

English Teacher Candidates Developing Dialogically Organized Instructional Practices

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Although mounting research evidence suggests that dialogic teaching correlates with student achievement gains and with high levels of student engagement, little work in English education addresses the challenge of supporting new teachers in developing dialogically organized instructional practices. In a design-based study, we examine a curricular intervention designed to cultivate development of dialogically organized instructional practices, defined as instruction that provides students with frequent opportunities to engage with core disciplinary concepts through sustained, substantive dialogue. The curriculum invited secondary English teacher candidates to repeatedly enact dialogically organized instruction and to receive feedback from peers using video and Web 2.0-based technologies across a year-long student teaching internship. In English methods seminars, eighty-seven participants from two cohorts generated over 300 five-minute video clips, associated planning documents, transcripts, and reflections. We coded documents for student participation, evidence of planning for dialogic instruction, and classroom discourse variables associated in previous research with greater student engagement in substantive classroom interaction. We find that those who planned for dialogic instruction using dialogic tools were significantly more likely to have higher ratios of student utterances in relation to teacher utterances. The use of dialogic tools—conceptualized as those practical tools mobilized in teacher planning and practice with potential to mediate dialogically organized instruction in a given classroom situation—explained more of the variance in student participation than did any other factor. Attention to such tools may help English teacher candidates enact dialogically organized instructional practices.

Introduction

A significant problem persistently challenges secondary English education: it is profoundly difficult to cultivate dialogic practices in new teachers' instruction. Although dialogically organized instruction in secondary English classrooms is

rare (Nystrand, 1997), a growing body of research evidence finds such instruction correlating with student achievement growth in literacy (e.g., Applebee, Langer, Nystrand, & Gamoran, 2003; Murphy, Wilkinson, Soter, Hennessy, & Alexander, 2009; Nystrand, 1997) and higher levels of student engagement (Kelly, 2008). Dialogically organized instruction, or instruction designed to provide students with frequent opportunities to engage with core disciplinary concepts through sustained, substantive dialogue (e.g., Aukerman, Belfatti, & Santori, 2008; Juzwik, Nystrand, Kelly, & Sherry, 2008), is typically overshadowed by lecture, recitation, and seatwork—forms of interaction privileging the authoritative voice of the teacher in tight control of classroom interaction.

Teacher educators face the task of preparing teachers to begin their careers knowledgeable about the importance of high-quality classroom interaction and capable of planning for and carrying out dialogic teaching in their classrooms (Hillocks, 2011). As students, teacher candidates typically have few experiences with dialogic interaction in their “apprenticeship of observation” (Lortie, 1975); moreover, throughout teacher preparation, they typically encounter mentors in field placements who organize classroom interaction through lecture, seatwork, and recitation and see such practices as efficient and dependable means to prepare students for further schooling and standardized tests (Feiman-Nemser, 2001). Despite a convincing body of basic classroom-based research on the effectiveness of dialogically organized instructional practices, research is scarce on the question of how to engage teacher candidates in developing dialogic practices.

The goal of our design-based study was to examine a programmatic effort to disrupt teacher candidates’ socialization into traditional ways of structuring classroom discourse and to instead support the development of dialogically organized instructional practices. The program-wide pedagogical intervention, Video-Based Response & Revision (VBRR), engaged two successive cohorts of teacher candidates in a) explicit learning about classroom discourse patterns and dialogic instruction, b) planning for dialogic instruction, c) video-recording early efforts at dialogic instruction, d) choosing clips to share with on-line groups, e) analyzing and responding to others’ videos, f) revising teaching practices in response to feedback from others, and g) designing culminating digital reflections about developing dialogic practices. Five research questions guided an investigation of the outcomes of VBRR: a) Given participation in VBRR, what patterns of tool use characterize teacher candidates’ planning for dialogically organized instruction? b) Given participation in VBRR, to what extent do teacher candidates make use of dialogic discourse moves in their teaching? c) To what extent did an increased use of dialogic tools in planning relate to an increase in the incidence of dialogic questioning? d) To what extent did the use of dialogic tools relate to the level of student participation? e) What is the relationship among patterns of dialogic tool use in planning, teachers’ questions, contextual factors, and student participa-

tion? In short, what is the relationship between planning for and achievement of dialogic instruction?

We argue that teacher candidates who participated in VBRR project activities achieved dialogically organized instruction and that this achievement significantly correlated with planning, specifically the use of dialogic tools in planning. To build the argument, we first ground our study in a Vygotskian approach to learning and development, reviewing the literature on dialogism, the use of tools in instructional practices, and salient research on supporting novice teachers in appropriating complex and unfamiliar practices. Following an overview of the design-based methodology, we present and discuss research findings. We conclude with a brief discussion of implications for research and for teacher education.

Dialogism and Dialogically Organized Instruction

Dialogism

The present inquiry emerges from a well-established approach to language-in-action (or discourse) focusing on the idea of dialogism, the idea that any utterance responds to previous utterances while at the same time anticipating responses from others (Bakhtin, 1929/1984, 1935/1981, 1953/1986; Bakhtin/Medvedev, 1928/1978; Volosinov, 1929/1973). Within a given utterance or text, moreover, traces of words, utterances, voices, and social languages of others link that piece of discourse to previous and subsequent utterances or texts. Although dialogism, as understood by Bakhtin and his interpreters (e.g., Holquist, 1990), assumes dialogue to be a fundamental property of all acts of language, some discourse—such as textbook discourse and some forms of teacher talk—presents itself as “monologic,” the final authoritative word.

While Bakhtin typically developed dialogic theory through examples from literary texts (e.g., the interplay of social voices and ideologies in Dostoevsky’s novels), literacy scholars have found dialogic theory generative for understanding the dynamics of classroom interaction (e.g., Aukerman, Belfatti, & Santori, 2008; Dyson, 1993; Nystrand, 1997; Reznitskaya, Anderson, & Kuo, 2007). From a dialogic standpoint, participation in a classroom is a complex social accomplishment occurring within a simultaneity of social and linguistic difference. Attention to interaction is especially critical in middle and high school English classrooms, where much of the responsibility for literacy development at the secondary level resides. Previous research has described and analyzed dialogic teaching in English classrooms where students have frequent opportunities to engage in sustained, substantive dialogue: through interanimation of multiple and diverse social voices, students and teachers build on others’ contributions, and they respect, question, and collaboratively explore conflicting ideas (Juzwik et al., 2008; Kelly, 2008; Nystrand & Gamoran, 1991; Nystrand, Wu, Gamoran, Zeiser, & Long, 2003; Reznitskaya,

Anderson, & McNurlen, 2001).¹ Such classroom interaction can include spoken, written, and multimodal utterances and texts.

Dialogically Organized Instruction

Although discussion-based classroom discourse has been a major focus of the research literature in secondary English education (e.g., most notably, Nystrand, 1997), teachers can organize instruction dialogically in other ways. For example, in the context of writing, a teacher might configure students into small peer review groups. In the context of recitation, she might probe students' ideas, pushing them to deepen exploration of the theme under study (Mercer, 1995). In the context of a collaborative enterprise (e.g., the class making a tour guide about places in the community—see Duke, Coughlan, Juzwik, & Martin, 2012), she might invite them into expert roles, where they share their developing knowledge with classmates and with audiences beyond school. If dialogic instruction aims to provide opportunities for students to engage collaboratively with core disciplinary concepts in English, then that goal can be accomplished in many ways.

Key variables researchers have identified and used to study dialogic instruction include a) the ratio of student to teacher utterances, b) types of questions posed by teachers and students, c) the nature of teacher responses to students, and d) the presence of discussion.

Ratio of Student Utterances to Teacher Utterances

A long line of research shows that teachers dominate talk in classrooms, both in the sheer amount of talk and in their control of turns taken. Early work analyzing the IRE/F sequence in British and U.S. classrooms suggested that a higher ratio of student utterances indicates a disruption of default patterns of classroom discourse, where a teacher steps back to create openings for listening to students and inviting them to grapple with concepts (Mehan, 1979; Sinclair & Coulthard, 1975). High levels of student talk are a necessary, if not sufficient, condition for student engagement in independently practicing dialogic academic interaction and in taking increased responsibility for interpretation (e.g., Chinn, Anderson, & Waggoner, 2001). Moreover, for novice teachers with limited exposure to dialogic instruction, a higher ratio of student talk not only gauges student participation but indicates the potential for dialogic interactions to occur. Admittedly, the ratio provides incomplete evidence of dialogicality (Wells, 1993). The amount of student talk observed, while important (Morine-Dershimer, 1985), is not sufficient; it is also critical to look at the quality of that talk (e.g., Marshall, Smagorinsky, & Smith, 1995; Murphy et al., 2009). For example, a higher ratio can indicate poor classroom management or a run of students each responding to a teacher's non-authentic question; a lower ratio can result when a teacher closely monitors turn-taking norms during a recitation marked by other dialogic indicators. Nevertheless, in large-scale analyses of classroom discourse, examining student-teacher

utterance patterns can show significant progress toward dialogic teaching insofar as it establishes the creation of openings for dialogic discourse to emerge, against the backdrop of the well-documented prominence of teacher talk. For purposes of large-scale analysis of novice teaching, then, looking closely at student participation can, at minimum, establish a disruption of historically default patterns of teachers talking and students passively listening.

Questions Posed by Teachers and Students

The asker of authentic questions does not have a pre-determined response in mind, whereas the asker of *test questions*—or non-authentic questions—does (Nystrand, 1997). Most teacher questions in secondary U.S. classrooms are non-authentic (e.g., Nystrand, 1997). One large-scale study of secondary English classrooms showed a 1:4 ratio of authentic questions to non-authentic questions (Applebee, Langer, Nystrand, & Gamoran, 2003). Student questions do tend to be authentic and, when they occur, they increase the probability of subsequent dialogic interaction (Nystrand, 1997; Nystrand et al., 2003).

Nature of Teacher Responses to Students

Researchers have also examined questions that incorporate *uptake* of previous utterances (Collins, 1982) and *revoicing*, in which the teacher repeats student comments (Herbel-Eisenmann & Cirillo, 2009). Both uptake and revoicing have been discussed as dialogic indicators: with each, teachers acknowledge students' contributions by repeating words or ideas. Uptake and revoicing can each serve various pedagogical and interactional purposes. In general, we would hypothesize that uptake would more consistently function to move discourse towards the dialogic because the teacher reworks the student contribution into the next question so that it influences the direction of the lesson. Revoicing can be used in more and less dialogic ways: when used as part of an interactive routine that draws attention to the student utterance to check the teacher's understanding and invite student elaboration, revoicing achieves its dialogic potential (O'Connor, 2009).

Presence of Discussion

We define discussion as “the free exchange of information among students and/or between at least three students and the teacher that last[s] at least a half minute” (Nystrand, 1997, p. 36). Controversies and different points of view can stimulate discussion by introducing generative tensions into classroom discourse (e.g., Hess, 2009). Conversational genres such as teacher and student narrative (Juzwik, 2009) and participant example (Wortham, 2006) can also become important resources for spurring discussion in secondary English.

In sum, our argument builds on the premise that dialogically organized instruction, or “dialogic instruction,” is not limited to open discussion, although discussion is perhaps the most obvious way to organize instruction dialogically.

Any instructional practice (even reviews for tests) can become dialogic when multiple student voices are included in the creation of what counts as knowledge in the classroom through discourse processes that can include both conflict and agreement.

Unfortunately, some students' voices enjoy a far greater probability of being recognized as a legitimate contribution to classroom knowledge than others' in the course of their schooling. Students with high socioeconomic status and in higher-tracked classes are more likely to encounter dialogically organized instruction in secondary English than are those with low socioeconomic status or placed in lower-tracked classes (Nystrand, 1997). Yet discussion-based approaches tend to be more effective for students with a history of struggling in school than for those whose achievement level is perceived as higher (Murphy et al., 2009). Some research indicates that dialogic instruction is rarer in urban and rural than suburban schools (e.g., Nystrand, 1997), although Applebee et al. (2003) found no significant differences among suburban, urban, and rural schools.

With any group of students, however, organizing instruction dialogically requires art and skill; dialogue does not spontaneously combust in classrooms, given the prevailing legacies of teacher-dominated school participation. If dialogically organized instruction is not normal, everyday business-as-usual in schools, then that art/skill must be learned by teachers and students.

Teacher Learning and Dialogically Organized Instruction **Dialogic Tools as Mediating Devices in Developing Dialogically Organized Instructional Practices**

To conceptualize how teacher candidates develop the arts/skills of dialogically organized instruction, we turn to Vygotskian perspectives on learning and development. Vygotsky (1978) argued that development is mediated by the semiotic processes involved in using signs and tools to accomplish situated activities (cf. Wertsch, 1985). Beginning in childhood, more knowledgeable others scaffold children into developing new abilities by modeling mediated or indirect means of planning and implementing difficult performances. Such mediational means may be tools for influencing the physical environment (e.g., hammers). Tools such as language and symbolic activity enable mastery of mental activity according to socioculturally specific means of organizing social and mental processes (Vygotsky, 1986). In teaching, tools function as mediational means by which teachers scaffold students into desired disciplinary practices and skills.

Given our interest in how teacher candidates develop dialogically organized instructional practices over time, a Vygotskian perspective trains our focus on how tools mediate planning and instruction. Tools such as quizzes and worksheets, done individually and in silence at desks facing the teacher's podium, emerge historically from a culture needing to simultaneously educate large numbers of pupils

and rank them according to individual capabilities. Because dialogically organized instruction operates on a different, more social set of assumptions about mental development and about the cultural purposes of education, learning environments require structures where collaborative interaction can thrive. Therefore, teachers need different tools and they need to use old tools in different ways.

In developing expert practice, novice teachers draw on *conceptual* and *practical* tools (Grossman, Smagorinsky, & Valencia, 1999): whereas conceptual tools are “principles, frameworks, and ideas about teaching, learning, and English/language arts acquisition that teachers use as heuristics to guide decisions about teaching and learning” (p. 14), practical tools are “classroom practices, strategies, and resources that . . . have more local and immediate utility” (p. 14). For our purposes, dialogically organized instruction can be understood as a conceptual tool that both motivates and is developed through teacher candidates’ appropriation of a range of practical tools that function in various ways: to organize space (like placing desks in a circle), to organize interaction (such as Socratic seminar or debate), to position participants as agents (e.g., by using a pass toy to mark the speaker), and to prepare participants for interaction (e.g., journal writing). Because dialogically organized instruction challenges taken-for-granted norms for classroom interaction, it often requires deliberate planning and scaffolding over time. Mediating tools can support that transition by, for example, disrupting default patterns of classroom interaction and eliciting student talk to create a set of conditions making it possible for teachers and students to achieve the difficult goal of dialogic talk. Because our inquiry focuses on teacher development of dialogic practices, we examine teacher candidates’ appropriation of what we call *dialogic tools*.

For the purposes of the study, we define dialogic tools as those practical tools mobilized in teacher planning and practice with potential to mediate dialogically organized instruction in a given classroom situation. We further distinguish between dialogic tools and dialogic classroom discourse. Dialogic tools include tools used in planning for dialogic classroom discourse, the language-in-use that emerges during the course of an unfolding lesson. Such discursive moves are, in a Vygotskian sense, symbolic tools; however, our study focused particularly on the role of tool-mediated planning in creating openings for dialogically organized instruction.

Teacher candidates encounter dialogic tools in various activity settings where they learn to teach (Grossman et al., 1999), such as university coursework, texts and websites, mentor teachers’ classrooms, and collegial conversations. Dialogic tools differ according to such characteristics and potentials as their mode (e.g., written, oral, multimodal); whether they involve material artifacts or not; the extent to which they scaffold students’ participation; their distance from the observable classroom events; and the extent to which a tool casts students as active agents in shaping the flow of classroom discourse.

Not all practical tools are dialogic tools. Monologic tools mediate classroom activities where teachers consider divergent student voices as obstacles to completing learning tasks and where teachers consequently plan to maintain control over what counts as classroom knowledge. Consider, for example, the multiple-choice reading quiz with factual questions designed to hold students accountable for completing reading. While it may be possible—in theory—for a quiz (or any practical tool) to be used in a dialogic manner, our definition of dialogic tools turns on the *potential* of a tool to mediate dialogic instruction *in a specific planning and instructional context*. When mobilized in planning to accomplish accountability for reading, then, the quiz functions as monologic tool. If recruited to start discussion where talk about factual information scaffolds higher-level thinking about a text, however, the factual multiple-choice quiz could overcome its historical (and perhaps inherent) likelihood of being used for monologic purposes.

A tool's potential to serve dialogic ends in a given situation depends upon its sociocultural origin, its potential to foment interaction (Wertsch, 1991), the conceptual orientation of the teacher (Grossman et al., 1999), and its uptake in the here-and-now of a classroom scene. Some practical tools—and their historical uses—seem to bear greater potential for mediating dialogic classroom discourse than others. Take, for example, pass toys students use to choose subsequent speakers in whole-class discussions. By design, they constrain both teacher control and students talking out of turn. They can also scaffold students' ability to respond to one another—contra the typical IRE sequence—and make participation patterns more visible by discouraging certain students from monopolizing while encouraging broader participation. The pass toy's properties work against default models of classroom interaction and make dialogic interaction more probable. More generally, whatever their historical origins and uses in classrooms may be, practical tools for teaching assert agencies of their own that work in concert with individuals or groups using them to accomplish situated activities (Wertsch, 2002). Thus agency is distributed across actors (e.g., students, teachers) and the tools they use.

Difficulties in Achieving Dialogic Instruction

Although little research focuses specifically on teacher candidates' attempts at dialogically organized instruction, their difficulties in appropriating and using complex and unfamiliar practices more generally are well documented (e.g., Feiman-Nemser, 2001; Kennedy, 1999), often within an “apprenticeship of observation” framework (Lortie, 1975). Some claim teacher preparation is a “weak intervention” between teacher candidates' experience as students and their immersion in traditional practices as student teachers and novices (Feiman-Nemser, 2001). Such difficulties are hardly surprising, given that experienced teachers find it difficult to cede control and allow dialogic interactions to take place (Caughlan, 2003; Chinn et al., 2001). Reasons vary, but seem rooted in teachers' established conceptions of classroom

interaction and students' abilities (Caughlan, 2003); institutional norms shared by administrators, teachers, and students (Mercer, 1995); and teachers' difficulties letting go of topic, turn-taking, and interpretation (Chinn et al., 2001). Where teachers may fear time spent in discussion will interfere with content coverage, students also have reasons—such as fear of negative feedback—for not participating. Despite the difficulties, however, if substantive classroom interaction provides the foundation for language and literacy learning, then learning how to achieve dialogically organized instruction should be a central skill learned in the process of becoming an English teacher.

Recent Developments in Professional Education

Despite research exploring the difficulties of changing entrenched classroom discourse patterns, other studies testify to its possibility. For example, the Center on English Learning and Achievement's (CELA) Partnership for Literacy (PFL) study largely succeeded in helping teachers a) create more coherent and culturally responsive curricula and b) engage students in substantive classroom dialogues that develop higher-level thinking, talking, and writing. The PFL professional development involved teams of teachers collaboratively working with classroom artifacts and video (Adler, Rougle, Kaiser, & Caughlan, 2003/2004; Langer, 2011; Langer, Applebee, & Nystrand, 2005). PFL suggests that teaching for understanding requires both teachers and students engaging in complex practices involving attention to both communication and cognition.

A growing consensus—including some specific work focused on supporting dialogic instruction in literacy classrooms—suggests four components of quality professional development: a) *duration*, recognizing that learning new practices requires time and sustained support; b) *collaboration*, involving serious, ongoing investigation and conversation with peers working on similar issues (e.g., professional learning communities); c) *learning rooted in practice*, involving artifacts of teaching (e.g., video or student work study) and d) *coherence*,² entailing common goals and common focus (e.g., Adler et al., 2003/2004; Ball & Cohen, 1999; Desimone, 2009; Greenleaf et al., 2011; Grossman et al., 1999; Kamil et al., 2008; Langer, 2001; Wideen, Mayer-Smith, & Moon, 1998). Research converges around the idea that teacher learning at all stages is most effectively grounded in particulars of classroom contexts; furthermore, emerging technologies make such grounding—across diverse classroom settings—increasingly possible (e.g., Lampert & Ball, 1999). Teachers who work collaboratively to build a “beginning repertoire” (Feiman-Nemser, 2001) of “high-leverage practices” (Ball & Forzani, 2011) and who learn from each other to expand that repertoire can practice dialogic interaction from the very beginning of their careers.

Methodology

A design-based approach to the research fit our context and our goals because a) the work took place in authentic instructional contexts, b) such an approach respects the complexities of learning ecologies (e.g., the layered context of a university-based teacher preparation program), and—in contrast to experiments demanding strict fidelity of implementation throughout an intervention—c) carries the expectation that interventions will be necessarily revised over the course of implementation, in response to what has been learned (Cobb, Confrey, diSessa, Lehrer, & Schauble, 2003; Reinking & Bradley, 2008). Design-based research (DBR) dialogically puts theory in conversation with practice through the instructional intervention, providing opportunities to adapt practice over time as the project proceeds. In DBR, practice talks back to theory, enabling researchers to refine their thinking about phenomena under study.

Research Setting

Teacher Education Program

We embedded the study within the English teacher preparation program at a major Midwestern university's college of education, where teacher candidates take professional education coursework, including practicum experiences; complete BA degrees in content areas; and complete year-long, post-BA internships.

English Methods Courses: Background

During the year before their internship, teacher candidates enrolled in a year-long methods sequence specific to English Language Arts that focused on planning and sequencing lessons for English content using principles of backward design. Throughout the course sequence, teacher candidates learned about dialogic instruction as a conceptual tool for planning curriculum. The focus on dialogic instruction was not limited to one isolated unit of study; it was woven throughout the year-long methods sequence.

English Methods Focal Courses

During the internship year, teacher candidates progressively assumed more teaching responsibilities until they were “lead teaching” several periods a day. They also completed courses designed to support their work as early career professionals, including a sequence of two English methods courses in which the research took place. (For more detail, see <http://msuenglished.wikispaces.com>.) Our pedagogical innovation, Video-Based Response and Revision (VBRR), included four key components: a) stimulating awareness of language patterns in classrooms and their implications; b) engaging teacher candidates in planning lessons that aimed for dialogically organized instruction; c) using video-recordings of their teaching to engage interns in self and peer response, reflection, and instructional revision; and

d) designing online learning communities engaged in collaboratively supporting colleagues' developing dialogic teaching practices.

The present analysis examines data from two cohorts of teacher candidates who completed the two-year English methods course sequence and participated in VBRR.

Participants

Teacher Candidates

Of 97 teacher candidates enrolled in the English teacher preparation program during the two-year period of our research, 87 participated in the research (69 were women, 18 men). Five declined to participate, and five who dropped out during the internship year were excluded as participants. All but two were traditional students in their early twenties. Both cohorts were predominately White, with two teacher candidates self-identifying as Hispanic, two as African American, and one as multiracial.

Participating teacher candidates were assigned to a variety of teaching contexts. Most (79%) were in high schools. Thirty-six percent were in urban and 53% in suburban locations, with the remaining few in town or rural schools. Almost half of participants were placed in schools reflecting a range of racial and economic diversity (Appendix A). Forty percent were placed in schools with more than 25% students of color; 47% were placed in schools with more than 25% of students eligible for free and reduced lunch. Thus, participating teacher candidates had opportunity to observe videotapes of teaching within various classrooms serving different student populations. We did not collect test scores, grade point average or tracking data for classrooms.

Researchers/Teacher Educators

Consistent with DBR principles, three of us—Samantha Caughlan, Mary Juzwik, and Carlin Borsheim-Black—collaborated on course curriculum design and taught sections in which VBRR was enacted.³

Data Generation

To facilitate understanding of the data set, we briefly describe components of VBRR relevant to our analysis. (We detail our pedagogical design in Heintz, Borsheim, Caughlan, Juzwik, & Sherry, 2010; Juzwik, Sherry, Caughlan, Heintz, & Borsheim, 2012). Data for analysis included “video posts” completed by teacher candidates in focal English methods courses.

First, teacher candidates videotaped themselves teaching an entire class period and selected one five-minute clip of whole-class interaction to share with a small group of colleagues. Second, candidates prepared contextualizing materials, including their plan for the lesson, descriptions of their teaching contexts and courses, the curricular goals relevant to the lesson highlighted in the video clip,

and specific challenges with classroom management or instruction. In their contextualizing materials, candidates also posed questions to their colleagues to focus feedback on particular areas of need. Third, teacher candidates posted video clips, contextualizing materials, and transcripts of selected clips on a secure, online social networking site. Fourth, colleagues in small online groups viewed each others' videos and provided feedback and responses. (We did not include the responses as data in the present analysis.) Finally, teacher candidates composed (using writing, audio, or video) a reflection on the process, responding to colleagues' feedback with an eye toward generating revisions, refinements, and ideas for future teaching. In sum, each video post included a) a 5-minute video clip, b) contextualizing material (including lesson plan), c) a transcript of the video clip, d) responses to the video clip by fellow group members, and e) a written reflection on the process.

We designed each video post assignment to encourage teacher candidates' critical engagement with some specific aspect of their efforts to engage students through dialogic instruction. Teacher candidates completed the video post process four times in cohort one and three times in cohort two.⁴ Focal data included all text documents associated with video posts completed by participating teacher candidates in focal courses ($N=301$ lessons). Coded documents therefore included lesson plans, contextualizing materials, video transcripts, and reflections. We consulted videos when necessary to clarify coding. In total, 21 posts were missing lesson plans and 12 posts were missing transcripts. These posts were not used for analyses that required those data.

Measures

The analysis used dialogic indicators from previous research for analysis of dialogic classroom discourse and developed new codes for analysis of instructional planning. We coded four main types of variables: (1) basic contextual information, (2) the number and kind of dialogic tools used in planning, (3) the nature of teacher instructional discourse, and (4) the extent of student participation in classroom discourse. (See <http://vbrr.wiki.educ.msu.edu/Analytic+tools> for coding categories.)

Basic contextual information included course, grade level, type of school, demographics, instructional focus, activities, and content. To characterize teacher candidates' planning for dialogically organized instruction (Research Question 1), we coded planning documents posted with videos and transcripts for dialogic tools, defined as practical tools mobilized in teacher planning and practice with potential to mediate dialogically organized instruction in a given classroom situation. Because categories and distinct types of dialogic tools coded in the study emerged from inductive analysis of lesson plans and contextualizing materials, we do not believe the list includes all possible dialogic tools. (For the full list of dialogic tools, see <http://vbrr.wiki.educ.msu.edu/Findings>.)

We further categorized dialogic tools for whether they were teacher-led or

student-led. Where teachers were positioned both to develop the tool and maintain responsibility for its enactment, we coded for teacher-led tools. Teacher-led tools enable teachers to maintain primary responsibility for the direction of classroom interaction. While holding potential to promote student participation in classroom discourse, they do not fundamentally shift the locus of authority to include students. Student-led tools, on the other hand, share responsibility for the direction of classroom interaction with students. Where tools enabled teachers to explicitly step back and positioned students to interact with content and with each other, we coded for student-led tools. Conceptually, such tools align more completely with dialogic instruction.

Given our interest in teacher candidates' achievement of dialogic instruction in practice (Research Question 2), we used indicators of the nature of teacher discourse (dialogic vs. monologic), including teacher authentic questions, teacher non-authentic questions, teacher uptake, and teacher revoicing of student utterances.

Because it allowed us to relate teacher planning and practice to student discourse, we used student participation in classroom discourse (Research Questions 4 and 5) as the dependent variable indicating accomplishment of dialogic instruction in the study. We therefore examined the ratio of student to teacher utterances, where utterances were distinguished by a change in speaker (*S2Tratio*). We calculated *S2Tratio* for each lesson as: $\sum \text{Student utterances} / (\sum \text{Student utterances} + \sum \text{Teacher utterances})$. A strict I-R-E pattern, where the teacher poses a question and the student responds, would produce an *S2Tratio* of .5. In contrast, a lesson consisting entirely of student-led discussion with no teacher utterances would generate a value of 1.0. Although we realize limitations in using quantity of student turns apart from their quality, we considered it an efficient metric for capturing general patterns of participation over a large data set. Appendix A contains descriptive statistics for all variables used.

Before coding, researchers and coders devised a coding manual and coded several common files to refine categories. We coded additional common files until we consistently reached agreement on coding categories. The team met regularly during coding to discuss and resolve problematic examples; these discussions maintained a common understanding of coding categories throughout the process.

Analysis

Analysis occurred in several stages. To address Research Question 1, we calculated descriptive statistics on the extent and variability of teachers' use of dialogic tools. To answer Research Question 2, we examined the nature of teachers' own discourse in the classroom: teachers' use of such dialogic moves as revoicing, uptake, and authentic questions. In response to Research Question 3, we compiled basic inferential statistics (Spearman's rank order correlation coefficients) examining the association between teachers' use of dialogic tools (both in total and specifically of

student-led tools) and the nature of teacher questions. Guided by Research Question 4, we investigated the reduced-form relationship between use of dialogic tools and student participation in classroom discourse. To further illustrate that relationship, we examined dialogic tool use in the top 20% vs. the remaining lessons on our dependent variable (the ratio of student to teacher utterances). Finally, to answer Research Question 5, we used regression models to consider both the direct effect of dialogic tools on student participation in classroom discourse and the extent to which the effect of dialogic tool use may have been mediated by teachers' use of dialogic questions.

In these data, lessons were nested within teachers: that is, each teacher submitted three or more lessons to be analyzed. Thus, an observed association between dialogic tools and teacher questions and/or student participation could have been biased by teachers' underlying propensity to engage in dialogic instruction. To address the likely selection bias that results from this nesting of lessons within teachers, we used fixed-effects models to isolate the *within-teacher* variance in classroom instruction. Fixed-effects models provide a strong control for this kind of selection bias (Dee & West, 2011; Guo & VanWey, 1999; Kelly & Carbonaro, 2012).⁵

Limitations

The analysis examined general trends across more than 270 lesson excerpts from 87 teacher candidates participating in a purposeful intervention designed to scaffold and support dialogically organized instruction. We recognize certain limitations of that design.

First, the transcribed video clips were not randomly generated videos of teacher candidate performance; rather, both the course objectives and the research study design left the choice of which lessons were recorded and what section of that lesson would be posted online to the teacher candidates themselves. While we, as instructors, defined the larger goal of moving towards dialogically organized instruction, it was important that teacher candidates decide what aspects of instruction they had questions about or wished to work on. Further, their own discretion was somewhat limited by contingencies such as availability of video equipment and schedule changes in their classrooms. As instructors, we encouraged teachers to not just showcase their "best" work, but to select video excerpts that they felt would stimulate their own learning, for example by capturing interactions that were puzzling or vexing to them. Therefore, the amount of within-person variance in dialogic instruction as well as any measured change over time is partly an artifact of why each candidate chose each video.

Second, we were unable to collect data about achievement gains of secondary students with whom participating interns worked. Had we secured resources to generate such data, it would no doubt have enriched our understanding of developing instructional practices. Given the strength of previous research linking

dialogically organized instruction and student achievement, however, our analysis assumes that dialogically organized instruction supports students' literacy growth.

Third, the present analysis does not include fine-grained analysis of the qualities of classroom interactions in teacher candidates' classrooms. For example, we used turns at talk to gain a broad measure of overall participation instead of considering number of words, t-units, or other more qualitative measures of student talk. That choice significantly qualifies our claims about the achievement of dialogic classroom discourse. Finally, with respect to teacher candidates' planning practices, some may object to our analysis not including more attention to interns' *processes* of planning. We are pursuing such exploration in qualitative data analysis of students' contextualizing material, interviews, and their comments on one another's videos.

Findings

The analysis indicates that English teacher candidates involved in VBRR planned for dialogic instruction and disrupted historically default participation and questioning patterns associated with recitation. We begin by analyzing teacher candidates' planning for instruction, particularly their use of dialogic tools in planning. We then report findings on the extent of teachers' own use of dialogic discourse, focusing on the nature of teacher questions and responses. Next, we consider the relation between planning and subsequent teacher discourse moves, followed by an analysis of the relation between planning and one indicator of the achievement of dialogic instruction, student participation in classroom discourse. Finally, we examine a series of regression models linking student participation in classroom discourse (the dependent variable) to use of dialogic tools in planning, the nature of teacher discourse, and contextual factors.

Planning for Dialogically Organized Instruction

Coding of lesson plans revealed pervasive use of a range of dialogic tools, including both teacher-led and student-led tools.

Dialogic tools used by teachers included teacher-led tools, where teachers both developed/adapted and implemented tools that enabled them to retain authority over the direction of the lesson and associated talk, and student-led tools, which at some point or points allowed for student influence on the direction of classroom discourse. We further divided student-led tools into the following tasks and prompts: student-enacted tools, drama tools, student-written questions, turn-taking tools, meta-lessons, spatial tools, and grouping tools (see Table 1).

The majority of lessons included evidence of planning using dialogic tools. Of the 283 lessons with planning information, 218 (77.1%) made use of at least one dialogic tool. Table 2 reports the mean number of dialogic tools used per lesson. On average, teachers used 1.42 tools per lesson and multiple tools were commonly

TABLE 1. Dialogic Tools Identified in Lesson Plans

Tool Category	Definition	Tools Coded
Teacher-Led Tools	Both developed/adapted and implemented by teacher. Enable teachers to maintain responsibility for direction of classroom interaction. Teacher-led tools become dialogic when they function to prompt participation in dialogic interaction.	Anticipation guide, composing prompt, comprehension game, four corners activity, handout, K-W-L, Take a Stand activity, teacher-scripted questions, teacher tokens, worksheet
Student-Led Tools	Enable teacher to step back and position students to interact with content and with one another, thus sharing responsibility for direction of classroom interaction. Tools are listed here according to how they <i>function</i> to provide student agency in classroom interaction.	
FUNCTION TO ORGANIZE INTERACTION		
Student-Enacted Tools	Enable the teacher to frame the interaction but then step back and largely let the students play it out	Debate, fishbowl, gallery walk, literature circles, Socratic seminar
Drama Tools	Enable students to take on roles within which they speak	Unscripted drama activities, role-playing games, (some forms of) choral reading
FUNCTION TO POSITION STUDENTS AS DIRECTORS OF INTERACTION		
Student-Written Questions	Enable students to influence content of classroom interaction	
Turn-Taking Tools	Enable students to decide who gets the next turn in the exchange (e.g., throwing and catching) of a physical artifact	Pass toy, student tokens
FUNCTION TO MAKE NORMS AND PROCEDURES EXPLICIT		
Meta-Lessons	Include explicit instruction in conversational norms, or class meetings where students and teachers decide on rules or guidelines for classroom interaction	
FUNCTION TO ORGANIZE SPACE		
Spatial Tools	Include ways of setting up the room in order to facilitate student-to-student interaction. ⁶	Arranging chairs in a circle
Grouping Tools	Include ways of organizing space or interaction so that students speak mainly to each other	Small groups, pair share

used in any given lesson.⁷ Teacher-led tools, those maximizing teacher purchase over classroom control, were most often used, with a mean of .88 per lesson—not a surprising finding, given that these tools most closely resemble historically default authority structures in secondary English. These included teacher-directed activities

TABLE 2. Measures of Central Tendency and Variability in Use of Dialogic Tools (n = 283 lessons)

Type of Dialogic Tool	Mean	Std	Range
Teacher-Led Tools	.88	.73	0,3
Student-Led Tools			
Student-Enacted Tools	.06	.26	0,2
Student-Written Questions	.06	.23	0,1
Turn-Taking Tools	.08	.29	0,2
Spatial Tools	.05	.22	0,1
Drama Tools	.03	.18	0,1
Grouping Tools	.14	.35	0,1
Meta-Lessons	.11	.31	0,1
Total	1.42	1.10	0,6

such as comprehension games or Four Corners, teacher planning for whole-class interaction (e.g., advance scripting of questions), and writing prompts either completed in advance or during a lesson, that could be used to structure conversation. Such writing tasks dominated teacher-led tool use.⁸ Among the student-led tools, grouping tools were most common (.14 per lesson) but were still relatively uncommon compared to teacher-led tools. However, some less frequently used tools afforded more student agency and opportunities to develop meta-cognition. We discuss the effects of using those tools below.

Teacher Candidates' Use of Dialogic Discourse Moves

The first research finding documents extensive use of dialogic tools in lesson plan data. The second research question addresses teachers' dialogic discourse moves in the classroom. Analysis shows that teacher candidates used authentic questions and uptake in sample lessons at higher rates than might be expected for novices. Table 3 reports descriptive statistics on the nature of teacher discourse in sample lessons.

Uptake

Approximately 24% of all questions asked by teacher candidates in selected lessons involved uptake (see Table 3). We consider questions with uptake to be a strong dialogic indicator because teachers not only respond with interest to what students say but also allow student talk to influence the ensuing lesson. Given that previous research using naturalistic samples of English and language arts classrooms has suggested that as few as 6% of teacher questions during Q&A sessions involved uptake (see Juzwik et al., 2008, Table 2, Observation-only classes), we consider 24% a high rate of questions with uptake, even with a sample of purposefully selected lessons.

TABLE 3. Measures of Central Tendency and Variability in Dialogic Teacher Discourse

Type of Dialogic Tool	N	Mean	Std	Range
PRELIMINARY MEASURE				
Proportion of Teacher Utterances with Revoicing	281	.13	.15	0,.58
ESTABLISHED MEASURES				
Proportion of Teacher Questions With Uptake	274	.24	.23	0,1
Proportion Authentic Teacher Questions	274	.77	.29	0,1

Authentic Questions

Data showed that teacher candidates used authentic questions (77%) to a much greater extent than non-authentic questions in these lesson excerpts. Although teacher authentic questions are somewhat more common than questions with uptake in naturalistic data (see Juzwik et al., 2008), the high incidence of authentic questions in the lessons is striking.⁹ Figure 1 provides further details on the distribution of authentic questions. Many lessons contained all, or nearly all, authentic questions. (One hundred and thirteen lessons—over 40% of all lessons—contained no non-authentic questions at all.)

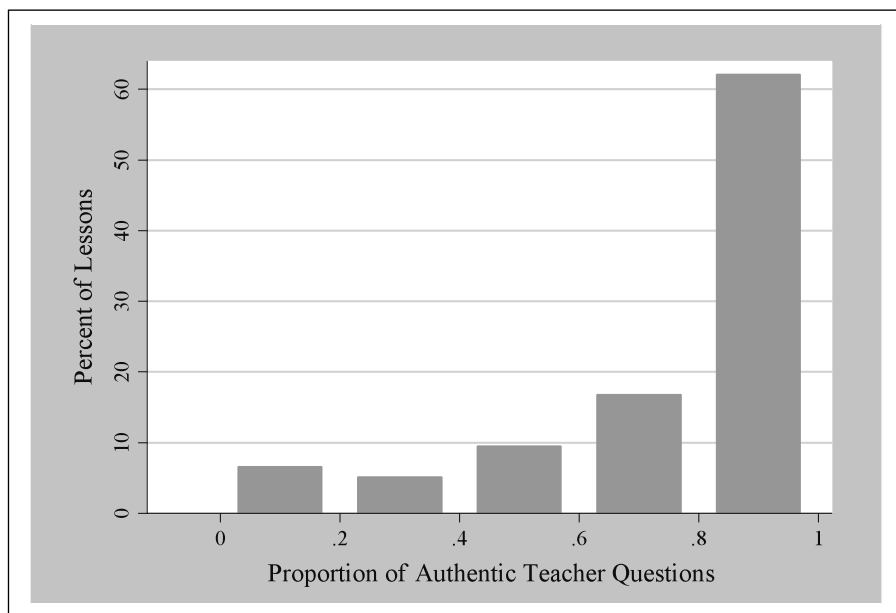


FIGURE 1. Percent of video posts containing various proportions of authentic questions ($n=274$ transcripts containing teacher questions)

Revoicing

As preliminary indicators of teachers' dialogic discourse practices, we considered incidences of revoicing. Revoicing occurred in approximately 13% of all teacher utterances. However, a close examination of data suggested it was not always a dialogic move, meaning that revoicing did not usually result in student ideas influencing the flow of the lesson. Particularly in early posts, many teacher candidates seemed to almost automatically repeat student comments. Moreover, further tests found no association between revoicing and other indicators of dialogic discourse, such as student participation or the use of dialogic tools, reinforcing our impression that revoicing is not as strong an indicator of dialogic discourse as uptake or authentic questions. Thus, although we consider revoicing as a potential indicator of teachers' awareness of student participation and understanding, revoicing was not a core component of dialogically organized instruction in these data.

In summary, teachers' use of dialogic discourse was pronounced in selected lessons compared to the incidence of dialogic teacher questions in naturalistic samples (or even compared to classrooms where practicing teachers were engaged in professional development).¹⁰ Yet, as revealed by the standard deviations reported in Table 3, the rate of dialogic questions was also highly variable. Many participating teachers were unable, even in purposefully selected lessons, to accomplish dialogic classroom discourse. We next examine this variation. Were teachers who employed dialogic tools more likely in turn to achieve dialogic discourse?

The Relationship between Planning for Dialogically Organized Instruction and Teachers' Dialogic Discourse Moves

In examining the relations among factors expected to influence student participation (thus making dialogic instruction more likely to occur), the positive relations between dialogic questions and teacher candidates' use of dialogic tools prompted us to tease out the differences between types of dialogic tools. We found a significant correlation between the total number of dialogic tools used and both teacher authentic questions and uptake. We also found a modest positive relation between use of student-led tools and dialogic teacher discourse moves, although it was not statistically significant.

Table 4 reports the relationship between teachers' use of dialogic tools and their enactment of dialogic questions, as indicated by authentic questions and uptake. As reported in Table 2, teachers' use of dialogic tools varied considerably. The modal lesson contained one dialogic tool (112 of the 258 lessons analyzed in Table 4), but many lessons included two or more, and others did not employ any dialogic tools (47 of 258). Likewise, as reported in Table 3, although the average lesson evidenced teacher dialogic discourse, teachers still showed much variation in their use of authentic questions and uptake. Despite the framework of teacher candidates' preparation, many lessons exhibited low levels of dialogic discourse.

TABLE 4. Relationship between Use of Dialogic Tools (Total) and Enactment of Dialogic Discourse ($n = 258$ Lessons)

# of Dialogic Tools (Total) used in Lesson	Frequency	Mean Proportion of Authentic Teacher Questions	Mean Proportion of Teacher Questions with Uptake
0	47	.72	.15
1	112	.73	.25
2	59	.84	.29
3	27	.81	.28
4+	13	.85	.30
Spearman's Rho:		.15*	.17**

* $p < .05$, ** $p < .01$, *** $p < .001$

We did find a statistically significant positive correlation between the total number of dialogic tools used and both teacher authentic questions (Spearman's Rho = .15) and uptake (Spearman's Rho = .17; see Table 4).¹¹ For example, in lessons without any dialogic tools, only 15% of teacher questions exhibited uptake, compared to 25% or more in lessons using dialogic tools. What, however, does that correlation indicate? One possible explanation of the association in Table 4 is that planning for and using dialogic tools promoted more open-ended questions, providing teachers with more space to consider student responses and work them into subsequent questions as uptake. Alternatively, a selection mechanism may be affecting these results, whereby teacher candidates who orient towards authentic questions and uptake would also be those who would choose to use dialogic tools. We therefore employ fixed-effects models to address concerns with selection bias. First, however, we consider the heterogeneity in forms of dialogic tools. As Table 2 indicates, the most common type of dialogic tools were teacher-led ones, yet we would expect student-led tools to have the most pronounced effect on classroom discourse because they tend to be most explicitly structured to promote student participation.

Table 5 reports the association between student-led tools and the indicators of dialogic discourse. As we saw with the findings for all dialogic tools, there appears to be a modest positive relationship between use of (student-led) tools and dialogic instruction. For example, the mean proportion of teacher questions with uptake increased from 22% to 28% or more as the use of tools increased. However, the association in Table 5 is not statistically significant. Nevertheless, it is important to consider whether the dialogic tools used might be considered more teacher- or student-led, as such tools may have had a direct impact on student participation in classroom discourse (beyond their effect on teacher questions).

TABLE 5. Relationship between Use of Student-Led Dialogic Tools and Enactment of Dialogic Discourse

# of Student-Led Dialogic Tools Used in Lesson	Frequency	Mean Proportion of Authentic Teacher Questions	Mean Proportion of Teacher Questions with Uptake
0	164	.75	.22
1	63	.75	.28
2	26	.85	.34
3	5	.95	.13
4+	0	--	--
Spearman's Rho:		.08	.07

The Relationship between Dialogic Tools and Student Participation in Classroom Discourse

We found a positive, statistically significant association between dialogic tool use and our primary indicator of student participation, ratio of student utterances to utterances overall. Examining this association more closely, we found that the extent of the relationship depended upon both the types of tools used and the number of tools used. Lessons with higher ratios of student utterances were more likely to show student-led tools and combinations of tools.

As further indication of whether dialogic classroom discourse was achieved, we evaluated the ratio of student to teacher utterances (*S2Tratio*), with higher levels indicating greater student participation in classroom discourse. Consistent with our findings on teacher authentic questions and uptake, we found a high ratio of student talk on average, but again, the extent of student compared to teacher talk was highly variable across classrooms. *S2Tratio* ranged from a low of .38 to a high of 1.0 (no teacher utterances). Eighty-two lessons (28.5%) had an *S2Tratio* of .5 or below, where teachers largely dominated turn-taking. The remaining lessons (71.5%) included at least brief moments when students spoke without immediate teacher evaluation, and 53 lessons (18.4%) had an *S2Tratio* of .66 or higher, with student utterances at least double the number of teacher utterances.¹²

Table 6 shows the association between use of dialogic tools and the prevalence of student utterances (*S2Tratio*). We found a statistically significant ($p < .001$) association between use of dialogic tools and student participation in classroom discourse. For example, among lessons without student-led dialogic tools, the mean *S2Tratio* was .54, while lessons with one or more student-led dialogic tools had a mean *S2Tratio* of .64, a difference of approximately .83 standard deviations (see Appendix A). However, this association was almost entirely due to the use of student-led tools as opposed to teacher-led tools. Although teacher-led tools have the potential to increase student participation if used for dialogic purposes, their

TABLE 6. Relationship between Use of Dialogic Tools and the Prevalence of Student Utterances—Spearman's Rho ($n = 272$)

	Student-L Tools	Teacher-L Tools	Dialogic Tools (total)
$S2Tratio$.32***	.11	.32***

* $p < .05$, ** $p < .01$, *** $p < .001$

properties as teacher -designed and teacher-enacted also enable them to be used in non-dialogic ways. Thus, the remainder of the analysis focused on teachers' use of student-led dialogic tools.

How Dialogic Tools Made a Difference: An Illustration

To illustrate the relationship between dialogic tools and student participation, we examined the use of dialogic tools among those lessons in the top 20% of $S2Tratio$ in each cohort (higher-participation lessons) and those in the remaining 80% (lower-participation lessons). Comparison of these two groups revealed interesting differences in dialogic tool use. The 20% ($n = 56$) lessons with the highest ratio of student to teacher talk had an $S2Tratio$ of .63 or above. In contrast, the remaining lessons ($n = 237$) had an $S2Tratio$ of .62 or below; in most lessons, then, the teacher candidates had been moderately successful in encouraging student talk, but much less so than in the highest-ratio classrooms.

Table 7 shows differences in use of dialogic tools in lessons with higher and lower student participation, using the mathematical model of independence as a reference to illustrate the association (Chi² tests of statistical significance). Although our underlying hypothesis is that dialogic tools led to student participation (rather than primarily the other way around), Table 7 illustrates the relationship between the two. The higher-participation lessons were more likely to use dialogic tools than the remaining lessons. In nearly all (52, or 94.5%) of the 55 higher-participation lessons, teachers used dialogic tools (compared to only 44 expected lessons under the model of independence), whereas in the remaining lessons only 80% of lessons included dialogic tools. Tools were also combined more frequently in higher-participation lessons, where two or more tools were combined in twice as many lessons as one would expect (considering averages across the entire data set).

Profiling dialogic tool use in the two sets of lessons showed two very different patterns of tool use (Table 8). In both higher-participation lessons and the remaining lessons, teacher candidates used teacher-led tools most frequently; there was no significant difference in the extent of their use ($p = .11$). These can be effective tools for preparing students to speak by giving them time to prepare. They can also provide teachers with ways to structure ongoing interaction in productive ways. However, the higher-participation lessons showed significantly higher use of student-led tools characterized by the greater amount of agency they afford

TABLE 7. Dialogic Tool Use in Higher and Lower Participation Lessons
Contingency Table Analysis: Actual Counts, (Expected Counts), Row Percentages
(*n* = 276)

	Dialogic Tools Used			Total
	None (0)	One	Two or More (up to Six)	
Higher Participation Lessons (top 20%)	3 (9.6) 5.5%	11 (23.7) 20.0%	41 (21.7) 74.6%	55
Remaining Lessons	45 (38.4) 20.4%	108 (95.3) 48.9%	68 (87.3) 30.8%	221

Pearson $\chi^2 = 35.51^{***}$

* $p < .05$, ** $p < .01$, *** $p < .001$

students and the higher degree of scaffolding and meta-cognition they enable. Those tools included student-enacted tools, student-written questions, turn-taking tools, and meta-lessons (highlighted in Table 8).

Although student-enacted tools (e.g., Socratic seminar) usually involve the teacher's choice of text, topic, and participation structures, they also afford students

TABLE 8. Dialogic Tool Category Profiles: Percent of all Lessons, High Participation, and Remaining Lessons Containing Tools of Each Type (*n*=276)

TOOL	Proportion of Lessons with a Given Type of Tool Used		
	HIGH-PARTICIPATION LESSONS	REMAINING LESSONS	ALL LESSONS
Teacher-Led	.764	.683	.699
Student-Led			
Student-Enacted	.014***	.255	.062
Student-Written Questions	.127*	.041	.058
Turn-Taking	.236***	.041	.080
Spatial	.127**	.032	.051
Drama	.073	.023	.033
Grouping	.164	.145	.149
Meta-Lessons	.309***	.063	.112

* $p < .05$, ** $p < .01$, *** $p < .001$

greater opportunity to take the lead in classroom talk and to produce classroom knowledge. They further provide structural support for more student turns and fewer teacher turns. Turn-taking tools enable the teacher to step back and allow students some of the responsibility for turn-taking. Meta-lessons involve building meta-cognition regarding how classroom interactions can work so that students also can assume responsibility for their smooth and productive functioning. Each of these latter three tool categories was found in 23% to 30% of higher-participation lessons, vs. 6% or fewer of the remaining lessons.

The Effect of Dialogic Tools on the Nature of Teacher Questions and Student Participation in Classroom Discourse

In this final section, we use statistical modeling to investigate the relationships among our independent variables (dialogic tool use, teacher dialogic discourse, and school context factors), and on our dependent variable, *S2Tratio*. In addition, we analyze within-teacher and between-teacher effects in order to see whether the use of dialogic tools made a difference because of who used them. Although each of these factors had its effects, dialogic tools explained more of the variance in student participation than any other factor, both within and between teachers.

We first evaluate to what extent the number of authentic teacher questions and teacher questions with uptake, as well as school context variables, can explain the strong relationship between dialogic tools and student participation in classroom discourse.

Ordinary Least Squares (OLS) Models

Model 1 in Table 9 shows the reduced-form (total) relationship between teachers' use of student-led tools and student participation in classroom discourse (*S2Tratio*). The estimated regression coefficient suggests that for each dialogic tool employed, the ratio of student to teacher talk increased by about .07. This effect is statistically significant and equates to a change in *S2Tratio* of nearly .58 standard deviations.

We hypothesized that dialogic tools may, in part, promote student participation in classroom discourse by promoting teachers' own use of dialogic questions, including authentic questions and uptake. In Model 2, the measures of authentic teacher questions and uptake are included. Comparing across models, the effect of dialogic tools declines from .070 to .047, suggesting that these two measures of teachers' own dialogic discourse explain about one-third of the relationship between dialogic tools and student participation in classroom discourse. Thus, while the teacher question properties measured here explain a proportion of the association between dialogic tools and student participation in classroom discourse, a substantial direct effect remains.¹³ In Model 3 we include several school-level control variables, of which only school level (high school vs. middle) is statistically significant. However, the main factors affecting rates of student participation were not school-level contextual variables. (See Kelly, 2008, 2010 for further discussion of the effect of school and classroom context on discourse.)

TABLE 9. The Effects of Dialogic Tools and Teacher Discourse on the Prevalence of Student Utterances (*S2Tratio*)

	Ordinary Least Squares Models			Fixed-Effects Model
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
<i>n</i>	272	258	241	258
Constant	.54 (.0082)***	.49 (.016)***	.44 (.024)***	.51 (.019)***
Number of Student-Led Dialogic Tools Used	.070 (.0084)***	.047(.0074)***	.050 (.0075)***	.039 (.0085)***
Proportion of Authentic Teacher Questions		.055 (.020)**	.060 (.021)**	.036 (.024)
Proportion of Teacher Questions with Uptake		.020 (.024)	.024 (.026)	.034 (.033)
CONTROL VARIABLES				
Urbanicity			.000 (.0065)	
High School			.050 (.015)***	
% Free Lunch			.0091 (.023)	
% Minority			.001 (.0004)	
R ²	.205	.187	.249	.513

* $p < .05$, ** $p < .01$, *** $p < .001$

Fixed-Effects Model

Teachers vary in personality, talents, their ability to bond with students, and their felt need for classroom control. What was the effect of the individual teacher on student participation? To answer this question, we used a fixed-effects model.

In the analyses so far, the primary unit of analysis was the lesson. However, lessons were nested within teachers (as each teacher submitted three or more lessons to be analyzed), making it possible that the variability in discourse (on the part of both teachers and students) stemmed primarily from teachers' underlying propensity to incorporate students' ideas and voices into instruction. If teachers with the greatest propensity to engage in dialogic instruction to begin with were the most likely to use dialogic tools, then the effect of dialogic tools in the conventional OLS models in Table 9 (Models 1-3) would be biased upwards, appearing stronger than it really is.

Table 10 shows the decomposition of variance (the proportion of variance that lies within and between teachers) in the dependent and independent variables within and between teachers in our sample. Due to the relatively small number of lessons per teacher (around 3.2 lessons depending on the measure), the proportion of variance at the teacher level was not estimated with great precision in these data. Nevertheless, it appears that for each of the measures, a substantial proportion of the variance lay between teachers (the confidence interval for the ICCs indicates as much as 20-40%). Teachers differed in their ability to get students to participate and in their ability to use dialogic questioning and dialogic tools.¹⁴ It is possible that unmeasured characteristics of the teacher interns themselves may account for the association between dialogic tools and discourse outcomes.

In Model 4 (Table 9) we use fixed-effects models to isolate the *within-teacher* variability in classroom instruction and discourse. As expected, the student-led dialogic tools and teacher questioning coefficients were somewhat attenuated in Model 4 compared to the OLS models.¹⁵ Yet, consistent with prior models, even when only differences in lesson planning and discourse within teachers were considered, we found a substantial direct effect of dialogic tools on student participation in classroom discourse. Because tool use is the largest and most significant of the variables in explaining variance in student participation between lessons, even the more dialogically inclined teacher candidates did better at eliciting student interaction on those days they used dialogic tools than on the days tools were not evident in their planning.

To summarize, we found pervasive use of dialogic tools in the planning documents submitted by focal teacher candidates. We also found they used a higher percentage of authentic questions and questions with uptake than would be expected from novice teachers. Although we found a significant effect of teachers'

TABLE 10. Decomposition of Variance in Dependent (Prevalence of Student Utterances) and Independent Variables (Dialogic Tools and Discourse)^a

	Average Within-Teacher Number of Observations	Sum of Squares Between/Within	R ²	ICC (95% CI)
<i>S2Tratio</i>	3.31	1.75/2.54	.409	.157 (.033, .281)
Student-Led Tools	3.25	56.2/122.2	.315	.014 (.000, .123)
Teacher Authentic Questions	3.15	8.0/14.1	.363	.070 (.000, .193)
Uptake	3.15	7.1/7.56	.484	.249 (.116, .382)

^aOutput from STATA's "Loneway" command

authentic questioning and use of uptake on student participation as indicated by the ratio of student to teacher utterances, we discovered a stronger relationship between planning for dialogic instruction using dialogic tools and student participation. This relationship seemed particularly strong when only student-led tools were considered. Adding the possible contributions of school contextual variables and the effects of the individual teacher still left dialogic tool use explaining more variance in student participation than any other factor.

Discussion and Implications

English teacher candidates participating in the study achieved dialogically organized instruction over their intern year to a greater extent than would be predicted by previous studies of either naturalistic samples of instruction or school-based professional development efforts. Analyses of lesson transcripts showed regular use of authentic questions, teacher uptake, revoicing, and runs of student turns, all indicators associated in prior research with opportunities for the dialogic interweaving of student voices in substantive interaction with curricular content. However, our analysis shows revoicing had little impact on student participation as used by these teacher candidates (particularly in comparison to uptake), providing support for the idea that the dialogic effect of any particular discourse practice depends both on its specific use and on its core characteristics. We also find a weaker effect of teacher authentic questions and uptake on student participation than do earlier studies, an effect mediated by use of dialogic tools.

Our analysis finds planning for dialogic instruction strongly associated with its achievement as indicated by high levels of dialogic teacher discourse and student participation. As they used a wide variety of dialogic tools to prepare for and organize dialogic interaction, novice teachers disrupted the historically default classroom discourse patterns in secondary English. Although each tool bears some potential for promoting dialogic interaction, dialogic tools in our study varied in their cultural-historical origin, types of agency afforded participants, and affordances in scaffolding students into participation and independence.

The analysis contributes to research on dialogically organized instruction in English language arts classrooms by pointing to planning, and specifically the use of dialogic tools in planning, as a key focus for dialogic teacher development. Use of dialogic tools in planning explains more of the variance in student participation among lessons than any other factor. Dialogic tools appeared to offer teachers and students physical and cognitive assistance with the profound challenges entailed in managing interaction and disrupting status quo turn-taking practices. Attending to a range of dialogic tools in planning may be one pathway for teacher development of dialogically organized instruction that extends beyond single-mindedly focusing on classroom discussion (e.g., Adler & Rougle, 2005; O'Donnell-Allen, 2011)—although we do not wish to diminish the power of classroom discussion

as a dialogic discourse practice. Results indicate teacher candidates' use of such tools frequently yielded increased student participation in whole-class interactions. However, not all teacher candidates used all kinds of tools. In most lessons, teacher candidates a) did not combine tools, and b) infrequently used student-led tools designed to share responsibility for managing classroom discourse with students—moves significantly correlated in our findings with higher student participation.

We further suggested a conceptual distinction between monologic and dialogic tools, based on their varying potential to mediate dialogic classroom interaction. This potential is related to these tools' sociocultural origins and the resulting characteristics that make a particular tool more or less likely to be used for dialogic purposes—in such ways tools exercise agency in contexts. However, because the ultimate expression of that potential is the tool's use by a teacher in a classroom, this distinction warrants further refinement or even disconfirmation. Additional systematic study of large samples of practical tools used by teachers and coding of both dialogic and monologic tools, alongside outcomes in dialogic classroom discourse, might be one pathway. Another promising pathway would be finer-grained study of dialogic and monologic tools—both conceptual and practical—used in specific classroom settings.

The study further distinguished between teacher-led and student-led tools, finding that student-led dialogic tools correlated more strongly than teacher-led tools with high student participation. This finding also needs further refinement and empirical study. For example, some may find our choice to use student participation as a key indicator of achieving dialogic classroom discourse limited or even unwarranted. We have argued that it is an accomplishment of dialogic instruction insofar as it does indicate a disruption of the historically default monologic mode of instruction in secondary English where teachers talk and students listen or respond briefly with known-answer questions. Continuing research can overcome our design limitations by scrutinizing qualities of classroom interaction (e.g., the extent to which students build on others' contributions) when looking at effects of using student- and teacher-led tools in planning, or perhaps in looking at affordances of specific student-led tools.

Others may wonder if the finding about the relation between student-led tools and higher student participation is tautological: if we define student-led tools as those for which the teacher steps back, then does it not necessarily follow that student participation will be higher in the lesson? We would argue “no” because we do not take for granted that student-led tool use in planning will result in higher student participation in practice. For example, teachers can exert control even in lessons where student-led tools have been written into lesson plans (e.g., directing students where to throw the pass toy next).

Use of dialogic tools in planning and high levels of student participation occurred across a variety of contexts: urban, suburban and rural schools; middle

and high schools; and schools with varying ethnic, racial, and socioeconomic populations. We expected, but did not find, significant effects of *context* on dialogic indicators. Although context impacted variance less than use of dialogic tools, we do not claim that the particular set of tools and practices in our data set belongs in a collection of “what works” regardless of context. Finer-grained accounts of particular sets of tools in planning in differing contexts may be an area for future research.

The study also suggests the value of curricular innovations, such as VBRR, for English teacher preparation. VBRR aligned with properties of sound professional development documented in the literature, including a) assumption of an inquiry stance, b) significant duration (two years), c) repeated opportunities to step back from practice and consider it from a distance through study of artifacts such as videos, d) opportunities to interrupt the isolation of practice through professional dialogues around shared goals, and e) opportunities to revise teaching in light of previous attempts and outcomes. VBRR invited teacher candidates to ground dialogic concepts encountered in university coursework in concrete planning practices that could be tried, discussed, revised, and passed among themselves. Such planning, we reason, seems a necessary first step in achieving dialogic classroom discourse.

The success of using dialogic tools within the pre-service context of VBRR raises further questions. To what extent was the mobilization of dialogic tools in planning and the achievement of high levels of student participation due to the teachers’ ongoing professional development experiences? Could experienced teachers be supported in achieving dialogically organized instruction through similar means? Previous research suggests it may be possible (e.g., Alexander, 2008), yet many questions remain. Do teacher candidates who mobilize dialogic tools to develop dialogically organized practices at the inception of their career continue using those tools and/or expanding their repertoires into their early- and mid-career years of teaching? Longitudinal studies of graduates of programs using similar practices, perhaps in concert with longitudinal studies of completers of inservice professional development, could provide portraits of the processes of developing dialogic practices.

In research on English teacher preparation, more work remains to be done with conceptual and practical tools. For example, future studies might expand on the conceptual work of Grossman et al. (1999) to better understand how tools contribute to teacher learning and how teacher educators can mobilize both conceptual and practical tools to support teacher candidates in adopting and appropriating powerful new practices.

In an age of curriculum programmed to align with standards, a narrow range of “best practices,” and other constraints on teacher and student interaction, it might seem quixotic to focus so much attention on providing teacher candidates with tools to increase opportunities for their students to share in shaping the

direction of classroom talk. We do see a mismatch between the current discourse of efficiency and the rather messier processes of learning involved in dialogically organized instruction. Nonetheless, the teacher preparation pedagogy discussed here emerges from a) research on engagement and its effect on learning, b) research on the correlations between dialogic discourse and student achievement, and c) a commitment to the proposition that classrooms should prepare citizens to actively participate in a pluralistic democracy. We therefore hope that teacher candidates come to view dialogically organized instruction not as a detour on the way to meeting standards, but as a means to develop key life skills (e.g., written argumentation) that are both highlighted by the Common Core State standards and historically valued by English teachers.

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NOTES

1. Although not a focus of the present analysis, we do acknowledge the rich “underlife” of classroom interaction and the reality that many students are carrying on “unofficial” discourses in classrooms, oftentimes in multiple languages and using multiple technologies. Sometimes, as Canagarajah (1999) notes, those discourses constitute acts of resistance to schooling, curriculum, pedagogy, and so on.
2. Coherence is variously defined by theorists of professional development. Desimone (2009), for example, defines coherence as a) consistence with teachers’ existing knowledge and beliefs or b) consistence with district or state programmatic goals (p. 184). Because her definition constrains the possible parameters for program design, we prefer the ideal of conceptual coherence as defined by Applebee (1996) and Feiman-Nemser (2001), where elements of a program or curriculum are guided by a consistent set of values and beliefs.
3. For more detail about the design of VBRR, see Juzwik et al., (2012), particularly pp. 9-10 for the researchers’ specific roles.
4. In line with design-based research procedures, we made adjustments to the video post assignments after the first cohort. Based on our observations of the process in year one and feedback from teacher candidates, we included the fourth video as part of the end-of-year dialogic reflective essay (not analyzed for this study), leaving cohort two with only three video posts suitable for comparing with cohort one.

5. Our fixed-effects models are run using STATA's 'areg' command.
6. This tool was noted where it appeared explicitly in lesson plans, but was likely undercounted, as in reflections and in comments, teacher candidates referred to different attempts to organize their rooms. In these lesson plans, only arranging chairs in a circle was specifically noted.
7. There was no significant difference in the use of dialogic tools between cohort groups.
8. Two hundred out of 249 teacher-led tools, or 50% of all dialogic tools used over the two cohorts, were teacher-structured writing tasks (not shown in Table 2).
9. In the Partnership data, 24% of teacher questions in the observation-only (non-experimental classrooms) were authentic (Juzwik et al., 2008); Applebee et al.'s (2003) national study of literature teaching showed only 19% of questions were authentic.
10. In supplementary analyses we also found that the total number of teacher questions in the selected lessons declined over time. The lessons observed in this study were selected, as opposed to being randomly sampled, and, thus, we do not explicitly analyze changes over time. Nevertheless, there does seem to be some evidence of teachers' increasing use of dialogic instruction, leading to increasing student participation in classroom discourse. Fewer teacher questions signals decreased teacher control and increased student control (Chinn et al., 2001).
11. Preliminary analyses showed no association between dialogic tools and revoicing.
12. The ratio of student to teacher talk rose sharply from the first to second lesson selected, but thereafter remained at about the same level.
13. Although the proportion of teacher questions with uptake is not statistically significant in Model 2, it is highly correlated with authentic questions. The zero-order correlation between uptake and $S2Ratio$ is .117 (p value of .052). Note also that the unusual decline in the R^2 from Model 1 to 2 is related to the change in sample between models, due to different numbers of missing lesson plans vs. missing transcripts.
14. Note: these results should not be compared to naturalistic studies of instruction. Study participants purposefully selected lesson excerpts.
15. The R^2 in Model 4 is not comparable to the other models, as it includes the effect of "absorbing" the teacher-level variance. Control variables are not shown because they are not relevant in Model 4; they do not vary within-teachers. Note also that while the teacher question variables are no longer statistically significant, they are still approximately the same magnitude as they are in the OLS models (but with larger standard errors). For a stronger test of the relationship between teacher questions and student participation, see Nystrand et al. (2003).

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APPENDIX A: DESCRIPTIVE STATISTICS

Variable	N	Mean	Std	Range
S2Tratio	288	.5779389	.1222332	.37778, 1
Dialogic Tools				
Teacher-led tools	283	.8798587	.7339662	0,3
Student-enacted tools	283	.0636042	.2585771	0,2
Student-written questions	283	.0565371	.2313651	0,1
Turn-taking tools	283	.0812721	.2863982	0,2
Spatial tools	283	.04947	.2172313	0,1
Drama tools	283	.0318021	.1757838	0,1
Grouping tools	283	.1448763	.3525996	0,1
Meta-lessons	283	.1095406	.3128696	0,1
Total dialogic tools	283	1.416961	1.099321	0,6
Dialogic Discourse Variables				
Proportion authentic T questions	274	.77302	.2850024	0,1
Proportion T questions w/uptake	274	.2439597	.2316834	0,1
Proportion T utterances w/ revoicing	281	.1295608	.1481148	0,.583333
Number S questions	284	1.78169	2.431002	0,15
Number T questions	274	10.57299	6.328909	1,29
Contextual Variables				
School % students of color*	290	4.491931	14.38609	.02,.69
School % free/reduced lunch*	290	.3388966	.2545669	.03,.99
School grade level (high)	276	.7862319	.4107097	0,1
Urbanicity (city, suburban, town, rural)*	293	.6825939	.8669764	0,3

* Source: NCES Common Core of Data (CCD), 2008–2009 school year.