to challenge my own mathematical mindset. Moreover, the inquiry process gave me a framework for my own professional development in the future. By embarking on this project, I now have the tools to address issues that may arise in my own classroom.

Although the specific pedagogical skills gained from each individual project varied, the teacher candidates gained valuable teaching and assessment skills relative to an interest of theirs which they can deepen moving forward. They saw the positive impact these skills had on the outcomes relative to their research questions and can tailor those experiences in the future.

Empowerment

One salient finding was the level of empowerment the MAT candidates felt during and after the action research process. The TRP was a worthwhile endeavor with structured support, as noted in Vanessa's quote:

I found this exercise incredibly valuable and empowering--what a fitting project to launch us out into the world of education! Just as we wish our students to be active agents of their own learning, this research process gives fledgling teachers a way to proactively grapple with all of the challenges that await us as new education professionals. Through the magic of growth mindset put into action, it turns things that might, viewed through the lens of a fixed mindset, seem discouraging or even crippling into a source of information for change.

Overall, all MAT candidates saw this research endeavor as extending well beyond a graduation requirement. For them, it was a valuable experience to carry forth into their future classrooms

since they witnessed firsthand the impact of it on their student learning, more so than any professional development they may have attended in their schools, as noted in the following two reflections:

This process was highly influential on my conception of professional development. This research was an example of authentic professional development as it stemmed from an observed classroom need, and then called for me to conduct research, collect data, and evaluate my results. [Hilary]

Overall, I found the process of the research project extremely useful for my own practice. Though I may not focus as much on the measurable data collection, it is important to practice constant observation, reflection and problem solving as an educator. This process leads to better instruction by improving areas of weakness in the classroom rather than simply accepting them at face value. Noting a problem in the classroom and researching previously successful solutions is critical for constantly improving teaching practice. This element of collaboration with researchers combined with peer collaboration facilitates creativity in problem solving. This is a practice I will strive to continue in my future classroom as I work to understand each student as a learner and constantly adapt to fit the needs of the students. [Alyssa]

Discussion and Implications

Teachers are at the forefront of this action research study. This research provided opportunities for MAT candidates' voices to be prominently heard about the value of the Teacher Research Project (TRP). This study was unique in its dual approach as an overarching action research study conducted by the researcher/director of the MAT program and connected by individual action research projects conducted by the MAT candidates. The individual action research studies led to increased elementary student achievements and explored what teacher candidates gleaned from this process to help in their teaching careers, while data from this overarching action research study can inform the urban teacher education program in which the candidates were enrolled, especially the value of the Critical Friends Groups (CFGs).

Given what the MAT candidates voiced about the action research process, professional development needs to be (re)imagined with more lasting effects for both students and teachers. The findings of this action research upon teacher action research is significant for urban teacher education programs and inservice professional development. All MAT candidates noted success with their studies to improve student outcomes in their respective projects in urban settings, as shown in the snapshot summary in Table 2. In each study, many urban youth in grades 1–6 had positive academic and social-emotional gains. Given what an entire cohort of novice teachers said about its importance for individual, student, community network, pedagogical, and empowerment levels, it would be beneficial to adopt this type of action research project as a form of professional development as opposed to short-term, single-session professional development from an external “expert,” which has not yielded lasting results (Desimone, 2009; Pianta, 2011; Whitworth & Chiu, 2015; Yoon et al., 2007). By having teachers regularly engage in action research, they can build networks of support and grapple with real issues pertinent to their students, and not ones put upon them.

Conducting teacher action research is a form of empowerment that enables other professionals to learn from each other and expand the knowledge base for teaching, which was evident in the CFGs and in the formal presentations to the cohort and the larger MAT community. It can enable teachers to become the experts and teacher leaders, as well as build capacity in schools without having to rely on costly external “experts.” It allows teachers to develop professional dispositions and encourages them to be continuous learners in their classrooms and in their practice. In short, it empowers teachers to become change agents, given that the MAT candidates all stated how they would use the skills, knowledge, and dispositions gleaned from their experiences engaging in their teacher research studies. They can become change agents just by shifting their thinking about professional development by having opportunities to be invested in *their* topics of interest and need.

Within the urban teacher education program in which the cohort was enrolled, the TRP underscored the value of continuous intentional and structured reflection and the importance of CFGs in the reflective process to improve their practice. The CFGs were shown to be a vehicle for empowerment, even more powerful than originally intended; they became the fabric of the Analysis Class. Although CFGs are most common in K–12 settings (Moore & Carter-Hicks, 2014), this study shed light on their value for higher education. MAT candidates saw the benefits in creating professional networks of support so that they are not so alone in grappling with challenges of their classrooms. They came to value CFGs as a way to collectively improve their practice since those CFGs were continuous opportunities to bring up areas for consideration that the MAT candidates had not thought of on their own. Consequently, the researcher plans to greater fine-tune the protocols to maximize utility for future cohorts and increase their use with other requisite course assignments.

Although the TRP was a requisite graduation requirement, it is valuable to study the impact these requisite assignments have on teacher candidates’ developing careers. As was noted in the reflections in the Findings section, it was not just a project but a real-world application of skills pertinent to their future classrooms. Subsequently, a fruitful further line of inquiry will be to continue the research to see how this cohort of teacher candidates has benefitted from the action research studies as they become inservice teachers with their own classrooms; what was the lasting impact from what they experienced as preservice teachers? In their action plans, given the limited time they had left between completing their research projects and ending their student teaching practicum, the MAT candidates were allowed to develop plans as if they were staying in their student teaching classrooms for the duration of the school year, but they also had the opportunity to describe what action they might take in their future classrooms as a result of what they had learned from their current studies. A follow-up would allow the researcher to gain firsthand knowledge of the impact of the TRP on their teaching and learning as inservice teachers.

Conclusion

In closing, teacher action research is change research in which teachers take action to strengthen their classroom practices based on classroom needs. Given the positive outcomes of this study for student and teacher growth in urban settings, it is time to move away from traditional

professional development one-time, singular sessions with little to no follow-up and toward having teacher research with the Critical Friends Group (CFG) model more widely recognized and enacted as a form of long-term professional development in which teachers are more invested and meaningful change in student outcomes can occur.

Joan Gujarati, EdD, is the director of the Elementary Education Master of Arts in Teaching (MAT) Program at Brown University. Her research interests include early childhood and elementary mathematics education; teacher beliefs and identity; teacher quality, effectiveness, and retention; professional development; and curriculum development.

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Appendix A

Formulating Research Questions CFG Protocol

Each presenter will have approximately 15 minutes as follows:

1. Presenter introduces the research question, context which led to the selection of the research question, and a focal question for the group to consider (2 minutes)
2. Presenter takes notes on the discussion which ensues between the other members of the CFG as they consider the research question in relation to the assignment criteria and presenter's focal question (10 minutes):
 - ❖ Is the research question:
 - something they are passionate about?
 - focused on student learning?
 - a real question (a question whose answer is not known)?
 - focused on their practice?
 - phrased as "What", "How," or "Why" and not as a dichotomous (yes/no) question?
 - specific?
 - manageable and within their sphere of influence?
 - ❖ Does the research question lead to taking action?
3. Presenter reflects on the feedback received from the CFG and describes key next steps (3 minutes)

Appendix B

Data Collection Procedures CFG Protocol

Each presenter will have approximately 20 minutes as follows:

1. Presenter introduces (7 minutes):
 - a. Research question(s)
 - b. Participants
 - c. Data Sources
 - d. Process for Data Collection
 - e. Focal question for the group to consider
2. Presenter takes notes on the discussion which ensues between the other members of the CFG as they consider the glows and grows of the research methodology in relation to the research question(s) and the presenter's focal question (10 minutes)
3. Presenter reflects on the feedback received from the CFG and describes key next steps (3 minutes)

Appendix C

Data Analysis CFG Protocol

Each presenter will have approximately 20 minutes as follows:

1. Presenter describes and shows evidence of their data analysis procedures and presents a focal question for the group to consider (7 minutes)
2. Presenter takes notes on the discussion which ensues between the other members of the CFG as they consider the glows and grows of the data-analysis process in relation to the research question(s) and the presenter's focal question (10 minutes)
3. Presenter reflects on the feedback received from the CFG and describes key next steps (3 minutes)