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FREEZING OUT INJUSTICE: USING ICE TO FOSTER DEMOCRATIC INQUIRY

by Monica Taylor, Emily J. Klein, and Liz Carletta

Abstract

In an urban teacher residency program, preservice science teachers experience what it's like to teach for social justice through the use of a democratic inquiry stance, thus moving toward an understanding of teaching for social justice as larger than one individual teacher in a classroom.

Key words: *inquiry, social justice, urban teacher residency*

It is important to understand science and use our power as citizens to make informed decisions as individuals and potentially influence policy decisions. (Liz Carletta's reflection)

In the fall of 2009, we (the first two authors) were invited to develop the secondary math/science

strand of the Newark Montclair Urban Teacher Residency (NMUTR) with the Newark Public Schools (NPS). Funded by a Teacher Quality Partnership grant from the U.S. Department of Education, we were encouraged to be innovative and re-imagine teacher education. We looked to the existing urban teacher residencies in Boston, Chicago, and Denver, which were modeled after a medical school residency; these

have an extended apprenticeship by a highly skilled mentor teacher and coursework integrated with residents' classroom experiences. We were inspired by the potential of this model with its higher retention rates than traditional teacher education programs and the integration of a yearlong fieldwork component (Bogess, 2010; Papay, West, Fullerton, & Kane, 2012).

Based on a long history of partnership with NPS, we conceptualized the secondary strand of our program as a continually constructed and negotiated hybrid space comprised of the university, schools, and community organizations, which would draw on the expertise of teachers, school administrators, university faculty, students, and community organizers. This approach would provide our preservice teachers opportunities to develop pedagogy within a space where theory and practice meet and blend.

For the purposes of this article, we focus on one integral strand of our urban teacher residency program: preparing preservice science teachers to teach for social justice through the use of democratic inquiry. We wondered how we could help these preservice teachers create bridges between their students' "funds of knowledge" (González, Moll, & Amanti, 2005) and the curriculum, and also how a "problem posing" stance (Freire, 1970) could be nurtured by preservice teachers among high school students. We knew that we did not simply want to teach our preservice teachers about social justice inquiry, which merely perpetuates the theory/practice divide. They needed to be invited to construct an inquiry with their students and then gather their own data to examine its impact. We hoped that this teaching lens would nurture a dialogic space where teachers and students work together to question, examine, and ultimately transform the world.

In this article we—two university faculty and a resident graduate—describe the Inquiry Cycle Experience (ICE) project, which we developed to model social justice inquiry with our preservice urban teacher residents. We begin by explaining the guiding social justice framework. We then share details of the ICE project, and finally we present an ICE exemplar and reflections on how it has impacted the first years of teaching.

Social Justice Inquiry

Through the NMUTR, we set out to provide opportunities to disrupt preservice teachers' preconceived notions about urban youth (Dudley-Marling, 2013) and encourage the development of rich, complex, sociocultural portraits of their students (Ladson-Billings, 1995; Nieto & Bode, 2008). Prior to the ICE project, residents had summer experiences working with Newark youth in local community organizations. These experiences served as a means to begin to nurture a social justice stance through which residents could teach (Au, Bigelow, & Karp, 2007; Cochran-Smith, 2004). The ICE project acted as a bridge from curriculum to students, helping residents to invent and construct curriculum practices that invite high school students to problematize issues of power in society and begin to develop a critical voice (Cochran-Smith et al., 2009; Freire, 1970; González et al., 2005).

ICE Project

Throughout the program, we encouraged residents to adopt an inquiry stance as a means to challenge social and cultural norms that are constructed in schools. In the fall semester, we focused on understanding what socially just inquiry pedagogy in science looks like and invited residents to design and teach units from this lens. For the spring, we introduced the ICE project as a means for residents to develop curriculum that would invite high school students to investigate a real-life problem. We knew from the literature on professional development that teachers do not become inquirers until they first experience it themselves (Klein & Riordan, 2011); so we used course time to give them that opportunity by facilitating the first stages of an inquiry cycle. We realized that many of our residents had limited experiences with student-centered social justice science inquiry. How could we expect them to design such curriculum when they had not had the opportunity to experience such work?

Typically an inquiry cycle begins with "wondering and wandering" (Short & Harste, 1996, p. 265) that leads to an authentic question or problem (Taylor & Otinsky, 2007). As inquirers, residents rotated through a variety of learning stations where they explored texts, music, and videos related to the topic of socially just



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Democratic Inquiry

schooling. Then they wrote reflections about their experiences in the learning stations and brainstormed authentic open-ended questions that emerged for them. Rather than complete an inquiry cycle as learners, we instead invited residents to design and teach an ICE unit in their own classrooms for high school students. The units were to be built on students' interests and encourage authentic, open-ended questions. Students were to be asked to gather various kinds of data and then go public with their findings.

Social Justice Inquiry

In this section, Liz Carletta (the third author) describes her experience of developing and implementing her ICE unit during her residency year teaching biology to high-performing juniors and also shares her reflections about social justice inquiry.

Teaching the Unit

Prior to developing the ICE unit, I had followed the district curriculum as a guide for topics and sequence, and I had used inquiry in the form of activities related to the concepts. Now, I was shifting the onus onto the students. Worried about student motivation, I knew it was essential that the topics for the ICE project be truly student-driven. We would focus on understanding science in order to actively make informed decisions that lead to change. I wanted to nurture their science literacy as a means of promoting awareness and activism.

I began by exposing students to 10 different topics that were significant examples of how understanding science can help people make individual and policy decisions in society. These questions led their inquiry: What science do I need to understand to make an informed decision for myself? What are my personal beliefs about certain topics? Should I influence others? Should others influence me? Should the government be allowed to make choices for me?

I gave students a brief overview of the stations, which had articles, videos, charts, and graphs about real situations. These included a town in California banning the use of plastic bags; Mayor Bloomberg's limit to soda sizes in New York City; the legalization of marijuana and gay marriage; abortion; the legal

drinking age in the United States; China's one-child policy; animal testing; genetic testing/counseling during pregnancy; and a woman with dwarfism's choice to conceive a baby.

Students were to visit *at least* six stations and create a statement that explains the issue, list factors supporting multiple points of view, and then decide what the appropriate decision is. Further, they were to determine whether there should be a law that supports the perspective, or whether the issue should be self-regulated. After wondering and wandering, we gathered as a class for spirited discussions in which we shared multiple perspectives about each station. Students then chose one topic to explore in-depth and conducted research to find evidence to support multiple arguments about it. Last, students produced a written resolution, using evidence to support positions as well as acknowledging and refuting the opposing point of view. Students had the flexibility to choose whether their written product would be a traditional paper, a letter to their senator, an opinion piece to the editor of a local newspaper, a script of a conversation, a blog, or another format of their choosing.

Influencing Others With Facts

The ICE unit gave students a choice and a chance to see the real-world relevance of biology. It invited students to learn about something meaningful to them and provided them insight into how policies and laws are sometimes made based on ignorance of scientific research. They had opportunities to see how these laws impact their lives. The unit demonstrated the connections among biology, policy, and social justice. Most importantly, it gave students the experience of learning and taking social action in the real world outside of school.

For example, Sophia examined abortion and, in particular, genetic testing of fetuses of older mothers. From the beginning, she was against abortion regardless of whether a child would be born with a disability or disease. Her beliefs came directly from her religion as well as her personal history; her mother had had her when she was in her 40s despite being told that she would likely be born

with a disability. She was not born with a disability and, in fact, became valedictorian. Feeling that her mother chose to have her regardless of her doctor's advice, Sophia began the project strongly opposed to abortion. Through her research, however, she was able to acknowledge that while she personally would not have an abortion in any situation, there also should not be a law that makes that decision for women.

The ICE unit was significant for my growth as a teacher and has influenced my continued work as a science educator. It showed me that independent inquiry promotes student learning and encourages reading, writing, and thinking. I also learned that students work hard and go above and beyond requirements when they are motivated to explore issues about which they feel passionate. Finally, I witnessed how inviting students to examine their beliefs and discover their own power to effect social change makes science learning for teenagers meaningful.

Conclusions

This work has a number of important implications. First, the ICE project reminds us of the value of creating opportunities for preservice teachers to have experiences bridging theory to practice. Prior to our program, many may never have inquired in science. Before being asked to facilitate such teaching, preservice teachers need to "wear the student hat" and engage in powerful learning that ties to issues of social justice (Klein & Riordan, 2011).

Second, too often in teacher education programs, social justice teaching is a theoretical experience for preservice teachers who struggle to connect it to specific content like mitochondria. Frequently social justice teaching and pedagogical content knowledge are taught separately, and the connections between the two are left to the preservice teachers to weave together. Yet we can embed experiences that better support these connections. Preservice teachers need assignments that scaffold the planning and enactment of tying social justice teaching to their content areas in real classrooms. Though this is not a new recommendation, more concrete examples of how to do this are needed.

Finally, we have realized how inadequate it is to focus on the development of social justice teachers as individuals. To increase our impact on schools and create sustainable change, we need to think about change agency on a broader, collective level. In developing a programmatic and curricular stance to support social justice teaching, we are moving toward an understanding of teaching for social justice as larger than one individual teacher in a classroom. Facilitating a social justice inquiry requires significant scaffolding and a supportive community where residents can brainstorm ideas, develop confidence to take risks, and reflect honestly about their practices. We want our preservice teachers to see themselves as part of a bigger community, with similar values, working together to create more socially just science classrooms (Taylor, Diaz, Taylor, Strom, & Perry-Ryder, 2015).

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