

# Practice, Tensions, and Identity: Boundary Crossing and Identity Development in Urban Teacher Leaders

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## Abstract

This study investigates the identity development of teacher leaders in an, urban school district who participated in a Noyce Master Teaching Fellow, program. We identify tensions that arose from involvement in this, external community of practice (CoP) and changes in teacher leader, meanings and practices in their school CoPs. Qualitative key findings, indicate that as boundary crossers, (1) teacher leader activities surfaced, tensions between CoPs, promoting boundary competence, and (2), participation in an external CoP reshaped their identities, especially as, mentors. Implications include recognizing that external CoPs can support, learning mechanisms for addressing educational issues, for example, teacher, retention.

## Keywords

teacher leadership, boundary crossing, communities of practice, leadership programs, leadership identity

## Introduction

There is a need to utilize teacher leader experience through distributive leadership frameworks for school improvement to meet the complex challenges of 21st-century

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secondary school systems (Harris, 2013; Rutherford, 2006; Weiner & Wouflin, 2018). Implementing a distributive leadership framework such as a teacher leadership structure works to provide opportunities for early-career, mid-career, and late-career teachers to partake in the decision-making process to renegotiate and establish continuity of school improvement (York-Barr & Duke, 2004). Teacher leadership practice consists of formal and informal leadership roles that challenge them to maneuver across and between multiple professional communities of practice (CoPs). These communities within the school system and district (e.g., teacher and instructional teams) have different sociocultural practices that contribute to school improvement efforts. Through engagement across and within different groups, teacher leaders develop boundary competence, or the ability to translate and transfer practices and meanings across CoPs (Walker & Nocon, 2007). Multiple membership gives rise to tensions as teacher leaders utilize “given” descriptions of role responsibilities, for example, serve as team leader to peers, and execute “emerging” needs from school administration that may contradict community norms (Engeström, 2004).

While a leadership structure aims to retain talented teachers by providing leadership opportunities to develop professionally (e.g., skills and dispositions), gaps can exist in the number and types of growth opportunities offered. As such, with limited opportunities, experienced teacher leaders possessing a growth mindset may experience stagnation, feeling unfulfilled as their potential is not maximized (Drago-Severson & Blum-DeStefano, 2014; Weiner & Wouflin, 2018). To achieve maximum output for their professional and personal selves, teacher leaders navigate the tensions and limitations of the system with insufficient skill training, motivating them to seek external professional programs (Cosner et al., 2018; Cunningham et al., 2019). Researchers state that external sources of professional development offer an alternative lens to increase awareness of issues and practices, aiding teachers to better navigate the school system and its tensions (Cunningham et al., 2019; York-Barr & Duke, 2004). However, more research is needed to allow the field to more fully describe how an external program supports the professional development of experienced teacher leaders.

This paper seeks to provide insight into how participation in an external teacher leadership program (e.g., Noyce program) supports the professional development and identity formation of experienced teacher leaders. Considering that teacher leadership was practiced in multiple communities within their schools and within the Noyce program, we use the Community of Practice theoretical framework (Wenger, 1998) to examine the changes in teacher leaders’ perception and identity from crossing boundaries of multiple CoPs of leadership practice. Understanding sociocultural differences between communities and successfully interacting within these boundaries reshapes practices and meanings (Akkerman & Bakker, 2011). Our work adds to research providing examples of how boundary crossing occurs, how teacher leaders develop boundary competence while engaging across these boundaries, and through this interaction, the mechanisms in place that support learning about and reshaping their identities as teacher leaders.

## Literature Review

### *Communities of Practice*

Communities of Practice (CoPs) are described as the foundation of an organization's ability to know and learn through the informal and formal collaboration or social participation of individuals with expertise around a common problem or interest (Wenger, 1998; Wenger & Snyder, 2000). A school system consisting of teacher communities of governance—teacher teams, content departments, instructional leadership, and administration—contain multiple examples of a CoP. Wenger (1998) categorizes the three dimensions of practice as (1) its purpose, (2) how it functions, and (3) what it produces. The purpose of a CoP is the *joint enterprise* of the individuals who formally and informally collaborate around an agreed-upon task or problem-solving effort (like teaching students). Developing understanding around a joint enterprise consists of a continual renegotiation by its members of the meaning of the work. How a community functions is through *mutual engagement*: members are a part of a social unit that binds them together through relationships as a result of interactions and actions around its purpose (like a shared set of students and faculty relationships). Lastly, a *shared repertoire of resources* is produced specific to the community in which the members partake. The resources (e.g., a shared curriculum, assessments, and/or academic standards) can be in the form of routines, attitudes, artifacts, cultural norms, group roles, and levels of expertise. These dimensions of a CoP can take on stages of development represented by social participation. Renegotiation of what is important occurs because group membership can change as new members enter with unique expertise and old members leave with expertise or resources (like introducing a new superintendent or losing an experienced teacher). The purpose can become impacted as new and old members interact and adopt new ideas or fight to keep well-established ones (like introducing a new active learning data-supported pedagogical approach to those with successful didactic routines).

### *Distributive Teacher Leadership Structure and CoPs*

Distributive teacher leadership structures seek to leverage the skills of teachers by sharing the responsibility of instructional leadership with principals (Ho & Ng, 2017; Rutherford, 2006). This distribution of power often involves tensions for teachers who are encouraged to engage in free intellectual inquiry but are constrained by the imposed bureaucracy and hierarchy of the system (Harris, 2013). These tensions are a consequence of the often opposing forces of the hierarchical organizational structure, which constrains community activity and its members' underlying informal and self-organizing nature, which often focuses on reform and change (Wenger, 2008; Wenger & Snyder, 2000). Communities of practice, convened within the hierarchical system but populated by these independently-functioning members, afford members the chance to effectively apply their expertise to constantly move the organization toward change. This change, or "learning," happens through engagement, which

means that a community group produces a shared practice or product as its members learn. Wenger and Snyder (2000) indicated that the production of members' practice can lead to new strategies, support the identification of new approaches to problems, allow resolution of organizational issues, promote redefining professional development, and determine the form of enculturation approaches into the organization. In this paper, we identify the tensions within and between the CoPs in which a group of teacher leaders participated—including one representing a professional learning program external to the school—and examine how the external CoP supported the teacher leaders in addressing those tensions.

The process of distributive leadership gives rise to challenges and affordances. As a challenge, teacher leader work is simultaneously nested in multiple organizational contexts. Examples include a teacher leader (a) entering into teacher teams with peers, (b) entering into administrative meetings to make governing decisions but not with administrative power to enforce decisions, and (c) operating within a school organization and mentoring new teachers into the culture of the organization, teaching, and learning. Affordances in these situations denote the opportunities to represent the understanding and perspectives of those they speak for and expand personal views of the system. These examples signify boundaries of sociocultural differences that teacher leaders need to successfully “cross” by recognizing the presence of such differences between boundaries (Akkermann & Bakker, 2011; Suchman, 1994).

### *The Nature of a Boundary*

Within a structure, teacher leaders participate within multiple communities of practice (e.g., teacher teams, decision-making teams at school and district levels, etc.). As they transition between these communities, they operate across spaces termed *boundaries* that represent the “sociocultural differences that give rise to discontinuities in interaction and action” (Akkerman & Bakker, 2011, p. 139) across systems of practice or lines of distinctions between communities (Wenger, 1998). Over time, interactions among participants generate actions with particular outcomes. According to Wenger (1998), a boundary is “a practice in which two communities engage and that has become established and provides an ongoing forum for mutual engagement” (p. 114). Imagine, for example, you serve as the team leader with colleagues supporting an instructional practice that works and act on the committee to implement new instructional initiatives with the principal. At the boundary between colleagues and the principal, learning can occur from potential discontinuities resulting from interactions around objects that create different forms of communication and collaboration. Teacher leaders enact the boundary by addressing and articulating meanings and perspectives of intersecting worlds while synchronically moving beyond the boundary to create a nature of its own (Akkerman & Bakker, 2011). Suchman (1994) referred to boundary crossing as how professionals enter unfamiliar areas they are somewhat unqualified to occupy. Professionals negotiate with cultural expectations and recombine perspectives in this engagement to achieve acceptance (Engeström et al., 1995). Negotiation and recombination are assisted through boundary objects, such as a structure. These objects

loosely represent the common identity of the group; however, they can become firmly integrated as a part of individual identity when used (Star & Griesemer, 1989). This can lead to the discontinuity between CoPs and make the need for boundary crossers to support community coherence even greater.

### ***Boundary Crosser***

In their research on the nature of boundaries, Akkerman and Bakker (2011) found the components of a boundary included its people, its objects, and its ambiguity. At the boundary of multiple CoPs, some people act and interact in ambiguous spaces to create cultural bridges. Individuals that perform this task have been termed in the literature as brokers (Leat & Thomas, 2018), boundary crossers (Suchman, 1994), boundary workers (Akkerman & Bakker, 2011), or having a brokerage role (Burt et al., 1998). For our research, we will use the term “boundary crosser” to emphasize the practice of creating continuity across the boundaries of different social group practices. Serving as boundary crossers, experienced teacher leaders within a structure have achieved a level of expertise in teaching, communication, and collaboration. They build bridges between their teacher teams (as faculty members) and administration (as leaders within the greater organization). Teacher leaders must act as boundary crossers and translate the interacted dialogue using their own experience. As such, they possess a role in maintaining continuity or (re)establishing continuity within informal and formal roles for collaboration between different practices across their different communities. The constant renegotiation of their roles due to multi-membership increases the need for teacher leaders to develop boundary competence or systems to navigate sociocultural practices.

***Boundary competence and learning mechanisms.*** The ability to cross multiple boundaries and function competently has been termed boundary crossing competence (Walker & Nocon, 2007). Competence is socially constructed and associated with the level of engagement or participation in the culturally defined practices of a community (Jenkins, 1998) and requires a level of “personal fortitude” (Landa, 2008, p. 195, referenced in Akkerman & Bakker, 2011). Walker and Nocon (2007) argued that exhibiting competence within a given context is to “manage and integrate multiple, divergent discourses and practices across social boundaries” (p. 181). They argued that competence as a boundary crosser requires using “system artifacts that serve as boundary objects that act as a bridge between social practices that are similar enough to offer the potential for alternative realizations of an activity” (Walker & Nocon, 2007, p. 182). We applied this definition to our context to study how teacher leaders negotiated meaning, resulting in learning across CoPs through their boundary engagement and the multiple identities they adopted with these interactions (Parashar, 2019).

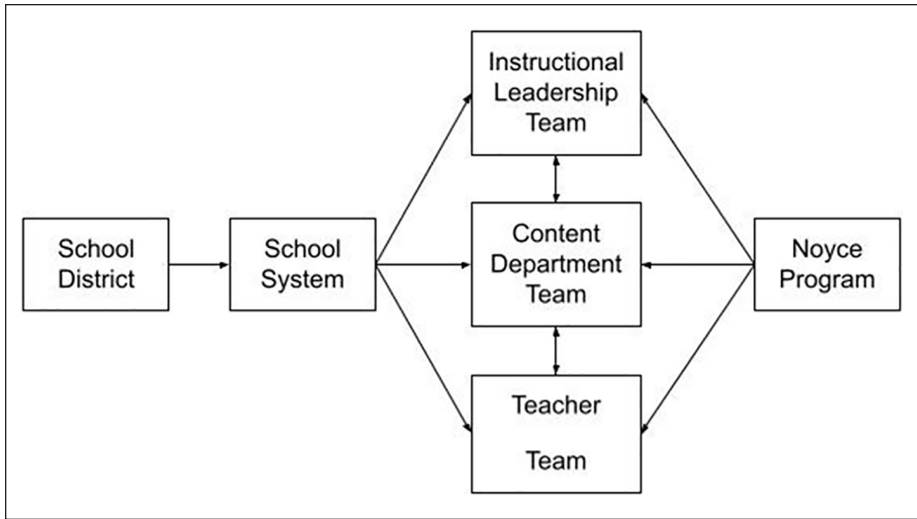
Akkerman and Bakker (2011) broadly described learning as new understandings, identity development, change in practices, and institutional development. Another later study discovered learning takes place in instances of boundary crossing reflected by four processes: (1) identification, (2) coordination of different practices,

(3) reflection, and (4) transformation (Akkerman & Bruining, 2016). Identification refers to learning as renewed sense-making of different practices and related identities, not the resolution of discontinuities. As teacher leaders make sense of differences in practices between social groups, they coordinate practices and establish continuity through procedures and routines. The process of reflection involves mutually defining perspectives and the effort to construct new perspectives that inform practice. Transformation occurs when a mix of different practices across boundaries creates something with a new cultural form. Within CoPs, learning occurs in the boundary of movement from peripheral to central participation in the community's cultural practices. This movement results in "confronting different perspectives" (Akkerman & Bruining, 2016, p. 244), which leads to the formation of new meanings, joint work, and criteria for practice (Wenger, 1998). A boundary crosser must translate and resolve different perspectives of each approach to each group to create a joint enterprise for practice (Roth & Lee, 2007). Developing the ability to balance these dimensions of practice serves the continuity or "coherence of a community" (Wenger, 1998, p. 72). Conversely, discontinuities across CoPs create tensions, spaces for learning, and identity formation (Wenger, 1998).

*Resolving tensions and identity.* Participation at the boundaries of multiple CoPs creates tensions between what teacher leaders need and what they can do. Tensions stem from the differences between worlds and their discourses, making it difficult for these professionals to adapt, reorient, or integrate their experiences (Phelan et al., 1991, p. 237). When teacher leaders work to resolve these tensions, they develop intrapersonal change manifested through distinctive educator roles they assign to themselves (Leat & Thomas, 2018; Parashar, 2019). The increase in competence and affirming actions lead to applications for reimagining themselves as competent in different contexts. Existing research lacks sufficient information to reference what has been done in these areas of study, which has necessitated further inquiry on the subject.

## Purpose of Study

This qualitative study examines the intersections of the Noyce Master Teaching Fellows (Fellows) school system and Noyce communities of practice. In particular, we were interested in how the intersections of these CoPs affected their understanding of practices, generated tensions and made those tensions visible, and led to reformulations of their identities as teacher leaders. The findings describe the emerging themes used to answer the following research questions: (1) How did participation in a formal teacher leadership structure position Noyce Fellows as boundary crossers? (2) How did tensions arising from their work within and between two communities of practice shape the Noyce Fellows' teacher leader identities and actions? (3) Which learning mechanisms are enacted by Noyce Fellows in response to tensions between the different communities of practice in which they work?



**Figure 1.** Interconnections of multiple communities of practice.  
*Note.* The arrows correspond to the multiple boundaries for border crossing across CoPs.

## Methods

The study described in this paper is part of a larger research project involving an examination of eight Noyce Master Teaching Fellows programs (Noyce) across the U.S. The larger project aims to understand how the experiences within the Noyce programs interact with the professional identity and school district contextual factors to impinge on the professional trajectories of the Fellows. This study looks at one of the Noyce programs at a large mid-western university that served 18 Fellows to retain, enhance, and capitalize on the expertise of well-established secondary STEM teachers. The program was designed to support the development of STEM educational leaders.

## Context

The Fellows served within a large urban school district framed by a distributive leadership system (structure). The system supported teachers as teacher leaders to share the responsibility of school governance with school and district administration within 17 high schools. The system comprised multiple communities of practice in which these Fellows operated: school district, school system, the instructional leadership team (ILT), content department team, and teacher team.

Figure 1 represents how information was shared between the CoPs that constituted the district and the Noyce program. The arrows represent the pathways where the Fellows could serve within and across different CoPs. Within the school district, the instructional leadership team included all content department team leaders, teacher

**Table 1.** Demographic Information of Participants (N= 17).

| Category                              | Sub-category           | Frequency |
|---------------------------------------|------------------------|-----------|
| Gender                                | Female                 | 12        |
|                                       | Male                   | 5         |
| Ethnicity                             | Black/African American | 8         |
|                                       | White/Caucasian        | 9         |
| STEM field                            | Science                | 7         |
|                                       | Math                   | 7         |
|                                       | Combination            | 3         |
| Highest degree earned                 | Master’s degree        | 16        |
|                                       | Doctoral degree        | 1         |
| Years of experience in education      | 9–19                   | 11        |
|                                       | 20+ years              | 6         |
| Years of experience in urban teaching | 4–19 years             | 13        |
|                                       | 20+ years              | 4         |

Note. Modified from Table 1 participant sample (Hutchinson, 2020, p. 54).

team leaders, and the school administrator for school administrative decision-making. Content chairs worked with similar content area teachers to convey instructional goals provided by the state, district, and school administrator. Team leaders worked with cross-disciplinary teachers who served the same students to meet teaching, learning, and discipline goals. School teacher leadership opportunities provided the actions and interactions for teacher leaders to receive and interpret information from entities outside of their CoP for its members and deliver needs from their members to those outside their community. Fellows also participated with CoPs outside the school district to build leadership skills to better operate within their school community. Noyce, as a CoP, brought together STEM teacher leaders from the same district and provided learning opportunities for teacher leadership to develop effective leaders. While Fellows operated within and across different CoPs, we focus in this study on how they coordinated action and negotiated meaning as part of their mutual engagement.

*Participants*

The Noyce program included 18 practicing secondary STEM teacher leaders. Team members worked with the program’s principal investigator to contact each fellow and seek their participation in the project’s data collection. Out of the 18 potential participants, 17 individuals agreed to participate in data collection and signed consent forms.

Table 1 displays the demographics of the group. The study utilized the term “experienced” teachers as the cohort of teacher leaders with a master’s degree or higher who had served in urban education for more than 4 years. Males in secondary education traditionally hold teacher leadership roles, but this group carries a 70% female to 29% male representation. The group’s diversity included 6% African, 41% Black/African

American, and 53% White/Caucasian individuals. Teaching experience averaged 18 years, and urban teaching experience averaged 16 years. The participants' range of backgrounds and experiences provided the opportunity for different perspectives to understand the meaning, context, and process of teacher leadership as a community of practice in professional identity formation.

### *Data Collection and Analysis*

Data was collected from participating Fellows using individual, semi-structured interviews conducted at a local university where the Noyce program met for professional learning; this had the advantage of being centrally located relative to the schools in which the participants taught. The interviews lasted 45 to 60 minutes and were conducted by three research team members who had practiced interviewing each other to maintain reasonable fidelity to the protocol. Two of the research team members had never met any of the participants before conducting the interviews. The third member had worked in the school district as a science teacher and teacher leader prior to beginning a doctoral program, had personal connections through STEM work with six of the Fellows, passing familiarity based on district teacher leader work with six others, and had never met or interacted with the remaining six Fellows. This individual conducted interviews with Fellows with whom she had not previously interacted. Due to the reflexive bracketing of this interviewer, effort was made to not deviate from interview protocol and yet use the knowledge of the structure to design follow-up and probing questions to gain clarity of acronyms and cultural references (Ahern, 1999). The interview audio files were sent to a professional transcription service for complete but not verbatim transcription (e.g., disfluencies were normally not transcribed). After a review of transcripts, responses did not seem to be significantly different across the interviews.

The coding of the data was completed by the same three individuals who conducted the interviews. They coded the data using the codebook that was developed by a team of several individuals involved in the larger research project (Saldaña, 2016). It has six "domains" of phenomena on which the coding was focused: (1) Professional Perception/ Philosophy, (2) Professional Identity, (3) [Noyce] Program Features, (4) [School] System Features, (5) Professional Trajectory, and (6) Teacher Leadership. Each domain has either two or three codes nested underneath it, for a total of 15 codes. For instance, the codes underneath Professional Identity are (a) Becoming/ Being, (b) Acting, and (c) Re-acting/ Responding. There is a second set of codes nested underneath the first level codes, but they were not used in this analysis. The 15 a priori codes were developed by reference to what was being asked in the interview protocol (Supplemental Appendix A) and the extant literature on teacher leadership. Supplemental Appendix B contains a condensed version of the codebook, with embedded references to the literature.

The three individuals analyzing the data paired up for coding work. They individually coded the data and then made determinations of inter-rater reliability, achieved an average inter-rater reliability of over 80% on the transcripts, and then talked to

consensus about ambiguous pieces of data (Armstrong et al., 1997). Once each transcript was reliably coded, a summary table was completed highlighting key pieces of data and potential patterns/ themes across each of the six coding domains. The Findings are drawn from those summary tables.

## **Findings**

In this study, three themes emerged: practice, tension, and identity related to Fellows acting as boundary crossers between CoPs that are internal and external to the school system and its teacher leadership structure. First, structured leadership systems impacted and influenced the Fellows' practices, shaping their identity as teacher leaders. Second, tensions arose as Fellows held multi-memberships in different CoPs, including Noyce, which was external to the school system. Lastly, Fellows employed learning mechanisms to negotiate meaning and practice across the various CoPs.

### ***Conditions That Affect Boundary Crossing Within Communities of Practice***

#### ***Teacher leadership structure***

**Forming community.** In this study, Fellows were positioned as boundary crossers within various CoPs in the structure. They served as team leaders, content department chairs, local school instructional leadership team members, and/or members of a district decision-making committee. All Fellows operated within communities called teacher teams composed of individuals from different perspectives and expertise. Being teacher leaders and team members within these CoPs forced them into action and interaction at boundaries.

Olivia described being on a teacher team as aiding a sense of belonging to a "close-knit family," which refers to the community coherence generated from everyday experiences with struggles teachers encounter together and the problem-solving processes they co-construct. A boundary crosser supports family formation by identifying and reinforcing practices that build coherence.

**Teacher leadership paradox.** Boundary crossers learn to leverage trust to successfully navigate community boundaries. Trust is built through the practice of navigating relationships correctly across multiple CoPs within the hierarchical nature (see Figure 1) of the district teacher leadership system. Fellows then navigated these cultural groups to gather information from one community, usually those above them, and interpret and communicate how decisions influence them and the community they represent. Elijah described that every interaction may not have been without tension, but "you can't always get along with everybody and lead. Eventually, you end up getting along with them anyway if you handle it right." The notion of "handling it right" with colleagues resulted from being honest with expectations and consistently expressing them. Kevin described this as being a "team player." Acting as team players positioned the Fellows

to champion the needs of their colleagues, providing them with social capital by creating a level of trust even within contentious relationships with administrators and teachers. Fellows stated that honest responses to questions and situations positioned them as a source of reason regardless of uncertainty.

Depending on the success of their interactions, the Fellows' sense of belonging was altered. This phenomenon was demonstrated by the idea that there was at times an "us vs. them" culture, which Willow called the side-eye. The "side-eye" she discussed symbolizes a lack of trust. The teacher leaders' motives were then questioned as the community doubted their intentions to represent the team or that of the school administration. Lucy described her encounter with side-eye: "It is tough because I think sometimes, they see me as someone. . .like we're on separate teams or something. I'm trying to let them know I'm not on a separate team." The distrust demonstrated reduced the teacher leader's social capital as a "team player" to be worthy of the "side-eye," believing the teacher leaders belonged more so to "them," the administrative CoP. Fellows must navigate community resistance represented by the "side-eye" to become a "team player." Boundary crossers build and maintain social capital by identification of the way to talk about and engage in practice. In addition, they coordinate the administration's desired practice to be evaluative in nature with the supportive needs of the teacher.

### *Teacher leadership practice*

**Level of credibility.** Boundary crossers strive to establish credibility to achieve common goals across CoPs. As established teacher team members, the Fellows realized that to impact school initiatives, they needed to leverage credibility to interact with additional CoPs.

Having the credibility that we had established allowed them [school administrators] to say, 'well, you go ahead and meet separately, and then you report back to us' . . . I felt like we could set some direction for the school (Sarah).

Credibility produced confidence to serve as a boundary crosser representing the needs of the teacher team in alternate CoPs, such as the school's administration.

Generating credibility within school CoPs was in conjunction with participation in outside communities such as the Noyce program. For instance, Sara was one of three Fellows from the same school who went through the Noyce simultaneously. Determined to introduce a reevaluation of the school grading system, Sarah noted: "seeing what we are doing and what we are bringing to the building" generated credibility. In addition, Sarah stated

When I come back to a school, and I say, "These are opportunities I've identified as a result of working with my colleagues or in this cohort," it has given me free rein. Because you have an idea, you bring it in, and once they see you follow through - then they're like, okay, that really worked out.

Fellows' established credibility with their colleagues that allowed them to coordinate practices between the Noyce program and school CoPs.

**Boundary competence.** Boundary crossers actively interact across different communities that require them to broaden their perspectives. Interactions within the school and instructional teams were sources of sense-making and identity constitution for the Fellows. Brenda described that as she interacted with her teacher team and colleagues, she became aware of the need to "increase my technical skills" to impact change. The identification that particular leadership and instructional skills were lacking resulted in the Fellows seeking other professional development activities to become better educators, increase their influence, and develop skills to learn how to handle issues. Sarah said teacher leaders have to be ". . .willing to pursue professional development and training to help them try somethin' different, to be more innovative. . .to make an impact on the profession." Developing boundary competence resulted from interacting with others outside the classroom, in meetings, across teams, and across the district.

Fellows interacting within the structure on teams is not enough to develop a new lens to solve problems. Noyce intentionally brought the Fellows together, who were aware of school issues, to overcome intellectual isolation. Lucy said collaborating caused her to reflect on her actions and learn how to "approach things differently" to have a more positive outcome from leadership decisions. When Fellows could not collaborate with others, they felt unproductive and isolated from solutions. This was evident when Georgia stated, ". . .okay, one I'm not the only one. We're all struggling in some sort of way and again, it's a great way." "It's a great way" referred to the participation in the Noyce CoP. Identifying that others had the same issues with their practice, inducted one into a community of reflection to decrease the feeling of being the "only one" and working to coordinate problem-solving approaches.

The school district's structure adopted a distributive approach to power-sharing in the decision-making process. As teacher leaders worked within the boundaries of sharing this responsibility, (1) the discontinuities created certain forms of isolation or resistance and (2) their activity as a boundary crosser sometimes made apparent deficiencies in their skill sets. The following section will describe tensions that result from CoP multi-membership.

### *Tensions at the Boundaries of Multi-membership*

As we mentioned, the Fellows in this study worked across several communities within the school district structure as a teacher team leader, content department chair, district mentor, and ILT member. The school system had a clear structure and requirements for teacher leaders. The boundaries were created by discontinuity (1) between expectations from the structure and the demands of teacher interactions and (2) between teacher leaders operating in different CoPs such as ILT and the school building simultaneously. Being in a position that required them to operate between multiple groups revealed tensions as their practices traveled across boundaries, leading them to seek out support from the Noyce program. We recognized several tensions and classified

them into the following themes: role conflict, skill training, interaction with administrators, and mentoring perspectives.

**Role conflict.** The district provided clear definitions of formal teacher leader positions, including serving as teacher mentors. However, in practice, they found gaps between the job descriptions and the demands on teachers in their teacher teams. For example, as department head, Olivia acknowledged she had a clearly defined role with job requirements and responsibilities.

Like I'm the department head, right? There are roles and responsibilities associated with my position. That is my formal role. I have to call a meeting every now and then. We have to discuss department issues and affairs. Then that is official leadership. I have to do those things.

As she continued, Olivia indicated that there was a different form of leadership required of her position by her colleagues; she saw that as the "informal" part of her responsibilities:

However, the other leadership, even those within that group, had to do what they need to do because that's what the school wants to do. They come to you for personal things. Now, that is informal leadership, right? Because they see that you are a leader, that you can really help. They will come to you for their personal home things that you probably don't know much about just to confide in you about something. That's not written in your job description, but you help because you're a leader, if you can.

Olivia felt obligated to help with personal non-work-related issues to support her relationships with colleagues as department chair. But offering help was beyond the job description of her leadership position. Greg shared the same feeling: "I think that goes into bein' a leader, too. I think there's some things that are unspoken and unclear, but we're expected to do it." This acknowledged the ambiguities between their job description and what they should do.

Another tension, which caused role conflict, is variable expectations of the teacher leaders' roles from members of different CoPs (teacher and administrator) in which the Fellows were members. Some teacher leaders were in a part-time leadership position, which meant they mentored pre-service or practicing teachers while also teaching in the classroom. Lucy and Sarah were in a part-time teacher leader position and described the prerequisite of the teacher leader work,

But that's not all you do. You're writing curriculum; you're writing exams. Um, you're making life decisions for the entire district. So definitely it's a, it's a full job filled with many roles (Lucy).

I was asked to do it part-time a couple of times, and I'm like, no, I know what that looks like. What it looks like is two full-time jobs as opposed to part-time and part-time (Sarah).

The Fellows recognized that having part-time teacher leader positions versus a full-time position would present challenges. When enacting teacher leadership goals according to the job description, the workload from another role prevented them from devoting the energy and time they needed to excel at both roles. Although the school district and school system failed to provide solutions, reflecting on formal and informal practices, Fellows developed a “new lens” (Lucy) or new perspectives in the Noyce program that increased their drive to push forward and overcome workload challenges.

*Skill training.* The practices in which they engaged in school district teacher leader positions varied widely. Fellows felt they lacked needed skills. Hallie showed her willingness to improve her skills and stated, “The one thing that I have not been good at as a leader, um, which is something that I know I need to work on, is the interdisciplinary sort of instructional teaming.” The district CoP did not provide training to help Fellows meet their work demands. This tension pushed them to seek outside resources like the Noyce program. Brenda stated she was interested in going to Noyce because

It had a lot of the areas that I was interested in, so increasing my technical skills, increasing the CCP or the dual enrollment credit for my students as well as ESL. We’re getting a lot of ESL population at school, so I wanted to learn a little bit more about that.

*Interaction with administrators.* Tensions arose when the administrators interfered with Fellows’ teacher leadership practices in a way that was considered unsupportive or created an argumentative environment. While operating within an antagonistic school CoP, they were ignored and personally not supported by their administrators. Marisah mentioned, “Where a principal will tell you, ‘Oh, this student said you did this. You need to go fix that’. I’m like, ‘Well, why are you believing the student?’ You didn’t ask me what my opinion is.” Marisah was questioned by the administrator when she enacted her role in the school system. She felt undervalued and reluctant to hear suggestions from an administrator who did not communicate to better understand the issue from her perspective.

As experienced teacher leaders, they believed their work could make schools better. Their level of self-efficacy was influenced by their interaction with their school administrator, who either doubted their value and questioned their sense of belonging or enhanced their self-efficacy. When it comes to being heard in the building, female Fellows (71% of the Fellows) tended to downplay the weight of their leadership identity or the need to be forceful to be heard. Willow described it this way:

Do I get a lot of recognition? No. That’s okay with me. I don’t necessarily need recognition. I didn’t join this [teacher leader role] because I could say, “Oh, look at me.” It’s because maybe I had something to add, and maybe I had something that I could gain.

Identifying this tension in practice assisted their decision to participate in the Noyce program to enhance their boundary competence. They felt that their work in the Noyce program validated their choices. In addition to validation, Noyce gave them “more confidence to speak within certain boundaries” (Willow).

*Mentoring perspectives.* Part of the job description for team and department leaders was to act as teacher mentors to support veteran teachers in improving their instructional practice and help new teachers adapt to the profession. Their mentoring effort was met with isolation and conflicting perspectives. When sharing observations of colleagues with administrators when requested, a community between them and administrators was created. This aspect of membership resulted in isolation from their community of peers. Lucy stated, “I’m trying to let them know I’m not on a separate team, but I guess they know that I do have a lot of interaction with the administration.” The isolation between the teacher leaders and their peers increased because colleagues felt supervised by Fellows who interacted with administrators (side-eye). This resulted in push-back, impacting their boundary competence as mentors.

With new teachers, they felt frustrated because their efforts were not acknowledged by their mentees. Georgia stated:

I mentor new teachers. I evaluate new teachers. It’s always like I have a plethora of information. I can show you. Come watch me; things like that and the lack of wanting to improve is, to me, very, very frustrating. I don’t understand how you could just come in. Here you go. Here’s the book. Here’s a sheet. Okay, thanks, bye and be out the door before the kids even—the bell rings. That, to me, is one of the hardest challenges.

This gap resulted in sentiment as a mentor to see the failures of the mentee as character flaws or inappropriate dispositions toward the profession. Brenda stated, “I always wondered why that was and didn’t really understand some of the issues until I started this [Noyce] program and seeing the pre-service teachers all the way through.” As experienced teacher leaders, mentor boundary competence generated from their own experiences, teacher identity, and instructional practices as the school system lacked guidance and formal training for mentoring work. Noyce provided an opportunity to reflect upon and coordinate the tension between what they believed mentees needed to succeed and understanding the school system’s challenges to develop as better mentors. In the next section, we will explore the core issue as the lack of understanding or consideration of the demands of new teacher practice and how the Noyce program addressed this tension.

### *Boundary Crossing and Identity Development*

Tensions can serve to create learning opportunities for boundary crossers. While in the school system, Fellows developed insights to engage with others, deal with differences in their expectations, and understand their identity as a teacher leader. Through boundary interactions, they sought continuity between their current community and the opportunities presented by Noyce. Operating external to their school, Noyce allowed Fellows to see the meanings and practices associated with these tensions differently and thus resolve them.

**Growth orientation.** Limited growth opportunities of the district structure led these teacher leaders to apply to the Noyce program revealing their proclivity toward continuous improvement: “I need to continue to push, continue to grow, continue to help other younger teachers with things I’ve learned” (Freda). Their growth orientation challenged and encouraged boundary crossing, leading them to identify the gaps in the school system. For example, Sarah stated, “I wanted to be an excellent practitioner, but there was nothing that said here’s a way that you can really develop yourself at the highest level.” By acknowledging her growth mindset, she identified the tension which inhibited her growth in the school.

Identifying such tensions forced the Fellows to renegotiate their career pathways and challenge their professional identity. By crossing the boundary into the Noyce CoP from the school district, the Fellows found themselves seated at the intersection between who they are and who they aspire to be. Sarah believed Noyce provided the platform to “be the practitioner and develop yourself, contribute to education, contribute to our knowledge base” (Sarah). While the program’s design did not set out to modify their identities, a natural phenomenon occurred during their time in the cohort, facilitating them to examine their precepts of identity. Freda shared her perspective: “One of the things that organically has happened in this program is individuals are finding themselves and figuring out [who they are]—and that can’t be scripted.”

An internal realization accrued among the Fellows allowing their passions to re-ignite. Noyce gave them opportunities to recreate who they are and gain insight from those with whom they interacted in the program. Consequently, this benefited the Fellows to recognize similarities and differences. They embraced redefining their identity as teacher leaders, thus exposing learning potential through reconciliation and a shared repertoire within their cohort to create new meanings and understanding of their identity through practice.

**Collaboration through practice.** Another theme revealed by the data was the collaborative nature of the Noyce CoP. Through reinforced practice, Noyce assisted these teacher leaders in overcoming structural and intellectual isolation. In the program, Fellows were “presented with opportunities that are bigger than themselves requiring collaboration with others. . . There’s some growth that has to occur there. . . working together” (Sarah). By identifying others and forming affinity groups within Noyce, the Fellows resolved their feelings of isolation to develop boundary competence. Joining the Noyce community made it possible for them “to sit around with other veteran teachers that also have the same insights or also share differing insights” (Greg). By collaborating with their peers in the program, the Fellows identified how their practices differ, thus facilitating enhanced awareness and renegotiation of meanings in teacher leader practice. Brenda affirmed, “I think it makes you reevaluate your teaching and want to be a better teacher. . . and think about some new ways of doing things that I really hadn’t thought of before—anytime you get that fresh perspective.” Through self-evaluation and reflection, the Fellows openly reviewed their own practices with an “openness to take up others” (Brenda).

Noyce provided a shared space to support informative exchanges to develop boundary competence. Willow discusses how she “sometimes felt like the odd man out. You do what you do on a very small scale. If somebody is willing to interact with you, but you don’t really put it out there. It [Noyce] provided a forum.” Through open conversation and information exchange, Fellows noticed the impact collaboration provided in resolving isolation. Georgia stated, “Then you talk to other people, and you find out they’re havin’ the same issue, or I had the same issue when I taught that course, or here’s somethin’ to look up, and it really re-energizes me.” Another fellow stated, “It made me realize there’s more—I could be doin’ more than I am doin’. . . It’s just broadened my horizon about the types of things that I could do (Sarah).” Noyce encouraged collaboration among the Fellows to relate to one another and reconstruct their practices. This resulted in renewed sense-making, which provided the continuity between personal vision and practice.

Noyce assisted the Fellows with boundary competence through multiple systems, such as the opportunity to participate in conferences. Fellows could collaborate outside their network, reduce isolation, and attempt transformation by introducing new ideas into the school district through attendance. Sarah described it as, “Seein’ the work that other teachers are doing whether they are scholars or the Fellows, and just bringing back ideas from them, or thinkin’ about how to help them improve their ideas.”

Another way Noyce set up conditions to develop boundary competence included disclosing intersecting teacher leader practices by providing information, examples, and support to each other. Brandy described the impact of these conditions:

We are able to share what we are experiencing, and then I can learn some things from them. It seems like a culture where we’re all tryin’ to learn, we’re all tryin’ to grow, and we are willing to help one another. We share experiences.

The culture of Noyce allowed the Fellows to “draw on each other” (Sarah), which helped develop a sense of purpose and retain job satisfaction. “Working with this cohort, it’s like okay, we have a bigger vision, and now we’re tryin’ to bring others, engage others on meeting these goals (Sarah).” Armed with validation from peers and newfound confidence in their abilities, the Fellows resurfaced with a renewed sense of self. “My confidence as a teacher, especially in the content area. . . has been huge. ‘Yeah. I can do this.’” (Freda). They increased their content knowledge, pedagogy, and sense of belonging within this community, promoting self-efficacy to enact change.

*Mentoring—seeing through a new lens.* The urban school district in which the Fellows operate presented them with challenges. They described their school system as having a “difficult environment” and a “challenging culture” (Willow) where they were often “putting out fires” (Georgia). These challenges disrupt learning and increase the likelihood of teacher attrition because pre-service/first-year teachers were not equipped to handle these challenges. These teachers’ skills were misaligned with how the system was structured, inevitably leaving them ill-prepared as they began their teaching

careers. Key findings revealed a shift in the Fellows' awareness of mentoring while in the Noyce program.

The common thought prior to Noyce surrounding teacher attrition was the belief that those that leave do not have what it takes. Willow described how one teacher "felt like he was in a tornado" and floundered under the weight of the assigned workload. The principal responded to this by noting, "Well, he can't do what we [the school] ask him to do then he can't—we don't want him" (Willow), to which the fellow responded, "shame on them [the administration], shame on the school." The belief that teacher attrition was a function of their own inadequacies regarding new teachers' support had taken root all the way up to administration. In addition, as mentors, the Fellows felt their training was inadequate. Before participating in Noyce, they did not understand the importance and effectiveness of mentoring and their identity as mentors. When it came to providing support for first-year teachers, one fellow who had been a mentor for over 12 years stated, "I didn't know how to help them, and they didn't know how to ask." (Georgia). Here, the fellow illustrates an understanding of the misalignment of the practice of mentoring and the mentees' needs.

In Noyce, Fellows engaged in activities such as serving as adjunct professors to pre-service teachers in the university methods course. Brenda stated,

It made me think about how I can improve being a mentor teacher. . .It made me reevaluate what I was doing a little bit and think about some new ways of doing things that I hadn't really thought of before.

They participated in rewriting the course itself and could see precisely how and what new teachers are being asked to learn and how it is translated into the classroom. Seeing from behind the curtain resulted in a new lens for understanding. For example, Greg recalled, "I never really thought about it like that, about what in-service teachers could use goin' into the profession, so they're set up to be more successful." In response, a group of Fellows created an artifact in the form of a pamphlet to serve as a resource to new and pre-service teachers engaging with the system. This has the potential to lead to a transformation in the practices within the school system. However, the current study is inconclusive on the matter.

Of the 17 participants, 12 of 17 (71%) discussed how Noyce impacted their abilities and views on mentoring. The opportunity to collaborate with other educators and reflect on their practices influenced them personally. Georgia expressed, "It has really helped me reflect better on how to improve and how to especially interact with new people. . . even new to the building." The Fellows reflected upon their practices and were encouraged to take perspective from those they encountered in the program.

I think it made me think about how I can improve being a mentor teacher, not only to the group that I have at school but also to the pre-service teachers here. It made me reevaluate what I was doing a little bit and think about some new ways of doing things that I really hadn't thought of before—anytime you get that fresh perspective (Brenda).

The time spent participating in the Noyce CoP was a vastly generative experience where ideas and insights intersected and were openly shared as the Fellows worked together to improve themselves and help others “stay in the career of teaching” (Brandy). They adopted a new lens which broadened their capacity to impact the system, “it’s helped me get out there and see what it’s all about, and see how to make a larger impact, and see what the student teachers would need from a mentor teacher. . . that’s the biggest impact” (Brandy). In Noyce, the Fellows confronted tensions in their practice and generated a new meaning for the term mentor. This unique reflection allowed for a shift in their identity and aided in reestablishing continuity for themselves and their schools.

## Discussion and Conclusion

We argue that multiple memberships within communities of practice develop a new understanding of the practice of teacher leadership, make dormant organizational tensions visible, and reshape individuals’ current teacher leader identities around their practices. From these findings, we can conclude that participation in a CoP, like Noyce, that is external to school systems, can (1) significantly influence the way that teacher leaders function as boundary crossers—even within the CoPs internal to the school, (2) bring to the surface tensions that exist within and between CoPs and support the teacher leaders’ development of boundary competence, and (3) reshape the teacher leaders’ professional identities—in this case, in terms of how they function as mentors.

### *Teacher Leaders Serve as Boundary Crossers Within Formal Teacher Leadership Systems*

From the findings, we can first state that a distributive structure demands teacher leaders to engage across the boundaries of multiple CoPs while utilizing boundary competence. The Fellows recognized the school district created affordances and challenges to operating as teacher leaders. For these teacher leaders to navigate the various CoPs, they served to build bridges to connect both sides of the boundary. As part of their daily work, these teacher leaders needed to act as boundary crossers, and they saw themselves as part of one CoP while simultaneously engaging in roles in and across other CoPs (Akkerman & Bakker, 2011). Second, boundary crossers can experience isolation from community belonging. A paradox of teacher leadership is the isolation that can result from having the social capital of belonging to a community and representing the interests of others within competing CoPs (Leat & Thomas, 2018). One’s practice, or standard modes of engagement, imagination, and alignment, determines if one belongs to a community. According to Akkerman & Bakker (2011), “they [boundary crossers] face a difficult position because they are easily seen as being at the periphery, with the risk of never fully belonging to or being acknowledged as a participant in any one practice” (p. 140). Boundary crossers need to make sense of relative practices that CoP

members adopt to represent and maintain themselves as a member. The Fellows note that correctly handling relationships to alleviate such tensions effectively requires them to increase interpersonal skills to “handle it right” while maintaining trust and honesty. Without this, they can lose credibility and receive the “side-eye” prohibiting them from aligning old practices with new practices across CoPs (Wenger, 1998).

Finally, the lack of professional development for teacher leadership in the structure weakens Fellows’ boundary competence. Walker and Nocon (2007) argued that teacher leaders need to develop skills or competence to build bridges between communities to accomplish their work as teacher leaders. As members of multiple communities, Fellows in the structure were not provided professional development, such as skill training. While the Fellows operated between multiple CoPs within the district and their schools, they simultaneously sought to reach beyond their skill level to engage elsewhere for development. Wenger (2008) suggests that teacher leader identity must be influenced by outside organizations for professional growth. The Noyce program served as the external organization that provided professional development opportunities to Fellows. It enhanced their boundary competence and reshaped their identities by what they adopted as a practice through the program’s individual learning pathways.

### ***Boundary Crossing Creates Tensions That Develop Boundary Competence***

As was described in the finding section, Fellows worked with three communities within the school district: instructional leadership team (ILT), content department team, and teacher team. They were boundary crossers who bridged and represented the divisions of these three communities (Akkerman & Bakker, 2011). Teacher leadership was practiced across different community groups based on the school district’s requirements and meanings compared to the actual demands of the teacher team. This practice formed two important boundaries: between district and teacher interactions and teacher leadership practices in different communities. We identified tensions, including role conflict and skill training, created when Fellows practiced their leadership across the school district and the teacher team. The Noyce pathways helped them to identify the skills needed in their practice. We also identified tensions, including interaction with administrators and the perspective of mentoring, which were created by the practice of crossing multiple communities. Some of the tensions were caused by the difference in meanings, for example, mentoring. The definition of mentoring was different between the district and teacher leaders. The district believed mentoring mimics the practice of acclimating new teachers to adopted content and instructional practices. However, teacher leaders focused on acclimating them to the school building. To reconcile this challenge in understanding the mentoring role from their personal experiences, veteran teacher leaders should participate in a collaborative and reflective community such as Noyce.

Boundary crossers can understand and negotiate meanings by participating in different roles (Walker & Nocon, 2007). As a result of a developed boundary

competence, the Fellows made proactive changes to transform their role as boundary crossers. They were aware of these tensions in their work, such as the gaps between system requirements and teachers' actual demands, as they tried to seek solutions to develop needed skills, such as joining the Noyce program. As Walker and Nocon (2007) pointed out, boundary competence can be acquired through interpersonal relationships and the social context. These identified tensions in Fellows' teacher leadership practice in three communities came from their relationships with administrators, teacher mentees, and themselves, which pushed them to reflect on their practice and eventually made them take action to solve tensions. Resolving these developed their perspectives allowing for learning new practices.

### *Resolving Tensions and Reshaping Identity Through Learning Mechanisms*

The teacher leaders' growth orientation and the sociocultural dissimilitude between expectations these teacher leaders had for themselves and the opportunities for growth within the school system they worked compelled them to branch out and join the Noyce CoP to resolve these tensions. In joining the Noyce program, these Fellows were granted the opportunity to come together with other teacher leaders, share their experiences and acquire mechanisms, thus unifying them by their shared struggles and goals as teacher leaders. Akkerman and Bruining (2016) identify four learning mechanisms (identification, reflection, coordination, and transformation), three of which we recognized in the data. However, we also note that unlike Akkerman and Bakker's (2011) process being more linear, our data suggest a circular pattern that allowed the Fellows to engage in multiple stages of renegotiating their identity as teacher leaders and mentors.

Through the identification process and being in a space where ideas were shared when engaged openly in the Noyce CoP where "intersecting practices are redefined in light of one another" (Akkerman & Bruining, 2016, p. 245), the Fellows gained insight into the diverse approaches to problem-solving practices. This helped to reshape their identity through collaboration in the cohort and attending conferences. Noyce encouraged them to reflect upon their practices to see how they could improve themselves and learn from others. Being in a space with like-minded individuals allowed for a surge of new ideas and perspectives, causing a reconstruction of their professional and personal identities. By increasing their confidence and providing validation, Noyce generated tension surrounding their self-efficacy and revitalized these educators' ability and desire to continue striving to make a positive impact.

Noyce reshaped how the Fellows saw themselves as mentors through the Methods course in the program, where they served as adjunct professors. During this time, they learned about teacher retention and what pre-service teachers must learn. This knowledge provided a new lens through which the Fellows (71%) could reflect upon their practices, develop empathy, and identify ways to better support new teachers. These Fellows identified ways to improve their practices to better those who rely on them

and the system in which they work. Armed with the knowledge of the importance of their role as mentors, they feel empowered to take ownership of retention through more successful mentoring.

The data present the argument that initial stages of transformation of their identity as practicing mentors occur in the Noyce CoP but question the transformation of mentoring as a practice upon reentry into the school district. Akkerman and Bruining (2016) state, “change that becomes visible either in terms of changes in the existing practices or in terms of the new in-between practices that are created” (p. 245), representing how boundary crossing can move toward transformation. These changes are expressed in how they initially came to Noyce as formerly isolated teacher leaders yet came together to form new ideas and perspectives around teacher retention and mentoring. Some of these ideas discussed were translated into an artifact. A few Fellows in the cohort decided to create a pamphlet to assist new and pre-service teachers coming into the school system. The identification process of “othering” is the mechanism of learning exhibited in the cohort. This delineated how their practices differed from their peers in the program, thus facilitating finding themselves. The Fellows used the word “I” to discuss a change in their professional identity but did not use “we” to indicate adopting a new practice as a Noyce CoP. Crystallization of the ideas from the pamphlet had not been reified, and additional study needs to be performed on how these mentors embodied the practices and concepts created.

## **Implications for Further Study**

This study contributes to current research by providing insight into how participation in multiple CoPs demonstrates the coordination of resolving tensions by practicing teacher leaders within a teacher leadership system. Data resulted in evidence that participation in outside professional development opportunities, such as Noyce, reshaped the identity of experienced teacher leaders. School districts should provide incentives for teacher leaders to participate in these specific learning environments. In addition, involvement in targeted learning activities to develop an external lens to internal school problems, for example, mentoring practice, can be incorporated into school and district professional development. However, the data do not provide evidence of how these adopted ideas from Noyce translated into the school district to transform the system in developing mentors, nor does it predict the impact of professional identity by those who make decisions for school reform. Noyce program data should be analyzed in years 2 and 3 to determine if newly formed professional identity translates into system change. Additional research will look at how the school district and Noyce program, as organizational structures, support the development of a type of teacher leader practice as described by York-Barr and Duke (2004).

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## Supplemental Material

Supplemental material for this article is available online.

## References

- Ahern, K. J. (1999). Ten tips for reflexive bracketing. *Qualitative Health Research*, 9(3), 407–411. <https://doi.org/10.1177/104973239900900309>
- Akkerman, S. F., & Bakker, A. (2011). Boundary crossing and boundary objects. *Review of Educational Research*, 81(2), 132–169. <https://doi.org/10.3102%2F0034654311404435>
- Akkerman, S. F., & Bruining, T. (2016). Multilevel boundary crossing in a professional development school partnership. *Journal of the Learning Sciences*, 25(2), 240–284. <https://doi.org/10.1080/10508406.2016.1147448>
- Armstrong, D., Gosling, A., Weinman, J., & Marteau, Y. (1997). The place of inter-rater reliability in qualitative research: An empirical study. *Sociology*, 31(3), 597–606. <https://doi.org/10.1177/0038038597031003015>
- Burt, R., Jannotta, J., & Mahoney, J. (1998). Personality correlates of structural holes. *Social Networks*, 20(1), 63–87. [https://doi.org/10.1016/S0378-8733\(97\)00005-1](https://doi.org/10.1016/S0378-8733(97)00005-1)
- Cosner, S., De Voto, C., & Rah'man, A. A. (2018). Drawing in the school context as a learning resource in school leader development: Application-oriented projects in active learning designs. *Journal of Research on Leadership Education*, 13(3), 238–255. <https://doi.org/10.1177/1942775118763872>
- Cunningham, K., VanGronigen, B. A., Tucker, P. D., & Young, M. D. (2019). Using powerful learning experiences to prepare school leaders. *Journal of Research on Leadership Education*, 14(1), 74–97. <https://doi.org/10.1177/1942775118819672>
- Drago-Severson, E., & Blum-DeStefano, J. (2014). Leadership for transformational learning: A developmental approach to supporting leaders' thinking and practice. *Journal of Research on Leadership Education*, 9(2), 113–141. <https://doi.org/10.1177/1942775114527082>
- Engeström, Y. (2004). New forms of learning in co-configuration work. *Journal of Workplace Learning*, 16(1–2), 11–21. <https://doi.org/10.1108/13665620410521477>
- Engeström, Y., Engeström, R., & Kärkkäinen, M. (1995). Polycontextuality and boundary crossing in expert cognition: Learning and problem solving in complex work activities. *Learning and Instruction*, 5(4), 319–336. [https://doi.org/10.1016/0959-4752\(95\)00021-6](https://doi.org/10.1016/0959-4752(95)00021-6)
- Harris, A. (2013). Distributed leadership: Friend or foe? *Educational Management Administration and Leadership*, 41(5), 545–554. <https://doi.org/10.1177%2F1741143213497635>
- Ho, J., & Ng, D. (2017). Tensions in distributed leadership. *Educational Administration Quarterly*, 53(2), 233–254. <https://doi.org/10.1177%2F0013161X16681630>

- Hutchinson, A. E. (2020). *Perceptions of teacher leadership: The influence of organizational structures on the professional identity of urban STEM teacher leaders* [ProQuest dissertations & theses global]. (2448822924). <https://uc.idm.oclc.org/login?qurl=https%3A%2F%2Fwww.proquest.com%2Fdissertations-theses%2Fperceptions-teacher-leadership-influence%2Fdocview%2F2448822924%2Fse-2%3Faccountid%3D2909>
- Jenkins, R. (1998). Culture, classification, and (in)competence. In R. Jenkins (Ed.), *Questions of competence: Culture, classification and intellectual disability* (pp. 1–24). Cambridge University Press.
- Landa, M. S. H. (2008). *Crossing the divide: A phenomenological study of early childhood literacy teachers who choose to work with children in high-poverty schools* (Unpublished doctoral dissertation). University of Maryland, College Park.
- Leat, D., & Thomas, U. (2018). Exploring the role of ‘brokers’ in developing a localized curriculum. *The Curriculum Journal*, 29(2), 201–218. <https://doi.org/10.1080/09585176.2018.1445513>
- Parashar, S. (2019). Research brokers, researcher identities and affective performances: The insider/outsider conundrum. *Civil Wars*, 21(2), 249–270. <https://doi.org/10.1080/13698249.2019.1634304>
- Phelan, P., Davidson, A. L., & Cao, H. T. (1991). Students’ multiple worlds: Negotiating the boundaries of family, peer, and school cultures. *Anthropology and Education Quarterly*, 22(3), 224–250. <https://www.jstor.org/stable/3195764>
- Roth, W., & Lee, Y. (2007). “Vygotsky’s neglected legacy”: Cultural-historical activity theory. *Review of Educational Research*, 77(2), 186–232. <http://www.jstor.org/stable/4624893>
- Rutherford, C. (2006). Teacher leadership and organizational structure: The implications of restructured leadership in an Edison school. *Journal of Educational Change*, 7(1), 59–76. <http://dx.doi.org/10.1007/s10833-006-0013-4>
- Saldaña, J. (2016). *The coding manual for qualitative researchers*. SAGE.
- Star, S. L., & Griesemer, J. R. (1989). Institutional ecology, “translations” and boundary objects: A amateurs and professionals in Berkeley’s museum of vertebrate zoology, 1907–39. *Social Studies of Science*, 19(3), 387–420. <https://www.jstor.org/stable/285080>
- Suchman, L. (1994). Working relations of technology production and use. *Computer Supported Cooperative Work*, 2, 21–39.
- Walker, D., & Nocon, H. (2007). Boundary-crossing competence: Theoretical considerations and educational design. *Mind, Culture, and Activity*, 14(3), 178–195. <http://dx.doi.org/10.1080/10749030701316318>
- Weiner, J., & Wouflin, S. L. (2018). Sailing across the divide: Challenges to the transfer of teacher leadership. *Journal of Research in Leadership Education*, 13(3), 210–234. <https://doi.org/10.1177/1942775118766319>
- Wenger, E. C. (1998). *Communities of practice, learning, meaning, and identity*. Cambridge University Press.
- Wenger, E. C. (2008). Communities of practice: Learning as a social system. *Systems Thinker*, 9(5).
- Wenger, E. C., & Snyder, W. M. (2000). *Communities of practice: The organizational frontier*. Harvard Business Review.
- York-Barr, J., & Duke, K. (2004). What do we know about teacher leadership? Findings from two decades of scholarship. *Review of Educational Research*, 74(3), 255–316. <https://doi.org/10.3102/00346543074003255>

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