Argumentation Tasks in Secondary English Language Arts, History, and Science: Variations in Instructional Focus and Inquiry Space

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ABSTRACT

This study drew on observations of 40 secondary English language arts, history, and science lessons to describe variation in opportunities for students to engage in argumentation and possible implications for student engagement and learning. The authors focused their analysis on two broad dimensions of argumentation tasks: (1) *Instructional focus* categorized tasks as learning to argue, arguing to learn, or interactive argumentation focused on evaluating different possible meanings and interpretations of text. (2) *Inquiry space* described the degree to which the question, possible claims, and knowledge and skills needed to accomplish an argumentation task were predetermined. Findings point to task characteristics as a potentially powerful influence on instruction and resultant student engagement. Although most of the argumentation tasks focused on arguing to learn, the authors found that both arguing-to-learn and learning-to-argue tasks were frequently based on predetermined questions, answers, and content. In contrast, interactive argumentation was generally shaped by student questions and interpretations. Using contrasting illustrations from observed lessons, the authors theorize about the role of inquiry space in argumentation teaching and learning. Given that students' interactive argumentation often revealed important argumentative reasoning, the authors argue for recognizing these activities as argumentation and exploring their potential in the development of argumentation literacy skills.

This study was inspired by the desire to understand the variation in opportunities presented by teachers for students to engage in argumentation, and possible implications of those variations for student engagement and learning. Recent literacy reform efforts epitomized by the Common Core State Standards have emphasized instruction that engages students in reading and reasoning with complex academic texts across the subject areas, with a special emphasis on evidence-based argumentation (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010a). The Every Student Succeeds Act (ESSA) continues this legacy. Despite granting states considerable control over choosing or developing standards, the overwhelming majority of states are implementing the Common Core in some form to meet ESSA's requirement for high academic standards (National Conference of State Legislatures, 2016). The emphasis on complex literacies has created uncertainty among educators not only about what it may mean for student engagement and

achievement but also about what instructional practices might be needed to reach these new standards (Bomer & Maloch, 2011; Gewertz, 2012; Henderson, Peterson, & West, 2015; Opfer, Kaufman, & Thompson, 2016; Sawchuk, 2014). Instruction of the sort envisioned by literacy reforms such as the Common Core remains quite rare in U.S. secondary schools (Greenleaf & Valencia, 2017). Engaging students in rigorous literacy-based learning at the secondary level will thus require many teachers and students to take on roles that are, as yet, unfamiliar to them (Beach, 2011a; Porter, McMaken, Hwang, & Yang, 2011).

This study draws on a larger program of design-based research that invited teachers to play a central role in the iterative design of instructional approaches to support secondary students' engagement in evidence-based argumentation from reading multiple disciplinary sources. To inform the design work, we carried out classroom observations of 40 middle and high school English language arts (ELA), history, and science lessons prior to designing any instructional intervention. By developing an understanding of teachers' current conceptions and instantiations of disciplinary reading and argumentation, we hoped to identify supports and challenges to engaging students and teachers in these complex disciplinary literacy practices. In this article, we report findings from these classroom observations.

Research Questions

To analyze the 40 lessons, we considered two questions:

1. How was argumentation understood, instantiated, and taught by teachers prior to the development of any intervention?
2. What were the possible implications of these different conceptions and approaches for student engagement, learning, and dispositions to learn?

Theory and Literature Review

In this section, we review the strands of research that have informed our theory of argumentation.

Argumentation as Social Practice

Our larger program of research focused on text-based argumentation as a means for building deep levels of comprehension (Goldman et al., 2016), seeing argumentation as a tool and a dialogic activity for creating new knowledge, deepening understanding, and building thinking and reasoning skills (Baker, 2009; Meiland, 1989; Schwarz, 2009). By focusing on its role in knowledge building, our approach emphasizes the importance of engaging students in the intellectual work of argumentation.

Drawing on Toulmin's (1958) model, we define *argumentation* broadly as making a claim or assertion that is supported by evidence that connects to the claim in a principled way. Toulmin's model accommodates the situated nature of argumentation. Unlike formal logical models of argumentation that may prescribe universal rules for relating premises to conclusions, Toulmin's model seeks to describe how people solve real-life problems that entail uncertainty and probability, where the quality of arguments is assessed as appropriate or inappropriate, stronger or weaker within a particular problem, community, context, or discipline (Fulkerson, 1996). Although the specific nature of argumentation differs across disciplines, research has shown that evidence-based argumentation is an essential practice to nearly all disciplinary knowledge creation (Goldman et al., 2016; Moje, 2015; Stevens, Wineburg, Herrenkohl, & Bell, 2005).

As Toulmin's (1958) model implies, argumentation is a social practice situated in and mediated by settings, purposes, and other social and linguistic factors (Newell, Beach, Smith, & VanDerHeide, 2011; Street, 2005). Above and beyond the dialogic nature of argumentation itself, social processes shape what counts as argument (Schwarz, 2009). Competing instructional enactments of argumentation reflect different understandings of what counts as argumentation and, in turn, what students learn about argumentation and how they learn it (McNeill & Pimentel, 2010; Newell, Van Der Heide, & Olsen, 2014). An extensive body of research has shown that classroom opportunity to learn, defined as opportunities presented by the teacher, has strong effects on student learning (see Abedi & Herman, 2010). Thus, understanding how teachers enact argumentation may be an important gauge of students' instructional opportunities and needs. Furthermore, because these understandings and enactments are shaped by cultural assumptions about teaching and learning, in a broader sense, understanding how teachers enact argumentation can potentially inform a "reexamination of cultural assumptions about what a 'real school' is and what sort of improved schooling could realize new aspirations" (Tyack & Tobin, 1994, p. 478) envisioned by literacy reforms.

Research on Argumentation in Schools: Knowledge and Gaps

Although studies of argumentation in education abound, few have examined or described argumentation practices during typical subject area instruction (Newell et al., 2011; Schwarz & Asterhan, 2010). Moreover, studies conducted in classroom settings have generally focused on the implementation and impact

of specific instructional interventions (e.g., Belland, Glazewski, & Richardson, 2011; Monte-Sano & De La Paz, 2012; Reznitskaya et al., 2009). Although such studies have provided evidence of the effectiveness of the interventions, they cannot tell us how these interventions will be enacted by teachers in the absence of researcher support.

A few studies have looked at variation in teacher implementation of argumentation interventions (Berland & Reiser, 2011; Gresalfi, Barnes, & Cross, 2012; McNeill, 2007; McNeill & Knight, 2013; McNeill & Pimentel, 2010; Reisman, 2015; Simon, Erduran, & Osborne, 2006). These studies have suggested that instruction varies considerably, even when teachers are enacting the same intervention. A rare study of argumentation practices absent implementation of a specific intervention likewise found significant variation in how teachers understood and taught argumentative writing (Bloome, 2015; Newell et al., 2014; VanDerHeide & Newell, 2013). Thus, although studies have yielded important insights about variation in argumentation teaching and learning, we know of no studies to date that have examined the wide range of argumentation activities and tasks offered to middle and high school students across subject areas, absent implementation of a specific intervention.

Instructional Focus of Argumentation

Research has indicated that students must be explicitly socialized into productive argumentation (De La Paz, 2005; De La Paz & Felton, 2010; Kuhn, 2010; Kuhn & Crowell, 2011; Nussbaum, Kardash, & Graham, 2005; Osborne, 2010; Wiley et al., 2009). Efforts to socialize students into argumentation in school subject areas have taken two major directions: learning to argue and arguing to learn (Schwarz, 2009).

Learning to Argue and Arguing to Learn

Most commonly, instruction in argumentation has focused on learning to argue, especially as it relates to written argument (Andriessen, 2006; Newell et al., 2011). In a study of argumentative writing instruction, Newell et al. (2014) found that 18 of 31 ELA teachers foregrounded argumentative structures used for constructing effective arguments, such as claims, evidence, and warrants. Similar approaches to teaching science argumentation focus on structures for making claims, citing evidence, and providing reasoning (McNeill & Krajcik, 2011). A pedagogical focus on arguing to learn, emerging from studies in the learning sciences, highlights the role of argumentation in building both content knowledge and knowledge of epistemological foundations and argumentation practices of particular disciplines (Driver, Newton, & Osborne, 2000; Osborne, 2010; Sandoval & Millwood, 2007; von Aufschnaiter,

Erduran, Osborne, & Simon, 2008). Although argumentation instruction rarely focuses exclusively on learning to argue versus arguing to learn, research has suggested that interventions and instructional practices tend to emphasize either the language and structure of argumentation or the use of argumentation as a tool for knowledge building (Cavagnetto, 2010; Newell et al., 2014; Schwarz, 2009). Because they focus on different learning outcomes, knowing more about the uptake of these alternative enactments of argumentation can potentially offer important insights into how students are socialized into argumentation.

Interactive Argumentation

Interactive argumentation has been an underrepresented and potentially important form of argumentation in research on argumentation teaching and learning. According to Norris and Phillips (2003), academic reading involves comprehending, interpreting, analyzing, and critiquing texts. When these intrapersonal literacy processes are externalized by students working collaboratively to unearth and evaluate different possible meanings and interpretations of text, the result is interactive argumentation (Chinn & Anderson, 1998). Although expressed in "spur-of-the-moment ordinary language" (Anderson, Chinn, Chang, Waggoner, & Yi, 1997, p. 166), students' arguments during interactive argumentation are generally understandable, supported by evidence, logically complete, and formally sound. Thus, when students are asked to jointly adjudicate the validity of competing possibilities and perspectives that emerge from negotiating meaning around text, they gain practice in key argumentation skills.

Task Complexity in Argumentation Instruction: Defining the Inquiry Space

Motivated by students' difficulties with engaging in skillful argumentation (Kuhn, Wang, & Li, 2010; Nussbaum et al., 2005), researchers have explored a variety of approaches to designing argumentation activities to increase performance success (Kapur & Bielaczyc, 2012). In one such line of research, researchers reduce the complexity of argumentation tasks by manipulating the degree to which the question, possible claims, and the knowledge and skills needed to accomplish the task are predetermined (Berland & McNeill, 2010; Jonassen, 1997; Reisman & Wineburg, 2012). Research has suggested that posing closely defined questions with a few potential answers may support students to access complex text, consolidate their knowledge of the topic, and develop other elements of argumentation, such as claims, evidence, counterarguments, and rebuttals (Berland & McNeill, 2010; Nussbaum & Edwards, 2011;

Reisman & Wineburg, 2012). Likewise, studies of argumentation in math have suggested that specifying what students need to consider when engaging with a problem potentially increases their engagement and participation (Gresalfi at al., 2012).

However, reducing a complex practice such as argumentation to a less cognitively demanding task can potentially reduce student learning (McNeill, 2007). Reducing the complexity of texts and the effort required of students to make sense of them may similarly compromise student learning from text-based argumentation (Kerlin, McDonald, & Kelly, 2010). Indeed, a growing body of research has demonstrated the benefits of asking students to grapple with complexity (Belland, 2008; Belland et al., 2011; Holmes, Day, Park, Bonn, & Roll, 2014; Jonassen & Kim, 2010; Kapur & Bielaczyc, 2011, 2012). These contrasting findings indicate the need for additional research to determine the impact on student learning of simplifying argumentation tasks.

The degree to which the question, possible claims, and the knowledge and skills needed to accomplish the task are predetermined circumscribes the problem space afforded to students in argumentation tasks. The concept of problem space comes from cognitive science research, where argumentation generally focuses on problem-solving tasks. In this article, we use the term *inquiry space* as more inclusive of the wide range of practices found in the cross-disciplinary research reported here. In labeling this characteristic of argumentation tasks as the inquiry space, we reference and extend the abundant research on problem space in science and mathematics.

In addition to affecting learning outcomes, inquiry space influences the degree to which students are granted the authority to identify questions of interest to them and to marshal the knowledge and resources that they bring to an argumentation task. Students' authority to identify questions and bring their knowledge and resources to bear on literacy-learning tasks has been shown to impact student agency, motivation, and interest, as well as self-efficacy and self-regulation (Athanases & de Oliveira, 2014; Guthrie & Klauda, 2014; Gutiérrez, 2008; Johnston, Woodside-Jiron, & Day, 2001; Toshalis & Nakkula, 2012). Because the inquiry space offered students in argumentation tasks is malleable and may have wide-reaching effects on students' personal epistemologies, identities, mind-sets, and learning, it is an additional dimension of argumentation instruction in need of study.

Drawing on these understandings of the complexities of argumentation instruction, we undertook an observational study of teachers' instructional practices as a critical first step for designing effective argumentation interventions. We were particularly interested in the degree to which these practices engaged students in the intellectual work of argumentation.

Methods

To explore existing argumentation practices prior to developing any instructional intervention, we conducted observations of 40 middle and high school ELA, history, and science lessons taught by 18 teachers in the greater San Francisco Bay Area of California. Observations were conducted between October 2010 and June 2011. At this time, the draft of the Common Core had been released, but implementation was not yet expected. Nonetheless, because the Common Core is being widely implemented to meet ESSA requirements and because recent publications by teacher journals and professional organizations suggest that teachers continue to seek clarification about what argumentation really means and how best to teach it (e.g., Grooms, Enderle, & Sampson, 2015), the following analysis stands to make a timely contribution to theoretical understandings of argumentation instruction.

Sample Recruitment and Selection

As mentioned previously, the study took place in the context of a larger design-based research project. A number of important studies of literacy instruction have been conducted in the context of design-based research involving highly regarded teachers (e.g., Applebee, Langer, Nystrand, & Gamoran, 2003; Bloome, 2015; Langer, 2001; Newell et al., 2014; VanDerHeide & Newell, 2013). In this tradition and with this broader research agenda in mind, observed teachers were recruited and selected as potential long-term partners. The majority of the teachers were known to the research team as experienced Reading Apprenticeship practitioners whose subject area instruction focused on building students' knowledge, skills, and dispositions for disciplinary literacy. Reading Apprenticeship is a model of academic literacy instruction designed to improve literacy skills and academic achievement for all students. Components include an instructional framework and an associated professional development model for secondary teachers across the academic subject areas. Although predating current literacy reform efforts, Reading Apprenticeship is aligned with reform initiatives that focus on fostering advanced disciplinary literacy skills and understandings across the content areas. (For a detailed description of Reading Apprenticeship, see Greenleaf et al., 2011.)

Expecting that these teachers might bring knowledge and expertise that could assist in the design of new approaches to teaching evidence-based argumentation in their subject areas, we requested permission to

observe their teaching. We also invited the teachers to participate in an ongoing teacher/researcher inquiry network in which the culture was deliberately one of co-learning among teachers and researchers. Thirteen of the 18 teachers we observed accepted our invitation to participate in the inquiry network. During its first year, teachers met with researchers four times to read and discuss the grant proposal, Toulmin's (1958) definition of *argumentation*, and texts and tasks from their own and others' classrooms, with an aim of understanding what argumentation across multiple subject area texts might be and what it might demand of students. Building common language and understanding over the first year enabled the work of the inquiry network to accelerate as the project began collaboratively designing, implementing, and refining argumentation interventions in the following years.

Thus, although our observations of teachers' current practices overlapped with their participation in the inquiry network, the observations occurred prior to the design of any instructional intervention. Although many of the teachers did not yet have established argumentation routines, we reasoned that the observed lessons could nonetheless reveal other promising disciplinary literacy practices, as well as pitfalls that could potentially inform the intervention work. In an effort to explore promising practices, we revisited classrooms as warranted, observing a total of 40 lessons. The distribution and characteristics of observed teachers, classes, lessons, and argumentation tasks are shown in Table 1.

The teachers we observed taught a wide variety of students in diverse settings, as indicated by the average percentage of students qualifying for free or reduced-price lunch in these schools (37%, range = 6–67%). The majority of observations took place in general track classes. However, 30% of the observed lessons were from AP or Honors classes (seven in literature, five in U.S. history). The percentage of AP/Honors lessons observed mirrors enrollment in the AP program nationally. Nationally, 33% of students take at least one AP exam (College Board, 2014). Our repeated visits to these AP/Honors classrooms and, consequently, the distribution of our observations were influenced by our wish to analyze the complex literacy-learning opportunities that were regularly on offer in these classrooms.

Observation and Analytic Instrument and Protocol

Classroom observations were protocol driven. The observation and analytic protocol focused on three aspects of the lesson: texts, classroom activities, and classroom culture. Guiding questions focused researchers'

attention on indexes that we theorized might influence the teaching and learning of text-based argumentation. Field notes focused on both instructional practices and student participation, engagement, and learning during observed lessons, which were audio- and videotaped to capture classroom discourse. Researchers also gathered lesson artifacts (texts, handouts, and student work samples) and conducted semistructured teacher interviews before and after observed lessons. Following each observation, field notes were converted into write-ups of the three analytic foci: texts, classroom activities, and classroom culture. In addition to providing a description of the lesson, observers wrote an interpretive summary to identify and index observations that might potentially inform the design of classroom interventions intended to support the teaching and learning of evidence-based argumentation.

Data Collection

All observations were conducted by two researchers, at least one of whom had expertise in the discipline being observed. To ensure accurate and reliable observations, prior to observing in the field, researchers watched videotapes of lessons while attempting to map what they saw onto the observation protocol. Discussions of these attempts resulted in a deeper understanding of the lesson elements under study and helped refine the protocol. Members of the research team continued to meet throughout the data collection phase both to ensure ongoing reliability and to discuss questions and themes emerging across observations.

To standardize the observed lessons and ensure that we witnessed literacy practices, we asked to observe typical lessons "in which reading and discussion play a central role." The focus during the observation was devoted to writing detailed field notes of the lesson and classroom interactions, with time codes that marked noteworthy events, incidents, or dialogue; time allocated to different lesson components; and shifts in activity, roles, responsibilities, or grouping structure. Observers also added preliminary interpretations in the form of marginal comments to park ideas that might be of interest during subsequent analyses of the data. Following each classroom observation, observers engaged the teacher in a conversation to help them understand what they had observed.

Resulting data included 40 sets of field notes and audiovisual recordings of 34.4 hours of lessons, pre- and postlesson interviews, and accompanying lesson artifacts. The findings reported in this article draw on systematic coding of field notes from all 40 lessons. Other data sources—lesson artifacts, teacher interviews, interpretive summaries, and audiovisual recordings—are used for clarification and illustrative purposes.

TABLE 1
Characteristics of Observed Schools, Teachers, Classes, and Lessons

School	Percentage of students in the school receiving free or reduced-price lunch	Teacher[a]	Grade	Track	Number of lessons observed	Number of argumentation tasks observed
Literature teachers						
BF	54	LR	7	Honors	2	2
BN	61	AH	7	General	1	1
BN	61	LD	7	General	1	1
BF	54	AS	8	General	2	1
LA	20	KR	9	General	2	2
LN	42	BH	9	Intervention	1	0
LN	42	CV	9	General	4	1
HD	57	MS	11	AP	3	3
LA	20	AO	12	AP	2	1
LN	42	CV	12	General	3	1
Totals		9			21	13
History teachers						
BN	61	AH	7	General	1	0
BN	61	LD	7	General	1	1
IH	6	HG	8	General	1	0
IH	6	TS	8	General	1	0
HL	18	AP	9	General	3	3
DN	32	GC	11	Honors	5	4
LN	42	JG	12	General	1	0
Totals		7			13	8
Science teachers						
AL	34	VB	6	General	2	2
OA	20	JH	7	General	2	0
JL	40	BM	9	General	1	0
TN	67	PV	10	General	1	1
Totals		4			6	3
Totals						
12	37 (average)	18			40	24

[a]Three teachers (CV, AH, and LD) were observed teaching two classes.

Data Analysis

We used an iterative approach to analyze the data. Consistent with qualitative methods, we interwove data collection and analysis from the start (Miles & Huberman, 1994). Using a combination of inductive and theoretically driven analyses, moving back and forth among field notes, teacher interviews, lesson artifacts, coded extracts of data, and emergent analyses, we iteratively identified a set of categories and codes related to the teaching and learning of argumentation. Initial coding used a start list of broad descriptive categories reflecting the conceptual framework and research questions articulated in the original project proposal: texts, tasks and task support, classroom

culture, and student behavior. Within these broad categories, we approached the analysis using open-coding processes from grounded theory research methodology, comparing features of the data for similarities and differences and grouping them together to form categories and subcategories (Corbin & Strauss, 1990).

Coding Dimensions of Argumentation Task Design

We defined *argumentation* a priori as making a claim or assertion supported by evidence that connects to the claim in a principled way. In the initial step of our data analysis, we coded as argumentation all tasks that fit this definition, whether or not the task was explicitly identified by the teacher as argumentation. Finding that argumentation varied in a number of ways, we continued to refine codes to describe features of argumentation tasks based on our theoretical emphasis on its role in knowledge building and the importance of engaging students in the intellectual work of argumentation. Here we focus on two broad dimensions of argumentation task design that emerged from this analysis:

instructional focus and inquiry space. Table 2 defines the two dimensions and the codes within each dimension.

Instructional Focus

The instructional focus dimension of our coding scheme incorporated a theoretical distinction between arguing to learn (argumentation tasks focused on teaching content and/or disciplinary knowledge) and learning to argue (argumentation tasks focused on teaching the language, structure, and/or principles of argumentation). We also identified argumentation tasks with a dual focus: those focused on teaching content knowledge while also explicitly teaching the structure, language, and/or principles of argumentation. Our observations also revealed interactive argumentation tasks, in which students worked collaboratively to unearth and evaluate possible meanings and interpretations of text. Because these tasks engaged students in adjudicating multiple possible interpretations and defending points of view, our analysis explored the affordances of these interactive argumentation tasks.

TABLE 2
Coding Scheme: Dimensions of Argumentation Task Design

Dimension	Codes
Instructional focus: This dimension captures the primary instructional focus of the argumentation task.	1. *Arguing to learn:* This task focuses on teaching content and/or building disciplinary knowledge.
	2. *Learning to argue:* This task emphasizes learning the language, structure, and/or principles of argumentation.
	3. *Dual focus:* This task focuses on building content and/or disciplinary knowledge and explicitly teaches the structure, language, and/or principles of argumentation.
	4. *Interactive argumentation:* In this task, students work collaboratively with partners, in small groups, or as the whole class to unearth and evaluate possible meanings and interpretations of text. Interactive argumentation tasks are identified through the co-occurrence of close reading and collaborative meaning making and must be coded as both.
	a. *Close reading:* Although many definitions of *close reading* have been advanced, we define it as active engagement in meaning making with texts. Close reading tasks are characterized by approaching texts to understand and build meaning (rather than simply to find factual information), emphasizing the kinds of reading and thinking processes instantiated in Norris and Phillips's (2003) fundamental literacy, where readers ask questions, clarify ambiguities, draw inferences from incomplete evidence, and make evidence-based judgments in the process of negotiating meaning.
	b. *Collaborative meaning making:* Students work with partners, in small groups, or as the whole class
Inquiry space: This dimension focuses on inquiry space as an indicator of the extent to which argumentation tasks afford opportunities for students to engage in the intellectual work of argumentation.	1. Students determine the correct answer from a limited set of given possibilities.
	2. The teacher provides two alternative claims, and students provide evidence to support one.
	3. Students generate claims and evidence in response to a predetermined question, topic, or theme.
	4. Students generate an argumentation question, theme, or topic; claims; and supporting evidence. Students define the argumentation question and generate claims and supporting evidence.
	5. Students evaluate author-generated claims and/or evidence.

Note. Based on Toulmin (1958), we define *argumentation tasks* as those that ask students to make a claim or assertion supported by evidence that connects to the claim in a principled way. This definition recognizes that argument is shaped by the discourses of particular communities and consequently accommodates a wide range of tasks, from reason-giving interpretations of literature to modeling and explanation tasks in science. Argumentation tasks are framed as inquiry into multiple possibilities and/or viewpoints. Tasks may or may not be explicitly identified as argumentation by the teacher.

Inquiry Space

According to Toulmin's (1958) model, arguments move from data to claim. Hillocks (2010) described how potential arguments surface from this type of inquiry to form the basis for subsequent disciplinary argumentation: "When the data are curious, do not fit preconceptions, they give rise to questions and genuine thinking. Attempts to answer these questions become hypotheses, possible future thesis statements that we may eventually write about after further investigation" (p. 26). Yet, our data revealed that students were not always entrusted with making meaning of the data themselves. Rather, in some cases, teachers provided a claim or a set of alternative claims and asked students to find evidence to support one of them. In these situations, students' opportunities to generate data-based claims were constrained by the fact that the claims were predetermined. This led us to look more closely at the properties of the inquiry space to determine the extent to which argumentation tasks afforded students opportunities to engage in the authentic intellectual work of argumentation (identifying their own questions and bringing their knowledge, reasoning, and resources to bear on argumentation tasks). The five codes in this dimension captured the degree to which the question that framed an argument, possible claims, and the evidence needed to support and/or rebut the claims were specified by the teacher or arose from students' own reading and inquiry.

After coding argumentation tasks on the two dimensions, as shown in Table 2, we calculated the number and percentage of argumentation tasks assigned to each code. We also calculated the number and percentage of teachers who were observed teaching tasks assigned to each code.

Coding Student Cognitive Engagement Behaviors

Because our research focused on features of instruction that potentially influence the development of high levels of literacy engagement and achievement, we were especially interested in identifying links between properties of argumentation tasks and student engagement and learning. In particular, we were interested in relations between task design and cognitive engagement, defined as "students' effort, investment, and strategies for learning—the work students do and the ways students go about their work" (Yazzie-Mintz, 2007, p. 7). Building on previous research on linguistic and behavioral indicators of engagement (Helme & Clarke, 2001; Williams, Hall, Hedrick, Lamkin, & Abendroth, 2013), we coded lessons for evidence of cognitive engagement based on student behaviors (see Table 3). We then looked at the properties of argumentation tasks in lessons characterized by high and low cognitive engagement.

Results

The 40 lessons included 24 argumentation tasks that required students to support a claim with evidence. Argumentation tasks were disproportionately represented in AP/Honors lessons. Although 30% of the observed lessons were from AP/Honors classes, these lessons accounted for 42% of the observed argumentation tasks. Every AP/Honors teacher assigned at least one argumentation task, and 10 of the 12 AP/Honors lessons included an argumentation task. This finding is consistent with previous research that has documented differences in literacy opportunities offered to students in lower or general track classrooms compared with classrooms serving academically accomplished students. Whereas academically accomplished students are challenged to think creatively and critically and engage in interpretive practices that foreground textual evidence and reasoned argument, students in lower track classrooms spend the majority of time in retrieval and reporting of textual information (Applebee et al., 2003; Rex, 2001). Indeed, by focusing on evidence-based argumentation, a goal of reforms such as the Common Core, Next Generation Science Standards (NGSS Lead States, 2013), and C3 Framework for Social Studies State Standards (National Council for the Social Studies, 2013) and of our own design-based research is to make

TABLE 3
Coding Scheme: Cognitive Engagement

Dimension	Codes
Cognitive engagement: This dimension focuses on "students' effort, investment, and strategies for learning—the work students do and the ways students go about their work" (Yazzie-Mintz, 2007, p. 7).	1. Appropriation and use of disciplinary language, literacies, thinking, and reasoning 2. Persistence and grappling in the face of a challenge 3. Ownership, valuing, and agency (e.g., spontaneous sharing of content and/or thinking; spontaneous seeking and/or providing clarification; gestures externalizing internal processes, such as high-five or fist-bumping in response to solving a problem and/or overcoming an academic challenge) 4. Extended student-to-student talk

accessible to all students the literacy competencies that until now have been reserved only for the most advanced students.

Dimensions of Argumentation Task Design

In this section, we present findings from the analysis of the two task design dimensions: instructional focus and inquiry space.

Instructional Focus

Like other observational studies cited in our literature review, we found that argumentation assumed many forms. As shown in Table 4, 58% of the 24 argumentation tasks (taught by 67% of teachers) were coded as arguing to learn, whereas 17% (taught by 22% of teachers) focused primarily on learning to argue. An additional 25% (taught by 22% of teachers) had a dual focus on arguing to learn and learning to argue. Opportunities for interactive argumentation were nearly ubiquitous, occurring in 88% of the observed lessons. Our finding that argumentation generally served knowledge building differs from that of Newell et al. (2014), who found that a focus on structure dominates the teaching and learning of argumentation in ELA classes. The inclusion of history and science teachers and lessons in the current study likely contributed to this difference. For example, Cavagnetto (2010) found that only 26% of argumentation interventions in science classes emphasized learning to argue.

Arguing to Learn

Arguing-to-learn tasks used argumentation as a tool for the development of subject area knowledge. Nonetheless, there was considerable variation among tasks coded as arguing to learn. Some of these tasks focused on practicing or demonstrating mastery of specific content or concepts, such as categorizing photographs of volcanoes into two main types (composite or shield volcanoes), classifying photomicrographs of plant cells according to phases of mitosis, or classifying paintings by historical period. Although classification tasks potentially engage critical disciplinary thinking and reasoning practices, the tasks that we observed focused on correct answers rather than student reasoning. This practice was characteristic of argumentation in science classes in particular, where classification of science phenomena was the only argumentation task on offer.

More frequently, observed arguing-to-learn tasks used argumentation as a tool for the construction and understanding (rather than demonstration) of subject area knowledge, such as making and supporting a claim related to an essential question. The following are examples of these types of questions asked by teachers in observed lessons:

- "Which union would you have joined if you had shared a workplace in the late 19th century?"
- "What traits do you think the Aztecs admired or felt were useful to their society?"
- "What motivations or other factors cause people to both destroy and create?"

Learning to Argue

The primary focus of learning-to-argue tasks was to identify, evaluate, and/or compose elements of effective arguments. Unlike arguing-to-learn tasks, which were organized around a disciplinary question or concept, three of the four learning-to-argue tasks, all from literature classes, focused on social and public policy issues. Two tasks were modeled after AP English Language and Composition free-response question items designed to assess students' ability to write evidence-based arguments from multiple text sources. These tasks posed a two-sided argument (e.g., "Take a position that defends or challenges the claim that celebrities (such as athletes and entertainers) should be role models"; "Should the penny be eliminated?"), and students read short texts to inform their position. In the role models lesson, students read persuasive essays and identified arguments that defended or challenged the claim that

TABLE 4
Number and Percentage of Teachers and Argumentation Tasks Contributing to Various Instructional Focus Dimension Categories

Instructional focus category	Teachers (N = 18)		Argumentation tasks (N = 24)	
	Number	Percentage	Number	Percentage
Total argumentation tasks	12	67	24	60[a]
• Arguing to learn	12	67	14	58
• Learning to argue	4	22	4	17
• Dual focus	4	22	6	25
Interactive argumentation	16	89	35	88[a]

[a]Percentage of 40 lessons.

professional athletes and entertainers should be role models. The objective for the penny lesson was that "students will be able to follow a protocol to create a claim for the synthesis essay and support it with at least 3 sources." These lessons did not engage literature content but rather focused on how to construct a persuasive argument.

Dual-Focus Tasks

Importantly, a quarter of the argumentation tasks combined an instructional focus on arguing to learn with explicit instruction in the language, structure, and/or principles of argumentation. This frequently involved instruction in discipline-specific argumentation practices. For example, students in an 11th-grade U.S. history lesson were taught to use the PRO (primary source, reason to distort, and other evidence) framework (Boorstin, Kelley, Boorstin, O'Reilly, & Stevens, 1981) as the first step in an argumentative writing task in which they analyzed whether historian A or B offered a more reliable account of a historical event. Dual-focus argumentation tasks provided unique opportunities for integrating literacy and content learning, supporting students to not only deepen their content knowledge but also learn the literacy and social practices of argumentation in the discipline. An illustration of this is provided in the Relations Between Task Dimensions and Student Cognitive Engagement section.

Interactive Argumentation

Both learning-to-argue and arguing-to-learn tasks were generally text based. This was likely influenced by our request to observe lessons in which reading and discussion played a central role. In addition, much informal argumentation took place in the form of interactive argumentation, focused on adjudicating multiple possible meanings and perspectives of text. Like previous studies of interactive argumentation, we found that students in these conversations demonstrated a willingness to consider and weigh multiple interpretations and, as in the following case of Justin, concede the strength of an argument that may contradict their own position (Chinn & Anderson, 1998). In the following dialogue, partners in a ninth-grade ELA class demonstrated emergent dual-perspective reasoning during interactive argumentation as they attempted to reconcile multiple perspectives in a text about the bombing of Hiroshima and Nagasaki:

Justin: I think when they got hired for the job, they knew what it was going to do, and they kind of took the job. Maybe they weren't as aware of that it was going to kill as many people, that it was going to be as terrible, but they knew that it was obviously a terrible bomb. But it was their job, and so that's why they were OK with it. It was for their nation.

Celia: And I think, also, the other justification is that—

Justin: Pearl Harbor?

Celia: No. That they had to win the war. Like, otherwise, more people would have died—

Justin: Died, yeah.

Celia: On [sic] their country. And everything's about yourself. Everybody's selfish.

Justin: Yeah. They—yeah, if they hadn't bombed Nagasaki and Hiroshima, Americans would have died.

Celia: Yeah. [paused] More than necessary. But if you think of it on the Japanese side—

Justin: I don't see why they didn't bomb the areas where the troops were congregated, where the military was, instead of bombing the people.

Inquiry Space

Whereas interactive argumentation tasks generally afforded an expansive inquiry space in which students generated and then judged the strength of different interpretations and perspectives, we found that other observed argumentation tasks often involved a question, topic, or theme specified by the teacher, as shown in Table 5. For example, students in a ninth-grade literature class read *The Martian Chronicles* by Ray Bradbury using a graphic organizer designed to track three predetermined themes that mapped onto the culminating argumentative essay: resisting change, motivations for destruction and creation, and selfishness versus selflessness. The teacher explained, "They know the three essay topics on the first day of the unit, and then what they're looking for as they read is quotes and examples, evidence for those topics." As in this case of themes that guided student reading of *The Martian Chronicles*, predetermined questions, topics, or themes were broad in 29% of the observed argument tasks, permitting (and requiring) students to generate other elements of arguments: claims, evidence, counterarguments, and rebuttals. Indeed, essential questions, topics, or themes that framed these argumentation tasks often engaged interpretive practices of the discipline as a lens for student reading and argumentation.

However, in a number of argumentation tasks, student participation was limited to providing evidence to support a predetermined claim provided by the teacher. As shown in Table 5, 17% of the argumentation tasks (taught by 20% of teachers) emphasized identifying the

TABLE 5
Number and Percentage of Teachers and Argumentation Tasks Contributing to Various Inquiry Space Dimension Categories

Inquiry space category	Teachers (N = 18)		Argumentation tasks (N = 24)	
	Number	Percentage	Number	Percentage
Students determine the correct answer from a limited set of given possibilities.	3	20	4	17
The teacher provides two alternative claims, and students provide evidence to support one.	4	22	4	17
Students generate claims and evidence in response to a predetermined question, topic, or theme.	7	39	7	29
Students generate an argumentation question, topic, or theme and then generate claims and supporting evidence.	4	22	6	25
Students evaluate an author-generated claim and/or evidence.	2	11	3	13

correct answer (rather than justifying one's thinking) from a limited set of predetermined claims, such as the volcano and painting classification activities described earlier. An additional 17% (taught by 22% of teachers) specified a limited set of alternative claims and asked students to provide evidence to support one. Only a quarter of the 24 argumentation tasks (taught by 22% of teachers) engaged students in generating potential questions, topics, or themes from data, a process that Hillocks (2010) claimed is central to disciplinary argumentation.

Interactive argumentation was generally characterized by a broad inquiry space. In the company of peers, students engaged with the universe of possible confusions and/or plausible interpretations afforded by the text and drew on the universe of knowledge and skills related to language, reading, reasoning, the discipline, and the world in general to solve problems of comprehension and interpretation. The affordances of an expansive inquiry space are illustrated in the following dialogue from a ninth-grade history lesson, in which students engaged in recursive cycles of partner and whole-class interactive argumentation focused on five World War I propaganda posters. In this conversation, students were considering possible interpretations of a Russian poster with Cyrillic text and many unfamiliar symbols (see Figure 1). At this point, students

FIGURE 1
World War I Propaganda Poster

Note. The poster was printed prior to 1923 and therefore is part of the public domain.

had established that the poster was Russian and that the bear represented Russia. The discussion then turned to the two human figures. We enter after Colin suggested that the figure in the white jacket is German "because he has the hawk on his helmet, and I thought that represents Germany."

Colin: And the other guy in the white jacket represents Austria-Hungary, because it seems like they're on the same side, like the German guy wants him to go toward the Russian bear, but Austria-Hungary's like "I'm not sure if I want to do that" 'cause they're—he's a bear. He figures he's stronger than they are. I'm thinking that Austria-Hungary's not as strong as Russia.

Teacher: OK. Well, that was a lot. Let's see if people want to add on because we've heard conflicting accounts, so we're going to keep going. Daniel.

Daniel: All right. Well, at first I thought it was like Germany was pushing Britain toward the bear, so it was like they were trying to kill Britain or something. But now I think that it's like basically what Colin said.

Teacher: So, you had an original hypothesis, and you got some new information, and you changed it? OK. Kari?

Kari: I think it could be Russia and Germany because they border each other, so they would have definitely been, like, fighting.

Teacher: Wait, these two, Russia and Germany? And who's who?

Kari: I'm not sure.

Teacher: OK. Um, Jim.

Jim: Two things: You can tell by the way that the artist, like, does shadowing and shows how they're moving that the one behind him, whether he's Germany, is pushing that forward because his heels are in the air, or his feet. He's definitely struggling to not go, so it makes me think that Austria-Hungary was a little reluctant to get into the war. And then—I had something else to say. [paused, trying to remember]

Teacher: OK, so you are again saying this guy's Hungary and this is Germany. Why?

Jim: Well. OK, I remember now. From my schema of all these other war comics, there's one person representing a country. And so basically, this would be saying there's two countries, and since there's only one side that had two alliances primarily, that it would be them.

Notably, the task's broad inquiry space accommodated claims and evidence reflecting a wide range of prior knowledge and literacy skills. Students' interpretations drew on their knowledge of World War I from previous readings and lessons and their understandings of the propaganda poster genre, as well as on evidence from the poster itself. They backed their claims with reasons such as "he has the hawk on his helmet" and "because they border each other" to elaborate, reasoned judgments based on the synthesis of multiple sources of information, as when Jim synthesized "schema of all these other war comics [cartoons]" and prior knowledge that "there's only one side that had two alliances primarily" to conjecture that "Austria-Hungary was a little reluctant to get into the war." Students demonstrated a willingness to revise their thinking as classmates presented persuasive evidence that challenged their initial interpretations, as Daniel's turn at talk suggests. The affordances of an expansive inquiry space potentially explain the high levels of cognitive engagement that we often observed during interactive argumentation as it was enacted in these classrooms. We consider the relation between task design and cognitive engagement in the next section.

Relations Between Task Dimensions and Student Cognitive Engagement

To identify the kinds of argumentation tasks that fostered high levels of engagement and learning, we examined relations between the two task dimensions and student cognitive engagement. Inquiry space appeared to play a central role in mediating student engagement and emergent learning from argumentation tasks. Regardless of whether tasks emphasized arguing to learn or learning to argue or had a dual focus, we noticed that tasks that encouraged students to grapple with the full range of information and possibilities provided greater traction for cognitive engagement than tasks that immediately zeroed in on a subset to support one position. In a case of the former, students in an 11th-grade U.S. history class spent two periods evaluating sources preliminary to generating a claim that historian A or B offered a more reliable account of the company town of Pullman, Illinois. Pullman was a model community founded by industrialist George Pullman who, at the same time as he provided his workers with amenities such as indoor plumbing, gas, and sewers, exercised rigid control over workers' lives. Conditions in Pullman precipitated the Pullman Strike,

a nationwide railroad strike that was a turning point for U.S. labor law.

In an interpretative summary of one 50-minute lesson, the observer commented,

> What most stood out for me during this lesson was students' stamina and engagement with the text. The text consisted primarily of two footnotes that students were analyzing to determine what type of historical source they were, if the author had a reason to distort, and the overall reliability of the source.

Audio recordings documented multiple indicators of students' cognitive engagement during extended partner and whole-class interactive argumentation, including the appropriation of disciplinary literacies, thinking, and reasoning skills and dispositions, and student agency exercised in shaping the direction of the inquiry. In the following excerpt of a whole-class discussion, the class considers Nicole's claim that having a perspective means a historian's account cannot be accurate. This interaction followed several turns in which students argued in support of her claim that having a perspective undermines a historian's reliability.

Mark: I was going to say that perspective takes account of the facts. Like from the facts, like, for the Holocaust, you know that they killed a bunch of Jews and stuff. So, it would be our perspective that that was bad, which it *was* bad. So, they're not really, like, [conflicting].

Teacher: Does the fact that I think it wrong to try to kill everybody in a population bias me? [overlapping student voices: Yeah./In a way.] Jeff?

Jeff: [referring back several turns] I think kind of where Chad's going is the fact that you don't have—we don't know where he's [the author of the footnoted source] getting his information from so we can maybe get an idea where his perspective is, but we don't have any idea what his sources are. So, when we don't have his sources, we can't actually tell where his perspective's going. So, all we can say is, you know, well, he [inaudible] is a historical American writer. That's all we have.

Teacher: So, if we wanted to go a little further, what could we—what would just help us, a couple of pieces of information that would help us evaluate this source?

An extended period of grappling with the data ultimately led students to the claims that they would make in the subsequent argumentative writing task

about whether historian A or B offered a more reliable account of history. Furthermore, as this conversation suggests, this broad and fluid inquiry space afforded learning beyond the confines of specific content, fostering historical thinking skills and dispositions, including a more nuanced understanding of historical sourcing. We can only speculate about student engagement and learning had the task led with the argumentative essay assignment, with its alternative claims that historian A or B offered the more reliable account, absent the extended period of interactive argumentation. We can also only speculate about student engagement and learning had the teacher assigned a claim and asked students to find support for it, as was sometimes the case in tasks we observed. What we know is that we did not see comparable engagement and learning when tasks limited argumentation to finding evidence to support a predetermined claim.

Indeed, we noted that argumentation tasks that limited students to providing evidence to support predetermined claims potentially gave way to perfunctory compliance, without necessarily engaging students intellectually with the academic content. This was particularly true when tasks focused on demonstrating content mastery. For example, during the volcano classification activity, whereas some students drew on evidence from the photos to argue for classifying volcanoes as composite or shield, one student offered as support for her classification that the group had used one of the two claims (volcano type) previously: "Remember, on tests, she does some of each?" Rather than focusing on science concepts for determining volcano type, this student's efforts were directed toward "'doing the lesson' or 'doing school,'" rather than "'doing science'" (Jiménez-Aleixandre, Rodríguez, & Duschl, 2000, p. 759).

Notably, even more open-ended argumentation tasks could potentially give way to such procedural display (Bloome, Puro, & Theodorou, 1989) when the inquiry space prevented students from constructing arguments based on their own sensemaking. An argumentative writing task at the culmination of the ninth-grade history lesson focused on reading and interpreting World War I propaganda posters described earlier provides a compelling example of this. The writing prompt focused on the question, "How did countries use national pride to convince men to join the military?" The following conversation, in which the teacher attempted to help a student complete the writing task, suggests a dramatic shift in cognitive engagement compared with the preceding poster interpretation activity:

Teacher: OK, who do they show as being stronger?
Monica: The Germans.

Teacher: Is it always—is it always the same country that's strong?

Monica: No.

Teacher: Mmhmm. So, in this document—look at this one. Who made this one?

Monica: Russia?

Teacher: Yeah. And who looks strong in this one?

Monica: Russia.

Teacher: OK. And who made this one?

Monica: England?

Teacher: And who looks strong in that one?

Monica: England.

Teacher: England. So, who looks strong in all of these?

Monica: All—everyone?

Teacher: Not everybody looks strong. Does everyone look strong in this? Do all of these look strong? Look—it—in the German poster, Germany looks strong. In the Russian poster, Russia looks strong. In the British poster, [inaudible]. How are countries showing themselves?

Monica: They're showing theirselves [inaudible: as strong?] countries.

Teacher: That's right! So, that's your claim.

Observers' marginal comments suggested that this decline in cognitive engagement was widespread. Furthermore, unlike the diverse interpretations of the posters that surfaced during the earlier interactive argumentation task, students' claims in this task were virtually identical (and only loosely connected to the essential question): that the posters showed the respective countries as strong.

Although it is plausible to attribute the shift in engagement to the demands of the writing process, Schwarz (2009) cautioned against assuming that weaknesses in argumentative writing are due to challenges of the argumentative writing process rather than shortcomings in the argumentation task that is the focus of the writing. In working to account for the dramatic shift in student engagement and agency in this lesson, we conjectured that the argumentative writing task, framed around the predetermined claim that the posters used national pride to convince men to join the military, precluded alternative interpretations. Certainly, war propaganda posters have multiple purposes and impacts: to dehumanize the enemy, to justify a country's involvement in war, to raise money and resources for war, to convince citizens to support an unpopular war, to inspire patriotism, to boost morale, and to recruit men to join the military.

A prompt with a broader inquiry space such as "What might be the purposes of wartime posters like these?" may have surfaced many of these purposes, as well as others, and afforded students more to say on the topic. Instead, this task was framed as a claim for one potential purpose of wartime posters, a claim unrelated to students' own prior sensemaking. Reznitskaya, Anderson, and Kuo (2007) likewise found that students offered fewer supporting reasons on argumentative essays that followed an abrupt shift from collaborative reasoning, where students "were free to allocate discussion time to any topic in any way relevant to the discussion question" (p. 465), to a highly structured writing task.

Discussion

Standards-based reform efforts advocate argumentation as a critical element of instruction across the disciplines. Yet, scholarship on this topic has revealed differences in how argumentation is understood, instantiated, and taught (Newell et al., 2011). Furthermore, standards provide little guidance to teachers for negotiating competing conceptualizations of argumentation (Opfer et al., 2016). For example, whereas the Common Core frames argumentation theoretically as a collaborative reasoning process, calling it "'serious and focused conversation among people who are intensely interested in getting to the bottom of things *cooperatively*'" (Williams & McEnerney, as quoted in National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010b, p. 24), in other descriptions of argumentation in the Standards—and notably in the grade-specific Standards themselves—a focus on canonical forms prevails, where the emphasis is on identifying and producing the structures and elements of effective argument (Beach, 2011b).

In addition, standards are generally silent on how long-standing instructional approaches might need to shift for students to achieve the higher level literacy achievement envisioned (Gewertz, 2012). Indeed, policy- and research-driven pathways to reform often neglect the essential role of teachers in enacting these reforms, a role that is critical to change efforts (Penuel, Fishman, Cheng, & Sabelli, 2011; Roderick, Easton, & Sebring, 2009). Because this study focuses on the essential role of teachers in enacting instruction that is the focus of literacy reform, our findings not only inform the design of instructional interventions targeting text-based argumentation but potentially help lay the groundwork for more systematic change. In the next section, we discuss major findings with important implications for students' instructional opportunities and needs.

Greater Attention to Synthesizing Pedagogical Approaches

We found that dual-focus argumentation tasks that combined arguing to learn with learning to argue not only deepened content knowledge but also apprenticed students to the tools and social practices of disciplinary argumentation. This suggests that dichotomizing argumentation in terms of learning to argue versus arguing to learn (e.g., Andriessen, 2006; Cavagnetto, 2010; Jonassen & Kim, 2010; Newell et al., 2011; Schwarz, 2009) may be overly simplistic and even counterproductive. Indeed, our findings suggest that both in research and in practice, this distinction may deflect attention from the important question of how teachers should integrate the two. In particular, greater attention to pedagogical approaches that focus simultaneously on building content knowledge and knowledge of epistemological foundations and argumentation practices of particular disciplines is needed (Driver et al., 2000; Sandoval & Millwood, 2007; von Aufschnaiter et al., 2008).

Clarifying the Definition of Argumentation

Our findings suggest that interactive argumentation may be a powerful way to teach argumentation. Although research has suggested that students across grade levels and subject areas demonstrate weak argumentation skills (Berland & McNeill, 2010; Kuhn et al., 2010; Nussbaum et al., 2005), we witnessed insipient forms of skillful argumentation, such as dual-perspective reasoning, counterfactual reasoning, and integration of opposing arguments, emerge from interactive argumentation. Furthermore, these enactments of argumentation provided a significantly richer and more engaging experience of argumentation compared with the practice of finding textual evidence to support a predetermined theme or claim. Nonetheless, these tasks were generally not explicitly framed as argumentation by teachers, nor did teachers necessarily use the language of argumentation (e.g., *claim*, *evidence*, *refutation*) in the course of these activities. Given our findings linking interactive argumentation to the emergence of important argumentation skills and processes, we think it may be beneficial to recognize and label these activities as argumentation and thereby broaden teachers' and students' conceptions of argumentation literacy.

Previous research has provided support for extending the definition of *argumentation* to interactive argumentation (Anderson et al., 1997; Chinn & Anderson, 1998; Kuhn & Crowell, 2011; Nussbaum, 2005). In addition to supporting evidence-based reasoning (Anderson et al., 1997), interactive argumentation also potentially reduces the demands on students' prior knowledge as a prerequisite for productive argumentation. Whereas traditional instantiations of argumentation essentially ensure "that the main indicator of whether or not a high quality of argument is likely to be attained is students' familiarity and understanding of the content of the task" (von Aufschnaiter et al., 2008, p. 101), our findings suggest that interactive argumentation is in itself a context for building students' understanding of content, as well as argumentation.

Nonetheless, we acknowledge that interactive argumentation rarely emerges without significant planning and instructional support (Schwarz, 2009). In particular, collaborative problem-solving dialogues may be dominated by nonargumentative interactions focused on helping or telling, rather than on identifying and adjudicating possible interpretations (Baker, 2009). Many of the Reading Apprenticeship teachers we observed provided ongoing support for evidentiary thinking and argumentation through metacognitive reading and discourse routines and teacher facilitation focused on how and what students read and reasoned. This support likely contributed to the frequent argumentative talk that we observed during interactive argumentation tasks in these classrooms. Future research is needed to identify not only specific task designs but also aspects of classroom culture more generally that ensure that interactive argumentation is indeed argumentative.

In this regard, we note that argumentation research is shaped by cultural assumptions about what "'real school'" (Tyack & Tobin, 1994, p. 456) and real learning are. Although research on argumentation design has been promising, much of it has focused on helping students perform school argumentation tasks (Kapur & Bielaczyc, 2012). Mirroring this emphasis on performance, we observed tasks labeled as argumentation that focused narrowly on linking a claim to evidence, but granted students limited interpretive authority and afforded limited opportunity to weigh alternative positions to reach a conclusion. In contrast, we observed tasks that were not explicitly labeled as argumentation that afforded students significant interpretive authority to weigh complex evidence to form a reasoned judgment—processes at the very heart of argumentation. This in itself is an important insight into how argumentation is understood, instantiated, and taught by teachers. In arguing for an expanded definition of *argumentation* that includes such tasks, our intention is to deepen teachers' understanding of the defining features of argumentation to make them more visible for students. Research based on this expanded definition can potentially refocus attention on underlying

features of argumentation that support thinking and learning.

The Role of Inquiry Space

Our findings suggest additional dimensions of argumentation to those identified by previous researchers. In particular, within arguing-to-learn tasks, we observed differences in the extent to which tasks were framed as inquiry and invited students to participate in the intellectual work of argumentation. The affordances of an expansive inquiry space that permitted multiple approaches and interpretations potentially explain a wide range of findings related to student engagement and emergent learning behaviors, including the high levels of cognitive engagement that we often observed during interactive argumentation and when argumentation tasks gave students significant interpretive authority. In contrast, a narrow inquiry space was associated with low levels of cognitive engagement, encouraging what we have come to call evidence extraction. Decades of research on problem solving in mathematics and science has linked features of the problem space to student cognitive engagement (Frederiksen, 1983; Jonassen, 1997; Voskoglou, 2011). Although less frequently investigated outside of mathematics and science, the research that has been undertaken supports our findings that argumentation framed as inquiry supports engagement and learning across disciplines (Meiland, 1989; Nussbaum et al., 2005). Similarly, research on cognitive engagement has indicated that inquiry pedagogy enhances student engagement (Shernoff, & Bempechat, 2014).

Although our findings suggest that constraining inquiry to support performance success potentially encourages perfunctory compliance, at the same time, we found that scaffolding designed to support student sensemaking within a broad inquiry space promoted engagement and learning. Prior research on instructional scaffolding similarly has suggested that whereas providing content support can potentially undermine student learning, providing support for collaboration and metacognition is beneficial (Athanases & de Oliveira, 2014; Roll, Holmes, Day, & Bonn., 2012; Westermann & Rummel, 2012). We therefore echo calls for additional research to examine how and when constraining a task might enhance or detract from the intellectual work of argumentation (Belland, 2008; Cho & Jonassen, 2002; Collins, 2012; Holmes et al., 2014; Kapur & Bielaczyc, 2012; Nussbaum & Edwards, 2011). In particular, additional research is needed to identify instructional progressions related to the use of constraints and scaffolding and their gradual release as students gain skill in argumentation processes and content.

Limitations: Beyond Instructional Focus and Inquiry Space

We share our findings mindful of the limitations of this research. In particular, because observed teachers were design partners in the larger project and because observations overlapped with the inquiry work, argumentation was on the teachers' radar, and thus, findings cannot be generalized to the broader population of teachers. However, studying highly regarded teachers with expertise in their disciplines has been shown to be particularly valuable not only for identifying promising practices but also for surfacing stubborn obstacles to reform. As Langer (1998) observed of the highly regarded teachers participating in her collaborative design research, "traditional notions of 'good' teaching were so internalized that they were difficult for most teachers to overcome, although they wanted to" (p. 20).

In addition, we recognize that many factors influenced the degree of challenge and support provided by argumentation tasks in this study. For example, it may be that the limited student choice observed in argumentation tasks reflected, at least in part, responsive instructional scaffolding based on teachers' sensitivity to students' limited argumentation abilities. In this regard, the snapshots of instruction in the present study potentially present a distorted picture. Nonetheless, our observations suggest that there may be a fine line between simplifying a task to support the development of argumentation skills and undermining student intellectual work altogether.

Conclusions

By requiring students to analyze, interpret, integrate, critique, and evaluate information, curricular reforms emphasizing evidence-based argumentation can potentially support all students to achieve high levels of academic literacy. Yet, our findings suggest that despite the intentions of reform initiatives, argumentation as currently enacted in many subject area classrooms provides varying degrees of opportunity for students to develop the skills and dispositions envisioned by literacy reforms.

In the current zeal to implement the new standards focused on argumentation literacy, we caution against overlooking the variations in practice that can make the difference between advancing student literacy and maintaining student passivity in the learning process (Beach, 2011a; Bomer & Maloch, 2011; Harste & Albers, 2013). Our partnerships with teachers in the inquiry network have enabled us to identify and work collaboratively to avoid such pedagogical pitfalls. Previous research has found teachers' quality of implementation

of an argumentation intervention to be consistent across time, for good and ill (Simon et al., 2006). Happily, our finding of considerable variation in practice, even within the same teachers' lessons, points to task characteristics as a powerful influence on instruction and subsequent student engagement and learning. Equally promising, through processes of joint inquiry into texts, tasks and instructional supports, collaborative design of routines and lessons, classroom tryouts and reflections, and documentation and examination of student work and learning, our collaborative design work has expanded and deepened over time, leading to new refinements, knowledge, and instructional solutions for supporting argumentation across the subject areas.

NOTES

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