

Beth A. Wassell
Ian Stith

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Becoming an Urban Physics and Math Teacher

Infinite Potential

 Springer

BECOMING AN URBAN PHYSICS AND MATH TEACHER

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Becoming an Urban Physics and Math Teacher

Infinite Potential

by

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Foreword

In the United States it certainly is the case that we live in a country that adheres to an ideology of individualism. In education this ideology is manifest in holding teachers accountable for the achievement of their students, and teacher educators accountable for the quality of teaching. Similarly, in school districts such as Philadelphia, where this research was undertaken, school principals are held accountable for the quality of the educational programs in their schools. In making this claim about individualism I do not seek to oversimplify an argument that individualism is the only referent used in formulating and enacting policies. Clearly there is recognition of complexity and the mediating effects of others' actions on individuals accomplishing their goals. However, in arguments over accountability it always seemed beyond argument, for example, that teachers should have control over their students and if that were not the case then the teacher is not effective. Similarly, as a teacher educator, there is a widespread perspective that I should train teachers to establish and maintain tight control over students, and plan and enact curricula to meet mandated national, state, and local standards in ways that align with testing programs such as those associated with the *No Child Left Behind* legislation. Failure to comply with these expectations, while possible, feels risky. The ideology of individualism is taken for granted, part of normal social life, not usually a focus for discussion or a point of departure. Indeed, arguments that depart from an emphasis on individual accomplishment, exercising control over students, and departing from the alignment of curricula with mandated goals and statewide testing are regarded as lowering standards and unscholarly—examples of Liberal thinking that belonged in the 1960s and have no place in the modern era.

Teacher educators face numerous pressures, not the least of which is that almost anyone you speak to is an expert on teaching and how to train teachers. From janitors to deans, opinions on what constitutes good teaching are presented willingly and with conviction—after all we all had teachers and our experiences are reified in stories that incorporate what we believe about teaching and learning.

The problem of having so many experts is compounded by a profound disrespect for research on teacher education and learning to teach. There is a widespread assumption that there is little research out there to support what is done in teacher education and what little there is carries a weight that is no more substantial in many instances than stories told by the local school principal and much less important than the convictions of a dean of education. As if these problems are not enough for teacher educators to endure, there also is the intervention of politicians who have mandated that what counts as research, and therefore is compliant with *No Child Left Behind*, is scientifically based studies. Hence, there is a press to disqualify research findings that do not emanate from scientific studies. Advocates for such approaches to education research include scientists with little understanding of education theory and practice and educators with little understanding of the sciences. This is not the place to deconstruct this political move—suffice to say, it is a major source of irritation to many educators, especially those who undertake research that is built upon sociocultural foundations that do not embrace oversimplified models derived from the physical sciences.

Within the teacher education community is widespread acceptance of models of learning to teach that embrace reflective practice and learning from field experiences in which university-based and school-based educators meet with new teachers to discuss the new teacher's performance during field experiences. Many of these models acknowledge the centrality of mentoring and building teaching competence around the expertise of mentors, what is done in the field, and current research and theory. Such an approach was a point of departure for our venture into coteaching and cogenerative dialogues, setting the stage for the research undertaken by Beth and Ian in this volume.

We were frustrated by the challenge of finding suitably qualified mentor teachers in urban public schools in Philadelphia. The city was large and getting to schools that were geographically dispersed was a challenge. Furthermore, the high schools closest to the university in which I was Director of Teacher Education were among the lowest performing in a low-achieving school district. Many faculty in the university felt a responsibility to make a positive difference to the education of high school youth in area high schools. Accordingly we opted to assign large numbers of new teachers to City High with the goal of creating a community of practice at the school—a community that valued inquiry into learning to teach and was committed to raising the educational opportunities for urban youth, most of whom were from home circumstances of high poverty and differed socially and culturally from the new teachers.

An unexpected problem we encountered was that several of the resident teachers at City High were unwilling to give up their classes because they were not confident that the new teachers could control their students. Many of these resident teachers were struggling to control the students and promised to make their classes available when the classes were more settled. The mentor teachers' lack of confidence was reinforced somewhat by experiences throughout the school where many resident and new teachers struggled to control students. After almost a semester, the frustrations of the new teachers who were unable to teach mounted to the point that a summit meeting was called, to include me, the new teachers, the resident teachers who would not relinquish their classes, and the school principal. The outcome of the meeting was not what I expected or hoped for. Rather than give up their classes, the resident teachers opted to withdraw from their agreement to be mentors for the new teachers.

The school principal was known as innovative and focused on getting the best for his students. "Why don't we create some special classes to be taught by two new teachers?" His request seemed risky to me, but he was enthused and, since all of the new teachers already had an undergraduate degree in science, he could arrange emergency certification for them to teach the class without a mentor being present. With some reluctance I agreed to the idea, with the provision that we undertake research on what happens. The bold plan put forth by the principal catalyzed a program of research that is ongoing and an approach to teacher education that incorporates coteaching and cogenerative dialogue.

Central to coteaching is learning to teach by *teaching with another*. What is learned can be through conscious intent or it can be unconscious. Hence it is important for coteachers to analyze their teaching to ascertain what happens, figure out why that happens, and identify contradictions—especially those that produce undesirable outcomes. Cogenerative dialogues, which are critical dialogues among participants from the cotaught class, are ideal fields for identifying what works and what does not. For example, a typical cogenerative dialogue would include the coteachers and two to three students from the class, with the purpose of improving the quality of teaching and learning and, in so doing, create collective recommendations for change and responsibilities for enacting them. Cogenerative dialogues developed from a project in which each class in which we placed new teachers would identify two students, selected for their differences from one another, to act as coaches on how to "better teach kids like me." In collaboration with Wolff-Michael Roth we developed cogenerative dialogues as fields in which changes in the roles of teachers and students could be negotiated, classroom rules could be changed, and resource accessibility and utilization could be modified.

Beth and Ian describe longitudinal research of critical importance—studies of learning to teach through coteaching and cogenerative dialogue during a teacher certification program and subsequent investigations of Ian’s role as a curriculum developer in a summer program and his initial two years of teaching. Accordingly, the research explores crucial questions that teacher educators need answers to, especially those who employ coteaching and cogenerative dialogues. For example, can a new teacher who has employed coteaching in his initial teacher education program teach solo? Is there evidence of transfer of teaching strategies from coteaching to solo teaching? Can cogenerative dialogues be adapted to improve the quality of teaching and learning in classes with only one teacher? Questions such as these are central to this book and as such are essential reading for stakeholders in teacher education.

The research is a fine example of research in education that is theoretically rich, incorporating an array of methods that explore questions to which teacher educators, school-based personnel, and policymakers should attend. The collaboration between a teacher and a university researcher is an example of the added value that comes from coresearching challenging contexts such as those experienced in inner city schools, especially when differences between the teachers and students include race, ethnicity, and social class. Furthermore, the involvement of students through cogenerative dialogues in curriculum development and research has enormous potential and serves as a reminder of the folly of continued adherence to an ideology of individualism that de-emphasizes the centrality of building communities with students as active participants, enacting an expanded array of roles. The theoretical and empirical support for a dialectic relationship between the individual and collective is just one of a plethora of reasons for the salience of this research, not just for the United States, but also for a global community in which policy mandates diffuse rapidly and approaches to teaching, curriculum, and accountability have a depressing similarity in a pervasive climate that supports a rationale for aligning national standards, enacted curricula, and testing. Preparing teachers to thrive in such environments is a priority and little attention is given to scholarly essentials that include deliberating answers to questions such as: what is teaching; what are the best ways to learn to teach; and how can learning environments conducive to student learning be created and maintained? The research in this book addresses such questions and raises issues that should command the attention of educators in the global community.

Kenneth Tobin
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Preface

The beginning: In Beth's words

This book chronicles almost three years of research in and around Ian Stith's physics and math classrooms. Although the impetus for the research emerged from my doctoral studies, by the final year of data collection, Ian and I worked together in collaboration. I first met Ian during the spring of 2003, prior to our work together on a curriculum project that also included a group of students from an inner city high school in Philadelphia. Ian was finishing up his Master's degree in education, while I was beginning my dissertation. Around that time, I became interested in studying the transition between preservice teachers' student teaching experience and their first year of in-service teaching in urban schools. My interest was spawned by the daunting teacher turnover statistics in the city of Philadelphia, which indicated that only 52 percent of new teachers who began during the 1999–2000 school year were still teaching in the district three years later (Neild & Spiridakis, 2003). In addition, I was highly interested in exploring the experiences of White teachers who work with predominantly African American students and how socioeconomic, social, racial, and cultural differences might impact interactions, teacher–student relationships, and student learning.

At that time, Ian was finishing his student teaching and trying to find a position as a physics and math teacher in Philadelphia. He had completed his graduate-level teacher training at a large university in the Northeast immediately after receiving his Bachelor's degree in mechanical engineering. Ian's teacher education program was unique in that he had spent a large portion of his year-long student teaching experience coteaching with another student teacher (Roth & Tobin, 2002, 2005). As my understanding of coteaching expanded, I grew increasingly interested in the futures of those who had primarily taught with others during their preservice experiences. How would these individuals fare in the reality of a traditional, autonomous setting as first year teachers?

As I was beginning my dissertation, my adviser, Ken Tobin, suggested that Ian would be an excellent person to consider for my study. By examining Ian's case, I would be able to focus on the experiences of a beginning teacher in an urban school district. Furthermore, Ian, a White, middle-class male from the suburbs, was quite different from his students, who were primarily African American and from working class families or conditions of poverty. Ken had worked closely with Ian during his student teaching experience and claimed that Ian and his partner Jack had been quite successful in coteaching an engineering physics class at City High School, a large, neighborhood secondary school. Incidentally, Siobhan McVay, one of Ken's other graduate students, had collected a significant amount of video footage of Ian and Jack coteaching over the previous five months. Thus, I would also be able to trace Ian's transition from coteaching with Jack to his traditional, autonomous experiences as a first year teacher. In essence, Ian was an ideal subject for an in-depth, qualitative case study, considering my research interests.

That summer, Ian and I worked together with four students to develop a set of science units. We detail our work, which was incredibly illuminating for us both, in chapter three. During that time, I began to develop my research questions. Rather than doing this in isolation, Ian and I were in constant dialogue about our interests and ideas. In line with what other individuals who knew Ian had mentioned, I learned that Ian was extremely laid-back, yet thoughtful about the potential for our work together. These early conversations laid the groundwork for a collaboration that would span the course of several years and would foster a longitudinal study.

Emerging and evolving questions

Although Ian and I discussed the research that would occur in his classroom, the first phase of data collection and analysis was conducted primarily by me. In the beginning, Ian was experiencing the chaos of beginning a job, which left him barely enough time to participate in my countless interviews, debriefing sessions, and other attempts to gather data. Additionally, this portion of the study resulted in my dissertation, so naturally the data collection, analysis, and writing was my responsibility. Ultimately, my research questions focused on his agency, or his power to act as a beginning teacher. Specifically, I considered: (1) What are the structural changes that Ian encounters as he transitions through various fields (i.e., student teaching at City High and his first year of teaching at Leach Learning Academy)? (2) How does Ian use agency to find success as a new teacher?