'Staying with the Trouble': Praxis Crisis in Science Teacher Education for Emergent Bilingual Learners

Sara Tolbert, University of Canterbury, Aotearoa New Zealand
Caroline Spurgin, Doris Ash, University of California, Santa Cruz, CA, USA

Subject/Problem

While there is a small but growing body of literature on how novice teachers can be better prepared to improve instructional experiences for Emergent Bilingual Learners (EBLs) in science classrooms, very little is known about how secondary science teachers make sense of their ability to enact agency (as responsive practice for EBLs) within rigid schooling contexts (Authors, 2018). We analyze the discursive positionings of five novice teachers across 3 different university teacher education programs to explore how they perceive their agency, defined as their ability to effect change in EBLs' opportunities to learn, and how they understand the systemic contexts of oppression which complicate their agency. We then discuss how preservice teachers experience or manage tensions of working within this complex structure/agency dialectic. We reflect on their experiences as a form of *praxis crisis*, i.e., the disjuncture between theory and practice that occurs as they negotiate the real constraints of their work. Finally, we articulate implications for 'staying with the trouble' (Haraway, 2016) in teacher education research and practice on science for EBLs.

Opportunities to Learn Science

Teacher Agency and Discursive Positioning

Science teachers of EBLs are, indeed, working within a particularly nuanced and complex structure-agency dialectic (Braaten & Sheth, 2017; Buxton, et al., 2015) as they learn to enact responsive pedagogies in often highly constrained, opp(reg)ressive (Rodriguez, 2010), schooling environments. As Kayi-Aydar (2015) points out, "Teacher agency is important to investigate because teachers affect instructional conditions in positive ways only when they demonstrate the will and ability, in other words, when they are positioned as agents" (p. 96). We draw from discursive positioning theory (Bishop et al., 2007; Bishop, 2010) to analyze how teachers employ particular discourses to explain or position their own agency in classrooms with minoritized students. Bishop (2010), using Foucault's work on language and power, illustrates how "the discourses [teachers draw on] already exist, they have been developing throughout our history, are often in conflict with each other through power differentials, and importantly for our desire to be agentic, in terms of their practical importance, some discourses hold solutions to problems, others don't" (p. 67). Agentic positioning (Bishop, 2010; Bishop, Berryman, Cavanagh, & Teddy, 2007) refers to teachers *expressing* a sense of responsibility and professional commitment to improving minoritized (EBL, in our case) students' educational experiences and outcomes. We seek, therefore, more nuanced understandings of novice teachers' discursive positionings in relation to (1) their abilities to teach EBLs in secondary science classrooms (agency), and (2) their critical awareness of how EBLs are structurally excluded from opportunities to learn science (structure).

Design/Procedure

We pursued the following line of inquiry in our work: *What are novice teachers' discursive positionings within the structure-agency dialectic as it pertains to teaching science with EBLs?* This research is part of a large, multi-year, multi-state, multi-institutional, design-based teacher education research project. The larger study investigated the impact of five collaboratively redesigned (with university researchers in science education and bilingual/ESOL education, and science methods instructors) secondary science teacher education programs on novice science teachers' knowledge, beliefs, and practices related to teaching science for EBLs. Data for the analysis presented in this manuscript includes surveys, used to collect participants' demographic data, and semi-structured interviews. Project researchers conducted interviews with preservice science teachers at the beginning and upon completion of their teacher education program and again in their first and/or second year of teaching. The interviews were approximately an hour in length, and were designed to elicit participants' beliefs and knowledge about specific practices for teaching science with EBLs.

For this study, we used random stratified sampling to represent the diversity of the candidates enrolled in each program (by age, gender, race/ethnicity). We selected and analyzed multiple participants across 3 institutions. In this paper, we focus on five focal cases. Though we iteratively analyzed interview transcripts in their entirety, we anchored our analysis in how the five novice teachers responded across multiple points in time to the following focal questions:

1. *Can all students understand complex science ideas?*
2. *Why don't all students take advanced science courses?*
3. *Should students be tracked in secondary science? Why or why not?*
4. *Does the current education system adequately meet the needs of ELLs?[1]*

Through this iterative process, we independently coded and discussed the cases, and then worked to develop shared understandings of each participant's discursive positionings within the structure-agency dialect. We observed that the novice teachers were situated "all over the map," so to speak. Our analytic process led us to the development of a non-linear data visualization heuristic for making sense of teacher positioning with regard to agency/structure. We agreed that the results of our analyses (see Appendix A) would be best displayed as a matrix vs as a linear progression (adapted from Schindel Dimick's 2015 study of students' atomistic vs. collective views of environmental participation). Though unable to develop a linear progression, we were able to identify and characterize a variety of discourses upon which the novice teachers consistently drew to 'make sense' of their work, which we share below.

Analyses/Findings

A primary goal of our analysis was to demystify the rich complexity of the data concerning our research question. Reflecting on the data from this study, we came to understand that the problem we were exploring was not as simple as understanding how much agency preservice teachers felt they had, nor as simple as mapping out the structural constraints they faced, or perceived—i.e., so that we as teacher educators could better identify key sites of intervention in terms of shaping their agency and/or structural awareness. Instead, what we noted is the value of the SADialectic as a metacognitive tool that directed our analysis to larger underlying issues of what we refer to as *praxis crisis* (Anwaruddin, 2019) and its sequelae, *tension management*

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[1] We use ELL in the interview given the term's broader recognition and understanding, particularly within the schools and districts in which novice teachers were placed.

(adapted from Braaten and Sheth, 2017). In the section that follows, we describe what we mean by praxis crisis and highlight the predominant discourses each teacher used to negotiate (or avoid) the praxis crisis.

Praxis Crisis

By *praxis crisis*, we refer to the disjuncture preservice teachers experience when negotiating conflicts between what they have learned about social justice and responsive education from their teacher education programs, and the actual day to day work they do in classrooms (Braaten & Sheth, 2017; Achinstein & Ogawa, 2006). Participants' discursive positionings not only reflected conflict and tension, but also reflected ways that they had made compromises or managed tensions that they were experiencing either in their field placements or in their early years of teaching (Braaten & Sheth, 2017). We interpret these 'compromises' as 'work within the SADialectic.' By this, we mean a dynamic and not always consistent traversal of the SA dialectic space. Below, we offer five brief examples of the predominant discourses each teacher articulated, and how they used them to traverse the SADialectic.

'You can lead a horse to water, but you can't make them drink.' Margaret, an older white woman in her mid 50s, located EBL students' success within the realm of the teacher and described how teachers often "just let [EBL students] fall through the cracks" but then she simultaneously expressed that there was only so much she could do for students and that it was ultimately up to the student to "take ownership" of their success, e.g. by showing up to after school programs for extra help, and coming prepared with questions. Margaret thought that tracking was unfair but that it was important for advanced students to have a place to be challenged lest they get bored and disrupt others. Margaret's approach to crisis resolution and tension management appeared to be one that allowed her to draw very clear boundaries on her effort and time in terms of what she is willing and not willing to do. She also, however unknowingly, draws from post-integration discourses to frame advanced (white) students as in need of special programming (Dickens, 1995; Porter, 2017).

Praxis paralysis: There's just too much I don't know or can't do. Nancy, 27, identifying as Portuguese, Chinese, and European, was often critically reflective of her own teaching. Nancy recognized early on that while she could not become part of the Latin American cultures of her students, she had been taught a spectrum of strategies to use in class. Increasingly, however she seemed immobilized by her own inability to work meaningfully with Latinx students, even though she had been viewed as a promising future teacher by faculty. She said she did not "understand all of the cultural backgrounds that they come from." She lamented that she did not know enough Spanish, and felt underprepared to relate to the "world experiences and life experiences" of her Latinx students. Nancy also realized the structural constraints faced by her Latinx EBL students as their school bus leaves right after school. She noted, 'there was not an easy 'fix' for this,' except providing more support during school hours. Nancy appeared to be mired in a praxis crisis and struggled to find a way through it.

Bring them to me, and I will help them pull their bootstraps over the fence. In terms of supporting EBL students in science learning, Rodrigo, 22, Mexican American, shared very well developed examples from his own instructional practice as well as ideas he learned in his teacher education program. In contrast to Nancy, he highlighted the importance of getting to know his EBL students' cultural backgrounds, particularly if they were very different from his own. Rodrigo never addressed the restrictive or racist/nativist nature of EL education in the state where he taught, and how it limits EL students' participation in science or advanced science courses. In fact, when

asked if the current education system adequately meets the needs of EBLs, he expressed that he felt the model his district was using supported EL students well. He framed EBL students' under-participation in advanced science coursework as a lack of their individual awareness of relationships between college and science coursework (i.e., so therefore they weren't choosing to pursue it). Rodrigo's highly agentic positioning compounded with a teaching placement in a high school setting in *which he himself had been successful as an EBL student* seemed to mitigate, or even completely sidestep, any sort of praxis crisis. His strategy was that he will and can do anything in his power for any student *assigned to his courses*. Beyond that, he does not engage (i.e., with systemic inequities).

Deficit discourses and 'these kids'. <u>Henry</u> did not appear to experience praxis crisis given that he did not articulate an agentic positioning and instead has decided that students are either curious and motivated to learn, or not. Ironically, he appeared rather un-curious himself about what his students' motivations, desires, and challenges may be beyond the scope of his curriculum. He drew from racist stereotypes to explain differences in participation, commenting that Hispanic girls were "just going to have kids and be a housewife and stuff like that" whereas the "Caucasian girls have more career ambitions." He employed similar racist ideologies to justify inequitable systems like tracking.

'Staying with the trouble': Working the structure-agency dialect. <u>Monica,</u> 21, Mexican American, sought to become a science teacher in order to go back and teach in her community on the US/Mexico border. Her experiences as a Latinx who felt her science teachers were not serving her community well were foundational to her awareness of the conditions that constrain opportunities to learn science for Latinx students like her. Monica negotiated the praxis crisis with acute awareness of the political contexts (i.e., the 4-hour Structured English Immersion block in her state) that limited EBL students overall opportunities to participate in science coursework. She articulated how this systemic oppression negatively affected EBL students' retention and graduation rates, recalling peers from her own high school who were pushed out of science by their EBL status. At the same time, she was both knowledgeable and confident in her own abilities as a teacher to help EBL students succeed in secondary science, and worked to mitigate the structural barriers (such as English only curriculum materials and unfair assessment practices) through her own pedagogical practices.

Contribution

These findings from our multi-year research study suggest that a crisis of praxis is a common experience for emerging science teachers of EBLs, where imagined and real classroom outcomes collide, the educational theory and practice of the university classroom clash with rigid structures of schooling. This resonates with prior research that has demonstrated how novice science teachers experience immense cognitive dissonance when coming to terms with the multiple intersecting contexts of oppression that constitute school science (Achinstein & Ogawa, 2006; Bianchini & Cavazos, 2007; Braaten & Sheth, 2017; Buxton, et al., 2015; Crawford-Garrett, 2017; Rodriguez, 2015). The novice teachers in our study drew from a variety of discourses to negotiate the tensions they experienced of teaching EBLs in "real" classrooms. As they begin the process of orienting themselves to relevant power structures, some, like Monica, oriented in ways that suggest that they will use their agency as science teachers to provide science learning opportunities for EBL students, in ways that buck restrictive policies and norms (Gutierrez, 2016). Others oriented themselves in ways that suggest they are likely to use their agency as science

teachers to sustain (Margaret, Rodrigo) or even exacerbate (Henry) the marginalization of EBL students.

Our analysis of these five cases contributes to the theoretical landscape of research on science teacher preparation for EBLs in several ways. We came to frame the crisis of praxis in positive *or generative ways,* that is, as stimulus for change rather than an indication of failure, and that tension management is one logical consequence (Engestrom, 1987). This claim builds on recent research (Braaten & Sheth, 2017; Buxton et al., 2015; Rodriguez, 2015) that is moving towards expanding the discourses available to us as researchers and teacher educators, i.e., a more nuanced and elaborated reflection/analysis of science teachers' orientations to their agency, and away from reductivist binaries or dichotomies.

Our subtle nod to Haraway's (2016) work, *Staying with the Trouble: Making Kin in the Chthulucene*, in the title of our paper reflects our own desires to (re)frame "praxis crisis" as a place of possibilities, rather than a source of impending doom. Instead of focusing our attention on how we can prevent a crisis of praxis for teachers, we see praxis crisis as a critical inflection point in novice teacher development for EBLs. The discourses that teachers draw from to cope with the crisis can have implications for how they will enact their agency as science teachers. Novice teachers need more opportunities to *stay in praxis crisis* while they grapple with the discursive and material realities that exclude EBLs from opportunities to learn science--and learn to enact justice-oriented agency that disrupts, not sustains, these exclusions (e.g., Gutierrez, 2016). We recognize that this calls for us, as university educators, to enact agency against neoliberal university teacher education contexts that would have us monitor and evaluate "effective" or "successful" performances of practice to the exclusion of 'staying with the trouble' in science teacher education for EBLs.
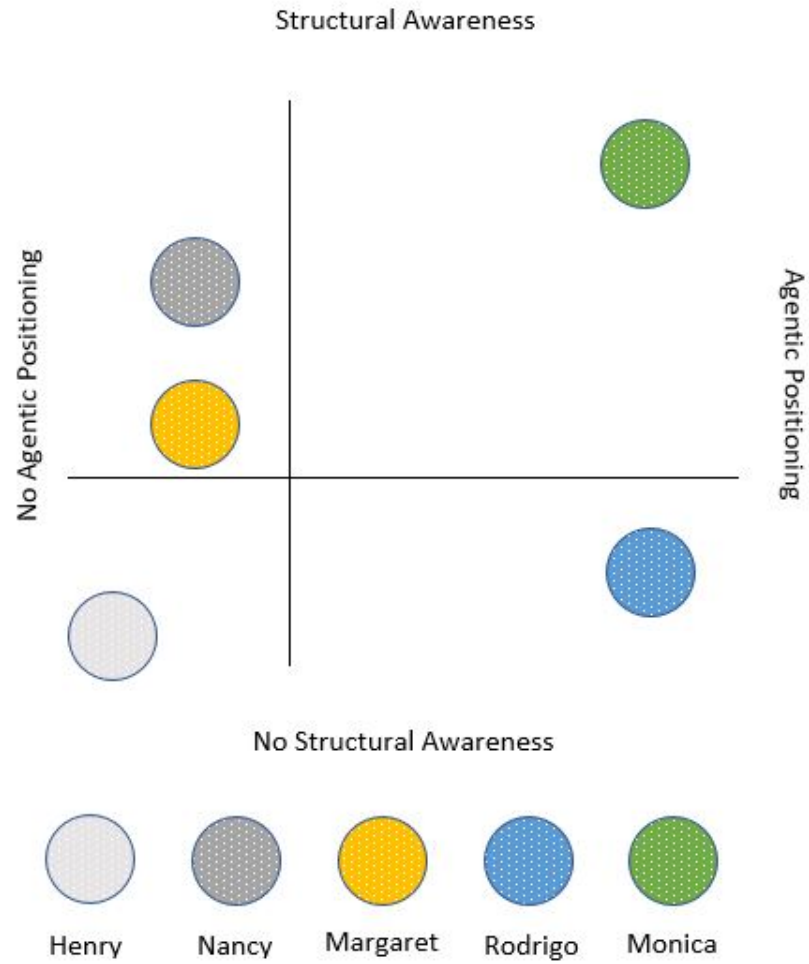
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Appendix A. *Agentic positioning and structural awareness*

Adapted from Schindel Dimick, 2015