Leveraging Communities of Practice and Pedagogies of Practice to Prepare Ambitious Teachers

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Abstract

Ambitious teachers view students as sense makers in collaborative learning of disciplinary ideas and value students' assets as resources for learning. Preparing teachers to enact ambitious instruction requires an approach to professional learning that constructs connections between instructional practice and a vision of principled teaching. This study explored how pedagogies of practice and communities of practice support prospective teachers' development of a mathematics teaching practice. The study findings suggest pedagogical activities situated within a community of practice may provide opportunities for prospective teachers to build an understanding of the relationship between a core teaching practice and principles of ambitious teaching.

Keywords

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Introduction

Researchers and practitioners working in the field of teacher education are calling for the preparation of *ambitious* teachers. Ambitious teachers cultivate learner-centered environments and use teaching practices that are responsive to diverse students as they participate in instructional activities, all while holding students accountable to rigorous learning goals (Kazemi et al., 2007). Ambitious teaching is rooted in a contemporary, principled vision of professional practice (Ball & Cohen, 1999; Kazemi et al., 2007; Lampert & Graziani, 2009). Scholars define a principled vision of practice as one where teachers view learners as sense makers, value learners' personal, cultural, community and linguistic assets as resources for learning, and create opportunities for learners to engage in collaborative inquiry of disciplinary ideas (Huinker & Bill, 2017; McDonald et al., 2013; Windschitl et al., 2012). A compelling aspect of ambitious teaching is the potential to disrupt persistent inequities existing in K-12 classrooms where instructional practice often limits rigorous learning opportunities for marginalized students (McDonald et al., 2013). Scholars describe the work of ambitious teaching as highly complex in nature in that it requires teachers to use professional judgement, and to make in-the-moment instructional decisions that respond meaningfully and equitably to emerging student ideas. (Janssen et al., 2015; Kavanagh et al., 2019; Kazemi et al., 2009; Lampert et al., 2013). The complexity inherent in learning to teach ambitiously presents clear challenges to teacher educators. How do we prepare prospective teachers (PTs) to enact instructional practice that is rooted in a vision of ambitious teaching? What learning theories and pedagogies in teacher education can we leverage?

The questions posed above have been taken up by teacher education scholars investigating practice-based approaches to professional learning that cultivate a vision of principled teaching while simultaneously developing the skills to enact core teaching practices corresponding to that vision (e.g., Boerst et al., 2011; Ghousseini, 2009; Ghousseini & Herbst, 2014; Kavanagh et al., 2019; Lampert et al., 2013; Sun & van Es, 2015; van Es et al., 2017). These practice-based approaches to professional learning situate learning to teach in activities that mirror the tangible work of teaching (Ball & Forzani, 2009; Grossman et al., 2009b; Grossman, 2018; McDonald et al., 2013). These approaches commonly use *communities of practice* as a context and *pedagogies of practice* as pedagogical tools for preparing PTs. Communities of practice are social contexts for learning where mutual engagement in shared activities support individuals' learning of a community's shared practices (Lave & Wenger, 1991). Pedagogies of practice, comprising the individual pedagogies of representations, decompositions, and approximations of practice, is a framework for supporting the development of professional practice (Ghousseini & Herbst, 2014; Grossman et al., 2009a; Sugimoto & Rigelman, 2020). Researchers point to the need for a broader understanding of pedagogical approaches in teacher education, as well as the relationships between pedagogies, instructional contexts, and activities intended to support PTs' learning of practice (Cochran-Smith et al., 2015; Grossman, 2005; Kavanagh et al., 2019). Stroupe and Gotwals (2018) propose that research in teacher education should include teacher educators taking an inquiry stance in their methods courses, sharing their "research stories" (p. 12) to build a community of teacher educators who share knowledge and pedagogical practices that contribute to developing a vision of ambitious instruction.

This paper share insights from an inquiry of using practice-based pedagogies in an elementary mathematics methods course. The course is framed around developing a vision of ambitious mathematics teaching and using practices that align with this vision. Specifically, I wanted to better understand how I could support PTs' learning of a noted mathematics teaching practice--eliciting and responding to student thinking (Huinker & Bill, 2017; NCTM, 2014). Anthony et al. (2015) state ambitious mathematics teaching involves skilled ways of eliciting and responding to all students giving them the opportunity to learn meaningful mathematics and come to see themselves as competent mathematicians. My inquiry focused on how PTs' development of the skills to elicit and respond to student thinking in mathematical discussions was supported through instructional activities featuring pedagogies of practice contextualized in a community of practice (CoP) in the elementary methods course. I will begin with an overview of the frameworks of pedagogies of practice and CoP in teacher education. Next, I will describe the study methodology followed by describing insights that emerged from data analysis. I will conclude by proposing potential implications for the field of teacher education.

Pedagogies of Practice in Teacher Education

Grossman et al. (2009a) offer a pedagogical framework for learning professional practice. The framework features *pedagogies of practice* that are intended to develop core teaching practices that emerge from and are connected to a vision of ambitious teaching. One of these pedagogies, representations of practice, provides images of teaching that serve to illustrate practice and reveal essential elements of a practice for PTs to see and take up (Grossman et al., 2009a; McGrew et al., 2018). Pedagogical activities that encompass representations of practice can take many forms: e.g., videos of teaching episodes, written narratives and case studies of practice, and teacher educators modeling instructional practice (Ball & Forzani, 2009; Darling-Hammond et al., 2005; Grossman et al., 2009a; van Es et al., 2014). Another pedagogy of practice, approximations of practice, provides PTs with opportunities to experiment with elements of teaching in settings where their instructional decisions can be discussed and analyzed (Grossman, 2018; Grossman et al., 2009a). In a rehearsal, an approximation of practice, a PT "acts out" a brief teaching episode within the university classroom (Kazemi et al., 2016; Kelley-Peterson et al., 2018). The enactment provides generative opportunities for PTs to interrogate and analyze practice as it unfolds and in a debrief of the rehearsal (Kelley-Peterson et al., 2018; Lampert & Graziani, 2009; Lampert et al., 2013). Both representations of practice and approximations of practice provide a pedagogical structure that supports PTs' learning to teach (Kazemi et al., 2009; Kazemi et al., 2016). Notably, these pedagogies of practice situated in a CoP open occasions for PTs to critically examine core teaching practice to uncover connections to visions of ambitious teaching.

Communities of Practice in Teacher Education

Teacher education scholars argue that learning to teach should be centered in the actual work of teaching, which means activities should mirror the authentic practices and ways of thinking that are fundamental and critical to the profession (Ball & Cohen, 1999; Lampert, 2010; Putnam & Borko, 2000). *Communities of practice*, a construct of situated learning theory, posits that learning occurs through collective engagement in the authentic activities of the community as members negotiate the meanings and principles of shared practices (Lave & Wenger, 1991;

Wenger, 1998). Natural CoP are inherent in many teacher education programs where PTs and teacher educators interact in and through learning activities intended to develop the skills of professional practice. In a CoP, activities can be structured to provide opportunities for mutual engagement in the practices of teaching, creating ongoing occasions for PTs to negotiate the meaning of practice explicitly connected to a vision of ambitious teaching. An example of leveraging a CoP for this purpose would involve using a lesson simulation in which the teacher educator would model questioning strategies that elicit students' thinking. Next, PTs and the teacher educator would debrief the simulation identifying salient elements of practice. The CoP provides a context for PTs to co-construct knowledge of core teaching practices and simultaneously build a shared understanding of how those practices connect to principles of ambitious teaching. Studies have found that CoP can help PTs attend to both the "how and why" (p. 2855) of particular practices (Boerst et al. 2011) and build a principled vision of practice (Ghousseini & Herbst, 2014; Kavanaugh et al., 2019).

Study Methodology

The purpose was to better understand PTs' learning of professional practice that aligns to a vision of ambitious teaching. Specifically, this study investigated how the pedagogical structures of representations and approximations of practice situated in a CoP supported PTs' development of skills to elicit and respond to student thinking in a productive mathematical discussion with explicit connections to principles of ambitious teaching.

Situated learning theory posits that individuals construct meaning through participation in activities in social contexts (Lave &Wenger, 1991). CoP, a construct of situated learning theory, is a useful theoretical perspective for exploring the possible influence of activities and contexts designed to develop knowledge and expertise of a community's shared practices. In this study, CoP was the lens used to illuminate how PTs' engagement and interactions in pedagogical activities grounded in practice influenced their development of a core teaching practice and shaped their vision of ambitious teaching. The instrumental case study methodology is well suited for exploring a contemporary issue within its natural setting using multiple data collection methods leading to holistic understanding of the issue under study (Creswell, 2013; Stake, 2005; Yin, 2014). Accordingly, I used an instrumental case study to explore PTs' development of the teaching practice, eliciting and responding to student thinking, in an elementary mathematics methods course. It is important to acknowledge that the theoretical perspective and instrumental case study methodology limits the findings of this inquiry to the situated, local context of the study.

The setting of this study was a semester-long elementary mathematics methods course in a teacher preparation program at a liberal arts college in the northwestern United States where I was the instructor. The seven participants in the case study were PTs enrolled in the mathematics methods course during one semester. The methods course was situated in two distinct, yet intentionally aligned, learning contexts: a university-based classroom and a field experience in a second grade classroom. In the university-based classroom PTs participated in varied activities to develop knowledge and skills of core mathematics teaching practices. In the elementary classroom, the PTs were placed in pairs and triads in three different second grade classrooms. In this context PTs were engaged in activities that included observation of cooperating teachers' mathematics instruction, engagement with students in small groups, and the teaching of

mathematics lessons. The structure created collective experiences of teaching and learning and provided opportunities for PTs to build shared knowledge of students in their placement.

The theoretical perspective of CoP guided data collection strategies that included gathering artifacts of PTs' practice (assignments, lesson plans, and reflection activities), video recordings of PTs' rehearsed teaching episodes and debriefs occurring in university class sessions, and field notes recorded after class sessions and after viewing videorecorded university class sessions. These data sources allowed for examination of PT's actual words, reasonings, and actions thereby providing insight into PTs' learning (Creswell, 2013). In addition to informing data collection decisions, this theory framed the study's data analysis through identification of occurrences of PTs' individual and collective construction of meaning of ambitious teaching alongside their development of skills to elicit and respond to student thinking.

Analytic memos were used during data collection to capture my reflections on PTs' interactions within the CoP as they engaged in pedagogical activities intended to develop the core practice of eliciting and responding to student thinking (Miles et al., 2014). The primary data analysis employed a coding scheme to analyze PTs' development of skills to elicit and respond to student thinking connected to principles of productive mathematical discussions (see Appendix A). Another level of data analysis included coding field notes and video recordings of class sessions for identified interactions where PTs were collectively negotiating the meaning of ambitious teaching and the practical application to the practice of eliciting and responding to student thinking.

In this study I was the researcher and the instructor of the elementary mathematics methods course. Informed consent was granted by the participants in the study, and I attempted to minimize possible influences of power over the participants (PTs) by delaying primary data analysis until after the course ended and grades were issued. An inherent bias of my study was my being the instructor of the elementary mathematics methods course who ascribes to pedagogies of practice as a promising approach to support PTs' professional learning. To account for my positionality and bias I engaged in a process of "using multiple perceptions to clarify meaning" (p. 454) leading to what Stake (2005) describes as "experiential knowledge" of the case (p. 455). An additional validation strategy was using multiple data sources to justify themes that emerged from the evidence (Creswell, 2013; Stake, 2005). The theoretical perspective and instrumental case study methodology, along with my positionality and role as the researcher in the study, leads to framing the findings as insights into the influence of pedagogies of practice and CoP on PTs' development of eliciting and responding to student thinking in a mathematical discussion in ways that align with principles of ambitious teaching. I will now turn to insights that emerged from my inquiry.

Study Insights

I will first describe the representations and approximations of practice I used in university class sessions to support PTs' development of the core practice of eliciting and responding to student thinking. I will follow by sharing insights that surfaced from analysis of interactions in the CoP where PTs and I had the opportunity to negotiate a shared understanding of the practice under study and how principled enactment of the practice could align with a vision of ambitious teaching.

Representations of Practice

I planned two activities, using representations as a pedagogy of practice, to support the development of PTs' skill development of the core practice. In the first activity, I used videos of classroom teaching episodes introducing talk moves to elicit and respond to student thinking in a mathematical discussion. Talk moves are strategic ways of asking questions and inviting participation in classroom discussions, e.g., "*Why do you think that strategy would work?*" "*Does someone want to take the idea another step?*" and "*Turn and talk*" (Chapin et al., 2009; Chapin et al., 2013). The video representations provided the opportunity to examine the visible actions of the teacher as they engaged students in mathematical discussions. I then provided an explanation of how particular talk moves can prompt students to share their thinking, uncover and deepen student reasoning, orient students to others' thinking, and serve to position students as sense makers in mathematical discussions (Chapin et al., 2009). My aim was to explicitly connect practical, visible components of talk moves with the underlying conceptual, invisible components of ambitious teaching. I next turned to having PTs examine videos of teaching episodes where they were asked to identify talk moves within the mathematical discussions. As a CoP, we discussed PTs' interpretations of how the identified moves connected to ambitious teaching.

The second activity had multiple parts. First, I modeled the practice of eliciting and responding to student thinking as a representation of practice. The activity began by giving PTs a mathematics task where they explored relationships between the area and perimeter of rectangles. After working on the task, I engaged PTs in whole group discussion of the task where I took on the role of teacher and the PTs took on the role of students. In the discussion I attempted to use talk moves to elicit and respond to PTs' thinking in ways that represented a productive mathematical discussion. Next, we collectively debriefed the teaching episode. The purpose was to use my enacted practice in the teaching episode as an artifact of practice that could be explored and examined in the CoP. In another component of the activity, PTs were given a hypothetical classroom scenario relating to the same area and perimeter task. The PTs composed three conversational moves between the students(s) and teacher in a hypothetical classroom discussion and provided a justification of how they elicited and responded to student thinking in ways that connected to ambitious teaching. The activity concluded by PTs sharing their individual responses and justifications for the CoP to consider.

Insights

The PTs and I, as the teacher educator, comprised a CoP. Wenger (1998) theorizes that in a CoP, members learn and develop as they collectively negotiate the meaning of the communities' shared practices. The PTs and I engaged in discussions centered on the practice of eliciting and responding to student thinking, providing the opportunity to develop a shared understanding of how particular talk moves could function to support the goals of a productive mathematical discussion that aligned with ideas of ambitious teaching. In the following paragraphs, I will begin by discussing PTs' initial conceptions of eliciting and responding to student thinking from video representations, followed by how PTs began to investigate the underlying purpose of

teacher moves, and end by giving an account of how PTs negotiated the meaning of the core practice.

The first discussion occurred after viewing video representations that featured teachers facilitating a mathematical discussion. After viewing the video clips PTs were asked what they noticed in the video, what stood out to them. PTs first commented on general actions of teaching, such as the teacher was a "facilitator" and remarked the teacher "didn't talk much." As the discussion of video clips continued, they proceeded to identify more specific teaching actions. For example, one PT described the actions of the teacher as "not telling students if they were right or wrong but having students agree or disagree" with other students' answers. The same PT commented that the teacher asked students to "prove their thinking" in the mathematical discussion. A second PT also noticed student engagement in the discussion, stating how "students did most of the talking" and that "students automatically justified their thinking." My analysis suggests that through engaging in the discussion of the videos, each PT had begun to surface initial conceptions of eliciting and responding to student thinking in discussions. The analysis revealed that PTs' noticed that the discussions were student-centered versus teacher-centered. PTs also identified a common element of the discussions was students explaining their thinking. These findings suggest that after viewing these video representations PTs were able to surface initial, general connections between teacher practice and ideas of ambitious teaching.

In a subsequent class session, I used video representations to explain how specific talk moves (see Appendix A) could be used to elicit and respond to student thinking. After viewing one clip a PT observed that the talk move, *can you repeat what [student] said*, was being used frequently. Given her observation she asked, "Are they (the students) listening just to repeat?" Our class discussion turned to exploring if the talk move was effective in helping students to listen to one another and if the move helped students to orient to the thinking of others as I had proposed in the video representation of practice. My analysis of this interaction was that it marked a significant moment in the CoP, as the PTs seemed to be willing to analyze and interrogate practice, in this case the talk moves, with the intent of negotiating a deeper understanding of the relationship between the practice and its undergirding purpose. The analysis of field notes from video capture of subsequent class discussions provided evidence that this was a stance PTs would continue to take in the CoP as they collectively engaged in representations and approximations of practice. For example, in a rehearsal debrief (an approximation of practice) PTs critiqued a PT's response to a student's misconception. In the discussion, one PT put forward an alternative response that used a piece of the student's expressed thinking to address the misconception making an apparent connection to ambitious teaching.

Another insight emerged when PTs shared their responses to the hypothetical classroom scenario in the second representation of practice. Initially, PTs were hesitant to offer any critical analysis, but once I modeled critical analysis by giving the frame, "I'm wondering how your use of the talk move…," the PTs felt more comfortable, and the class discussion moved to inquiring into aspects of how their conversational moves worked to elicit and respond to student thinking. As the critical analysis unfolded in our CoP, I noted how the negotiation of practice took on a fine-grained nature. For example, given the hypothetical classroom scenario one PT proposed the following response to student thinking:

> I'm not sure I understand. Can you come up (student comes from seat to show thinking on document camera) and explain it step-by-step?

After sharing this prompt, the PT explained her aim was to help the hypothetical student to deepen their own reasoning. The discussion of this PT's response to a student's thinking and rationale for the response led to a second PT commenting that having the student show their thinking on the document camera was "giving the student the opportunity to clarify their thinking as well," observing "that it is almost like the talk move *wait time.*" As the discussion continued, a third PT stated that this move was "evidence of putting more responsibility on students" and a further offering made by a fourth PT asserted this was an example of "student-centered learning." My analysis of this CoP interaction suggests that the PTs were willing to engage in negotiating their own meaning of talk moves presented in the representations of practice. Further, my analysis also suggests the CoP discussion worked to expand PTs' understanding of how talk moves could potentially support productive mathematical discussions with explicit connections to principles of ambitious teaching.

Approximations of Practice

I planned two activities using approximations of practice to support the development of PTs' skill of eliciting and responding to student thinking in a mathematical discussion. In the first activity, PTs completed a discourse script for a planned lesson that they would teach in their field experience classroom. A discourse script is a simulated planning activity where PTs write a narrative representation of teacher and student interactions occurring within a discussion of a mathematical task (Ghousseini & Herbst, 2014; Zazkis et al., 2013). In the discourse scripts PTs (a) composed prompts they would use to elicit student thinking in their lesson enactment, (b) recorded imagined student answers to the prompts and (c) proposed talk moves that responded to the imagined student's thinking. The PTs' discourse scripts were shared and analyzed in the university classroom and served as a basis for the second approximation of practice. The next activity used a rehearsal to try out a part of a lesson PTs would eventually teach in their field placement classroom. In the rehearsal episode, one PT adopted the role of teacher and facilitated the mathematical discussion portion of their planned lesson, while the other PTs took on the role of students in the discussion (Kazemi et al., 2016; Kelley-Peterson et al., 2018). Each rehearsal episode was debriefed in the CoP with the intent of uncovering how a PT's enactment of eliciting and responding to student thinking aligned with the principles of ambitious teaching. The rehearsals provided an occasion for PTs to experiment with the application of talk moves in a setting that included the necessity to respond, in-the-moment, to student thinking that surfaced in the rehearsal. Both approximations of practice provided opportunities for PTs to experiment with implementing talk moves as a set of tools to elicit and respond to student thinking.

Insights

A pedagogical component of the approximations of practice used in this inquiry engaged PTs in communally reflecting on prompts used to elicit and respond to student thinking in the discourse scripts and rehearsals. Discussions in the CoP included soliciting critical feedback on PTs' implementation of talk moves to co-construct a shared vision of ambitious mathematics teaching. The analysis of CoP discussions of the approximations of practice revealed ways PTs' drew upon their knowledge of students from their mutual field experience classrooms to contextualize the use of talk moves in discussions. This suggests PTs were able to expand their skills to elicit and respond to student thinking by considering students' specific learning needs. In the following

paragraphs I will present two instances that are representative of the insight emerging from my analysis of the approximation of practice activities.

The first example comes from a discussion of a PT's discourse script. The PT presented this sequence of teacher actions:

> Teacher: I'm not sure I understand. Can you come up and *explain it step by step?*
> [Student comes up to document camera and explains]
> Teacher: [*revoicing* student's explanation] So if I understand correctly when you changed the rows the shape changed.
> [Student responds yes]
> Teacher: [to class] *Do we agree or disagree?*

The PT explained her intention of using this series of talk moves was to support students in engaging in the reasoning of others, one of the principles of a productive academic discussion. As the sequence of moves was analyzed in the CoP, a PT asked, "I wonder how that would work in my [field experience] classroom?" This PT went on to clarify she was thinking about the five English Language Learners in her classroom. The CoP discussion then focused on how talk moves might be structured and sequenced to support specific learners. My analysis suggests that when PTs used their knowledge of students to negotiate practice, it created opportunities to move beyond a general understanding and rote application of talk moves to a nuanced understanding and strategic use of talk moves responsive to particular students.

A second instance comes from a discussion during a rehearsal episode where we were examining the affordances of a PT's prompt to elicit student thinking. The PT expressed she had struggled with coming up with a prompt to elicit students' ideas about estimating length. The question she used in the rehearsal was "What are mathematicians doing when they estimate the length of the string?" The PT asked if we thought the question would be successful in eliciting student thinking for students in her field placement. A PT, who was placed in the same classroom, offered feedback suggesting this prompt might not attend to students' background knowledge. The CoP discussion turned to exploring if and how the prompt attended to students' prior knowledge of estimation. The PTs proceeded to offer ways to reword the prompt with the expressed purpose of attending to the background knowledge of learners in this classroom. The analysis of this interaction shows that PTs were willing to interrogate the use of a particular prompt to elicit student thinking and suggests that PTs understood that in constructing questions it was important to consider students' assets as valued resources to support their learning.

Implications and Conclusion

The purpose of my investigation was to better understand PTs' learning of professional practice grounded in a principled vision of teaching. My inquiry suggests the practice-based pedagogies of representations and approximations may support PTs' development of skills to enact a core teaching practice, eliciting and responding to student thinking. Further, my inquiry suggests that pedagogical activities situated within a CoP provided opportunities for PTs to collectively build an understanding of the relationship between the mathematics teaching practice, eliciting and responding to student thinking, and ambitious mathematics teaching. Preparing PTs to teach ambitiously requires an approach to professional learning that supports a shared vision of principled teaching alongside the development of the skills to enact practices that explicitly

connect to that vision (Ball & Cohen, 1999; Grossman et al., 2009b; McDonald et al., 2013). Developing PTs' understanding of connections between the practical components of practice (the how) and the undergirding conceptual components (the why) is critical to avoiding reducing teaching down to applying a set of general practices without consideration to the students being taught (Kennedy, 2016; McDonald et al., 2013; Windschitl et al., 2012). Insights from the study indicate representations of practice and approximations of practice provided meaningful opportunities for PTs to make connections between the core practice of eliciting and responding to student thinking to a vision of ambitious teaching. In this way, my findings are consistent with research that has shown that instructional activities using pedagogies of representations and approximations of practice can lead to an understanding between the how and why of teaching practices (Boerst et al., 2011). Further, my study led to insights of how pedagogies of practice implemented in a CoP model can work in unison to support PTs' capacity to enact practice that is purposefully connected to principles of ambitious teaching. This insight adds evidence to Kavanagh et al.'s (2019) call for studies that investigate pedagogies of practice as a way to "link the activity of teaching with the knowledge and ethical infrastructure that animate it" (p. 2).

The study insights offer practical implications for teacher educators. While the study was limited by a small number of participants in a single, localized setting and my positionality as the instructor of the course, it gives teacher educators a concrete example of the implementation of pedagogies of practice in a methods class designed to support PTs' development of a core teaching practice. Kavanaugh et al. (2019) state that the field of teacher education has few representations of what it looks like to use pedagogies of practice in the service of ambitious teaching. My study offers teacher educators a practical application to reflect upon as they consider the potential affordances of this pedagogical approach to developing PTs' ambitious teaching practices. Even though methodologically constrained, the study insights revealed that practice-based approaches to professional learning show some promise in supporting PTs' learning to enact ambitious teaching practices, while simultaneously cultivating critical connections to equitable instructional practice. Finally, my study is an invitation for teacher educators to also experiment with practice-based approaches in teacher preparation courses and then share their "research story" (Stroupe & Gotwals, 2018). In this way, as community of teacher educators we can collectively contribute knowledge of pedagogical practices that support the preparation of ambitious teachers.

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APPENDIX A
Talk Moves and Academically Productive Talk

Talk Move	*Principles of Academically Productive Talk*
Turn and Talk Wait Time Say more Revoicing (individual or teacher) Who can repeat? Will you share that with the class? So are you saying…?	Helping individual students clarify and share their own thoughts
Who can repeat? Who can restate what [student] just said? Who can put that into their own words? Who can say that again for us? After a turn and talk: Tell us what your partner said.	Helping students orient to the thinking of others
Why do you think that? What is your evidence? How did you get that answer? Show how you got answer? What makes you think that? Can you prove that to us? I am not sure I understand. Can you explain it to me step-by-step?	Helping students deepen their own reasoning (press for reasoning)
What do you think about that? Does that make sense to you? Do you agree or disagree…and why? What do other people think about what he/she just said? Who can add on? Does someone want to take the idea another step? Does anyone want to contribute more evidence for that claim?	Helping students engage with the reasoning of others

Note: Adapted from *Classroom Discussions: Using Math Talk to Help Students Learn* by S. Chapin, C. O'Connor, N. Anderson, 2009. Sausalito, CA: Math Solutions. Copyright 2009 by Math Solutions.