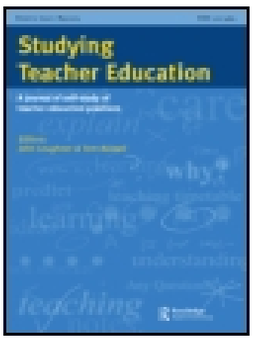

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Teacher Educators Struggling to Make Complex Practice Explicit: Distancing Teaching through Video

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ABSTRACT

This self-study examines our use of video with a cohort of preservice teachers as a means to address the challenges we face as teacher educators who are working with candidates in extensive clinical practice. We came to video as a nuanced way to discuss and make meaning of complex practice and as a means of bridging theory and practice. We found that our use of video supported preservice teachers and their mentors in decomposing, representing, and approximating practice. We also found that, as suggested by the literature, the use of video distanced preservice teachers from their experiences in practice. Finally, we discuss the implications for using video to support the work of rich clinical teacher education.

Formadores de docentes que se esfuerzan por explicitar lo complejo de la práctica: distanciando la enseñanza utilizando videos

Este self-study examina nuestro uso de videos con un grupo de estudiantes de pedagogía para hacer frente a los desafíos que enfrentamos como formadores que trabajan con estudiantes en prácticas clínicas extendidas. Llegamos al uso de videos como una forma matizada de discutir y asignar significados a lo complejo de la práctica y el proceso de tender puentes entre teoría y práctica. Encontramos que nuestro uso de videos ayudó a los estudiantes y sus mentores a descomponer, representar y aproximarse a la práctica. También constatamos que, tal como lo sugiere la literatura, el uso de videos hace que los estudiantes tomen distancia de sus propias experiencias en la práctica. Finalmente, discutimos las implicancias del uso de videos en el apoyo y enriquecimiento del trabajo con una formación docente clínica.

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Research in teacher education has pointed to the need to increase fieldwork opportunities and ground the learning of teaching in actual classrooms (Darling-Hammond, 2006). This call has led to innovative residency programs where preservice teachers are in classrooms throughout their entire program (Solomon, 2009). They are typically placed in classrooms with highly qualified mentors for extended periods where they develop their teaching practices through enacting theory. In 2009 we began designing such a program at our state

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university. In collaboration with Newark, we designed the secondary strand of Newark Montclair Urban Teacher Residency (NMUTR) program in order to provide preservice teachers (who we refer to as "residents") with an immersive, rich, contextual experience of becoming math and science teachers (Taylor & Klein, 2015). The foundation of many of these programs, based on research that student teaching is one of the most significant experiences for future teachers (National Research Council, 2010), is that dramatically increased time in a classroom gives them experiences that ensure they are well prepared for their own classrooms: increased practice increases capacity. However, we know from the work of Britzman (1991) and others (Bullough et al., 2003; Capraro, Capraro, & Helfeldt, 2010; Darling-Hammond, 2006) that, without a framework that provides for reflection and meaning making, additonal practice will not necessarily create better teachers. Nevertheless, there is a call from policy makers to increase the numbers of hours that preservice teachers spend in classrooms (Ball & Forzani, 2009; Darling-Hammond, 2006; Labaree, 2010). This creates a challenge for teacher educators: How do we make clinical experiences meaningful and enriching, particularly when increased fieldwork may mean even fewer opportunities for coursework? In what ways can we scaffold learning in the field when we are not present?

While practice is an essential part of learning to teach, teacher education has struggled to manage the challenge of what Grossman et al. (2009) call the area of "human improvement" in which "practice depends heavily on the quality of human relationships between practitioners and their clients" (p. 2057). Teaching is a *complex* practice, where practitioners are called upon to navigate and make judgments about numerous relationships, contexts, contents, and policies (Opfer & Pedder, 2011). Helping others to improve their practice is an additional challenge; doing so in a practice-based program provides its own distinct challenges that many will face as the legislation increases student teaching hours (Mooney, 2015). In the Newark Montclair Urban Teacher Residency, after two years our residents were so immersed in their practice that they often lacked the necessarily distance from their work that would help them improve and become inquirers about practice. We needed to give them opportunities to remove themselves from daily practice in order to better reflect and theorize about their work. We understood that, as Loughran (2002) has explained, productive reflection for preservice teachers focuses on their classroom experiences and process of learning how to teach but it does not happen automatically. It requires that teacher educators provide tools as well as a focus and purpose for that reflection. As Grossman et al. (2009) note, much of this work is under-theorized, and their cross-comparative analysis of how different professions attempt to teach novices yielded three significant types of instruction: representations of practice, decompositions, and approximations. These served as our analytical framework for discussing the use of video in preservice teacher education.

As one response to these challenges, in collaboration with our mentors, we developed a program component using video to deliberately address their teaching practices in the classroom. We faced two important challenges that we believe are increasingly faced by those who do the work of teacher education: (1) With the move to more preparation that blurs the lines between courses and field experience, we needed to explore the use of more complex tools to be able to reflect and examine the nuanced in-the-moment experiences of classroom practice. (2) As our traditional teacher education programs in the USA face policy changes that require videotaping for certification — a growing trend — we wanted to see if we could find productive ways to use video, not merely comply with the new requirements. We wanted to know if the use of video, in multiple forms, would encourage residents

to develop an understanding of complex practice, as a means of bridging the gap between theory and practice. Did our video protocol and structure afford us the opportunities for learning to teach suggested by Grossman et al. (2009)? In our self-study of this process we asked these questions:

- How did the use of video afford opportunities for preservice teachers to engage in complex teaching practices? How did their peers and mentors support this work?
- How did the use of video bridge theory and practice for preservice teachers?

First we describe our work on video and why we conceived of this particular tool. Next we share our self-study research design, our data collection, the conceptual framework that guided the analysis, and our analysis of students' use of video. Finally, we discuss our findings and the implications for using video to support the work of rich clinical teacher education.

Can Video Facilitate Learning Complex Practice?

Over the last 10–15 years there has been increased interest in using video to support a number of important pedagogical purposes in teacher education, in part as a reaction to the kinds of problems with which we continue to struggle. Because video captures real time classroom experiences, it allows teachers to view teaching authentically and in all its complexity (Cheung Kong, Schroff, & Keung Hung, 2009; Marsh, Mitchell, & Adamczyk, 2010; Muir, Beswick, & Williamson, 2010; Rosaen, Lundeberg, Cooper, Fritzen, & Terpstra, 2008; Zhang, Lundeberg, Koehler, & Eberhardt, 2011). Video enables teachers to speed up, slow down, and focus deeply on moments, thereby supporting teachers in identifying important aspects of practice and focusing their attention on how to apply what they learn to their teaching (Beswick & Muir, 2013; Sherin, Linsenmeier, & van Es, 2009). Given this research, we wondered if video would be useful in helping our preservice teachers make sense of the complexity of the classroom experience. Some studies have found that the use of video helps teachers name their teaching decisions (Beswick & Muir, 2013) and pull back the curtain to reveal the why of what they do (Carroll, 2005; Chaliès, Ria, Bertone, Trohel, & Durand, 2004; Koc, Peker, & Osmanoglu, 2009; Meijer, Zanting, & Verloop, 2002). For new teachers who are often so deeply immersed in doing – finding tools to see, unearthing the why, making sense of the complexity, and supporting reflection about learning to teach were of interest to us.

The research on using video in teacher education also indicates that it can support deeper reflection (Calandra, Brantley-Dias, & Dias, 2006; Cheung Kong et al., 2009; Marsh et al., 2010; Sherin & van Es, 2009) and that such reflection can have important consequences for student outcomes (Ward & McCotter, 2004). This lay at the root of our purpose in using video – we hoped that we would find a tool that might strengthen and deepen reflective capacity in our residents. Additionally, Rosaen et al. (2008) found that, when using video, student teachers were able to shift the content of the reflection to one on instruction. Related to this, video use encourages "knowledge-based reasoning" that "refers to the ability to reflect on and interpret that which is perceived" (Kleinknecht & Schneider, 2013, p. 14). It allows teachers to "treat students' ideas as objects of inquiry that deserve 'careful consideration' (Cohen, 2004, p. xiv) and are worthy of trying to understand" (Sherin & van Es, 2009, p. 218). Finally, we believed that video might support the development of complex practice because "effective reflection can serve as a catalyst to reconstruct prior understandings and refine

pedagogical thinking" (Calandra et al., 2006, p. 137). This guided reflection has the potential to support the development of practical knowledge and provide some distance for reflection for residents deeply immersed in practice.

In developing reflective practitioners, video-based learning also helps to manage the "theory/practice divide" (Beswick & Muir, 2013; Ethel & McMeniman, 2000; Koc et al., 2009; Marsh et al., 2010; Rosaen et al., 2008). In focusing on real practice, video reflection assists teachers in deepening their pedagogical content knowledge (Beswick & Muir, 2013) and encouraging a "habit of praxis" (Hewitt, Pedretti, Bencze, Vaillancourt, & Yoon, 2003, p. 500) by concentrating on the decisions that combine theory and practice. In Ottesen's (2007) study of how video helps to manage this divide, he writes that "what student teachers learn in internship cannot be identified as being theoretical or practical; rather, particular combinations of knowing emerge in students' and mentors' accounting practices" (p. 621). Thus video supports this kind of generative, co-constructed knowing through practice (Masats & Dooly, 2011), yet an issue that echoes throughout the literature is that merely using video does not ensure all the benefits cited. What then are the best structures for supporting video use?

Self-Study Methodology

Our research questions planted important seeds for us to conduct a collaborative self-study of our video use practice as teacher educators. For who better to examine and reflect on teacher education practices than teacher educators themselves (Garbett & Ovens, 2012)? We used self-study as a methodology because it provided us the tools to search for meaning rather than solutions (Loughran, 2007) and we believed the self-study community would provide a rich scholarly context in which to explore these issues (Dinkelman, 2003). We wanted to move beyond theory and really focus on "our pedagogical imperatives, responsibilities to our student teachers [the residents] as well as their students" (LaBoskey, 2004, p. 819). Common to self-study, our inquiry emerged authentically from the challenges of our residency program and was a flexible and generative process (LaBoskey, 2004). Our self-study research was self-initiated and focused, improvement-aimed, and collaborative. Much like other self-studies, we used a variety of qualitative methods, such as videos, written reflections, online discussion board responses, and transcribed interviews (LaBoskey, 2004) to uncover the complex understandings of how residents make sense of their teaching captured in video. These methods helped us to understand the *how* and *why* of a phenomenon and the underlying processes (Denzin & Lincoln, 2005). This is particularly important in the use of video as a mirror of teaching, where we were trying to make sense of how our residents reflected on their videos and the meaning they were making from them. When researchers try to unpack thinking, qualitative methods allow them to peer inside complex understandings. We provide a clear description of our process and findings in order to develop "trustworthiness or verisimilitude rather than truth" (LaBoskey, 2004, p. 853).

Context of the Study and Video Use

For this self-study, we examined the use of video protocols with five residents and five mentors. The residents were all members of a secondary cohort of math and science urban teacher residents in the Newark Montclair Urban Teacher Residency. Residents chose to

participate in research related to the residency at the beginning of the program, but during their residency doctoral students were in charge of data collection; we did not know who had chosen to participate in the research until after residents graduated. In the case of this cohort, five of six residents chose to participate. All mentors chose to be included, but in order to protect the confidentiality of the non-participant, we did not include responses from his mentor in this study. Participation included allowing us to collect their work for the program's courses in addition to participating in a series of interviews throughout the program. Residents owned the videos and chose which portions of the video to upload and share. This allowed them control over what others saw of their teaching. This work included video clips and reflections on the video and as such gave us consent to write about the clips the residents uploaded. The schools with which we partnered gave consent for residents to videotape their courses and sent out a notice to parents alerting them to this. Video was used solely for instructional purposes and we focused our research and research questions on the meaning that residents made from their videos (as opposed to doing research that would involve revealing information about the students) and not the videos themselves. Video clips were uploaded to a private Google blogger website that had strict controls over who could view them.

Although there are a number of well-established and effective protocols for using video (Calandra, Brantley-Dias, Lee, & Fox, 2009; Etscheidt, Curran, & Sawyer, 2012), we chose a slightly different tactic in developing one for use in our program. Like theirs, ours involved viewing, interpretation, and evaluation. Originally, the protocols we developed (see Appendix 1) were developed to help support mentors in making their practice more visible. Frustrated with how best to convey their intentions and instructional moves, we worked with the mentors collaboratively to create a means for using video that was both flexible and guided (Klein, Monteiro, Scott Kallai, Romney, & Abrams, 2015). Moving into a new cohort for the residency, mentors suggested that the residents mimic the process modeled by the mentors. Concerned about the amount of work involved in regularly debriefing videos with residents, we made the decision to embed the use of video within our faculty-run course, as we already had a regular blogger site set up for sharing and debriefing of critical incidents.

We began the year by teaching residents how to observe video in two capacities. First we viewed video collectively in our course. Residents watched a number of videos on inquiry-based practice, wrote individual notes, and looked at emergent patterns and themes from those notes. Then we had whole-group discussions with the cohort to unpack the videos. Second, residents began to videotape themselves and chose a clip to discuss with their mentors. They used the video protocol that we collaboratively designed with mentors the prior year. Mentors and residents decided which motifs or themes to explore, and the mentors led the residents through one or two cycles of video reflection. Although we knew that increasing cycles might increase reflection, timing constraints only allowed for these initial cycles. Additionally, this was a relatively new way of using video for the mentors and for us, and so we considered this a pilot experience. Finally, starting at the end of the fall semester, we asked residents to videotape themselves on a monthly basis, choose a single clip from that video and post it in a private, online discussion forum. Included in their posting was a critical-incident discussion of what they chose, why, and what it revealed to them about their teaching. Thus residents had opportunity for both peer and individual reflection.

Data Sources

For our self-study, we used three sources of data: residents' videos and online responses, interviews with mentors and residents, and our own field notes and reflections. As described above, these video clips and online responses were posted monthly. We analyzed a total of 25 posts, and each post had from two to seven responses from us and resident peers. At the end of the academic year, all residents and mentors were interviewed and one of the questions asked about video use to support their learning. Additionally, we took field notes during mentor meetings and our debrief meetings. We also invited mentors to keep track of how they were using video through a Google document that we shared online. In this way they could make suggestions and comments about the process in the moment and share their strategies with others. Finally, we wrote our own reflections on the process of using these videos as an instructional tool.

We acknowledge that one of the limitations of this self-study is that we use text to represent meaning derived from video representations of practice. The use of technology in the form of video affords new opportunities to represent practice, but the work of describing and analyzing that work is still largely limited to representation through language. While videos help represent complex practice, writing about this work is still challenging and some have suggested the importance of using multi-media in order to better express the learning from such practice. While we recognize that language cannot completely represent embodied experiences of teaching, for the purposes of this study, we are using reflections that are expressed in language to understand the meta-narrative of our residents.

Data Analysis

Our data analysis was collaborative, reflective, and participatory, and we engaged in several recursive cycles of data analysis. Although guided by the literature around the use of video, we entered into coding our data without pre-determined codes. We read through all the data and then developed initial codes using our first round of responses. Examples of codes for this round of responses included description of practice, analysis of discourses, analysis of student thinking, and analysis of student behavior, as well as the moments in teaching the residents were engaged in opening, small-group work, and closing. Although we did watch the posted video clips, our focus was on the text related to those clips; we focused on how residents wrote about and responded to the conversation about their postings.

Once we felt we had reached "theoretical saturation" (Bogdan & Biklen, 2007, p. 75), we returned to the data and analyzed them using the constant comparative method (Glaser & Strauss, 1967). During this process we went to the literature in search of a framework that would support our initial codes and help us develop our themes. Attempting to describe all incidents in the data as well as make meaning was something we did both together and separately. This led us to Grossman et al.'s study (2009) on complex practice.

If complex practice were how we conceptualized the problem, Grossman et al.'s (2009) work on how to teach practice was a frame for analyzing how video use supports learning about complex practice for preservice teachers. It struck us that the data on video use were examples of what they call decompositions, representations of practice, and approximations. The authors explain that decompositions are when students have the opportunity to "break down complex practice into its constituent parts for the purposes of teaching and learning" (p. 2069). In many cases, preservice teachers need opportunities to practice teaching in

smaller pieces and then reflect on these so they can "'see' and enact elements of practice more effectively" (p. 2069) and pay attention to particular teaching features. Representations of practice are those examples that "provide novices with opportunities to develop ways of seeing and understanding professional practice" (Grossman et al., 2009, p. 2065), i.e. case studies and observations. Key to this kind of learning is when "novice teachers had access to an experienced teacher's pedagogical actions and thought processes" (p. 2067). Although our residents were in mentor classrooms from the start of the school year, we found that mentors and residents often had trouble naming and identifying the instructional moves behind their teaching. We used video to provide some opportunities for teachers to name their decision-making, slow down and explain their processes, and represent practice. Approximations of practice allow preservice teachers to practice their practice, through simulations or role plays. So, for example, in a student teaching seminar a student might write and present a "do now," or opening, for their peers. However, because our residents were immersed in teaching every day, finding opportunities to approximate practice was challenging. We realized that video could be used as a way to do this.

Using the Grossman et al. (2009) framework as an analytical lens for our data, we created a data table for the video responses that included segments for the initial posts and relevant responses for each theme. Finally, we organized the data based on initial responses, peer responses, and mentor responses. We thus had four levels of coding: our initial codes, the aspect of practice the resident wrote about, the kind of teacher education practice it fell into (i.e. Grossman et al.'s categories), and the person responding (resident, peer, or mentor). This process helped us to triangulate the data (Bogdan & Biklen, 2007).

Findings

Our findings are organized into the three practices from Grossman et al.'s (2009) conceptual framework. We present these findings from a multi-vocal lens that includes the perspectives of residents themselves, their peers, and their mentors to make meaning of the use of video to examine complex practices.

Decomposing Practice

By analyzing our data, we noticed how video afforded opportunities for the residents to decompose practice. Decomposing practice involves "breaking down complex practice into its constituent parts for the purposes of teaching and learning" (Grossman et al., 2009, p. 2069). Breaking teaching down into smaller pieces can help teachers to grow because it draws their attention to important components. This process helps new teachers to focus on valuable aspects of complex practice that are often blurred in the messy experience of the classroom.

Most of our residents' posts demonstrated general steps towards decomposing practice. While we found that video responses included some level of analysis about their work or insight into their own thinking, there were some posts that remained largely descriptive. Then, either through a specific assignment (i.e. we asked each resident to do a post around student discourse which pushed them to analyze for their video for particular themes or issues) or probing questions, we would try to deepen the analysis of those posts.

A number of residents were able to do more than describe in their writing of posts. For example, Kristen wrote:

> I realized how important it is to really move around the classroom. I noticed that some of my students won't actually ask clarifying or content-related questions unless I come to their group and ask how they're doing. I tell the students at least three times that they would be working in pairs. Being a presence in the classroom … allows me to be a resource person and make sure that all of the students are focused and on task.

The time spent re-watching the video and writing about her connections encouraged her to achieve a new insight about her work. This kind of attention to practice seems deeply connected to how we develop it. Interestingly, as they seemed to get better at noticing, the residents were better able to engage in decompositions of practice. Conversely, as we pushed them to engage in decompositions, they were able to increase their noticing.

Below, Kristen explicitly talks about the learning that came from re-watching the video and thinking about explaining what she was doing:

> … instead of having the students take a minute or two to analyze the possible reasons for the statement, I went ahead and performed an awesome [sarcasm implied] traditional teaching moment. I even asked one question in the way that we have been told repeatedly not to do: "and the other option is … ?" It was a little painful to watch this clip, because there was no way to determine if all of the students understood the lesson, and I did not have any way for them to produce something that demonstrated their understanding … I do think that it would have been a lot more valuable to have the students think about it for a minute and then produce the Punnett Square.

Re-watching the video led Kristen to re-evaluate a number of problematic areas in the lesson, including discourse patterns (asking a fill-in-the-blank question), assessment ("there was no way to determine if all of the students understood the lesson"), and student ownership of the learning (suggesting students could produce the Punnett Square themselves). Here the video allowed her to break down complex teaching decisions into areas of study and analyze them to inform her future practice.

We also found that decomposing practice with video provided the residents with opportunities to attend to student thinking, a challenging task for preservice teachers who are trying to attend to any number of issues in the moment of practice. The act of decomposing teaching examples seems to have supported this. In the video analysis there was a lot of attending to *students* (i.e. levels of engagement, participation, etc.), but fewer moments where the video itself provided the structure to push them to examine how students were thinking about ideas. For example, Lisa makes several astute observations about the ways her practice encourages or discourages participation:

> What surprised me was that Sabrina jumped in. Although she's quiet, she had something to say … I think that there are a few things going on here that "let" Sabrina participate: first … that I had already said that *I* don't know the answer made it feel safer for her to try an answer … it was a very free moment of thinking and applying our knowledge, without worrying about being wrong … I also think it's clear that she was already engaged – and was actively thinking – since she came up with an idea so quickly. I think seating arrangement (and my location at this moment) also plays a role … Since I was so close to her, it made it easy for her to speak in her soft voice and for me to acknowledge the question.

Of particular interest in this statement is how Lisa reflects that by removing her authority as the teacher about the answer, she opens a space for the student (Sabrina) to safely attempt a response. Additionally, Sabrina's speed in answering provides evidence that she is engaged and actively thinking.

Requiring that residents respond to their peers' video clips and reflections provided them with opportunities to coach each other with ideas about student engagement, curricular

development, classroom management strategies, and other issues important to preservice teachers. Inviting collaborative reflection assured that the residents would not fall into the trap of what Fendler (2003) describes as individual reflection, which can be self-reinforcing and circular. Sharing their decomposed practices as "representations of practice" become a way for others to deepen their thinking and analysis. Because they were working with students at either one of two schools in the same district, these videos became cases for analysis that were a short leap from their own classroom, but just far enough to provide critical distance.

In addition to shifting the control of the reflective tool from us to our residents, we also invited mentors to use the video protocols in differentiated ways to meet the individual learning needs of the residents. This allowed the residents another context for thinking about their practice and one that they often seemed to feel was more valid than our perspective as teacher educators. Leanne used video to support her mentee in decomposing his own practices, many on which he struggled to reflect. Specifically, John had difficulty noticing and attending to how he used questioning in the classroom, so they chose to examine questioning. Leanne reported at a mentor meeting that "John noticed that he is giving students the answers to his questions" and this allowed her to discuss how students need time to process and think as well as opportunities to "unpack a concept." Interestingly, when we viewed John's video and his responses, we similarly found that he struggled with this, that he tended to ask questions that included the answer and left little space for students to respond to questions in depth. The video opened this collaborative conversation between the mentor and resident and gave John the opportunity to notice aspects of his teaching practice for himself rather than relying on his mentor or us for the critique. Realizing that wait time and questioning were issues for John, at the mentor meeting we (faculty and mentors) collectively strategized about how video could further support him. We began to notice that he referred to "unpacking" in his later reflections.

Karen similarly noted the use of video for decomposing practice. Although she and her two residents used video in a variety of ways, she ultimately settled on using it to support the residents in analyzing their own practice: "I think it's most effective if you are the one looking at yourself and dissecting what you have done, decisions that you made in class while you're teaching."

Representations of Practice

Representations of practice include the visible ways that teachers represent their practice through student work, lesson plans, and narratives. In many ways, the use of video is itself a representation of practice and each time a resident chose a piece of practice to share with their peers, they were engaged in the act of choosing a representation of practice. For this reason, we did not focus on the residents in this category, but rather focused on how their peers and mentors also engaged in this practice through the use of video. We were interested in the affordances of video practice on the entire community, how observation of and dialogue about video gave others access to "teacher's pedagogical actions and thought processes" (Grossman et al., 2009, p. 2067).

As we examined our data to see where we saw representations of practice happening through the use of video, we noted that this kind of practice emerged through peer responses. Peers served to provide a number of types of responses. We noticed that overall,

peers commented to provide affirmation of each other's choices and practices, and that most of the responses were positive overall. We acknowledge that this is an important part of being "critical friends" (Schuck & Russell, 2005), but were hopeful that they would also give constructive feedback. Aside from this, we identified two significant themes in the responses.

First, *peers made connections from what they observed to their own practice and classrooms.* While initially this seemed relatively obvious to us, we noticed that overall it served as an important bridge for them to use videos as representations of practice so that they could learn from each other. Because their contexts were so similar (in one case the residents even shared a mentor, although they were responsible for different classes), they were able to see these cases as highly relevant to their own and thus they served as valuable tools. This is particularly important in a practice-based teacher education program where residents are immersed in classrooms soon after entering the program. While learning *in situ* is valuable and something we believed would make for more prepared and effective new teachers, we undercut the value if there are not enough opportunities for them to reflect with some distance from that context. The structure of using video, both for themselves and their peers, provided this.

For example in response to Justin's post about vertex and absolute value, Lisa responded:

> I think you did a great job getting the students to define vertex … and even better that one student confused it with vortex! I couldn't hear that definition, but clearly you knew what he was getting at and corrected it. I think this is one area where I struggle … something like a simple definition (that they should know …) seems easiest for the teacher to just give it to them simply. Yet, this didn't take a lot of time out, and I think for those who *didn't* know vertex (I am getting the idea that they really *should* have,) it is more helpful for their peers to give them a sense of "you should know this by now" instead of their teacher saying it.

Here Lisa made a connection to her own struggle and practice in affirming Justin's choices. The context is close enough to her own for this to be a useful case for thinking about how to support students who are struggling and when to give information to students.

Second, *residents used responses to offer alternatives and suggestions.* They understood both the content and the context of those they were responding to and they were able to be supportive peers who offered constructive feedback. For example, Lisa offered an idea when Jorge was frustrated with a lesson on Newton's First Law in which he used a hockey puck to illustrate issues of friction:

> I totally got into the role as student watching you, and one "complaint" … is that maybe you just pushed it harder the 2nd time … also, I want to *feel* the lack of friction myself. So a suggestion I have would be to let the students push the puck around. Maybe have one student push it with the air off, and measure the distance, then see if anyone could push it farther. Let a bunch of kids push it (all without air) and ask if they think anyone can get it to go farther … ask how? If this is an intro to friction/forces, they may say "a stronger person can get it to go farther" or maybe might think of oiling the floor or something … then turn the air on and either *you* win the competition by a landslide, or let the same students push again and compare their before/after distances … and then ask them what they think is going on … I would want to push it myself instead of watching you do it (or at least in addition to watching you do it!). Especially for kinesthetic learners, I think feeling the difference between floor and air friction will really make a difference.

Lisa's feedback was particularly effective because she provided it from the perspective of a student or learner, a position that is often difficult for the person teaching to take up. She shared her frustration of watching the lesson and not having the opportunity to physically

push the putt to feel the different kinds of friction. There were numerous examples of moments where residents were able to support each other's learning and build a learning community. Their familiarity with each other's classrooms and the principles of the program seemed to be significant factors as sources of intellectual and pedagogical support.

Mentors were also able to use the videos and the protocols we co-constructed as a kind of representation of practice. For example, Kendra used the protocols to provide Justin with a representation of practice that was deeply embedded in his current context. She videotaped herself teaching and she invited Justin to choose a relevant motif when viewing the video. Justin chose "teacher as facilitator of knowledge construction" and in reflecting on the meeting, Kendra found that

> he discussed my selection of materials and ways in which I chose to use them. He discussed how I elicited student responses using the student bodies. He noticed how I scaffolded the concepts surrounding a number line. Justin also discussed the ways in which I would phrase my questions, which required higher-order thinking on the part of the students. Sometimes it is just as simple as rephrasing the question to start with "why?"

As opposed to case studies, which may or may not provide a representation of practice that allowed the residents to approximate judgments, video allowed them one that was identical to their teaching context. Additionally, it allowed for a slower and more deliberate debrief than took place when residents merely observed their mentors. Justin wrote, "It was good to look for stuff together – you sit together – you can dissect it a little more – because something you might miss if you are just observing by yourself. Watching together, Kendra can point out particular issues to me." Next they videotaped Justin and used the same motif to analyze his own video. Here he had the opportunity to analyze his practice, using the model of his discussion with Kendra. He wrote:

> Like in my video–I had missed X talking–seeing it in the video helped me … Should I have said something in the moment and interrupted what I was teaching? Sometimes you have to acknowledge the kids–but it is hard to know when–sometimes it could be just a tap on the arm.

As we read their responses we were also struck by how much our residents were doing the constructing of knowledge, unlike traditional debriefs where the faculty member or mentor often dominates the conversation. We questioned whether the use of conventional structures of observation/debrief aligned with our beliefs about inquiry and constructivism.

Approximations of Practice

Approximations of practice are a means of allowing practitioners to practice their work outside of its natural context. Obviously, in a program that immerses preservice teachers in practice, we were not able to remove them from the teaching context. While not explicitly geared towards approximations of practice, video enabled our residents to slow down and focus on a specific area of their teaching. This was invaluable to us as we were not able to practice areas of teaching with them on a regular basis. But we *could* assign them all to videotape themselves as they did a lesson's "do now" or warm up activity. Then we could conduct an online session particularly geared towards this.

For example, one of the most common themes that emerged from the video analysis was a focus on student discourse. In part we attribute this to an early course assignment that we developed to encourage them to focus one clip on patterns related to discourse. The assignment began with residents reading Cazden (2001), who asks teachers to pay attention to

particular discourse patterns in classroom and the factors that contribute to them. This reading is paired with an audiotape assignment in which residents audiotaped their teaching, transcribed a few minutes of that class, and then used the transcript to analyze discourse in their course. For instance, they looked to make sense of who had control of the discussion, who posed and answered questions, and whether there was teacher to student dialogue or student to student dialogue. This primed them to focus on discourse throughout their video work and some of the residents also focused their action research project on this issue. Additionally, an early case study of a young person in the first few months of the program encouraged "kid watching" (Goodman, 1978), another assignment to help them focus on student thinking and dialogue. We then asked them to focus on these issues in their classroom practice and videotaping. They used the videotaping exercise to pick a particular piece of their teaching to practice and to analyze it in their online responses.

In one physics class, Jorge introduced the concept of circular motion and centrifugal forces, using a video clip of a roller coaster in his explanation. He wrote of that lesson:

> I felt very comfortable up there feeding off the students' questions and enthusiasm. Looking at the clip it's obvious that the ratio of teacher to student talk was still too high, and I would have liked for the questioning to have been more deliberate and pointed on my part. Classroom discourse is not easy; even if you might be satisfied with the discourse, it might not be very good. However, the students seem to be engaged in this lesson and having some fun as well.

While satisfied with the level of engagement and clearly pleased with the lesson, re-viewing it pushed him to also notice the issue of student/teacher discourse ratio. By practicing these particular areas of their teaching, residents were then able to make changes that support more deliberate work and often improved their practice. It also provided a connection back to the coursework, thereby solidifying theories we may only have time to discuss once or twice in class.

Residents also started paying attention to indicators that students were talking to each other, an important part of discourse (Cazden, 2001). Karla noted this in an attempt to get students to "create conversation" in a biology class:

> I am trying to create a classroom conversation by using the students- own ideas. We were talking about osmosis and after reviewing an example and talking about it in their own groups, sort of like a 3- or 4 people "think, pair, share," we came back together as a class. I then chose a group to start the conversation; after the initial comment almost all the groups participated and together they created an explanation for the problem. My favorite part was when one student used the phrase "I am going to piggy back off of what Fernanda just said." … It showed that they were actually paying attention to their peers and got their own ideas based on previous comments.

In this commentary, Karla was aware of how her strategy served to increase student-to-student discourse overall, but is also showed evidence of how she knew this. Her reflection demonstrates her awareness that in order for her students to authentically engage in dialogue, they must listen carefully to one another.

Conclusion and Implications

This research originated with a problem we faced as teacher educators. Teaching practice is a complex and multilayered task and requires reflective strategies that highlight these complexities. This becomes particularly challenging for field based teacher educators when residents are immersed in their teaching context, something increasingly common as teacher education programs around the USA increase fieldwork requirements (Labaree, 2010). We

were struggling to bridge the gap between what we as faculty were seeing in classrooms with what our residents were experiencing. We needed tools to help us navigate this problem, to allow us to invite our residents to see together. The use of video in such a program provided us with opportunities to help residents get some distance from their practice in order to reflect, build new strategies for teaching and learning, and create additional opportunities to learn about students. More specifically, the videos and their use in decomposing, representing, and approximating practice helped us to identify the foundational *skills* that residents needed, while at the same time helping them to develop more focused reflective lenses. Working in this backward and forward motion between making pedagogical decisions and examining pedagogical decisions is what a habit of praxis entails. For example, preservice teachers need tools to be able to attend to student thinking in order to do a good job with decomposing practice, even while the act of decomposing, both in isolation and in collaboration, helps them become better at attending to student thinking.

Our study suggests a number of implications for video use in teacher education for teacher educators, as well as for mentors and residents. We realized that it was not enough to offer our students an extensive clinical experience. Working in the field needs mediation and, as teacher educators, we discovered that we needed means to stop and start the teaching instances and to see together. We recognized that we could not be with our residents every day and that, even when we were in their classrooms, our observational experiences were limited because we often saw them with different eyes than our residents. We needed additional supports that allowed us to "be" with them on a more consistent basis.

First, using video allowed us access to residents' practices outside of the very time-consuming full observations. Videos enabled us to be with them more frequently without being with them physically. Second, using video provided us with a way to access numerous expert eyes, including faculty, peers, and mentors, on a specific part of practice on which they wanted to work. As Korthagen, Loughran, and Russell (2006) explain, "learning about teaching requires an emphasis on those learning to teach working closely with their peers" (p. 1032). In many ways we were giving a kind of approximation of practice. Although for Grossman et al. (2009) approximation of practice means opportunities to practice teaching in smaller increments, for us video created a way of focusing on a smaller piece of practice and getting the kinds of feedback one might experiece in that sort of specific instruction. We noticed that the more focused we asked the video clips to be (focusing on openings or closings, instructions, discourse, etc.), the more fruitful the learning opportunities seemed. We were finally able to find ways to see the same parts of practice. We realized that, prior to the videos, many of our debrief conversations about practice were not authentic, but represented *our* thinking about *their* practice. Video invited our residents to facilitate a co-constructive process about their thinking and helped us to support them in thinking through issues of practice. We realized in doing this work that, in solving our problem of seeing, we were also better aligning our practice with our beliefs about inquiry and constructivism.

Finally, the mentors took a significant lead in using video in the classroom. They helped to construct the protocols in collaboration with us and then took the lead on modeling the process with residents. The use of video supported mentor development and the work between mentors and residents in unpacking teaching. Video served as a useful tool in their toolkit, although we note that it is important that mentors not feel alone in having to support the use of video. By inviting mentors to take ownership of a significant part of the residency curriculum, we were able to walk our talk and invite them to participate in the process as

co-teacher educators (Taylor, Klein, & Abrams, 2014). As teacher educators, working collaboratively with the mentors in this capacity generated a significant shift in how we conceptualized the field experience. Although we had always believed in the value and importance of the mentors, co-constructing and facilitating the video assignments enabled us to reimagine the work of teacher education as a more collaborative endeavor between faculty and mentors.

Another challenge that arose for us involved finding ways to structure video in order to facilitate our seeing together as faculty, mentors, and resident. Our self-study research demonstrated how we can better support preservice teachers as they develop their practices by structuring and scaffolding the work with video. First, it is important that we as teacher educators model the use of video and how it can be used as a vehicle for reflection, starting with some of the excellent online teaching videos available but also recording clips of our own teaching that we can then unpack. This helps to model the kinds of questions and purposes video can serve with students and sets some norms among the residents. As Russell (1999) argued, "universities generally, and university-based teacher educators particularly, have no right to recommend to teachers any teaching practices that they have not themselves used successfully at the university" (p. 220). Second, bringing the mentor into the process is important for a number of reasons: it helps to de-mystify the process of videotaping teaching for the residents – something they often find daunting and nerve-wracking – and also helps the mentor to reveal her thinking around teaching moves. It helps residents have evidence-based (and sometimes difficult) conversations as the focus can be on the video rather than on the teacher. Third, we think that engaging peers and teacher educators in regular conversation about video is important in providing opportunities to learn about practice. The flexibility of video and the use of protocols allowed us to use videos for decomposing practice, representations of practice, and approximations of practice. To maximize these opportunities, teacher educators can give specific assignments that push the students to use video in multiple ways. Based on what we saw, we believe that, were we to structure a video assignment focused on student thinking, we could increase the focus of discourse on student thinking in ways that could benefit the residents and their students.

Finally, recent policy shifts, not under consideration when we first began this work, make it more urgent to think about the pedagogical implications of using video in teaching about practice. As this self-study research developed, the state of New Jersey has recently decided to move to edTPA as a means of assessing all graduates entering into teaching, adopting it as a number of other states have. EdTPA requires that students submit a video as part of their portfolio that demonstrates their readiness to become certified teachers ("About edTPA," 2017). As teacher educators we were faced with a parallel but different problem: How can we navigate state mandates in a way that continued to be educative for us and our students? Currently, in our traditional teacher education program, there are few opportunities for preservice teachers to work with video and most opportunities are left to the discretion of the professor and, of course, whether or not the district or school will provide consent for videotaping. Given this growing trend, we believe it is imperative that teacher educators find meaningful and consistent ways to work with video that afford them opportunities to grow and learn and then work with districts and schools to enable this process. We have come to see this self-study research as a first window into how we can use video in ways that are authentic to our teacher education mission.

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Appendix 1.

Video Protocols

Using Video to Discuss Teaching

This document provides examples of protocols that may be helpful in using videos for thinking and talking about teaching. The protocols presented here are used to create a structure for viewing videos of teaching and for discussing it together. They are designed to support exploration of teaching motifs and practices, activation and sharing knowledge of pedagogy, and responding to questions about teaching. Collecting evidence, analyzing it independently and together, and reflecting on what was uncovered and learned facilitate the process.

Following the sample protocols you will find a list of suggested motifs and teaching practices that you can use to focus your viewing and discussion. You should also consider how to collect evidence of the motif or practice. Recording evidence on sticky notes will facilitate sorting it for analysis. Recording it on a sheet of paper labeled with time intervals is helpful for examining how a lesson develops or time on task. Changes in where the camera is focused (e.g. on the students or on the teacher) will also influence what you learn from the video. We encourage you to make a decision about where to place the camera before you begin recording.

Finally, we hope these protocols are helpful, but we encourage you to create your own protocol to accommodate the learning objectives of your resident-mentor team.

Mentor Video Protocol 1: Focus on Motif and Practices

Mentor selects a 10-min clip of his/her video		
Mentor and Resident watch the video together and briefly discuss what they noticed		
EITHER	**OR**	**OR**
Mentor pre-selects motif or teaching practice they will focus on	Mentor and resident identify a motif or teaching practice they will both focus on	Resident identifies a motif or teaching practice they will focus on
Mentor and resident watch the video again and collect evidence of the motif or teaching practice		
Mentor and resident discuss the evidence. The focus of the discussion is around "what" (what the mentor does around the motif), "how" (how she does those things), and "why" (why she might make the decisions she makes based on the evidence)		
Resident writes a reflection about what he/she learned about the motif or practice and how the knowledge can be applied in his/her practice		

Mentor Video Protocol 2: Focus on Resident's Questions

Resident watches the mentor's video, selects a clip, and writes 3–5 specific questions to understand "what" (what the mentor is doing in the clip), "how" (how she does those things), and "why" (why she might make the decisions she makes based on the evidence)	
Either	**Or**
Mentor watches the clip to prepare answers to the resident's questions and to consider other observations to be discussed	Mentor and resident watch the clip together
Mentor and resident meet to discuss questions and observations	
Resident writes a reflection about what he/she has learned in response to the original questions and discussion and how that knowledge can be applied to his/her practice	

Resident Video Protocol

Examples of Motifs and Some Associated Practices

- Teacher as resource person during student presentation (extending the student lead lesson by providing information, clarification, and/or questioning)
- Teacher as facilitator of group work (establishing effective groups; establishing and monitoring routines, roles, and expectations; monitoring student understanding)
- Teacher as facilitator of discussion (questioning, guiding, engaging all students)
- Teacher as facilitator of knowledge construction (scaffolding of instruction, selection of lesson materials, eliciting student thinking during a lesson)
- Teacher as lesson manager (time management, transitions, pacing)
- TEACHER as classroom manager (non-instructional routines)

Resident watches his/her video and selects a 10-min clip		Mentor watches the video and selects a 10-min clip	
Either	**OR**	**Either**	**OR**
Resident selects a motif/practice, watches the video again, gathers evidence, and writes a reflection about "what," "how," and "why" she/he did what she did	Resident and mentor watch the video together and select a motif/practice		Mentor selects a motif/practice, watches the video again, gathers evidence and writes questions to the resident about "what," "how," and "why" she/he did what she did
Mentor watches the clip, gathers evidence, reads the resident's reflection, and writes questions and observations	Resident and mentor watch the video together for a second time to gather evidence of the motif/practice		Resident watches the clip, gathers evidence, and answers the mentor's questions
Resident and mentor meet to discuss the evidence, questions, and observations			
Resident writes a reflection about what he/she learned about their practice from this process and how it will influence what they do in the future			

- Teacher as facilitator of knowledge construction (scaffolding of instruction, selection of lesson materials, eliciting student thinking during a lesson)
- Teacher as lesson manager (time management, transitions, pacing)
- TEACHER as classroom manager (non-instructional routines)
- Teacher as a physical presence and space manager (movement in the classroom to monitor student behavior and/or progress/understanding; to advance instruction)
- Teacher as communicator (verbal communication such as giving directions and explaining content; non-verbal communication such as body language, positioning, classroom arrangement; written communication such as using the board, worksheets and written directions)
- Teacher as culture agent (establishing a culture of respect and rapport, academic rigor and high expectations, safety and trust, fairness and democratic ideals)
- Teacher as monitor of student conduct (creates and enforces expectations for conduct)

Focus on Student

- Student as teacher (student facilitates learning of others, asks questions of fellow classmates, leads the direction of discourse and ideas).
- Student as learner (asking questions, giving feedback, struggling, offering formative data, reflected).
- Student as knowledge producer (makes predictions, estimations, and hypotheses, also devised means for testing them)

Options for Where to Focus the Camera:

- On the teacher
- On the students
- On the classroom
- On a student or small group of students
- On the white board

Examples of Evidence Gathering

Sorting

Checking for understanding

Teacher visits table 1 to check students' work, asks questions

Teacher asks: "Which of these images provides an example of mitosis?"

Monitoring behavior

Teacher stands near disruptive student

Time Intervals

8:30	Teacher stands near disruptive student
8:35	Teacher visits table 1 to check student work, asks questions
8:40	Teacher visits table 2, sits, does not speak to them.
8:45	Teacher asks: "Which of these images provides an example of mitosis?"