

Preservice Teachers' Negotiation of Middle Grades Science Teaching Identity

How do beginning teachers learn to teach middle grades science? This question lies at the heart of this study in which three middle grades science teachers' learning during their student teaching placement was examined. Although many scholars have conducted high quality studies on learning to teach middle grades science (Proweller & Mitchener, 2004) and learning to teach science (Crawford, 2007; Friedrichsen, Munford, & Orgill, 2006; McGinnis, Parker, & Graeber, 2004), my own experiences as a middle grades science teacher encouraged me to identify a lens for examining learning to teach that more accurately represented the complexity of my own experiences while learning and becoming in the classroom. I believed this lens could prove useful in helping middle grades teacher educators support beginning teachers' efforts to navigate the complexities encountered during student teaching in the middle grades. Building on the work of situated learning and practice theorists (Lave & Wenger, 1991; Wenger, 1998), learning, in this study, is conceptualized as a process of becoming, or identity negotiation (Gee, 2005; Holland, Lachicotte, Skinner, & Cain, 1998). Identity negotiation, as a lens for examining teacher learning, prioritizes action (enacting self in world) as socially-situated and personally-bound (Wenger). As such, learning to teach is assumed to be a dynamic and complex process rather than something more linear, static, or developmental in nature. One primary research question framed this study: How do beginning teachers negotiate their middle grades science teaching identity during student teaching?

My inquiry into this question was driven by a constructionist (Crotty, 1998) epistemology, which assumes that meaning does not exist in the world or in objects waiting for us to discover it. Instead, there is *something* to work with in constructing meaning, but meaning is not present waiting or able to be discovered. As such, there is not one true or valid interpretation. An inductive (Charmaz, 2006) case study approach (Hays, 2004) infused with narrative inquiry traditions (Polkinghorne, 1995) was employed in collecting and analyzing data. Three middle grades science student teachers participated: a graduate student and an undergraduate student in a science education program and an undergraduate student in a middle grades education program. Data collection methods included interviews, observations, various written work, and informal participant-initiated conversations throughout their semester of student teaching in middle grades science classrooms. Analysis of data included initial and line-by-line coding (Charmaz), a focus on the social goods (Gee, 1999) that were made relevant or irrelevant by my participants, and, ultimately, a re-coding of the data into large chunks of text that reflected the nuanced negotiations of middle grades science teaching identity. These chunks of text were used to craft narratives, which, in conjunction with Gee's notion of D-identity (2001) and Holland et al.'s tools of agency (1998), were used to construct a model depicting each participant's negotiation of middle grades science teaching identity.

Synthesis of findings into a concise paragraph is impossible in light of the nature of this study. Participants' negotiation of middle grades science teaching identity is best represented by using the narrative as grist for understanding the middle grades science aspects of identity negotiation that are not explicitly part of the model. However, the narrative cannot be reduced to a few sentences if meaning is to be retained. Thus, a synopsis of each model will be included and a few implications of the nuanced negotiations of middle grades science teaching identity will be explored below. The graduate science education student teacher's (Lilly) model of identity negotiation can be characterized as one of dialogic tension. She focused on how students and others responded to her as a certain type of teacher, which she always referenced back to her

personal vision of teaching. She placed considerable emphasis on getting kids to see her as a teacher, not a student teacher, and was able to accomplish this goal. She consistently used others' responses to her to refine her conceptions about the type of teacher she wanted to be. When she lacked confidence, she was less able to stay in touch with her personal vision of teaching. However, as her confidence increased, the dialogic tension she maintained between the social response and her personal vision allowed her to refine and reshape this vision of teaching in ways that influenced her teaching identity and resulted in more desirable responses from the social context (students & cooperating teacher).

The undergraduate science education student teacher's (Stacey) model of identity negotiation can be described as one in which trial and error allowed her to learn about the nature of the social context in response to **activities**. Whereas Lilly was constantly trying to learn about the nature of the social context prior to teaching and modified her teaching identity based on how the individuals within the social context were responding to **her**, Stacey's actions as a teacher were intended to help her learn how the students responded to the **instructional approaches** she employed (these were more like tools than an extension of her preferred way of doing things as a learner or a person). She did not use students' responses to help her determine whether or not they were seeing her as the type of teacher she desired (in fact she did not desire that students recognize her as a teacher unless class got out of hand - she prioritized her relationship with students as one person trying to relate to another), but instead used these responses to determine if activities worked or did not work. She used this knowledge of how the social context had responded to an instructional strategy to guide her enactment of teaching in the future.

The undergraduate middle grades education student teacher's (Mandy) model of identity negotiation cannot be described as a negotiation of **teaching** identity as Mandy was never able to get students to recognize her as the teacher rather than the student teacher. As such, she was unable to make significant progress in establishing the type of relationships she wanted to have with her students as their **teacher** (not their student teacher), which was her priority during student teaching. Thus, she spent the majority of her efforts mimicking her cooperating teacher's instruction. To Mandy, copying her cooperating teacher's teaching was the best way to learn to teach. She frequently watched him teach and then tried to replicate what he had done. She did not question what relational factors made it possible for him to enact himself in this way, nor did she carefully examine the nature of his interactions with students. Upon completing student teaching Mandy concluded that she had learned little about herself as a teacher, but said she felt confident she could establish positive relationships with students and successfully implement her cooperating teacher's strategies in the future.

Various conclusions can be drawn that hold powerful implications for middle grades and science teacher educators. First and foremost, beginning teachers' attempts to relate to students are an integral part of their negotiation of middle grades science teaching identity. Each of the participants in my study prioritized their relationship with students above their actual teaching practices. Only Lilly, however, came to see an integral connection between her ways of relating to students (as a teacher) and her instructional practices. Her ways of relating to students were linked to her desire to help them learn. For Stacey, however, her way of relating to students made it difficult for students to recognize her as a teacher. Her interactions with students were inconsistent: sometimes she was the supportive friend and others the mean teacher. Her ability to reflect deeply on her instructional practices was disconnected from her thinking about relating to students. On the other hand, Mandy prioritized relationships with students but was unable to make meaningful connections between relating to students and instruction because she was

always positioned as the student teacher. As middle grades teacher educators invested in helping beginning teachers create inviting, supportive, and safe learning environments, we need to consider ways to help beginning teachers identify more coherent connections between their relationships with students and their instructional approaches during student teaching. In addition, we must carefully consider the implications of placing student teachers in contexts where they are unable to relate to students in authentic ways. How much space is needed in order to negotiate teaching identity in ways that ease student teachers' transition into their induction year and allow them to have made progress in relating to students as teachers and linking these relationships to learning? Finally, we must further examine learning to teach in all contexts by considering practice within the sociocultural and personal dimensions from which it cannot be removed. If we are to better understand how our work with beginning teachers is becoming relevant in their future work both the context, the individual's response to the learning in which they engage, and the individual's actions and interpretations of the current context must be considered when examining learning to teach.

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