

Supporting collective enactments of instruction:
A decomposition of the practice of an expert teacher educator

Hannah Nieman

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Kara Jackson

Elham Kazemi

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Abstract

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Hannah Nieman

Chair of the Supervisory Committee:

Dr. Kara Jackson

College of Education

Forms of practice-based teacher education, in which pre-service teachers engage in collective enactments of instruction, necessitate that pre-service teachers take risks and make their practice public. However, there is currently little work specifying teacher educator practices that establish a culture that supports collaborative learning and risk-taking. This study aims to understand what an expert teacher educator considers and does to establish a culture that supports pre-service teachers to take risks and make their practice public in a collaborative, practice-based teacher-learning context. I provide the field of teacher education with a framework for understanding how teacher educators can establish learning environments that support pre-service teachers to engage in collective enactments of instruction, and therefore make their practice public. In developing this framework, I decompose an expert teacher educator's practice into teachable and learnable components and their associated moves. The findings from this study have implications both pragmatically – for teacher educators' improvement of practice – and for research – in further analyses and decompositions of teacher educator practice.

Author note

This study is a part of an analysis in collaboration with Lynsey Gibbons, Alison Fox, and Becca Lewis

Introduction

A growing body of research has demonstrated the potential of collaborative, practice-based teacher education to promote deep and meaningful learning experiences for teachers (e.g., Ball & Cohen, 1999; Grossman, Compton, Igra, Ronfeldt, Shahan, & Williamson, 2009). Some forms of practice-based teacher education, in which pre-service teachers engage in collective enactments of instruction, necessitate that pre-service teachers take risks and make their practice public (e.g., Gibbons, Hintz, Kazemi, & Hartmann, in press; McDonald, Kazemi, & Kavanagh, 2013). This, in turn, requires skilled teacher educators who foster a learning environment that supports collaborative risk-taking (Even, 2008; Little, 1982). However, there is currently little work specifying teacher educator practices that establish a culture that supports collaborative learning and risk-taking. This analysis aims to address that gap by presenting an empirically grounded framework that specifies how teacher educators can establish learning environments that support pre-service teachers to engage in collective enactments of instruction, and therefore make their practice public. The framework is grounded in a qualitative analysis of an expert teacher educator's practice in establishing a learning environment in which pre-service teachers are supported to engage in collective enactments of instruction.

In what follows, I first describe the related literature and conceptual underpinnings of this study. Second, I describe the methods. Third, I present the framework for understanding how teacher educators can establish learning environments that support pre-service teachers to engage in collective enactments of instruction, and therefore make their practice public. I also discuss what the expert teacher educator considered when supporting candidates to make their practice public. Finally, I conclude by considering the implications of my findings for the work of teacher educators as well as for future research.

Related Literature and Conceptual Framework

Ambitious Instruction and Practice-Based Teacher Education

There is increasing consensus among researchers and educators that the aim of K-12 education should be students' deep conceptual understanding of discipline-specific ideas. Following the work of Lampert and colleagues (2010), I call this type of instruction *ambitious instruction*. Teachers' enactment of ambitious instruction requires that teachers treat students as sense-makers, value and incorporate a broad range of students' ideas and perspectives, and design tasks that allow students to access rigorous content (e.g., Franke et al., 2007; Jackson, Garrison, Wilson, Gibbons, & Shahan, 2013; Lampert, 2001). Ambitious instruction is complex work requiring a great deal of knowledge and skill on the part of the teacher. As Ball and Forzani (2009) articulate, what makes instruction complex is the imperative that teachers understand students' experiences and perspectives and teach in response to what students know and do.

How do pre-service teachers develop ambitious instruction, especially since it often contrasts with their own experiences of K-12 schooling? A growing number of teacher educators have suggested that *practice-based teacher education* is necessary, if pre-service teachers are to develop the core principles and practices of ambitious instruction¹ (e.g., McDonald, Kazemi, & Kavanagh, 2013). Ball and Cohen (1999) first defined practice-based teacher education as training in which teachers engage in "learning in and from practice." They argued that learning in and from practice does not necessarily imply anything about *where* teachers are trained, but, rather, is "a statement about a terrain of action and analysis that is

¹ Teacher educators have collaborated to identify principles and core practices of ambitious teaching (e.g., Grossman, Hammerness, et al., 2009; Lampert et al., 2013). For example, the Learning to Teach In, From, and Through Practice Project has *identified eliciting and responding to students' ideas* as one core practice of ambitious instruction, because it supports students in engaging in reasoning and justification of mathematical ideas, and it supports the teacher in enacting a principle of ambitious teaching – *treating students as sense-makers* (Lampert et al., 2013).

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defined first by identifying the central activities of teaching practice and, second, by selecting or creating materials that usefully depict that work and could be selected, represented, or otherwise modified to create opportunities for novice and experienced practitioners to learn” (p. 13). The term practice-based teacher education has since been used in differing ways in the field of education (Forzani, 2014).

In this study, I focus on a particular model of practice-based teacher education, which includes collective enactments of instruction, or what Grossman, Compton, and colleagues (2009) call *pedagogies of enactment*. Grossman and colleagues distinguish between pedagogies of enactment – teachers’ engagement in actually doing the practice of teaching – and *pedagogies of investigation* – teachers’ engagement in analysis of the practice of teaching – and argue that teachers need to engage in both in order to learn the complex practice of teaching.

McDonald and colleagues (2013) have proposed a cyclical structure for practice-based teacher educator pedagogy called the *Learning Cycle* (see Figure 1). The Learning Cycle is centered on core practices and principles of ambitious instruction and includes opportunities to engage in both pedagogies of investigation and enactment. In the context of the Learning Cycle, pedagogies of enactment require that pre-service teachers try out teaching practices and enact instruction with and in front of each other, while receiving support and feedback from teacher educators.

The first quadrant of the Learning Cycle (see Figure 1) involves pedagogies of investigation: a teacher educator models an activity, pre-service teachers watch video of instruction, and pre-service teachers engage in analysis teaching practice. The second quadrant involves pedagogies of enactment. Here, pre-service teachers engage in collaborative planning

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for the activity and rehearse the activity in front of each other, with a teacher educator coaching. The third quadrant also involves pedagogies of enactment, as pre-service teachers enact instruction with students and teacher educators present. The fourth quadrant involves pedagogies of investigation: small groups of pre-service teachers watch video of their own instruction and engage in analysis of their teaching practice.

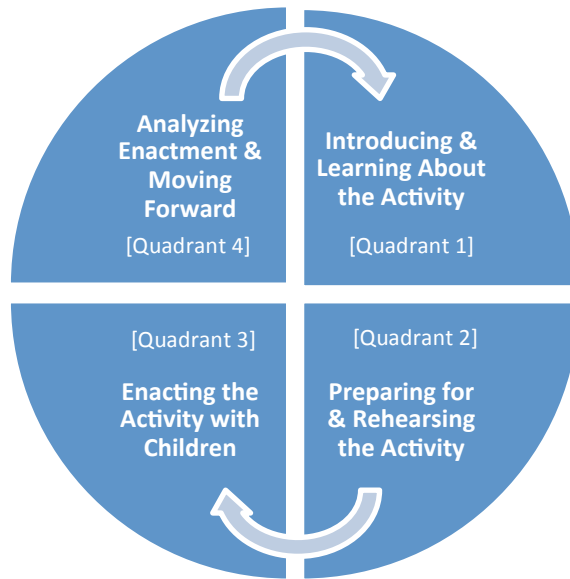


Figure 1. The Learning Cycle, adapted from McDonald et al., 2013

Pedagogies of Enactment: Decomposing the Practice of Teacher Educators

This analysis focuses on pedagogies of enactment. As Grossman and colleagues (2001) articulate, the type of work entailed for pre-service teachers in pedagogies of enactment is “risky intellectual and social work” (p. 54). Thus, engagement in pedagogies of enactment requires particular trust between pre-service teachers and teacher educators and a readiness to take risks (Fox, 2014). Teachers must, then, develop a learning stance (or growth mindset), trust in other members of the community, and a willingness to take risks in order to engage in the type of work entailed by this model of practice-based teacher education.

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Research suggests that the establishment of such an environment takes place over time through purposeful work on the part of the teacher educator (Borko, 2004; Grossman, Wineburg, & Woolworth, 2001). However, there is little research specifying particular components of the practice of teacher educators in collaborative, practice-based teacher education contexts in establishing learning environments. This study aims to *decompose* the work of an expert teacher educator into teachable and learnable components, as she works to establish an environment that supports pre-service teachers to take risks and make their practice public. By decompose, I intend, as Grossman, Compton, and colleagues (2009) articulate, the “breaking down [of] practice into its constituent parts” (p. 2056), or teachable components (Grossman & McDonald, 2008). Breaking the practice of teacher educators into smaller components allows researchers and professionals to identify, study, teach, and rehearse these components and integrate them back into the work of preparing pre-service teachers (Grossman & Shahan, 2005).

Attending to Risk-Taking, Trust, and Supporting Teacher Identity Development

An initial review of literature on the facilitation of pre-service teacher education found that there have been few analyses decomposing the work of the teacher educator in contexts in which teachers are expected to make their practice public (Fox, 2014). Thus, I broadened my search to include studies of the development of teacher communities that aimed to foster teacher learning, namely literature focused on professional learning communities, school reform, and the teacher educator’s work in facilitating pedagogies of investigation. Through this review of the literature, three particular constructs emerged as important to attend to in this analysis: *risk-taking*, *trust*, and supporting teacher *identity*.

Risk-taking. The construct of *risk-taking* is useful, in light of Grossman’s (2001) idea of

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the work of learning to teach as being “risky intellectual and social work” (p. 54). Literature suggests that teachers are more likely to take risks when it is clear that experimentation and innovation are valued and even expected as a normative aspect of the learning environment (Little, 1982; Ponticell, 2003). Relatedly, studies of risk-taking in the field of psychology suggest that positive emotions facilitate risk-taking (Yates & Stone, 1992). Teacher learning literature also suggests that teachers are more willing to engage in collaborative learning experiences when they believe the work contributes to their own professional knowledge and skill (Little, 1982). In other words, teachers’ willingness to engage in more risky pedagogies increases as teachers perceive significant value in their work.

Trust. *Trust* is an important aspect of productive teacher learning communities, particularly when the work entailed in those communities involves risk-taking on the part of the teachers (Bryk & Schneider, 2003; Tschannen-Moran, 2001). Researchers have found that one important way teacher educators build trust in learning communities is by demonstrating respect for the knowledge, experiences, and questions of teachers (Edwards, 2010; Grossman, 2001). Another way that teacher educators inspire trust is by conveying humanity – making themselves vulnerable by sharing in the same challenges in which the teachers engage (Tschannen-Moran, 2001).

Supporting teacher identity development. Teachers’ professional *identities* shift as they engage in learning experiences, and their identities shape the decisions that teachers make about engagement in future learning experiences and in practice (Edwards, 2010; Grossman et al., 2009). Edwards (2010) states that social interactions between novices and experts establish what is valued within a community, thereby shaping the professional identities that novices form (Edwards, 2010). Thus, attention to the interactions between teacher educators and teachers is a

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productive way of thinking about the professional identities that teachers are forming within the learning environment.

Research Design

To study how a teacher educator establishes an environment that supports pre-service teachers to engage in collective enactments of instruction, and therefore make their practice public, I used a qualitative case study approach (Stake, 1995). The focal case was a mathematics methods course in a program organized around the Learning Cycle, led by a highly experienced and accomplished teacher educator. The guiding research questions were as follows:

- 1) What does an expert teacher educator consider in establishing a culture that supports pre-service teachers in taking risks and making their practice public?*
- 2) How does an expert teacher educator establish a culture that supports pre-service teachers in taking risks and making their practice public?*

In what follows, I provide background on the research context, describe the data collection, and then describe my analysis process.

Context

This particular case comes from a data corpus gathered in a larger study of a six-week pre-service practice-based teacher education setting designed by researchers at the University of Washington that closely followed the structure, curriculum, and pedagogies of practice-based teacher education (as described above). I purposefully sampled for an expert educator (Merriam, 2009) in order to decompose the teacher educator's practice into teachable and learnable components for pre-service teacher educators (Grossman, Compton, et al., 2009). My analysis

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focused on Nia², the primary teacher educator in the Secondary Mathematics sessions, because Nia's background and experiences constitute that of an expert teacher educator and, more particularly, an expert teacher educator in the work of practice-based teacher education. Nia has served as a teacher educator for eight years at two different university-based teacher preparation programs that incorporated components of practice-based teacher education. In addition, Nia was involved in research focused on practice-based teacher education.

The Secondary Mathematics methods learning community was composed of 23 pre-service teachers, four coaches, and three teacher educators. The group met daily for three-hour methods sessions during Weeks One – Four of the program. These sessions followed the structure of the Learning Cycle (see Figure 1) and were centered on core practices and principles of ambitious teaching. A typical Learning Cycle in this context (see Figure 2) began with a teacher educator modeling the activity and pre-service teachers engaging in decompositions of the practice of experienced teachers by watching video of their instruction. Preparation for the activity involved first planning for the activity in groups of three or four. Then, pre-service teachers engaged in *rehearsals* of the activity. Rehearsals gave pre-service teachers the opportunity to publicly and deliberately practice how to teach rigorous content to particular students using particular activities (Lampert et al., 2013). The pre-service teachers divided into two groups of 10 to 12 pre-service teachers, and one teacher educator coached the rehearsals in that group. Any other experts in the room would engage in the rehearsals alongside the pre-service teachers. During the rehearsal, one teacher practiced the activity while audience members engaged with the activity as students. The teacher educator *paused* each rehearsal at strategic moments in order to guide the group's learning about teaching practice. After preparing for and

² All names are pseudonyms.

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rehearsing the activity, pre-service teachers collaboratively enacted the activity in classrooms with students. Finally, pre-service teachers engaged in analysis of their own practice in a collaborative, video-based debrief session with five to six other pre-service teachers and a coach.

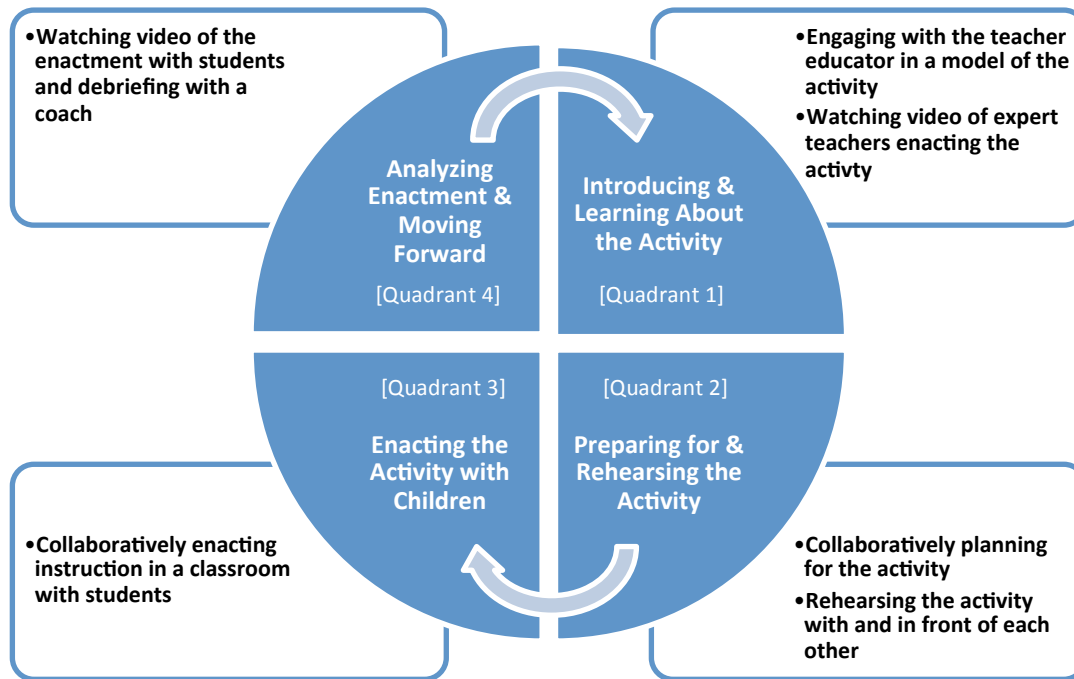


Figure 2. The Learning Cycle in the context of methods sessions, adapted from McDonald et al., 2013.

Data Collection

Several data points were used in order to understand how the teacher educator established an environment that supported pre-service teachers to engage in collective enactments of instruction, and therefore make their practice public. These included video footage of methods sessions and audio-recorded interviews with the teacher educator.

Methods session video-recordings. The first two days and final two days of the Secondary Mathematics teacher education methods sessions were video-recorded, which encompass the first and last full Learning Cycle (see Figure 1 and Figure 2) of the program, approximately the first five hours of sessions and the last five hours of the sessions. Because my focus in this analysis is on how the teacher educator begins to establish an environment that

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supports risk-taking, I examined video footage of the first full Learning Cycle (approximately 5 hours total), which spanned the first two days of the program. In each session, I set up two cameras, one at the back of the room to capture the teacher educator's voice and interactions with the pre-service teachers, and one in the front of the room to capture pre-service teachers' voices and interactions with the teacher educators, coaches, and one another. Once in place, the cameras were not moved, except before rehearsals, in order to better capture the small-group interactions of each rehearsal. The University of Washington design team chose to capture video of the sessions because the interaction within a teacher preparation program is complex, and video allows us to analyze this complex interaction in a way observation cannot (Hall, 2000).

Pre-program teacher educator interview. The lead teacher educator, Nia, was interviewed before the program was underway using a protocol developed by the University of Washington design team. I transcribed the interview and identified excerpts in the interview in which the teacher educator discussed ways in which she planned to address pre-service teachers' preexisting frames and any mention of supporting pre-service teachers to engage in pedagogies of enactment. I did not formally analyze this interview, but it supported my understanding of the context.

Post-program teacher educator interview. After the end of the program, I conducted an interview in a video review session format (Jordan & Henderson, 1995) with Nia, grounded in specific moments in the data, in order to better understand the decisions she made in these moments and to select significant moments for deeper analysis. Selection criteria for moments I brought to the video review session included moments in which the teacher educator: 1) re-framed an activity (usually after another teacher educator framed it); (2) appeared to make a decision in response to pre-service teachers' preexisting framing of the activity; (3) enacted

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practices that exemplify those the teacher educator enacted frequently in the data corpus.

Analytic Framework

Interaction analysis and the concept of *frame* inform my analytic framework in my decomposition of the practice of an expert teacher education. This framework guided my analysis of the methods session video recordings and post-program teacher educator interviews (see Phases 2 – 4 in what follows).

Framing the work of teaching and learning to teach. A key conceptual tool that I found useful in decomposing the practice of an expert teacher educator is the construct of *frame* from sociolinguistics. By frame, I intend, as Goffman (1974) defines, “the organizational and interactional principles by which situations are defined and sustained as experience” (p. 53). I use Goffman’s idea of frame to guide my analysis of the teacher educator’s considerations – particularly Nia’s anticipation of the frames pre-service teachers may have about the work of learning to teach – and my analysis of the teacher educators’ practice itself – particularly, how Nia frames the work of teaching and the work of learning to teach.

Interaction analysis. I draw on interaction analysis methods for this study for three primary reasons. First, because interaction analysis methods aim to identify patterns in people’s interactions, it connects to Grossman and colleagues’ (Grossman, Compton, et al., 2009) call for decompositions of practice. Second, interaction analysis connects to the situated view of learning that guides this work, as it assumes knowledge and action are “social in origin, organization, and use” and situated in social contexts (Jordan & Henderson, 1995, p. 40), which is compatible with how learning was organized in the research context. Finally, interaction analysis assumes, that “expert knowledge and practice are seen not so much as located in the heads of individuals but as situated in the interactions among members of a particular community engaged with the material

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world” (Jordan & Henderson, 1995, p. 41), which allows for a study of interactions among participants within the teacher education sessions in order to understand the practices of an expert teacher educator.

Analysis

My analysis involved an iterative process of reading literature, viewing video, coding video, writing memos, and creating data displays. Phases of this analysis were done collaboratively, working alongside Gibbons, Fox, and Lewis, and other phases of this analysis were done individually. I used multiple methods of data collection – video of the teacher educator’s practice and an interview of the teacher educator – in order to employ triangulation (Merriam, 2009).

Phase 1: A review of the literature. As noted above, several constructs emerged in a literature review as important to attend to in this analysis: *risk-taking*, *trust*, and supporting professional *identity*. However, previous research had not yet resulted in a framework with which to study *how* a teacher educator establishes an environment that supports pre-service teachers to engage in collective enactments of instruction, and therefore make their practice public. Thus, we used the constructs and suggested aspects of learning environments and facilitator practices from the literature to create a hypothesized set of moves that teacher educators might make in this work. This initial set was incomplete, given the relative lack of literature in this area; that said, it helped orient what I looked at in my initial scan of the video-recordings.

Phase 2: Analysis of subset of video data. This phase of the analysis centered on the identification of particular moves that the teacher educator enacted in her establishment of the learning environment and analysis of how these moves might support the pre-service teachers in

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risk-taking. I took an inductive approach for my analysis (Derry et al., 2010). I began my analysis by creating a content log of the video footage, dividing the video footage into 3- to 10-minute clips, characterized by the interaction between teacher educators and pre-service teachers. I coded each of the clips as *high teacher educator interaction*, *medium teacher educator interaction*, or *low teacher educator interaction*, based on the degree to which the teacher educator engaged with pre-service teachers. For example, a clip in which the teacher educator engages in a discussion with pre-service teachers in order to set up norms before rehearsals would be coded as *high teacher educator interaction*; a clip in which the teacher educator models an instructional activity, and the pre-service teachers participate as student learners would be coded as *medium teacher educator interaction*; and a clip in which pre-service teachers work in small groups to plan for an enactment, and the teacher educator periodically checks in would be coded as *low teacher educator interaction*.

I selected two video clips coded as *high teacher educator interaction* to bring to our collaborative research team. Our initial analysis involved a close review of the two video clips to begin to decompose the teacher educator's practice into components, with the analytic unit being the teacher educator's verbal and nonverbal *moves*: utterances, tone, and gestures. Across several iterations of viewings of the video clips, we created an initial, working list of moves. Using this preliminary analysis, we developed definitions for each of the moves, illustrations from the data, and analytic memos detailing how the practices were used.

Phase 3: Primary analysis of video data. As a third phase of the analysis, I viewed the rest of the video footage, using Studiocode© software to code the interactions in terms of the preliminary set of practices developed by our collaborative research team. Each video clip was double-coded – viewed and analyzed in collaboration with one other researcher, in order to, as

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Jordan and Henderson (1995) state, “neutralize preconceived notions on the part of the researcher” (p. 44). For each video clip, I kept both observational and analytic notes to capture the qualitative nature of the teacher educator’s facilitation, make note of significant moves, and make note of how these moves supported pre-service teachers in engaging in collaborative risk-taking. Our team of four researchers met periodically throughout this phase of analysis to review the memos and particular video clips together in order to reach agreement on particular practices and to refine definitions for the moves.

I transcribed the verbal and nonverbal behaviors (Ochs, 1976) of participants in significant moments in the data in the establishment of a learning environment that supports pre-service teachers in taking risks and making their practice public. This analysis supported me in further refining the moves and definitions for the moves and in grouping the moves into particular components of Nia’s practice

Phase 4: Analysis of post-program interview. As a fourth phase of analysis, I interviewed the primary teacher educator in a video review format, grounded in clips of the video footage in order to gain information about the teacher educator’s perspective (Derry et al., 2010; Jordan & Henderson, 1995). I transcribed this session and took analytic notes throughout. I used this data to both corroborate and challenge my preliminary analysis, and I refined moves and definitions for moves based on this data. I also used this data to identify a set of considerations that the teacher educator has in her aim to support pre-service teachers to engage in collaborative enactments of instruction.

Phase 5: Secondary analysis of video data. In the final phase of my analysis, I created data displays from my analysis of the video data. I created matrices of the frequency of each move and the consistency of the teacher educator’s use of each move in particular types of

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activities in the sessions. I also mapped the set of moves identified and refined in Phases 1 – 4 and the teacher educator’s considerations identified in Phase 4 onto particular, significant segments of the video data transcript in order to better understand the teacher educator’s coordination of moves and to understand the relationship between the teacher educator’s considerations and her practice. This analysis supported me in understanding the complexity of the work of the teacher educator.

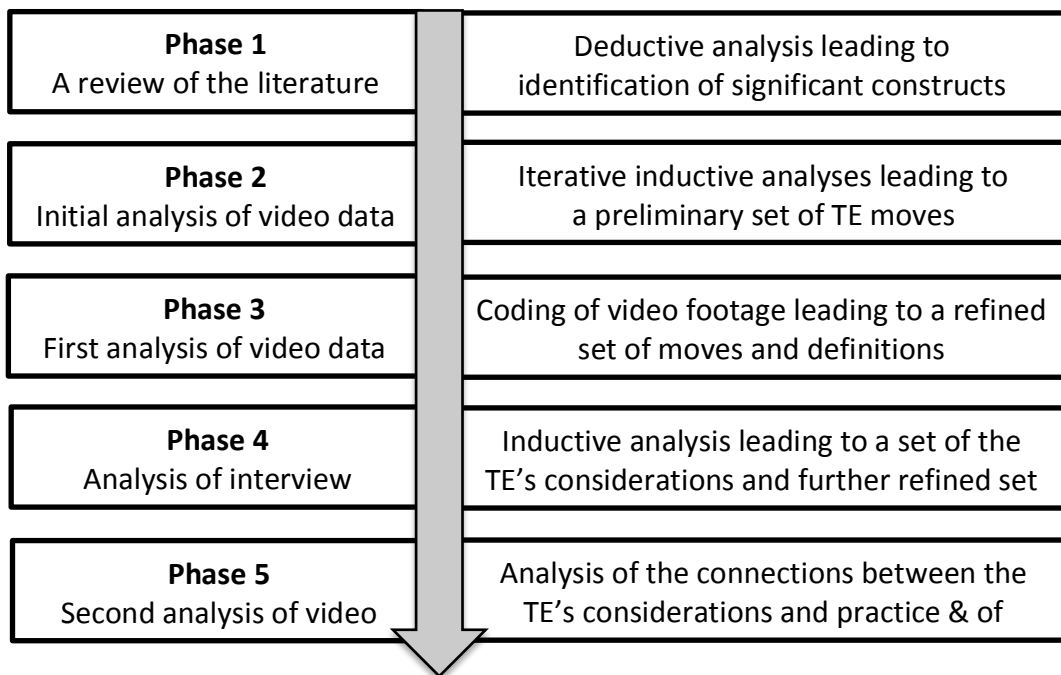


Figure 3. Phases of analysis.

Findings

In what follows, I present a framework for understanding how teacher educators can establish learning environments that support pre-service teachers to engage in collective enactments of instruction, and therefore make their practice public. To help ground my discussion of the framework, I share two segments of transcript from the data corpus. I use them to illustrate the key components of establishing such learning environments and the moves

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associated with those components. These excerpts are not unique; they provide a representative snapshot of Nia’s practice and offer a window into the complexity of her work. I also share Nia’s considerations for her work in supporting pre-service teachers to take risks and make their practice public.

Framework of the Components of the Practice of an Expert Teacher Educator

A central contribution of this analysis is a framework for understanding how teacher educators can establish learning environments that support pre-service teachers to engage in collective enactments of instruction, and therefore make their practice public. The three components that I identified are: 1) *framing the work of learning to teach as experimental, positive, and light*; 2) *orienting pre-service teachers toward learning and the improvement of practice*; and 3) *orienting pre-service teachers toward collective work*. Within each component, I identified a set of associated moves (see Table 1; see Appendix 1 for an elaborated framework, with definitions and examples).

Table 1. Framework of the components of an expert teacher educator’s practice and associated moves

<i>Framing the work of learning to teach as experimental, positive, and light</i>	<i>Orienting pre-service teachers toward learning and the improvement of practice</i>	<i>Orienting pre-service teachers toward collective work</i>
Using a playful tone and gestures	Positioning everyone as learners about and from students’ ideas	Positioning pre-service teachers as a part of the community
Using humor	Positioning pre-service teachers as learners	Positioning self and other experts in the room as a part of the community
Using language that conveys experimentation	Positioning self and other experts in the room as learners	Discussing how groups will work together
Framing the work of teaching as complex	Discussing benefits of the work of learning to teach	
Giving permission to try things out		

Illustrative Examples.

Excerpt 1: “Nia described rehearsals as playful.” In this first segment, the group is about to engage in their first rehearsals of the program. To set the scene, one of the teacher educators in the room (Josie) has just walked through a protocol for rehearsals with the group, and the primary teacher educator (Nia) and a coach (Sonia), interject, adding on to the protocol. A pre-service teacher asks, “When we’re students and we think of things students might misinterpret, should we express that?” and this launches a brief exchange within the group about whether the audience members of the rehearsals should respond with student misconceptions. This transcript segment begins with Nia’s interjection into the exchange. (The entirety of the transcript³ segment is below along with the moves I identified in each turn of talk, followed by a descriptive analysis.)

Excerpt 1. Framing rehearsals.

1.1	NIA:	I think we’ll insert the really weird stuff. So, if you see us raising our hands (.) ((laugh)), get (.) nervous.	Using playful tone Positioning self and other experts in the room as a part of the community
1.2	ALL:	((laughter))	
1.3	NIA:	You’re welcome to call on us as well, is what I’m saying.	Positioning self and other experts in the room as a part of the community
1.4	SONIA:	((leans forward, makes eye contact with Josie, raises hand	

³ I use the following transcription conventions in the data I report (adapted from Jefferson, 2004):

[overlapping speech	,	a continuing intonation
(.)	a tiny gap within or between utterances	?	a rising intonation
(1.2 s)	a longer gap within or between utterances	CAPS	comparatively louder speech
:	prolongation of the prior sound	°	comparatively softer speech
-	a cut-off	<u>underline</u>	emphasis
.	a stopping fall in tone	(())	activity descriptions

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		upward, and holds mouth slightly ajar))	
1.5	JOSIE:	Sonia, did you want to add-	
1.6	SONIA:	((nods)) Yeah, um, so: at one point, I think when we were doing this and learning this material and practicing it <u>ourselves</u> , I think one way Nia described rehearsals, which I really liked, is like as <u>PLAY:FUL</u> . Um, I think it takes a lot less <u>pressure</u> - it takes some <u>pressure</u> off of you to feel like you don't have to do this perfectly, and I think Grace modeled this really well when she was up in front of us and said, 'Actually, if I was to do this again, I would do this differently', so feel free when you're up there to <u>pa:use yourse:lf</u> . Um, I think one of our coaches earlier this year, did like [((rewind gesture (see Figure 4))]	Using language that conveys experimentation
1.7	NIA:	[<u>rewind</u> ((rewind gesture/dance; smiling))	Using playful gestures
1.8	SONIA:	I'm gonna [rewind myself, ((rewind gesture))	
1.9	NIA:	[ch-ch-ch-ch-ch ((rewind gesture/dance; smiling))	Using playful tone/gestures

Leading up to Turn 1, the group has been engaging with Josie to learn the protocol for rehearsals, and the tone of the conversation has been a serious one. In Turn 1, Nia interjects, beginning in a similar, serious tone. The words “really weird” mid-sentence mark an impending shift in tone. Her tone shifts to a playful one in her next utterance, and she emphasizes this tone with a hyperbolic pause and laugh mid-sentence. This utterance initiates shared laughter with the pre-service teachers, coaches, and other teacher educators in the room. Thus, in two short turns of talk, the tone of talk in the room shifts from a serious one to a jovial one, characterized by

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shared laughter. In Turn 3, Nia reiterates an aspect of the protocol for rehearsals, which has now been couched in humor and laughter.

In Turn 6, Sonia recounts something that Nia has said about rehearsals, when she and the other teacher educators were “learning this material” and practicing rehearsals themselves. She says, “Nia described rehearsals... as playful,” and uses prosody of speech to emphasize the word *playful*. She then states a benefit to the pre-service teachers in viewing rehearsals as playful – it takes the pressure off. In my interview with Nia, she used similar language to explain why she frames rehearsals as playful. This implies that Sonia was likely repeating the rationale that Nia had given to the group of teacher educators. Sonia then makes two concrete suggestions as to how the pre-service teachers might take up the idea of rehearsals as playful: 1) by pausing themselves inside of the rehearsal, and 2) by “rewinding”.

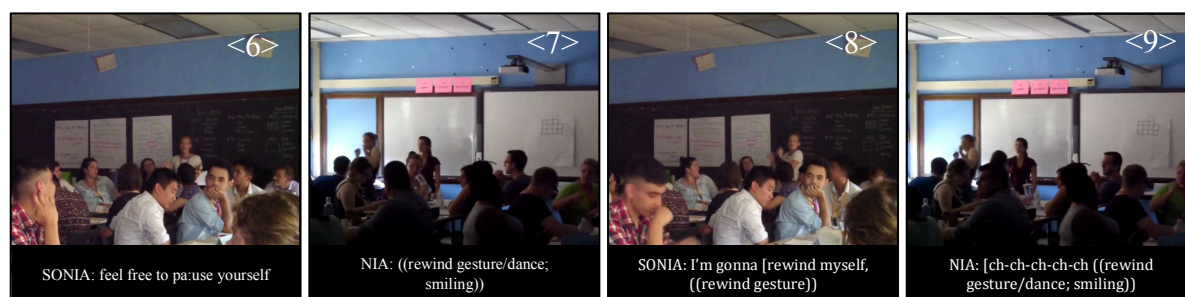


Figure 4. Nia and Sonia introduce the rewind gesture as a way of making the activity light.

In Turn 7, Sonia makes a metaphoric gesture (Alibali & Nathan, 2012) as if she’s stepping backward in time. As Sonia begins this gesture, Nia smiles, says “rewind” in a jovial tone, to emphasize the lightness and playfulness of pretending to rewind oneself, and recreates a similar gesture with slightly more of a dance movement. Sonia echoes Nia’s utterance in Turn 8, and as she says this, Nia repeats the rewind gesture, adding a sound to emphasize each movement backward. She continues to smile and her gestures continue to take on a playful air. In these turns, Nia brings to life the example that Sonia gives and emphasizes the playfulness of

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rehearsals in her gesture, tone, and expression.

Excerpt 2: “I’ve never seen it that way!” In this second segment, the pre-service teachers are engaging with the mathematical task that they will be rehearsing and enacting with students in the next few sessions. They are working together in small groups to understand a hypothetical student response from a student named Zach Morris.

Excerpt 2. Asking how Zach Morris saw it.

2.1	NIA:	You like it? ((fixes gaze on a small group of pre-service teachers)) [Zach Morris?	Using a playful tone
2.2	JAMES:	[Ye:ah!	
2.3	ANA & THEO:	((nod))	
2.4	NIA:	((raises hand)) Alri:ght, four, three: [whoo! Look at that.	Using a playful tone
2.5	ALL:	[[((become silent; fix gaze on Nia))	
2.6	NIA:	((holds arms outstretched)) Does somebody want to explain what Zach Morris did?- by the way, when <u>I</u> heard this from a kid, it was the <u>first</u> ((beat)) time I ever saw it that way, and that’s one of the things that makes math teaching so <u>FUN</u> ((beat)) if you’re open to it, is when a kid offers that and you’re like ((opens mouth in astonishment)) ‘wh hu- I’ve never seen ((beat)) it that way before!’ and you <u>LEARN</u> ((beat)) something.	Using a playful tone Giving permission to try things out Positioning everyone as learners about and from student ideas
2.7	NIA:	SO! How did <u>Zach Morris</u> do it?	Using a playful tone Positioning everyone as learners about and from student ideas

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Leading up to Turn 1, Nia posed a hypothetical student response, and small groups of three to four pre-service teachers have engaged in analysis of the student's strategy. In Turn 1, Nia turns to one particular small group of pre-service teachers (Ana, James and Theo) and asks, "You like it?" In Turns 2 and 3, all three of the pre-service teachers respond affirmatively, James speaking, and Ana and Theo giving an affirmative nod. This subtle move displays vulnerability.

In Turn 4, Nia calls the whole group back to attention, raising her hand and starting a count down. Nia commonly uses "teacher moves", moves that might be useful for the pre-service teachers to take up in their own teaching practice in moments of transition between activities. Turns 5 and 6 mark the group's attention turning to Nia and her celebration of how quickly they responded to her call to attention (again, modeling a "teacher move" for them to take up in their teaching practice).

In Turn 6, Nia first poses a question to the group that will allow them to share what they discussed in small groups. She interrupts herself with the transitional phrase "by the way" to signal a shift in tone. She then begins her aside, placing emphasis on the word "I" to signal a personal experience with this student's idea. She then places emphasis on the word "first" both with her intonation and with a beat gesture (Alibi & Nathan, 2012) with her hands. She emphasizes the word "fun" with tone, volume, and a beat gesture with her hands and later makes a similar emphasis of the word "learn." In between, she uses a playful intonation in her recounting of what she might say to the student with the new idea: "wh hu- I've never seen ((beat)) it that way before!" In this way, she is connecting math teaching being fun to learning new things from students. In Turn 7, Nia makes the transition back to the initial question she posed to the group, marking the transition with the word "so."

Framing the work of learning to teach as experimental, positive, and light. One

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component of establishing learning environments that support pre-service teachers to engage in collective enactments of instruction, and therefore make their practice public concerns framing the work of learning to teach as experimental, positive, and light. Clear patterns emerged in her framing of what may naturally be a pressure- or anxiety-filled pedagogy or activity as experimental, positive, and light. This serves to create an environment that supports pre-service teachers to take risks and make their practice public. I identified five moves associated with this component: *using a playful tone and gestures, using humor, using language that conveys experimentation, framing the work of teaching as complex, and giving permission to try things out.*

The two moves that Nia used most frequently as she frames the work of learning to teach (particularly as she frames rehearsals and other enactments of instruction as experimental, positive, and light) are *use of a playful tone and gestures* and *use of humor*. Recall 2.1, 2.4, 2.6, and 2.7 (from Excerpt 2). In these turns of talk – which are all four of Nia’s turns of talk in this excerpt – she *uses a playful tone*. In line 2.6, this playful tone is used to help make a connection between learning to teach and “fun”. Nia also *used playful gestures* when highlighting ways to engage in enactments of instruction that she aims for pre-service teachers to take up in their own rehearsals. Consider, for example, 1.1, 1.7, and 1.9 (from Excerpt 1). In these three turns of talk, Nia uses both a playful tone and gestures. In 1.1, Nia’s playful tone is in service of a shift in tone of the talk in the room. In 1.7 and 1.9, Nia’s playful gestures serve to model for pre-service teachers how they might interact in a light way during rehearsals. In these three turns of talk, Nia also *uses humor*. The discursive humor used in 1.1 immediately shifts the tone of the talk in the room from a serious tone to a positive, light tone. 1.7 and 1.9 mark moments of gestural humor, which serve to frame the work of learning to teach – particularly, the work of rehearsals – as

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positive and light. Note that in all three of Nia's turns of talk in Excerpt 1 she uses humor and a playful tone and/or gestures and that in all four of Nia's turns of talk in Excerpt 2 she uses a playful tone. Thus, the use of humor and the use of a playful tone and gesture play a significant role in framing the work of learning to teach as experimental, positive, and light.

Using language that conveys experimentation involves framing activities (particularly those that require risk-taking on the part of the pre-service teacher) and pedagogies (particularly pedagogies of enactment) as spaces in which pre-service teachers might "try out" teaching practices. This type of language implies experimentation – that the work of learning to teach involves trial and error and that perfection in public rehearsals and enactments is not expected. This language brings lightness to activities that may otherwise carry a sense of pressure and social riskiness. For example, consider 1.6 (from Excerpt 1). In this turn of talk, Sonia recounts Nia's use of "playful" to describe rehearsals. This word frames the work of rehearsals as more experimental in nature than needing to be polished and practiced. Nia commonly uses language that conveys experimentation when she frames the work of learning to teach.

Framing the work of teaching as complex involves explicit discussion of teaching as requiring a great deal of knowledge and skill on the part of the teacher. This serves to set up the expectation that novice teaching practice will be imperfect and will require experimentation – iterations of trial and error. Consider the following excerpt from Nia's introduction to the work of learning to teach early on the first day of the program:

It's hard to learn to do well, and you cannot learn to do well quickly. You're going to be teaching on Monday, but on Monday, you are not going to be the teachers who you want to be and who you are going to be in November, two years from now, five years from now, or ten years from now.

This move serves to frame the work of teaching and the work of learning to teach as being complex, thereby normalizing imperfection and setting up pre-service teachers' expectations of

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being lifelong learners.

Giving permission to try things out involves an explicit statement about the productivity of trying something out or actually modeling what it looks like to try something out without being certain of the outcome. Recall 2.6 (from Excerpt 2) in which Nia tells the pre-service teachers about a moment in which she has posed a task for the class and receives a strategy that she hasn't heard before – a time in which she tried something out with students without being certain of the outcome. Her use of this move in this particular context serves to lighten what might typically feel risky for pre-service teachers – hearing unanticipated student ideas, either in rehearsals or in enactments with students.

Orienting pre-service teachers toward learning and the improvement of practice. A second component of establishing learning environments that support pre-service teachers to engage in collective enactments of instruction, and therefore make their practice public concerns orienting pre-service teachers toward learning and the improvement of practice. In an analysis of Nia's practice, clear patterns emerged in her framing of the work of learning to teach as improvement of practice – an opportunity to develop their proficiency as educators, which in turn serves to create an environment that supports pre-service teachers to take risks and make their practice public. I identified five moves associated with this component: *positioning everyone as learners about and from students' ideas*, *positioning pre-service teachers as learners from others in the room*, *positioning self and other experts in the room as learners from others in the room*, *discussing benefits of the work of learning to teach*, and *connecting to the pre-service teachers' pre-existing frames of the work of learning to teach*.

Positioning everyone as learners about and from student ideas involves making explicit reference to learning from students and providing opportunities for the group to learn from

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students. Recall 2.6 and 2.7 (from Excerpt 2), in which Nia poses a question of everyone in the room, asking them to share what they've learned about a particular student's strategy. Here, she is positioning everyone in the room (experts included) as learners about and from students' ideas. This move works to normalize the practice of learning from students, to orient pre-service teachers to what it means to improve practice inside the work of teaching, and to break down the status hierarchy in the group based on gradations in experience. When considering a particular student's idea or strategy, everyone in the room (pre-service teachers with teaching experience, pre-service teachers without teaching experience, coaches, and teacher educators) is positioned as a learner, regardless of experience. So, in posing a student's response and having pre-service teachers consider it, all in the room are positioned as learners and can equally contribute valuable ideas to the conversation.

Two related moves are *positioning pre-service teachers as learners from others in the room* and *positioning self and other experts in the room as learners from others in the room*.

These moves involve making explicit reference to learning from others in the room or noting particular ideas that have been taken up from others in the room. Consider the following excerpt from Nia's introduction to the first rehearsal:

We're going to ask after the fact what you learned, because we don't want to think of it as just the person rehearsing who is learning.

In this moment, Nia positions the pre-service teachers as learners from each other during rehearsals. In this way, she is orienting the pre-service teachers toward learning and the improvement of practice as audience members in the rehearsal.

Discussing benefits of the work of learning to teach involves making explicit the ways in which teachers will benefit from activities and pedagogies and doing so in ways that highlight pre-service teachers' learning and improvement of practice. Often, this move involves making

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connections to pre-service teachers' pre-existing, positive frames of the work of learning to teach. Consider the following excerpt from Nia's introduction to the methods course on the first day of the program:

You've chosen to work toward [social justice] through teaching. And the way that you do that is by in the classroom, with your kids, being an extraordinary teacher – developing your proficiency as a professional.

Pre-service teachers in this particular program enrolled in large part in order to work toward social justice in their communities. Nia uses this pre-existing frame of the work of learning to teach in order to make a connection to the importance of the improvement of practice.

Orienting pre-service teachers toward collective work. A third component of establishing learning environments that support pre-service teachers to engage in collective enactments of instruction, and therefore make their practice public concerns orienting pre-service teachers toward collective work. In an analysis of Nia's practice, clear patterns emerged in her orientation of pre-service teachers toward collective work. In doing this, she works to shift pre-service teachers' frames of the work of learning to teach from independent work toward collaborative work, which in turn serves to create an environment that supports pre-service teachers to take risks and make their practice public. I identified three moves associated with this component: *positioning pre-service teachers as a part of the community*, *positioning self and other experts in the room as a part of the community*, and *discussing how collective groups will work together*.

Positioning pre-service teachers as a part of the community and *positioning self and other experts in the room as a part of the community* both involve making a connection between individuals in the room and the collective learning community. Often these moves occur

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simultaneously, involving the use of collective pronouns (i.e., we and us). Positioning self and other experts in the room as a part of the community may also involve references to the importance of each role to particular activities and pedagogies. Consider, for example, this statement from Nia's introduction of rehearsals: "Coaches are there to help you *see* [your practice] better." In this statement, Nia positions coaches as a part of the community with a particular and helpful role to the rest of the community – supporting pre-service teachers to see their practice in a more clear light. Similarly, positioning the pre-service teachers as a part of the community can involve references to the importance of pre-service teachers and their perspectives to the rest of the community. Positioning as a part of the community may also involve re-positioning individuals to disrupt the pre-existing status hierarchy in the room. Consider 1.1 and 1.3 (from Excerpt 1). In these turns of talk, Nia often reiterates that she and the other teacher educators and coaches in the room will be participating in the rehearsal alongside everyone else in the room. This move serves to orient pre-service teachers toward collective work.

Discussing how groups will work together involves stating and describing normative aspects for groups to take up to ensure that each person's perspective, ideas, and experiences are valued within the group. For example, when leading discussions, Nia often asks teachers to either share their own idea or to share the idea of someone in their group. In this way, pre-service teachers are oriented toward each other's ideas and toward collective work.

Considerations of an Expert Teacher Educator

After watching a set of video clips from the teacher education sessions, Nia reflected on her own practice and her considerations in supporting pre-service teachers to make their practice public. Analysis of this interview indicates that when working to establish an environment that

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supports the pre-service teachers in the room to take risks and make their practice public in collaborative enactments of instruction, Nia considers (1) *framing the work of learning to teach as experimental, positive, and light*, (2) *framing the work of teaching as complex*, and (3) *building community*. In what follows, I provide illustrations of these considerations using excerpts from the post-program interview with Nia and make connections to what she enacts in practice.

Framing the work of learning to teach as experimental and playful. As seen above, one of the components of Nia's practice is framing the work of learning to teach as experimental, positive, and light. One of Nia's considerations is to frame the work of learning to teach – the pedagogies and activities in which pre-service teachers are expected to engage throughout the teacher preparation program – as *experimental* and *playful*. In the following interview excerpt, Nia had just watched a video of her introduction of the pedagogy of rehearsals. Recall from the sections above that rehearsals are spaces in which an individual teacher enacts instruction in front of a group of colleagues, and a teacher educator pauses the teacher, drawing attention to specific aspects of teaching practice.

I try to frame rehearsals as an experimental space or a playful space, where we're going to be experimenting, we're going to be investigating, we're going to be pausing and trying stuff out, and it's going to be *playful*.

Here, Nia identified that a consideration in her framing of rehearsals is to explicitly say that they are experimental, playful spaces.

When asked if there are other ways in which Nia works to frame enactments of instruction as experimental and playful, Nia identified that another way in which she does this work is through her own use of gesture, tone, and language:

I try to shape the emotional space in the room by my own presence or

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language ... Let's just keep it positive. It's going to be *good*. It's trying not to make anything sound overly weighty or overly serious. It's trying to keep things *light*. It's trying to keep things less serious, less urgent, and less stayed.

Nia also identified that she accomplishes this goal by modeling during methods sessions what it looks like to experiment inside the work of learning to teach:

I want to create a space where they can get up and say, "Ooh, I'm thinking about doing this!" and we can say "Ooh, let's try that out!" And it feels like there's not a huge amount of weight on any particular move that they make. That's what I want, is a little bit of playfulness. So, they can see me go, "Ooh, let's try this question! Ooh, no that didn't work." I want that kind of vibe.

For Nia, modeling can serve two purposes. It both humanizes Nia (Tschannen-Moran, 2001), who is the primary teacher educator and is likely seen as an expert by the pre-service teachers in the room, and it serves to give the pre-service teachers examples of how they might interact inside of rehearsals and other public enactments of instruction. After watching a video clip in which she used particularly playful and animated gestures, Nia said:

You want to offer some of that stuff up so [the pre-service teachers] start to take it on themselves.

Thus, one of Nia's considerations is to offer up tone, gesture, and language that pre-service teachers may take up in order to take on a playful, experimental tone during rehearsals.

Framing the work of teaching as complex. As seen in the sections above, framing the work of teaching as complex is a component of Nia's practice in establishing the learning environment. Another key consideration that Nia has is to frame the work of teaching itself as *complex*. Recall that the complexity of the work of ambitious instruction is grounded in the fact that pre-service teachers must teach in response to what students do as they engage in mathematical tasks while working toward the goal of students' conceptual understanding and

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supporting the participation and learning of all students in the classroom (Ball & Forzani, 2009; Jackson, Garrison, Wilson, Gibbons, & Shahan, 2013; Kazemi, Franke, & Lampert, 2009; Lampert, 2001). It may seem counterintuitive to focus on the complexity of the work of teaching in an effort to support pre-service teachers to take risks. However, in this interview, Nia identified that her purpose in framing the work of teaching as complex is so pre-service teachers would understand that perfection is not an expectation in collaborative enactments of instruction:

We're not looking for perfection, because we don't even expect it – it's not possible. There is no such thing as perfection.

Nia noted that one way she works to do this is by explicitly talking about the complexity of teaching.

Nia noted that another way she does this she works to shape pre-service teachers' expectations of the collaborative enactments of instruction. She anticipates that the pre-service teachers will view any activity in which they speak individually in front of a group of colleagues and expert others as an activity requiring refinement and aiming for perfection. In her framing of the work of teaching as complex, she aims to re-frame public enactments of instruction as definitely imperfect, thereby shaping pre-service teachers' expectations of what rehearsals will look and feel like:

I want them going in thinking, "Oh, I'm probably not going to get it right." Because, I don't want them to think there is a right, and I don't want them thinking that they could get close to getting it right on their first try.

Thus, one of Nia's considerations is to frame the work of teaching as complex so as to normalize imperfection and to shape pre-service teachers' expectations of rehearsals.

Nia identified that another way she frames the work of teaching as complex is through intentional planning of tasks for which the pre-service teachers to engage. For example, Nia

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planned a task in which she posed a hypothetical student idea, and pre-service teachers were asked to brainstorm possible responses. In this task, Nia facilitated the pre-service teachers' sharing of ideas and discussion of the benefits and drawbacks to each suggestion. In tasks such as this, Nia stated that she is working to convey the following:

There is no decision in the moment that's going to be a perfect decision. There are always a lot of factors that weigh in on us. It's something you'll be working on your whole career, so let's not assume you'll be perfect the first day. Some of what we're trying to do is to make it *clear* that in every decision, you could also go a different direction.

Nia noted that one particular aim she has during rehearsals is to ensure that each teacher rehearsing is paused at about the same rate, particularly if the teacher rehearsing is perceived to have more expertise than others in the room. Nia does this in order to frame the work of teaching as complex work and to further emphasize that perfection is not an expectation:

We can't let any rehearsal go by without a lot of pauses, because it makes it seem that *good* rehearsals don't get pauses.

Nia works to ensure that all rehearsals are paused frequently and that these pauses are not moments of reflection on "good" and "bad" rehearsals but rather opportunities to reflect on the benefits and drawbacks of particular teacher practices.

Building community. Nia noted a pre-existing status hierarchy in the room: pre-service teachers with little to no experience with children, pre-service teachers who have some experience with children, coaches, teacher educators, and herself, an expert teacher educator. She viewed this status hierarchy (or "class system," as she called it) as a barrier to the type of community needed for an environment that will support pre-service teachers to take risks and make their practice public. Thus, Nia identified particular ways in which she worked to break down the status hierarchy and build community.

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One primary way that Nia noted she works to break down the status hierarchy in the room is by positioning everyone in the room as learners. A particularly common way in which she attempts to do this is by setting up space in which everyone in the room is learning from student ideas. She identified moments in which she planned tasks that oriented the group to a particular student idea. She also identified moments in which she explicitly made mention of members of the group learning from student ideas.

Nia also noted particular language that she used in an effort to build community. She consistently uses the pronouns “we” and “us” when referring to the learning community, and she acknowledged this as something that she did intentionally in order to establish herself (and the other experts in the room) as a part of the community, together with the pre-service teachers.

Nia takes particular care in presenting herself in the room in order to build community:

I’m going to be perceived as more of an expert because I’m leading things, because I’m from a university, because I have this mathematical knowledge. So, what I want is to add moments of humanity and to find moments of connection.

In the interview, she went on to elaborate on what she means by “moments of humanity” and “moments of connection” as they relate to other moments in the video footage. Nia identified moments in which she highlighted aspects of her own learning trajectory, modeled vulnerability, or joked with the group as moments that serve to bring a sense of humanity to the pre-service teachers’ image of her and serve to create points of connection, which pre-service teachers can relate to and reference again at later points in the program.

Discussion and Conclusion

In this study, I sought to understand how teacher educators can establish learning environments that support pre-service teachers to take risks and make their practice public.

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Toward this aim, I decomposed the practice of an expert teacher educator into teachable and learnable components and associated moves, thereby responding to Grossman and colleagues' (2009) call for decompositions of practice. More specifically, this study provides the field with a framework of the practice of an expert teacher educator in working to establish a productive learning environment. This framework includes three particular components of practice: 1) framing the work of learning to teach as experimental, positive, and light; 2) orienting pre-service teachers toward learning and the improvement of practice; and 3) orienting pre-service teachers toward collective work. It also includes moves associated with each component of the teacher educator's practice. In addition, I provide the field with a window into what an expert teacher educator considers in engaging pre-service teachers in taking risks and making their practice public.

It is important to note that the moves (which are outlined in Appendix A) are not an exhaustive list of moves. In studying expert teacher educators across four contexts, my team and I have found that there are additional moves that other expert teacher educators employ to accomplish similar purposes. For example, we found that another move facilitators of teacher learning experiences use in service of *framing the work of learning to teach as experimental, positive, and light* is to celebrate teachers' collective experiences.

In addition, it is important to keep in mind that the framework I have offered is not intended to script the work of the teacher educator. Rather, the components and moves are intended to provide a decomposition of the practice of teacher education, while honoring the complexity of the practice. In fact, the complexity of the practice of teacher education lies in tension with the need for representations and decompositions of the practice. Researchers have identified a need to wrestle with this tension in research (e.g., Lampert & Graziani, 2009). The

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practice of teacher education is complex because it is in response to what pre-service teachers know and do; teacher educators cannot plan for or anticipate all that will happen in a teacher learning setting. However, when learning a complex practice like that of a teacher educator, it is important to have a sense of the concrete things one needs to be able to do and to have some moves with which to accomplish these things.

In fact, the complexity of establishing learning environments that support pre-service teachers to engage in collective enactments of instruction is illustrated by Nia's practice (see Excerpt 1 and Excerpt 2). The moves inside of the framework were rarely seen in isolation in any one moment of Nia's practice. It is her coordination of these moves that serves to establish an environment which pre-service teachers to engage in collective enactments of instruction, and therefore make their practice public

Implications for Research and Practice

This study is situated in mathematics education because, first, I am a mathematics educator, so it reflects my personal area of expertise, and second, because the field of mathematics education has done significant work in the area of intellectually ambitious instruction and teacher preparation (e.g., Franke, Kazemi, & Battey, 2007; Lampert, 2001). However, the implications of this study are not necessarily limited to the work of mathematics teacher educators and researchers but rather have implications for practice-based teacher educators and researchers in a broad range of content areas. Engaging in risk-taking and making practice public is required of pre-service teachers across contexts in teacher learning models that include collective enactments of instruction. Additionally, my findings are not necessarily specific to mathematics. A possible focus of future investigation is to determine whether these findings cut across content areas within practice-based teacher education program designs.

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Further, the implications of this study are not limited to pre-service contexts but may have implications for other teacher learning settings, including in-service professional development sessions. Understanding what aspects of facilitation practice might be unique to working with in-service teachers is another important area for future research. While pre-service contexts engage novice teachers, many of whom have had few interactions in school settings, in-service contexts engage teachers who have had rich experiences with students on which to build their learning experiences. In addition, pre-service teachers are just beginning to develop instructional practice, while in-service teachers have developed instructional practice to varying extents in their own classrooms. The nature of risk-taking in in-service settings, then, might be different from that in pre-service settings, and thus, the work of the facilitating risk-taking may also look different. Particular contexts that warrant analysis include professional learning communities, video clubs, and professional development sessions.

One of the limitations of this study is that the video data does not include planning sessions with teacher educators. In our post-program interview, Nia noted particular aspects of her practice that are not visible in the video data but occurred in pre-program and in-the-moment planning conversations with other teacher educators and coaches. For example, Nia noted that she is able to take up, represent, and otherwise validate pre-service teachers' ideas so consistently because of work she does in her planning. She intentionally plans tasks with a low barrier-to-entry so many pre-service teachers can contribute and can then be positioned competently. There is a need for future research on teacher educators' planning for teacher learning experiences and, particularly, their planning to support pre-service teachers to take risks and make their practice public.

Another limitation of this study is that teacher perspectives were not included in the data

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corpus. In this study, I considered the moves of the teacher educator and the effect they had on teachers and the learning environment, based on analysis of the interactions between pre-service teachers and the teacher educator. There is a need for future research that includes teachers' perspectives.

Practically, this study suggests that when preparing to facilitate teacher learning experiences in which teachers must take risks and make their practice public, it seems important for teacher educators to ask the questions: 1) How can I make this learning environment feel experimental and playful? 2) How can I convey that the work of ambitious teaching is complex and takes time, practice, and a willingness to make mistakes in order to learn? 3) How can I work to build a community, so teachers don't perceive themselves as being judged individually?

In closing, I view what happens in the work of the facilitation of teacher preparation programs as important, ultimately, for student learning opportunities. Teachers' productive engagement in collaborative, practice-based learning communities that focus on the practices and principles of ambitious instruction results in teachers' learning to teach in a way that treats students as sense-makers, value and incorporate a broad range of students' ideas and perspectives, and design tasks that allow students to access rigorous content.

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Appendix A: Components of the practice of an expert teacher educator

<i>Move</i>	<i>Definition</i>	<i>Example</i>
Framing the work of learning to teach as experimental, positive, and light		
Using a playful tone and gestures	The teacher educator uses a light, playful tone in the framing of an activity OR the teacher educator uses playful gestures in the framing of an activity	
Using humor	The teacher educator interjects in the framing of an activity with humor (gesture or talk)	
Using language that conveys experimentation	The teacher educator uses language such as “try it out,” “play with it,” or “experiment” when framing collaborative enactments of instruction.	“Coaches are going to pause you and say, ‘let’s do it a little differently. Let’s have some fun!’”
Framing the work of teaching as complex	The teacher educator describes teaching as requiring a great deal of knowledge and skill on the part of the teacher in an effort to normalize imperfection	“It’s hard to learn to do well, and you cannot learn to do well quickly. You’re going to be teaching on Monday, but on Monday, you are not going to be the teachers who you want to be and who you are going to be in November, two years from now, five years from now, or ten years from now.”
Giving permission to try things out	The teacher educator discusses the productivity of trying something out without being certain of the outcome or models what it looks like to try something out without being certain of the outcome	“When I tried this out for the first time, it completely flopped.”
Orienting pre-service teachers toward learning and the improvement of practice		
Positioning everyone as learners about and from students’ ideas	The teacher educator both models taking a learning stance and positions the group as learners by talking about learning from students.	“When I heard this from a kid, that was the first time I ever saw it that way. That’s what makes math teaching so fun – when you’re like ‘I’ve never seen it that way!’, and you learn something.”
Positioning pre-service teachers as learners	The teacher educator refers to the teachers in the room as learners.	“We’re going to ask after the fact what you learned, because we don’t want to think of it as just the person rehearsing who is learning.”
Positioning self or other experts in the room as learners	The teacher educator demonstrates that she is (or other experts in the room are) learning from others in the room and/or learning from this experience.	“We’re here to learn from you!”
Discussing the benefits of the work of learning to teach	The teacher educator explicitly mentions a way in which an activity benefits teachers	“Your coaches are here to help you see better when you watch teaching.”
Orienting pre-service teachers toward collective work		
Positioning pre-service teachers as a part of the community	The teacher educator refers to the pre-service teachers as a part of	“We all have something important to offer to each other.”

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	the collective teacher learning community in the room	
Positioning self and other experts in the room as a part of the community	The teacher educator identifies his/herself (or other experts in the room) with the teacher learning community	“We are excited to support you to serve your students well this summer.”
Discussing how collective groups will work together	The teacher educator orients teachers to each other	“I’m going to ask you to share either how you saw it or how someone in your group saw it. I want you to listen, because maybe you’ll be able to share how someone in your group saw it”