Text-Based Argumentation with Multiple Sources: A Descriptive Study Of Opportunity to Learn in Secondary English Language Arts, History, and Science

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Abstract

This study presents a descriptive analysis of 71 video-taped lessons taught by 34 highly-regarded secondary English language arts, history, and science teachers, collected to inform an intervention focused on evidence-based argumentation from multiple text sources. Observations coincided with the onset of literacy reforms emphasizing close reading of complex texts and argumentation across the disciplines. Studying the practices of highly regarded teachers is valuable for identifying promising practices and surfacing stubborn obstacles to reform. We found that while these highly-regarded teachers allocated three times more class time to working with text than to teacher lecture and explanation, opportunities for students to engage in text-based argumentation with multiple sources were rare. Furthermore, working with text was no guarantee of a literacy focus: less than a third of the time allocated to working with text engaged students in active meaning making from text. When literacy tasks did occur, they were associated with a disciplinary knowledge focus, challenging the notion that literacy activity occurs at the expense of content instruction. We also found evidence that argumentation can serve as a lever to raise the level of literacy learning opportunities offered to students. Close reading and cross-textual analysis frequently co-occurred with one another and with argumentation, suggesting intervention designs should include these "building blocks of argumentation." Disciplinary differences in opportunity to learn indicate that norms of instruction may carry greater weight than disciplinary norms of evidence, reasoning, and discourse, and suggest that a particular focus on transforming literacy instruction in science may be warranted.

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Evidence-based argumentation— defined broadly as making a claim or assertion that is supported by evidence and reasons that connect to the claim in a principled way (Toulmin, 1958)—is an essential practice to nearly all disciplinary knowledge creation (Asterhan & Schwarz, 2016; Moje, 2015; Stevens, Wineburg, Herrenkohl, & Bell, 2005). When situated inside the discourse practices of academic disciplines, argumentation tasks have been shown to build students' conceptual understanding, disciplinary knowledge, and reasoning in English language arts, history, and science (Asterhan & Schwarz, 2009; De La Paz & Felton, 2010; Duschl, Schweingruber, & Shouse, 2007; Levstik & Barton, 2005; Osborne, Erduran, & Simon, 2004; Wiley, Goldman, Graesser, Sanchez, Ash, & Hemmerich, 2009; Wineburg, 2001). In the wake of this research, argumentation has become an influential element in educational reforms rapidly reshaping the landscape of public schooling (National Governors Association Center for Best Practices & Council of Chief State School Officers [NGA & CCSSO], 2010; National Research Council, 2012; NGSS Lead States, 2013). Most prominent among these reforms, The Common Core State Standards (CCSS) (NGA & CCSSO, 2010) emphasizes argumentation based on close reading of complex, discipline-specific texts as a critical element of instruction across the disciplines.

Despite this new emphasis on teaching argumentation across the disciplines, our understanding of argumentation literacy[1] is overwhelmingly based on studies conducted in

[1] We define a*rgumentation literacy* as the knowledge, skills, and disposition to engage in evidence-based argumentation in the context of reading, writing, and talk.

highly controlled settings (Newell, Beach, Smith, & Vanderheide, 2011; Schwarz & Asterhan, 2010). Even when studies of argumentation have been conducted in classroom settings, they have generally focused on specific instructional interventions or approaches (Cavagnetto, 2010; Chinn & Anderson, 1998; Driver, Newton, & Osborne, 2000; Reznitskaya, Kuo, Clark, Miller, Jadallah, Anderson, & Nguyen-Jahiel, 2009). In light of its prominent role in current educational reforms, research is urgently needed to determine how argumentation is understood, instantiated, and taught in the real world of classrooms, and possible implications of these various approaches for student engagement, learning, and dispositions to learn.

The findings reported here represent an important step in this research agenda by describing literacy learning opportunities related to text-based argumentation in content area classrooms across the disciplines. The study was conducted during the initial phase of a research and design process to inform the development of instructional interventions focused on evidence-based argumentation from multiple text sources in the disciplines of English language arts (ELA), history, and science, grades 6 - 12. Our conception of reading for understanding focuses on text-based argumentation as a means for building deep levels of comprehension (Goldman, Britt , Greenleaf, Lawless, Lee, Magliano, … Shanahan, 2010; Greenleaf & Valencia, n.d.; Norris & Phillips, 2003). Drawing on observations of English language arts, history, and science classrooms conducted between October 2010 and June 2011, the year of the release but prior to the implementation of the CCSS (http://www.corestandards.org/standards-in-your-state/), the study provides an existential description of opportunities to learn targeted by the CCSS and similar standards-driven reforms at a time when public education was on the threshold of profound literacy reform. Pearson & Gallagher (1983) define *existential description* as research

that attempts to answer the question, "What's going on out there in the real world of classrooms and instructional materials?"

Design research can be understood as a way to provide students with new and different opportunities to learn than those typically on offer in schools and classrooms and to study the impact of these newly engineered learning opportunities (Barab & Squire, 2004; Cobb, Confrey, Lehrer, & Schauble, 2003), while descriptive observational studies delineate students' existing opportunities to learn. Influential existential description studies of classroom literacy practices have included Durkin's (1978) observational studies of reading comprehension instruction in upper elementary school and Applebee's (1993) studies of literature curriculum and instruction in secondary schools. While such research is not designed to evaluate whether existing practices are good or bad, by focusing attention on what happens inside the classroom, existential descriptions of literacy learning opportunities serve as potential catalysts for change. Multiple observational studies of mathematics and science instruction such as the TIMSS and Inside the Classroom studies, for example, have paved the way for reform-oriented design research to address observed shortcomings in students' opportunities to learn (Banilower et al., 2013; Hiebert & Stigler, 2000; Weiss, Pasley, Smith, Banilower, & Heck, 2003).

A number of important existential description studies of literacy instruction have also been conducted in the context of design-based research involving highly regarded teachers. For example, in a series of ongoing studies, Langer, Applebee, Nystrand, and colleagues at the Center on English Learning and Achievement observed classrooms of well-regarded teachers enacting instructional cultures, activities, and interactions aimed at developing students' literary understandings (Applebee, 1989, 1994; Applebee, Langer, Nystrand, & Gamoran, 2003; Langer, 1998, 2001). More recently, Newell, Bloome, and Hirvela (2015) and colleagues from the

Argumentative Writing Project observed 31 high school ELA teachers with reputations as excellent writing teachers to understand how they taught argumentative writing as well as what instructional practices were related to student learning of argumentative writing (Bloome, 2015; Newell et al., 2014; Newell et al., 2015; VanDerHeide & Newell, 2013). By studying highly regarded teachers with expertise in their disciplines, such studies are particularly valuable not only for identifying promising practices, but also for surfacing stubborn obstacles to reform. As Langer (1998) observed of her collaborative design research focused on describing literature-rich classrooms: "Traditional notions of 'good' teaching were so internalized that they were difficult for most teachers to overcome, although they wanted to" (p. 20).

Research on argumentation indicates that without intervention, students in a variety of grade levels, subject areas, and instructional contexts demonstrate weak argumentation skills (Berland & McNeill, 2010; Kuhn, Wang, & Li, 2011; Nussbaum, Kardash & Graham, 2005; Osborne, 2010). This is particularly true for argumentation that requires an integrative perspective, such as argumentation from multiple sources (Bråten, Britt, Strømsø, & Rouet, 2011). Studies suggest that to develop these practices, students must be explicitly socialized into argumentation (Anmarkrud, Bråten, & Strømsø, 2014; Braten, Britt, Stromso, & Rouet, 2011; Britt & Anglinskas, 2004; De La Paz, 2005; De La Paz & Felton, 2010; Goldman, 2004; Kuhn & Crowell, 2011; Nussbaum, Kardash, & Graham, 2005; Wiley et al., 2009; Wiley & Voss, 1999). However, little is known about students' current opportunities to learn multi-text argumentation in middle and high school subject areas. By describing practices of highly regarded teachers, this article aims to generate usable knowledge about promising practices and persistent obstacles, in order to inform the design of interventions targeting text-based argumentation from multiple

sources in content area classrooms. We thus report here on the processes and groundwork necessary to the systematic design of educational interventions.

Review of Related Literature

The conceptual framework guiding this study is based on Opportunity to Learn (OTL), the notion that educational outcomes depend on educational opportunity. Teachers play a central role in mediating students' opportunities to learn. Classroom OTL, operationalized as learning opportunities presented by the teacher, has strong effects on student learning, even after controlling for teacher expertise and a variety of student variables, including gender, prior ability and academic performance, free/reduced lunch status, and a variety of social, behavioral, and motivational measures (Abedi & Herman, 2010; Boscardin, Aquirre-Munoz, Stoker, Kim, Kim, & Lee, 2005; Heafner & Fitchett, 2015; Wang, Haertel, & Walberg, 1997). The belief that what students learn is tightly linked to what they are taught aligns with a sociocultural notion of practice that emphasizes learning to be literate by participating in literacy practices characteristic of particular communities (Street, 2005). While sociocultural theory is commonly used to explain the way individuals learn the literacy practices of particular disciplinary communities of practice, it also explains the appropriation of more reductive notions of literacy in classrooms where literacy activities focus on "doing school," rather than as tools for learning (Applebee, Burroughs, & Stevens, 1994; Gutierrez, Baquedano-López, & Asato, 2000; Gutiérrez, 2008; Iannacci, 2006; Jiménez -Aleixandre, Rodriguez, & Duschl, 2000; Johnston, Woodside-Jiron, & Day, 2001; Rex, 2002). Street (2005) reminds us that literacy opportunities offered by teachers comprise a social practice that affects the nature of the literacy being learned and the ideas about literacy held by the participants.

Opportunity to learn (OTL) is a multidimensional construct that encompasses "not just the content that is covered in classrooms, but also what teachers do in the classroom, the activities in which students engage, and the materials and other resources that are used to support instruction" (Correnti, Matsumura, Hamilton, & Wang, 2012). Correnti et al. (2012) note that what constitutes effective instruction varies across different areas of the curricula and that researchers who seek to understand OTL must make decisions about what dimensions of instruction to target and then develop appropriate measures to capture that instruction. Below we review the varied streams of research on teaching and learning related to evidence-based disciplinary argumentation from multiple text sources that shaped our research questions and coding scheme for the observational study. We begin by considering the extant literature on students' opportunity to engage in the types of complex literacy activities that are the focus of our study.

Literacy Opportunity to Learn in Secondary Classrooms

The type of complex disciplinary literacy instruction envisioned by the CCSS—focused on "close, attentive reading…wide, deep, and thoughtful engagement with high-quality literary and informational texts…cogent reasoning and use of evidence" —remains quite rare in our nation's secondary schools (Applebee, Langer, Nystrand, & Gamoran, 2003; Duschl et al., 2007; Reisman, 2011; Weiss, Pasley, Smith, Banilower, & Heck, 2003). Recent National Curriculum Surveys have found that secondary teachers across the disciplines prioritize content mastery over disciplinary literacy and reasoning skills (ACT, Inc., 2009, 2013a, 2013b). This content focus may contribute to the paucity of attention to disciplinary literacy and reasoning processes and skills characteristic of secondary classrooms (ACT, Inc., 2013a, 2013b; Carnegie Council on Advancing Adolescent Literacy [CCAAL], 2010; Goldman & Bisanz, 2002; Heller & Greenleaf,

2007; Lee & Spratley, 2010; Snow, 2002). Consistent with an emphasis on delivering content, teachers in all subject areas use lecture as the predominant mode of instruction in both college-preparatory and general-track classes (ACT, Inc., 2006; Ness, 2008). A recent study of instructional time use in high school classrooms found that students spend the majority of class time in listening activities such as lecture and film in all subject areas (Fisher, 2009). Lecture was the predominant mode of instruction among highly regarded teachers whose classrooms were "deemed to be places of college-preparatory thought and study" (ACT, Inc., 2006). Although teachers report assigning significant weekly textbook and trade book reading (ACT, Inc., 2013a) and textbook assignments are a pervasive feature of instruction in English language arts, history, and science (Applebee, 1993; Bain, 2006; Banilower et al., 2013; Reisman, 2012), students themselves may do little of the assigned reading (Wade & Moje, 2000). Instead, research suggests that teachers often resort to showing or telling students about content as an efficient alternative to actively engaging students in making sense of challenging academic texts (ACT, Inc., 2006; O'Brien, Stewart, & Moje, 1995; Pearson, Moje, & Greenleaf, 2010; Vaughn Swanson, Roberts, Wanzek, Stillman-Spisak, Solis, & Simmons, 2013).

Even when written texts are used in classrooms, they are generally relegated to a supportive role, rather than used as a core resource for constructing new knowledge (Banilower et al., 2013; Hartman & Dyer, 1992; Smith & Ochoa-Angrino, 2012). Numerous studies spanning three decades paint a picture of perfunctory in-class reading activities that only require students to look up isolated pieces of information to fill in worksheets (Alvermann & Moore, 1991; Fisher, 2009; Hartman & Dyer, 1992; Valencia, 2014). Students rarely engage in extended reading (Greenleaf, Schoenbach, Cziko & Meuller, 2001; Wade & Moje, 2000). Even when reading assignments involve more than hunting for information, they are generally limited to

basic comprehension and summary of information (Kiuhara, Graham, & Hawken, 2009). Furthermore, secondary teachers provide scant support for reading comprehension (Ness, 2008, 2009; Snow, 2002; Vaughn et al., 2013). Asked how much time they spend teaching strategies for how to read the materials in their courses, high school English language arts and social studies teachers most commonly reported a "moderate amount of time," while high school science teachers reported that they devoted only "a little" time to reading in their content area (ACT, Inc., 2009).

Given this lack of opportunity, it comes as little surprise that even the most able students often arrive in college without the literacy skills and proficiencies required to succeed in credit-bearing courses, such as argumentation from multiple text sources. According to the National Assessment of Educational Progress (NAEP) and other sources, about two-thirds of U.S. high school students are currently unable to read and comprehend complex academic materials, think critically about texts, or synthesize information from multiple sources. Less than a quarter are able to effectively communicate what they learn (ACT, Inc., 2010, 2013b; NAEP, 2012, 2013, 2015). While the need to increase levels of academic literacy achievement across the subject areas has gained acknowledgement and support through state and national funding, policy mandates, and literacy standards (CCAAL, 2010; NGA & CCSSO, 2010; NGSS Lead States, 2013), additional research is needed to better understand how current opportunities to learn provided by teachers may contribute to low levels of student literacy achievement required for success in college and 21st century careers.

Argumentation and Adolescent Literacy

The problem facing literacy reform is thus how to transform traditional instruction in which students are taught to look up or summarize information from single sources into the kind

of literacy instruction that engages academic texts and reasoning to support the development of complex literacy skills and proficiencies required for success in college and 21st century careers, including evidence-based argumentation with multiple sources in the disciplines (Asterhan & Schwarz, 2016). Engaging in rigorous text-based learning requires both teachers and students to take on roles that are unfamiliar to them (Hall & Comperatore, 2014; Litman & Greenleaf, 2008; Porter, McMaken, Hwang, & Yang, 2011).

Evidence-based argumentation from multiple sources in the disciplines has the potential to shift literacy learning opportunities offered to students and impact dispositional reader dimensions as well as knowledge and processing strategies. Argumentation tasks can help adolescents understand the tentative rather than absolute nature of disciplinary knowledge and reasoning in literature, history, and science (Applebee, Burroughs, & Stevens, 1994; Bain, 2006; Duschl et al., 2007; McNeill & Pimentel, 2010; Olshavsky, 1976; Reisman, 2012; Simon & Richardson, 2009; Wineburg, 2001). Engaging in inquiry, interpretation, critique, and evaluation emphasizes personal agency rather than deference to the authority of authors. These processes potentially shape adolescents' personal epistemologies towards normative standards that have been shown to relate to reading strategies, reading comprehension, reasoning about text, and task interpretation (Goldman, 1997; Gresalfi, Boaler, & Cobb, 2004; Griffin, Wiley, Britt, & Salas, 2012; Holschuh, 2000; McNeill & Pimentel, 2010; Nystrand, 2006; Osborne, Simon, & Collins, 2003 Reisman, 2012; Simpson & Nist, 2000).

Text-Based Argumentation

Fundamental Literacy

Reading and text are central to argumentation focused on learning. Reading can not only provide textual evidence to ground dialogic argumentation but may also assume the form of

intra-personal argumentation as individual readers negotiate meaning with texts (Schwarz & Asterhan, 2010). In this light we see argumentation not only as a literacy discourse practice, but also as a literacy development process. Specifically, our view of text-based argumentation is influenced by Norris and Phillip's (2003) notion of fundamental literacy, where reading assumes the form of argumentation and interpretation. According to this model, comprehending involves interpretation and argumentation processes used purposefully not only to induce or restore comprehension, but to generate the kind of principled representation of the text required of disciplinary reading and thinking. Reading of this kind that involves metacognitive inquiry appears to support disciplinary learning and thinking (CCAAL, 2010; Greenleaf et al., 2001; Kamil Borman, Dole, Kral, Salinger, & Torgesen, 2008). Likewise, reading tasks that require more effort and active problem-solving—such as reading more complex or less coherent text, or reading across multiple texts—have been shown to promote better understanding of the subject matter (Kintsch & Young, 1984; Wiley & Voss, 1999).

Multiple Source Literacy

While text processing theories underscore the fact that *every* text offers possibilities for multiple interpretations, solutions, or standpoints (Kintsch, 1988; Norris & Phillips, 2003), in the disciplines we focus on here—literature, history, and science—multiple possibilities are often instantiated in multiple sources (Bråten, Anmarkrud, Brandmo, & Strømsø, 2014; Goldman, 2004; Hartman & Hartman, 1993; Schwarz & Asterhan, 2010). Furthermore, disciplinary literacy often explicitly involves analysis, comparison, discussion, and deliberation over multiple sources of information and evidence (Afflerbach & Cho, 2009; Bain, 2006; Hartman, 1995; Langer, 2011; Lee & Spratley, 2010; Monte-Sano, 2011; VanSledright, 2002; Wineburg, 2001). Synthesizing across texts is arguably the most challenging form of academic reading, requiring

greatest awareness and executive control over reading processes (Afflerbach & Cho, 2009). Nonetheless, the levels of literacy proficiency required to support students' full participation in disciplinary learning essentially require the ability to read and synthesize across multiple sources to build disciplinary knowledge and understanding (Asterhan & Schwarz, 2016; Bråten, Britt, Strømsø, & Rouet, 2013; Bråten, Anmarkrud, Brandmo, & Strømsø, 2014; Goldman, 2012; Leu et al., 2015). Students need to be able to read to learn from multiple texts of varying genres, and in disciplines such as science and history, be able to read across multiple forms of textual representation as well. While all the academic disciplines require this assiduous literacy work (the work of any scientist, any historian, and any literary analyst entails reading multiple texts on their subjects of inquiry), learning in these subjects also requires carrying out multi-text reading and reasoning tasks, whether this learning reflects disciplinary literacy practices *per se*, or merely academic literacy practices more generally (Norris & Phillips, 2003).

Yet text-processing studies have shown that students in a variety of grade levels and subject areas have great difficulty carrying out multi-text argumentation tasks (Anmarkrud, Bråten, & Strømsø, 2014; Britt & Anglinskas, 2004; De La Paz, 2005; De La Paz & Felton, 2010; Goldman, 2004; Wiley et al., 2009; Wiley & Voss, 1999). Similarly, students do poorly with argumentative reasoning skills and processes that require an integrative perspective, such as dual perspective reasoning, counter-factual reasoning, and integration of opposing arguments (Braten, Britt, Stromso, & Rouet, 2011; Kuhn & Crowell, 2011; Nussbaum, Kardash, & Graham, 2005). Research suggests that limits on students' ability to engage in skillful argumentation from multiple sources may be due in part to lack of experience rather than lack of reasoning ability (Asterhan & Schwarz, 2016). Consistent with an OTL perspective, studies indicate that students become better at argumentation if it is an overt feature of their education (Andriessen, 2008;

Berland & McNeill, 2010; Jonassen & Kim, 2010; Kuhn, Wang, & Li, 2011; Nussbaum, Kardash & Graham, 2005; Osborne, 2010). Classroom-based intervention studies indicate that students who are explicitly taught multiple source reading strategies outperform students who receive typical classroom instruction (Braasch, Bråten, Strømsø, Anmarkrud, & Ferguson, 2013; Britt & Angliskas, 2002).

In a recent review of research and theory focused on the comprehension of multiple text sources, Bråten et al. (2011) caution: "As demanding as this task may be, failure to coordinate and integrate multiple information sources may have serious consequences" (p. 48). Reading to interrogate, evaluate, corroborate, synthesize, and reconcile content from multiple texts encourages a fundamentally different epistemological understanding than that which is promoted in typical textbook based instruction (Daniels & Zemelman, 2004; Nokes, Dole, & Hacker, 2007; Reisman, 2012; Wolfe & Goldman, 2005). Likewise, reading across multiple texts has been shown to promote better understanding of the subject matter (Bråten, Anmarkrud, Brandmo, & Strømsø, 2014; Wiley & Voss, 1999). In support of this, Wiley and Voss (1999) found that college students who used multiple texts emerged with a deeper understanding of the material than students who read textbook chapters. Similarly, Britt and Anglinskas (2002) found that high school students who read a set of seven documents wrote essays that were more integrated, cited more sources, and referenced more information from primary and secondary sources than the textbook comparison group. This was true even though textbook chapters in both studies contained almost identical material to the text set, suggesting that these genres evoked different sense-making schemas in readers. Thus, understanding existing opportunities provided by teachers for students to engage in argumentation from multiple sources may be an important

gauge of students' instructional needs and of what is required to design interventions targeting argumentation literacy.

Argumentation Literacy as Social Practice

While literacy has been defined in myriad ways, our understanding of literacy derives from a sociocultural notion of practice that emphasizes learning to be literate by participating in literacy practices characteristic of particular communities (Street, 1984, 2005). Literacy practices thus become increasingly specialized throughout the school career, reflecting the broader activities that characterize the academic disciplines (Heller & Greenleaf, 2007; Lee & Spratley, 2010). While reading in all academic disciplines requires the principled fundamental literacy processes described by Norris and Phillips (2003), norms of evidence, logic, and discourse vary widely across disciplines (CCAAL, 2010; Moje, Ciechanowski, McIntosh, Kramer, Ellis, Carrillo, & Collazo, 2004; Osborne, 2007; Stevens et al., 2005). Texts are shaped by specific conventions and structures of language, and proficient reading of such texts demands the use of these conventions to navigate layers of meaning (New London Group, 1996; Scribner & Cole, 1981). Likewise, argumentation assumes discipline-specific forms.

In each discipline, the language and texts used to represent and communicate ideas vary widely. While the ability to read and reason from multiple text sources is a requirement across disciplines, the nature of reading, reasoning, and the sources themselves vary widely (Lee & Spratley, 2010). In science, readers must synthesize across diagrams, data arrays of various kinds, and mathematical expressions (Lemke, 1990; Snow, 2010; van den Broek, 2010). In history, reading and synthesizing across the range of artifacts and texts that comprise the historical record—the primary sources of the discipline—is similarly varied and complex (Wineburg, 2001). In literature, intertextuality enriches interpretation by contributing to an

increased understanding of the subjectivity and contextuality of meaning (Langer, 2011). Similarly, while evidence-based argumentation is an essential practice across disciplines, the specific nature of argumentation—including what counts as evidence—likewise varies across academic disciplines (Asterhan & Schwarz, 2016; Moje, 2015; Stevens et al., 2005). In literature, argumentation involves weighing possible interpretations by drawing on textual evidence, the readers' own experience, and critical traditions (Langer, 2011); in history, argumentation focuses on interpreting the historical record to create a warranted account of historical events (Reisman, 2012); and in science, argumentation takes the form of developing and evaluating explanations for natural phenomena (Falk & Brodsky, 2014). All these forms of disciplinary communication present novel challenges of comprehension and interpretation to learners and an integral part of learning a discipline involves learning to navigate and acquire the oral and written languages of the discipline—including its disciplinary forms of argumentation (Moje et al., 2004).

Thus, Street (2005) has argued, "In order to develop rich and complex curricula and assessments for literacy, we need models of literacy and of pedagogy that capture the richness and complexity of actual literacy practices" (p. 420). Nonetheless, teaching practices in secondary classrooms do not commonly reflect the role of literacy—and reading and argumentation in particular—as an integral part of disciplinary learning. While text-based learning is widely accepted in English language arts with its focus on reading literature (Langer, 2011), educators have struggled to move beyond textbook reading for delivery of information to more authentic disciplinary reading and argumentation in history and science instruction (Cavagnetto, 2010; Reisman, 2012). Recognizing that authentic science engages practitioners with a wide range of disciplinary literacies and text types, current literacy reform efforts advocate instruction that engages students in making sense of the authentic range of scientific

texts and data representations used to communicate and represent science as one form of scientific inquiry (NGA & CCSSO, 2010; NGSS Lead States, 2013). The Next Generation Science Standards, among other initiatives, require students to engage in the inquiry practices of science, grappling with substantial complexity to clarify meaning, pose inquiry questions, develop investigations, identify and accumulate answers to inquiry questions, develop explanations and models, and critique how well their models hold up (NGSS Lead States, 2013). Likewise, the CCSS call for students to use textual evidence to support analysis of science and technical texts as well as historical documents (NGA & CCSSO, 2010). Such inquiry-driven literacy practices are radically different from the passive reception of information *about* history and science that has heretofore dominated instruction. Instead, as a process of actively making meaning of literature, science or historical documents, such inquiries are best regarded as investigations in their own right (Greenleaf, Brown, Goldman, & Ko, 2013; Pearson et al., 2010).

Text-based argumentation from multiple sources thus seems important for the development of disciplinary learning and reasoning skills and processes essential for college and career readiness. Yet it would appear that opportunities to engage in such tasks are currently rare in content area classrooms. Teachers play a central role in mediating students' opportunities to learn (Newell et al., 2011), and teachers' role in adopting, implementing, and augmenting reform policies is key to the success of any such endeavors (Coburn, 2003; Penuel, Fishman, Cheng, & Sabelli, 2011). For the purpose of building usable knowledge as well as building on the wisdom of practice, we therefore engaged teachers as partners in the design of text-based argumentation approaches. As a first step in this process, we observed teachers reported to be implementing disciplinary literacy instruction. By examining what was occurring in these diverse classrooms prior to any intervention, we hoped to develop an understanding of supports and challenges to

engaging students and teachers in these complex literacy practices. We believed that studying opportunities to learn provided by highly regarded teachers in particular would shine a spotlight on both promising practices and obstinate challenges associated with enacting the complex literacy practices instantiated in text-based argumentation from multiple text sources.

Research Questions

The following research questions guided our analysis of OTL in these classrooms:

Content delivery and task opportunity to learn. Our central research question focused on opportunities these highly regarded teachers provided for students to engage in activities and tasks central to text-based disciplinary argumentation from multiple sources:

- *How frequently do teachers provide opportunities for students to work with text,[2] in contrast to learning content through teacher lecture, demonstration, or explanation, or delivered by media?*
- *What opportunities do teachers provide for students to engage in tasks central to text-based argumentation and disciplinary learning?*
- *Which tasks are students asked to do with text, and how are tasks assigned in the context of working with text different from tasks performed when students learn content delivered by the teacher or media?*
- *How are tasks related to one another?*

[2] Our definition of text is broad. Texts include all the semiotic means students are expected to make sense of in content area classrooms, including visual displays such as diagrams, data tables, models and figures, photographs, documents, and artifacts, as well as more traditional verbal texts of all genres.

Grouping structures. Because we are interested in how students acquire argumentation literacy in interaction with teachers and peers, we also examined grouping structures as an important element of opportunity to learn:

- *How do teachers allocate time to various grouping structures?*
- *Which grouping structures are associated with particular content delivery and task opportunities to learn?*

Disciplinary variation. And finally, because we are interested in describing how opportunities to learn may vary across disciplines, we ask:

- *How is time allocated to various content delivery modes, tasks, and grouping structures by English language arts, history, and science teachers?*

Methods

Sample

The data set used in the present analysis consisted of videotapes of 71 lessons taught by 34 teachers from 22 urban and suburban public schools in two states. As mentioned previously, this study took place in the context of a larger collaborative design research project focused on disciplinary argumentation from multiple text sources in middle and high school English language arts, history, and science classes, grades 6-12. Teachers for observation were selected based on perceptions of good instructional practice and as potential long-term partners in our collaborative design work. Research team members nominated teachers they believed to be effective and engaging teachers in their disciplines. We also solicited nominations for participants from researcher colleagues and district leadership in literacy, English language arts, social studies, and sciences. At the same time, because the observations occurred prior to any intervention and reflected a wide variety of teachers, we approached them with the understanding

that many of the teachers we observed would not necessarily have established argumentation routines, or might only have emergent ones. We reasoned that the observed lessons could reveal other literacy practices as well as pitfalls that could potentially inform the development of interventions focused on text-based argumentation with multiple sources. Elsewhere we have written about differences among teachers as a function of these different recruitment and selection processes (Litman, Marple, & Greenleaf, 2016a).

Table 1 compares characteristics of the 34 highly regarded teachers to a nationally representative sample of teachers from 2011, the year of the study. In general, teachers in our study mirror many characteristics of the nationally representative sample, although our study included fewer teachers with less than 5 or more than 15 years of teaching experience. In addition, teachers in our study were more likely to have Master's degrees than teachers in the representative sample (80% versus 55%). The teachers we observed taught a wide variety of students in diverse settings representative of schools across the nation—the percentage of students qualifying for free/reduced lunch in these classrooms was nearly identical to the national average (48% versus 50%). In an effort to explore promising practices that could potentially support argumentation from multiple sources, we revisited classrooms as warranted, observing a total of 71 lessons. Table 2 shows the distribution and characteristics of the 71 lessons.

Data Collection Methods

Observations were conducted between October 2010 and June 2011.[3] We asked to observe typical lessons "in which reading and discussion play a central role." The videotaping protocol focused on teacher talk and behavior. A single tripod-mounted camera with a wide-angle lens was placed at the rear of the room and focused on the teacher, although students were also visible much of the time. In addition to capturing opportunities to learn that were the target of our research, this protocol standardized the videotaping across classrooms and minimized decision-making and time required of observers for setting up and monitoring video equipment (Jacobs, Hollingsworth, & Givvin, 2007). We videotaped a total of 3,813 minutes of instruction, including 1866 minutes in English language arts, 1,338 minutes in history, and 609 minutes in science.

Coding Scheme

We used an iterative approach to analyzing the corpus of observation data. Consistent with qualitative data analysis methods, we interwove data collection and analysis from the start. Using a combination of inductive and theoretically-driven analysis, we iteratively identified a set of categories and codes related to the teaching and learning of argumentation. Initial coding and analysis of field notes, lesson artifacts, and teacher interviews utilized a "start list" (Miles &

[3] The study reported here involved an extensive team of observers. We wish to acknowledge the support of Megan Hughes, Jackie Popp, Diane Puklin, Ursula Sexton, Tanya Solomon, Teresa Sosa, and Mary Pat Sullivan in collecting the observational data analyzed here. In addition, we wish to acknowledge the contributions of Cyndie Shanahan, Carol Lee, and Taffy Raphael to the observational and interview protocols developed to guide this data collection. Finally, we thank Angela Fortune for her contributions to the research questions guiding the analysis of this data.

Huberman, 1994) of broad descriptive categories reflecting the conceptual framework and research questions articulated in the original project proposal. These included lesson architecture, texts and text characteristics, tasks and task support, classroom culture, and student behavior. Within these broad categories, we approached the analysis using open coding processes informed by grounded theory research methodology and moved to axial coding processes as codes stabilized (Corbin and Strauss, 1990). Through this process, we developed a coding scheme that described features of instruction that appeared to influence text-based learning, use of multiple sources, and argumentation.

Building on this work, for this study we developed a coding scheme to analyze student opportunity to learn based on our video data. Working collaboratively as a research team, we coded videos and honed the coding scheme until codes and definitions were broad enough to apply to the videos reliably, yet specific enough to capture opportunities provided by teachers for students to engage in literacy practices identified as important for learning text-based argumentation from multiple sources. To facilitate reliable coding across videotapes, reducing code complexity was necessary. For example, while there are many elements contributing to the social context of learning, the opportunities students have to work in different groupings is one important element–and across videotapes, grouping proved to be the aspect of social context we could most reliably code. These types of decisions guided the code book development. Our coding was thus focused, and not a comprehensive cataloging of all classroom activities and interactions.

We recognize that different students take up opportunities to learn in different ways (Kurz, Elliott, Lemons, Zigmond, Kloo, & Kettler, 2014). However, an extensive body of research has shown classroom opportunity to learn—operationalized as opportunities presented

by the teacher—to have strong effects on student learning, even after controlling for student's prior ability and academic performance (see Abedi & Herman, 2010). To measure OTL, our analysis focused on *exposure*, the amount of time teachers actually implemented or enacted various activities and tasks (Smith, 2000). Exposure is the most frequently studied indicator and one of the most consistently significant indicators of OTL (Boscardin et al., 2005). The effects of exposure hold across content areas (Boscardin et al., 2005; Heafner & Fitchett, 2015). Although we did not directly assess quality of instruction, our focus on implementation of cognitively demanding disciplinary reading and reasoning tasks is a measure of teachers' expectations for student learning, an indicator of instructional quality (Kurz et al., 2014; Porter, 2002). Due to our definition of OTL, our coding scheme was designed to capture opportunities presented by the teacher.

For this study, we examined three dimensions of videotaped lessons related to text-based argumentation from multiple sources. These dimensions focus on the locus of the intellectual work, the kinds of tasks, and the classroom social context of the lessons: 1. *Content Delivery*, 2. *Task*, and 3. *Grouping*. Classrooms are complex environments where multiple activities and interactions often occur simultaneously. Reflecting this reality, our coding scheme was not mutually exclusive and we coded all activities, tasks, and interactions that occurred during each segment. Below we provide definitions of the three dimensions and the codes within each dimension.

Content Delivery Dimension. This dimension, which addresses the locus of the intellectual work involved in learning lesson content, refers to the mechanism by which students are taught content, both in the input phase that generally occurs at the beginning of an assignment and throughout, as students continue to work with lesson content. We embrace a

broad definition of what counts as text (Wade & Moje, 2000). However, because written, recorded, and oral texts afford different kinds of engagement and learning, we differentiated between content delivered by the teacher, content delivered by media, and content delivered through working with written text. Unlike genre, which identifies properties of texts themselves, our content delivery dimension focuses on the intellectual work and language processing demands of various content delivery modes, and the control students have over processes and pacing of content acquisition. Puzzling over a photograph on paper is different from viewing it as part of a PowerPoint presentation or reading a written description of the same image, and requires different attention and supports (Avgerinou & Pettersson, 2011). Thus the primary conceptual distinction captured by content delivery codes is not medium (e.g., print material versus electronic), but how information is presented and received. For this reason, working to make sense of images on a computer screen is coded differently from watching a PowerPoint presentation. The three codes comprising the Content Delivery dimension include:

1. *Teacher.* Content is delivered through teacher lecture, demonstration, explanation, or PowerPoint, in which the teacher has done the work of understanding, organizing, and delivering material to students. This mode of content delivery may involve some student interaction around presented material, but the primary focus is on teacher-delivered content.
2. *Media.* Content is delivered through audio, video/film, or other media presentation and is presented with a receiver-oriented stance toward content acquisition.
3. *Working with text*. *Working with text* is distinguished from other Content Delivery codes in that it requires students to access the content provided in textual sources. This code is used when students work with text, individually or collaboratively, as a source of

curriculum content. *Text* is defined broadly to include reading a wide range of materials, including graphic displays of various kinds, and data representations, from a wide range of sources, including computer screens, not just connected text and traditional print material.

Task Dimension. This dimension captures opportunities for students to engage in various literacy and content learning tasks related to text-based disciplinary argumentation from multiple sources. Literacy tasks included close reading, argumentation, and cross-textual analysis. Codes focused on content learning distinguish broadly between tasks with a disciplinary knowledge focus and tasks with a fact acquisition focus, characterized by lower cognitive demand. Because we focused on opportunity to learn rather than student uptake, tasks were coded based on what students were asked to do, rather than in terms of how students executed the task. The Task dimension comprises five codes:

1. *Argumentation*. Based on Toulmin (1958), we define argumentation as tasks that ask students to make a claim or assertion that is supported by evidence that connects to the claim in a principled way. Our definition recognizes that argumentation is shaped by the discourses of particular communities and consequently accommodates a wide range of activities, from reason-giving discussions of literature in English language arts to modeling and explanation tasks in science. Argumentation tasks are framed as inquiry into multiple possibilities and/or viewpoints (therefore, in our definition, asking students to find "evidence" to support a fact would not be considered an argumentation task). Tasks may or may not be explicitly identified as "argumentation" by the teacher. Argumentation tasks may or may not result in tangible products. Coded as argumentation:

- Students in a 9th grade history class are asked to synthesize information from five World War II propaganda posters and write a paragraph answering the essential question, "How did countries use national pride to convince men to join the war?," drawing on evidence from the posters to support their claims.
- During a whole class discussion of "The Summer of the Beautiful White Horse" by William Saroyan using the "shared inquiry" discussion prompt, *Why do Aram and Mourad take the beautiful white horse despite their family's reputation for honesty?* the teacher of an 8th grade English class tells students, "We are going to use textual evidence, reasoning… to support the claims you are making."

Not coded as argumentation:

- During an 8th grade history lesson focused on the U.S. Constitution, the teacher uses language of argumentation during an IRE-pattern discussion but "evidence" is information from textbook that answers teacher-generated factual questions:

  T: It's a what kind of system?

  S: Checks and balances.

  T: Explain that to us. Look for evidence in the text.

  S: Page 126. It limits the power of other branches.
- As an introduction to the teleplay "The Monsters are due on Maple Street," students in a 7th grade English class are asked to write an individual response and then discuss as a group the question, *What would you think if all technology suddenly stopped working? How would you feel? What would you do?*
- A bell-work assignment for a 9th grade science class asks, *Will osmosis occur? If so, what type of solution is it—hypertonic, hydrotonic, or isotonic? And what*

effect will that have on the cell size? In a debrief of the task, the teacher asks students whether they agree with their classmates without asking for evidence or reasons.

2. *Close reading.* Close reading tasks are characterized by approaching texts to understand and build meaning rather than only to find factual information. While other definitions of close reading have been advanced, in our coding we defined close reading as active engagement in meaning making with texts. Close reading tasks ask students to engage in interactive negotiation of meaning to unearth and evaluate possible meanings (Greenleaf et al., 2001; Norris & Phillips, 2003), individually or collaboratively. Coded as close reading:

    - In a 7th grade English language arts class, partners are asked to read two poems twice: first with metacognitive notetaking (Schoenbach, Greenleaf, & Murphy, 2012), and second with a disciplinary focus on figurative language and sound devices. Students are then asked to discuss poems with partners and small groups. Finally, the teacher brings the class together to tackle any questions students could not answer in groups.
    - In a 9th grade English class, the teacher asks individuals to preview a section of the play *Romeo and Juliet* before they listen to a recording of the same text. She tells the class, "Even when we do a preview we are writing things down." The teacher then plays an audio recording of the play to the whole class, pausing the recording every minute or two for students to talk about what they have heard—in brief pair-shares and teacher-facilitated whole class discussion— and add to their

reading logs. The focus is both on translating the language of the play into contemporary English, and appreciating the richness of the language.

Not coded as close reading:

- In a 9th grade English lesson the teacher facilitates a discussion to check for understanding of a chapter from the book *Red Scarf Girl.* In addition to fact-checking, the teacher offers her own interpretations of the story, without soliciting interpretations from the students.
- During a 9th grade history lesson on the Middle East conflict, the teacher reads aloud a text projected on the overhead, interpreting the text and instructing students what to mark on their own copies of the text. Students are not asked to engage in any text comprehension or interpretation themselves.

3. *Cross-textual analysis*. These tasks ask students to synthesize, evaluate, or critique information from multiple texts. Coded as cross-textual analysis:
    - At the end of a unit on *Romeo and Juliet*, students in a 9th grade English class are assigned a compare and contrast essay drawing on the written text and two film versions of the play. In the observed lesson, students are asked to look for lines that stand out to them as a "viewing lens" to compare and contrast the written text and the two films.
    - During a 12th grade AP English lesson, students are assigned an AP test prompt that involves comparing two passages, analyzing how the distinctive style of each reveals the purpose of its writer.

    Not coded as cross-textual analysis:

- In an 8th grade English lesson on Anne Frank, a student tells the teacher that she thinks the girl in the book about the Japanese girl who died of cancer (*Sadako and the Thousand Paper Cranes*) is similar to Anne Frank. The teacher responds that the two stories are really different, without asking the student or class to reason about the similarities or differences.
- Lessons that use multiple texts sequentially but never position the texts in relation to one another during the tasks.

4. *Disciplinary knowledge focus.* Disciplinary knowledge focus tasks ask students to engage with overarching frameworks, concepts, and/or themes of the discipline. The following examples were coded as disciplinary knowledge focus:

    - After extended partner and teacher-facilitated whole class discussion of an essay surfaced alternative interpretations of author's purpose, individual students in an 11th grade English lesson are asked to return to the text and examine how syntax, figurative language, imagery, and detail communicate author's purpose.
    - Students in an 11th grade U. S. History class previously read accounts of the history of Pullman, Illinois by two different historians (Historian A and Historian B) and analyzed their sources. During the observed lesson, students are asked to talk with their partner "about what you think of all that. You might be thinking about, what did you write for your whole concluding part, which historian were you most convinced by and why, what did you think about the sources. So we'll give you a few minutes to have that conversation with your partner."

    Not coded as disciplinary knowledge focus:

- During a whole class exchange focused on conservation of mass, a 10th grade science teacher checks students' fact retention, accepting recitation from the textbook without asking students to elaborate or explain their thinking.
- During an 11th grade English lesson about *The Great Gatsby*, the teacher leads a whole class discussion about the 1920's focused on isolated details: "What era was happening in the early 1920's? It starts with a P. (Student voice: Progressive) Progressive era, okay. But think about alcohol. (Overlapping student voices) Prohibition. Are you all with me?" The teacher does not engage students in considering how they might access or use historical context to comprehend or interpret literature.

5. *Fact acquisition*. Fact acquisition tasks focus on testing understanding, recall, or rote learning with little or no opportunity for sense-making. While they may involve brief instructional exchanges between teacher and students, the overwhelming focus is on learning facts/information and right answers. Coded as fact acquisition:
    - In a 9th grade English lesson, the teacher gives a "root review" quiz ("The first root is *GEN*. What does *GEN* mean, write it down. No talking, eyes on your own paper").
    - During a 9th grade science lesson, the teacher assigns partners to fill in a worksheet with information from the textbook.
    - During a 7th grade history lesson, the teacher asks students to write down word definitions.

    Not coded as fact acquisition:

- After assigning a chapter from the textbook as homework, the teacher of an 11th grade history lesson asks students to develop a summary of important ideas and use the Question-Answer Relationship (QAR) strategy (Raphael, 1986) to generate questions for one section of the textbook.
- During an 8th grade social studies lesson, the teacher facilitates a discussion based on students' understandings and questions about a textbook chapter. The discussion focuses on whether the President of the United States needs Congressional approval to send troops. Student contributions explore the difference between declaring war and military power.
- A 9th grade science teacher draws on students' real-world experience of Kool-Aid and dissolving sugar in tea during a lesson on factors that affect solubility.

Grouping. Understanding argumentation as process (rather than argument as product) in which two or more individuals engage in a dialogue where arguments are constructed and evaluated (Nussbaum & Edwards, 2011), the Grouping dimension is designed to capture students' opportunities for different kinds of interaction. Within an OTL framework, different groupings provide different opportunities for student talk and intellectual work. For example, across instructional contexts, small group interactions are associated with increased opportunity to respond and higher student engagement compared with traditional lecture and seatwork instruction (Hollo & Hirn, 2015; Pai, Sears, & Maeda, 2015). In our study, grouping codes focus on how students are receiving input or engaging in an activity or task, not on seating arrangement. For example, individual silent reading is coded as *Individual*, even if students are seated at a table group. The Grouping dimension includes four codes:

1. *Individual*. Students work independently.

2. *Pairs*. Students work in pairs.
3. *Small group.* Students are divided into small groups that they generally run themselves.
4. *Whole class*. Teacher interacts with the whole class at once.

Coding Protocol

Unit of analysis. As mentioned previously, in an effort to explore promising practices that could potentially support argumentation from multiple sources, we revisited classrooms as warranted. In addition, the length of observed lessons varied considerably. This meant that some teachers contributed more time than others to the data set. To control for differences in length and number of observations, we used *teacher* rather than *lesson* as the primary unit of analysis. Because we were interested in time teachers allotted to various opportunities to learn as well as their occurrence, we coded the *duration* of each activity, task, and interaction independently. In addition to yielding absolute durations, this enabled us to calculate "percent of class time" variables. As noted previously, the majority of footage contained multiple concurrent activities and interactions and was therefore multiply coded. Consequently, percentage time within a dimension may not add up to 100%[4].

Coder training. Video data were coded by four researchers, all of whom had classroom teaching experience. Researchers coded directly from video footage using NVivo9 qualitative analysis software (QSR International), without transcripts of the lessons. Training and support for coding was provided by senior research staff. To insure accurate and reliable coding, we held

[4] Some footage includes multiple codes from a single dimension (e.g., multiple tasks), whereas some footage does not include any code for a particular dimensions (e.g., housekeeping segments generally do not include task codes).

a series of four cross-site trainings that employed a Frame of Reference model based on practice, discussions between coders, and feedback from trainers (Melchers, Lienhardt, Von Aarburg, & Kleinmann, 2011). Once we established acceptable inter-rater reliability among the four coders, each video was assigned and coded by a single coder. To insure and maintain good inter-rater reliability, two or three additional videotapes were coded and discussed by intra- and cross-site pairs of coders throughout the coding phase.

Inter-rater Reliability

After calculating kappa coefficients for each jointly coded video, we calculated a generalized version of the kappa statistic by averaging multiple-rater and pair-wise kappa statistics across the seven videos coded by multiple coders. While kappa coefficients varied by code and lesson, percentage agreement was acceptable (above 75%) for all codes, with the majority of average kappas well above 0.41.[5]

Data Analysis

We looked at both occurrence and duration of opportunities to learn provided by teachers. For occurrence, we calculated the percentage of teachers who allocated any time to a particular code. Duration offers a finer grained look at opportunities teachers provided for students to engage in different types of learning. Because both the length and the number of observed

[5] When the base rates for different codes are uneven such that a few events, behaviors or interactions occur more (or less) frequently than others, as in the case of several codes in our coding scheme, values of kappa will be lower than when base rates are equal. Even if coder agreement is high, disagreements have a large impact on reducing kappa because of the large correction for chance agreement (Bruckner & Yoder, 2006).

lessons differed for different teachers, we calculated "mean percent of class time" variables. As a first step in computing these means, we calculated "percent of class time" variables for individual teachers. For example, to calculate the percent of class time a teacher allocated to working with text, we divided the total time coded to working with text for that teacher by the total duration for that teacher. In the next step, we used the per teacher percent of class time variables to calculate mean percent time variables for the whole group. For example, to compute the mean percent of class time allocated to argumentation across our corpus of 34 teachers, we calculated the mean of the individual argumentation percent of class time variables for the 34 teachers. Likewise, when calculating the mean percent of class time allocated to argumentation by the English language arts (ELA) teachers, we calculated the mean of the percent of class time the 15 ELA teachers allocated to argumentation. We use the terms *occurrence* (percent teachers allocating time) and *duration* (mean percent class time teachers allocated) throughout this paper to refer to these analytic methods.

Results

Below we report findings in three parts: (1) opportunity to learn related to *Content Delivery*, *Task*, and *Grouping*; (2) relationships among these three dimensions of opportunity to learn; and (3) disciplinary variations observed in opportunities teachers provided for students to engage in various activities, tasks, and interactions.

Opportunity to Learn

Content Delivery

To determine how these highly regarded teachers taught content, we calculated occurrence and duration for each of the three Content Delivery codes: Teacher, Media, and Working with Text. As shown in columns one and two of Table 3, the majority of teachers

delivered content both through lecture, demonstration, explanation, and/or PowerPoint (91%) and through working with text (97%). Relatively few teachers used media to deliver content (21%). In relation to duration, teachers allocated nearly three times as much class time on average to working with text as to teacher delivery of content. These findings are inconsistent with previous reports that teachers spend relatively little time having students work with text. The discrepancy may be a result of our request to see lessons in which reading plays a central role. Teachers allocated an average of 1% of class time on average to media-delivered content. In general, media was used for very short segments (e.g., a 2-minute clip of cell division). Only 2 of the 7 teachers who used media allocated more than 5% of class time to media-delivered content, and no teacher used media during more than one lesson. Because media use was infrequent and brief, it will not be considered further.

Task

We ran a parallel analysis to look at opportunities teachers provided for students to engage in various tasks. As shown in columns one and two of Table 4, over half of all teachers allocated time for close reading and slightly more than a third allocated time for evidence-based argumentation. Cross-textual analysis occurred infrequently. The vast majority of teachers allocated time to tasks with a disciplinary knowledge focus. Nearly three-quarters of the 34 teachers devoted time to tasks focused on fact acquisition. Our analysis of duration fleshed out these findings. For example, while 71% of teachers devoted time to fact acquisition tasks, only 17% of class time was allocated to fact acquisition. Durations also indicate that opportunities for students to engage in complex literacy practices were more modest than suggested by occurrence alone. While more than half of all teachers assigned close reading, only 21% of class time was allocated to close reading tasks. Little time was allocated to argumentation (10%) or cross-

textual analysis (6%). Thus, even in lessons "in which reading and discussion play a central role," these highly regarded teachers provided scant time for reading focused on understanding, and only rarely engaged students in evidence-based argumentation or cross-textual analysis.

Grouping

While deep investigation into the dialogic space of the classrooms was beyond the current analysis, the Grouping dimension provides a broad picture of opportunities for peer collaboration and teacher support for the tasks that are the focus of our study. As shown in the first two columns of Table 5, while most teachers provided opportunities for both individual and whole class interactions, students spent relatively little time working individually (16% of class time) and considerable time working as a whole class (51% of class time). An intermediate percent of time was allocated to peer-run groups (29% for partner and small groups combined).

Relationships between Learning Opportunities

Relationship between Content Delivery and Task

To investigate how tasks assigned in the context of working with text differed from tasks assigned when teachers delivered content, we looked at relationships between task and content delivery codes. For both occurrence and duration, content delivery was highly related to task. As shown in Table 6, teacher delivery of content almost exclusively focused on disciplinary knowledge and fact acquisition—consistent with fact acquisition's function as a tool of knowledge transmission. In contrast, teachers assigned a wide range of literacy and content learning tasks in conjunction with working with text—consistent with the versatile nature of text-based learning.

Across lessons, teachers assigned close reading, argumentation, and cross-textual analysis a greater percentage of the time when students were working with text than when content was

delivered by the teacher. These three literacy tasks were rare when teachers delivered lesson content. Tasks with a disciplinary knowledge focus were common across both categories of content delivery. Fact acquisition took place a high percentage of the time when content was delivered by teachers. In general, teachers devoted more than twice as much time to fact acquisition when they delivered content than when students were working with text.

Relationships Among Tasks

To explore the extent to which various literacy and content learning tasks co-occurred in observed lessons, we examined overlap among tasks for video footage that was coded to multiple tasks—for example, an activity coded to both argumentation and close reading, or to both close reading and disciplinary knowledge focus. Table 7 shows the percentage of teachers who allocated time to each task co-occurrence, and the mean percent of time that each task co-occurred with other tasks. Because some tasks occurred for greater duration than others, relationships among tasks are asymmetrical. For example, argumentation was relatively rare. Disciplinary knowledge focus tasks, on the other hand, were relatively common. Consequently, the 347 minute overlap between argumentation and disciplinary knowledge focus represented an average of 59% of the 519 minutes teachers allocated to argumentation tasks, but only 13% of the 2,015 minutes teachers allocated on average to tasks with a disciplinary knowledge focus.

Literacy tasks generally had a disciplinary knowledge focus. As shown in Table 7, three-quarters of teachers who allocated time to argumentation simultaneously allocated at least some of that time to disciplinary knowledge focus tasks. Argumentation was co-coded with disciplinary knowledge focus 59% of the time. Nearly three-quarters of all teachers who devoted time to close reading simultaneously allocated time to tasks with a disciplinary knowledge focus. Nearly half of all close reading tasks were co-coded with disciplinary focus. Similarly, every

teachers who allocated time to cross-textual analysis devoted much of that time to disciplinary knowledge focus. Cross-textual analysis was co-coded with disciplinary knowledge focus 89% of the time. On the other hand, fact acquisition and disciplinary knowledge focus tasks were infrequently co-coded with any literacy task. It is perhaps not surprising that tasks focused on fact acquisition did not engage students in complex literacies. It is more noteworthy that a minority of teachers assigned disciplinary knowledge and literacy tasks simultaneously, and that time allocated to disciplinary knowledge focus tasks was only rarely co-coded to close reading, argumentation, or cross-textual analysis. In other words, while these complex literacy tasks generally had a disciplinary knowledge-building focus, the converse was not the case: only a small percentage of the considerable amount of time allocated to tasks focused on overarching disciplinary concepts, themes, and frameworks engaged students in the complex literacy practices that are the focus of our study.

Argumentation was most likely to co-occur with cross-textual analysis—arguably the most challenging argumentation task. A majority of teachers who allocated time to argumentation simultaneously allocated at least some of that time to cross-textual analysis. Nearly a third of the time allocated to argumentation was co-coded with cross-textual analysis; cross-textual analysis co-occurred more than three times as often with argumentation as with any other task. The relatively frequent co-occurrence of these two tasks is especially noteworthy since teachers devoted scant time in general to either argumentation or cross-textual analysis (an average of 10% and 6% of class time, respectively). Also noteworthy is the finding that over two-thirds of argumentation and cross-textual analysis was not co-coded to close reading, indicating that these tasks rarely engaged students in reading for understanding. It is possible that while these argumentation and cross-textual analysis tasks did not engage students

simultaneously in close reading, they were informed by close reading that occurred in prior, unobserved lessons.

Content Delivery and Grouping

We also examined relationships between grouping and content delivery and task codes. In particular, we were interested in opportunities teachers provided for students to engage in activities and tasks in individual and peer-led settings that afford greater autonomy for intellectual work and in a whole class setting that potentially both limits student autonomy and affords opportunities for teacher support. These findings are shown in Table 8 and 9.

Content delivery was strongly related to grouping. As illustrated in Table 8, teacher delivery of content almost always took place in a whole class setting. In contrast, students worked with text in all grouping configurations, although a greater percentage of time allocated to working with text occurred in peer-led groupings (pair and small group combined) than when students worked individually or as whole class.

Task and Grouping

We also found a strong relationship between task type and grouping. As shown in Table 9, close reading and argumentation occurred most frequently during whole class instruction. In contrast, two-thirds of the time allocated to cross-textual analysis occurred in partnerships or small groups even though those grouping configurations combined comprised less than a third of class time on average. Disciplinary knowledge focus and fact acquisition tasks occurred most frequently and for the longest duration during whole class instruction.

Disciplinary Differences in Opportunity to Learn

Our analysis also examined disciplinary differences in opportunities teachers provide for students to engage in tasks and activities central to disciplinary and argumentative literacy. Our

findings related to these subgroups are based on small sample sizes, particularly in the case of science where we observed only 9 teachers (although the proportion of science teachers in our sample mirrors the nationally representative sample, as shown in Table 1). We therefore present these findings as interesting but tentative, and as potential fodder for future research.

Content delivery. As shown in columns 3 to 8 of Table 3, content delivery mode showed considerable variation across disciplines. While the vast majority of lessons across content areas included both teacher delivery of content and working with text, teachers spent considerably more class time delivering content in science (26%) and history (26%) compared with ELA (15%). Similarly, students were asked to work with text in almost all classrooms regardless of discipline. However, while ELA teachers devoted two-thirds of class time to working with text in lessons in which "reading and discussion plays a central role," students in science worked with text 42% of the time. History teachers allocated an intermediate amount of time to working with text (51%).

Task. Tasks related to text-based argumentation with multiple sources—argumentation, close reading, and cross-textual analysis—showed the greatest variation across disciplines. As shown in Table 4, columns 3 through 8, significantly more ELA teachers allocated time to close reading compared with history teachers, and a somewhat higher percent of ELA teachers allocated time to argumentation. A higher percent of history teachers allocated time to cross-textual analysis. In terms of duration, argumentation and cross-textual analysis both occurred for a greater percent of class time in history. History teachers allocated 17% of class time to argumentation and 11% of class time to cross-textual analysis tasks compared with 10% and 6% for ELA teachers. On the other hand, ELA teachers allocated twice as much time to close reading (36%) as history teachers (17%). Importantly, no science teacher allocated time to

argumentation, close reading, or cross-textual analysis—even briefly. The majority of teachers in all three disciplines devoted considerable time to tasks with a disciplinary knowledge focus. History teachers allocated the highest percent of class time to disciplinary knowledge tasks (70%), followed by science (60%). and ELA (49%). In addition, the majority of teachers allocated time to fact acquisition. However, science and history teachers devoted about a quarter of class time to fact acquisition tasks (25% and 23%, respectively), while ELA teachers allocated only 11% of class time to fact acquisition.

Relationship between content delivery and task. We also found disciplinary differences in what students were asked to do as a function of content delivery mode. These results are shown in Table 6. Not surprisingly, literacy tasks almost always occurred more frequently in the context of working with text. However, we found disciplinary differences in teachers' allocation of time to various literacy tasks in the context of working with text. Specifically, ELA teachers devoted 50% of the time allocated to working with text to close reading tasks, but allocated scant time to argumentation (12%) or cross-textual analysis (7%). History teachers allocated more than twice as much time to argumentation and cross-textual analysis as ELA teachers, but assigned half as much close reading. As noted earlier, no science teacher provided opportunities for students to engage in argumentation, close reading, or cross-textual analysis task, either when they delivered content or when students worked with text. We also found disciplinary differences in the relationship between content delivery mode and tasks with a content learning focus, with science as the outlier once again. English language arts and history teachers allocated considerably more time to tasks with a disciplinary knowledge focus when students worked with text than when content was delivered by the teacher. In the case of history, teachers allocated nearly twice as much time to disciplinary knowledge focus tasks when

students worked with text than when they lectured or explained content. Science teachers devoted a high percentage of time to tasks with a disciplinary knowledge focus whether content was delivered by the teacher or through working with text. Among ELA and history teachers, fact acquisition tasks characterized by recall or rote learning with little or no opportunity for sense-making took place a higher percent of the time when content was delivered by teachers than when students worked with text. Again, history teachers demonstrated the greatest differentiation, devoting 43% of the time they delivered content to fact acquisition, but only 15% of the time working with text to fact acquisition tasks. In contrast to ELA and history teachers, science teachers allocated a similar percent of class time to fact acquisition whether content was delivered by the teacher (26%) or through working with text (28%).

Task co-occurrence. Finally, we also looked at task co-occurrence for ELA and history teachers.[6] We found different patterns of duration of task co-occurrence in ELA and history classrooms. In history, a greater percent of time allocated to disciplinary knowledge focus tasks was co-coded to argumentation (29%) and cross-textual analysis (21%) compared with ELA (8% and 5%, respectively). On the other hand, in ELA, disciplinary knowledge focus tasks were nearly twice as likely to involve close reading compared with history (37% versus 19% of the time, respectively). While ELA teachers allocated less time overall to cross-textual analysis compared with history teachers, when ELA teachers did assign cross-textual analysis, it more

[6] Because no science teachers allocated time to argumentation, close reading, or cross-textual analysis, our findings related to disciplinary differences in task co-occurrence focus on ELA and history. Here we summarize the disciplinary differences that emerged from this analysis.

frequently co-occurred with argumentation, compared with history (50% versus 34% of the time).

Grouping. Opportunities to work in various grouping configurations were similar across disciplines (see Table 5, columns 3 through 8). However, we found disciplinary differences in grouping configurations associated with various content delivery and task types. As shown in Table 10, while teachers across the three disciplines almost always lectured and explained in a whole class setting, science teachers allocated more than twice as much time to individual work with text, and considerably less time to whole class work with text compared with ELA and history teachers.

Tasks were associated with different grouping patterns in ELA and history. As shown in Table 11, history teachers distributed instruction more equally across grouping configurations, while ELA teachers allocated a greater percent of time to whole class instruction. This was generally true across tasks. As a result, history teachers provided more opportunity for students to engage in peer-led groups, while the majority of time allocated to both literacy and content learning tasks by ELA teachers took place during whole class instruction. The exception to this was cross-textual analysis: ELA teachers assigned half of cross-textual analysis to peer-led groups and just over a third to whole class instruction. Compared with ELA and history teachers, science teachers more frequently asked students to work individually on tasks with a disciplinary knowledge and fact acquisition focus, and spent a lower percent of time allocated to these content learning tasks overall working as a whole class.

Discussion

The goal of this study was to describe instructional practices related to text-based argumentation with multiple sources in order to inform the design of interventions addressing the

literacy focus of multiple current reform efforts. To this end, we selected 34 teachers for observation on the basis of educational leaders' perceptions of best practice. By studying highly regarded teachers with expertise in their disciplines, we aimed to identify promising practices and surface stubborn obstacles to literacy reform. In light of this, it came as a surprise that even in this scenario, teachers provided few opportunities for students to engage in the complex literacy practices they need to meet the challenges presented by current reforms and by college and 21st century careers. Our findings thus underscore how deeply entrenched the instructional practices are that shape students' opportunity to learn—practices that privilege content knowledge delivery and eschew complex literacy tasks that are equally important to supporting student mastery of central disciplinary practices.

Findings from this existential description study fill in important gaps in our understanding of the processes and groundwork necessary for increasing opportunities for students to engage in complex literacy practices in middle and high school subject area classrooms. Key findings and insights have implications for both the instructional design of text-based argumentation with multiple sources and for the type of teacher professional development required for even highly regarded teachers to enact these instructional designs. We address these two issues in turn.

Implications for the Instructional Design

Strengthening the Role of Text and Reading in Content Area Classrooms

In some ways, findings from our study paint a brighter picture of reading and text use than other recent studies of content area literacy instruction (Vaughn et al., 2013). Unlike research that identifies lecture as the predominant form of instruction (ACT, Inc., 2006; Fisher, 2009), teachers in our study allocated three times as much class time to working with text than to

delivering content, and students spent a majority of class time working with text. These findings were likely influenced both by the selective nature of our sample and by observing lessons in which reading and discussion played a central role. Our findings therefore offer what could well be a best-case scenario of literacy opportunity to learn in middle and high school subject areas. Nonetheless, while working with text was associated with a greater variety of tasks compared with teacher delivered content, it was no guarantee of opportunity to engage in complex literacies: the majority of time allocated to working with text focused on disciplinary knowledge activities that did not actively engage students in making sense of texts. Research suggests that the kind of reading and reasoning required for knowledge construction involves conscious text processing where

> lack of understanding is recognized; alternative interpretations are created; judgement is suspended until sufficient evidence is available for choosing among the alternatives; available information is used as evidence; new information is sought as further evidence; judgements are made of the quality of interpretations, given the evidence; and interpretations are modified and discarded based upon these judgements and, possibly, alternative interpretations are proposed… (Norris & Phillips, 2003, p. 229).

Thus, even when teachers in our study asked students to work with text, in the absence of close reading, it is unlikely that they were able to form the kind of principled representation of text required for deep disciplinary learning (Pearson et al., 2010; CCAAL, 2010; Kamil et al., 2008; Langer, 1995; Norris, Phillips, & Osborne, 2008; Wineburg, 1998). These findings suggest that instructional design for evidence-based argumentation should emphasize the role of close reading, and provide sufficient time and support for meaning-making from text.

Using multiple sources. Disciplinary literacy and argumentation often explicitly involves synthesizing multiple sources of evidence (Afflerbach & Cho, 2009; Bain, 2006; Monte-Sano, 2011; VanSledright, 2002; Wineburg, 2001). The high co-occurrence of cross-textual analysis and argumentation in this study supports the notion that argumentation emerges in the presence of multiple perspectives. Yet our study found that students were rarely provided opportunities to engage in cross-textual analysis. This finding is consistent with research documenting that students in many content area classrooms read from a single text (Harms & Yager, 1981; Lee, 2013; Nokes et al., 2007; Reisman, 2011), and suggests that this widespread focus on single source reading potentially limits the development of students' reasoning skills related to identifying and weighing alternative positions to reach a reasoned conclusion (Braten et al., 2011; Kuhn & Crowell, 2011; Kuhn, Wang, & Li, 2011; Nussbaum, Kardash, & Graham, 2005; Osborne, 2010).

Of additional concern, we found a dearth of instructional support for constructing knowledge from multiple sources. The vast majority of cross-textual analysis tasks occurred absent the kind of close reading and time required for comprehending single, let alone multiple texts. While it is possible that students in these lessons engaged in close reading of these texts in earlier unobserved lessons, our findings suggest that teachers may not appreciate that cross-textual analysis requires close reading characterized by "reading sections of different texts *recursively*, as required to solve problems across multiple texts" (Afflerbach & Cho, 2009, p. 80, italics added). In addition, the majority of time allocated to cross-textual analysis occurred when students worked with partners or small groups. That this challenging literacy task occurred primarily in peer-led groups suggests that teachers may misjudge the level of instructional support required for cross-textual analysis—although, alternatively, it may reflect teachers'

recognition of the need for peer support to grapple with multiple texts. Regardless of the reason, even on those rare occasions when students did have an opportunity to read multiple sources, they often lacked the instructional support or time required for readers to construct knowledge from multiple sources and to engage in multiple source argumentation. Previous research indicates that "systematic efforts to teach intertextual strategies are mostly conspicuous by their absence" (Bråten et al., 2014, p. 21). Our finding that instruction in multiple source reading is likewise rare in classrooms of highly regarded teachers underscores the ubiquity of this absence, and indicates that instructional designs to support complex literacy practices need to strengthen opportunity and instructional support for multiple source literacy.

Building in the building blocks of argumentation. Our findings indicate that opportunities for students to engage in elements of text-based argumentation with multiple sources are rare, even in lessons taught by well-regarded teachers in which reading and discussion play a central role. It is troubling that much reading in these classrooms occurred absent argumentation, given our broad definition of argumentation as tasks that require students to make a claim or assertion that is supported by evidence or reasons that connect to the claim in a principled way—whether explicitly identified as "argumentation" or not by the teacher and whether resulting in a tangible product or not. In light of the significant time devoted to disciplinary knowledge focus tasks in these lessons, the dearth of text-based argumentation with multiple sources suggests that instruction focused on overarching frameworks, concepts, and themes of the discipline often occurred without engaging fundamental literacy processes required for disciplinary knowledge construction, such as asking students to consider alternative interpretations or make judgments based on available evidence (Norris & Phillips, 2003; Kuhn & Crowell, 2011).

Despite its relative infrequency, this study supports the suggestion that argumentation can potentially serve as a lever to shift the kinds of literacy learning opportunities provided to students. The observations reported here occurred preliminary to designing an intervention focused on text-based argumentation with multiple sources. Yet when argumentation was observed, it occurred with higher than average rates of close reading that encourages the disposition and understanding that reading means comprehending, interpreting, analyzing, and critiquing texts. Perhaps most interesting was the frequent co-occurrence of argumentation and cross-textual analysis, as both of these activities were rare in the data set. The reciprocity among argumentation, close reading, and cross-textual analysis suggests that these may potentially comprise "building blocks" of argumentation literacy. Furthermore, the reciprocal relationship among these building blocks suggests that there are multiple entry-points for introducing and supporting text-based argumentation from multiple sources in classrooms. Further research is needed to test these hypotheses, and to determine how to sequence these building blocks to greatest effect.

On the other hand, many tasks coded as argumentation in this study occurred absent close reading. This finding has sparked our investigation into the characteristics and affordances of argumentation tasks that incorporate close reading and those that do not (Litman, Marple, & Greenleaf, 2016b). We believe these contrasting contexts have much to reveal about the complexity of teaching and learning evidence-based argumentation. Furthermore, because close reading assignments *per se* do not guarantee that students will either engage or make sense of challenging disciplinary materials, there is a need for additional research that identifies the kinds of instructional support for close reading that increases engagement and learning from text-based argumentation with multiple sources.

Integrating literacy and disciplinary knowledge. Perhaps most significant among implications for teaching and learning high-levels of literacy, our analysis challenges the false dichotomy between content area literacy and disciplinary literacy and the notion that attention to literacy skills and processes competes with content learning. In fact, argumentation literacy tasks offered by these highly regarded teachers were associated with increased levels of disciplinary knowledge focus. Even close reading focused on negotiation of meaning often supported a disciplinary knowledge focus. Our findings thus demonstrate that complex literacies can be employed in the service of disciplinary knowledge building. We argue that instructional designs should leverage this synergy between literacy and disciplinary knowledge building and emphasize text-based argumentation from multiple sources as a tool for creating knowledge, deepening understanding, and building disciplinary thinking and reasoning skills (Asterhan & Schwarz, 2016; Cavegnetto, 2010; Osborne, 2010).

Shifting the Roles of Teachers and Students in Learning

We found that students' opportunity to learn argumentation from multiple sources is related to the extent to which teachers share responsibility for the intellectual work of learning with students. While opportunities to work with text did not guarantee that students would engage in the complex literacy practices that are the focus of this study, working with text opened the door to these literacy OTL. In contrast, across classrooms, teacher lecture and explanation appeared to have a dampening effect on argumentation literacy: evidence-based argumentation, close reading, and cross-textual analysis were essentially nonexistent when teachers delivered lesson content. Rather, teacher delivery of content was almost exclusively focused on teaching content knowledge—both fact acquisition and disciplinary knowledge focus tasks occurred a high percentage of the time when teachers delivered content. Furthermore, while

teacher delivery of content almost always took place in a whole class setting, the mode of content delivery rather than the grouping structure would appear to be the salient variable in this relationship—although argumentation almost never occurred when teachers delivered content, it did occur in whole class instruction that involved working with text. It is likely that teacher lecture and explanation, as a normative classroom routine that positions teachers as authorities and students as consumers of knowledge, is incompatible with the tentative nature of disciplinary knowledge and reasoning that is the basis for argumentation (Bain, 2006).

Addressing Disciplinary Variation in OTL

Our findings also suggest that discipline is a significant mediator of opportunity to engage in text-based argumentation with multiple sources. While we found interesting and pronounced disciplinary differences related to content delivery mode, tasks, and grouping in observed lessons, we present these findings as tentative and in need of additional research. Specifically, disciplinary variations are based on small sample sizes, particularly in the case of science teachers—which made up 9 out of the 34 teachers we observed. While science teachers allocated over 40% of class time to working with text, as per our request to see lessons in which reading and discussion played a central role, no science lesson included argumentation, close reading, or cross-textual analysis task. Instead, science lessons focused on content learning, allocating the greatest percentage of time to tasks with a disciplinary knowledge and fact acquisition focus. Furthermore, time allocated to fact acquisition and disciplinary knowledge focus tasks was similar whether science students worked with text or teachers delivered content. Findings from this study thus suggest that instruction in science is narrowly focused on acquiring content, even in science classrooms taught by teachers with a reputation for effective disciplinary instruction. Although students in these classrooms frequently worked with text, they never

engaged in close reading or disciplinary argumentation to construct, critique, vet, or verify ideas or worked with multiple sources to reconcile differing possible explanations, contradictory information, or dubious science. While the purpose of our research is not to establish whether, when, or how instruction should focus on fact acquisition versus more cognitively demanding tasks, research on STEM teaching and learning suggests that time spent on topic coverage and knowledge mastery is associated with decreased student achievement, whereas time spent on inquiry-oriented tasks is associated with increased achievement (Desimone, Smith, & Phillips, 2013). The fact that highly regarded science teachers devoted over a quarter of class time to fact acquisition and no time to text-based inquiry practices signals just how deeply ingrained the narrow focus on content mastery is among science teachers. While it may be tempting to attribute these practices to factors inherent in the discipline of science, studies of college and career readiness suggest that secondary science teachers emphasize content over the disciplinary literacy and reasoning skills most valued by post-secondary educators (ACT, Inc., 2009, 2013b) and by scientists themselves (Norris et al., 2008). Furthermore, while research suggests that argumentation tasks themselves are unlikely to result in the development of substantive new knowledge (von Aufschnaiter, Erduran, Osborne, & Simon, 2008), argumentation around text has the potential to deepen disciplinary knowledge and reasoning in science, as well as in other disciplines (Chinn & Anderson, 1998; Kerlin, McDonald, & Kelly, 2010; Reisman, 2011). In addition to fostering fundamental and disciplinary literacy skills that are a constitutive feature of science (Norris & Phillips, 2003), argumentation can therefore potentially contribute to the learning that secondary teachers value most, students' acquisition of science content. While our science sample was small, the fact that these findings are consistent with a wider body of research (e.g., ACT, Inc., 2009, 2013b; Smith & Ochoa-Angrino, 2012; Valencia, 2014)

indicates that a particular focus on transforming literacy instruction in science may be warranted, particularly in light of the newly adopted Next Generation Science Standards' focus on science literacy and argumentation (NGSS Lead States, 2013).

In comparison with science, history and English language arts lessons provided a greater balance between content learning and literacy skills and processes, and more frequent argumentation literacy opportunities to learn. This was particularly true in history, where 17% of class time was allocated to argumentation. The finding that a greater percent of time devoted to building disciplinary knowledge was co-coded to argumentation and cross-textual analysis in history—and that a greater percent of history teachers contributed to these co-occurrences—suggests that a significant subset of these history teachers with reputations for supporting disciplinary literacy have taken up instruction that engages students with argumentation and multiple documents, an essential practice for learning about and interpreting the past (De La Paz & Felton, 2010; Monte-Sano, 2011; Reisman, 2012). Nonetheless, our findings also indicate that argumentation in history frequently occurs absent the kind of close reading and cross-textual analysis necessary for students to engage in productive historical argumentation that "gives voice to a set of arguments that lead in opposing directions and hence require an integrative weighing in order for a conclusion to be reached" (Kuhn and Crowell, 2011, p. 546). Similarly, while ELA teachers provided significant time for close reading of single sources, limited opportunities for argumentation and cross-textual analysis potentially compromise the development of students' literary understanding. Based on the central role of intertextuality in literature reading, Hartman (1995) argues that models of reading and reading instruction based on reading single texts are overly simplistic and narrow: "Any textual arrangement can be opened and reexamined by merely intersecting additional texts on a field of discourse play. It is this vulnerability to

openness and reflexivity, I believe, that allows readers to develop and grow more fully" (p. 557). Thus, our findings related to disciplinary variation suggest that *norms of instruction* vary across the subject areas and may carry greater weight than *disciplinary norms* of evidence, reasoning, and discourse—impacting the kinds of opportunities teachers provide for students to engage in literacy practices central to disciplinary knowledge building. Our finding that teachers who are highly regarded by educational leaders allocate scant time and attention to developing the literacy and reasoning processes and skills integral to their disciplines, suggests that professional development (for teachers and educational leaders alike) must be a partner to instructional design in building teachers' understanding and capacity for teaching literacy—including disciplinary literacies—alongside content (Anderson, Harrison, & Lewis, 2012; Desimone, Smith, & Phillips, 2013; Heller & Greenleaf, 2007; Rose, 2015).

Implications for Teacher Professional Development

Teachers who participated in this study were selected because we believed their literacy implementation held some promise to inform our understanding of how to support evidence-based argumentation in English language arts, history, or science. Opportunities to learn presented in these lessons thus may not represent literacy learning opportunities in many content area classrooms. In addition, data collection occurred the year before states began implementing the CCSS. It is possible that there have been shifts in instruction since then. Nonetheless, while these teachers demonstrated an unusual level of professionalism as evinced by a willingness to have researchers come into their classrooms, we believe that what we learned from them can inform our understanding of what might be needed to move otherwise successful teaching practices to the level envisioned by the CCSS and other literacy reforms. A robust body of literature on teacher change indicates that traditional conceptions of knowledge, teaching, and

learning may cause even highly motivated teachers to unconsciously adapt curricular innovations so that they conform to existing beliefs and practices (Gresalfi, Barnes, & Cross, 2012; Guskey & Huberman, 1995; Langer, 1998; McNeill, 2009; Reisman, 2011; Remillard, 2005; Rogers, Cross, Gresalfi, Trauth-Nare, & Buck, 2011; Simon, Erduran, & Osborne, 2006; Spillane, Reiser, & Reimer, 2002). Furthermore, although selective, we reason that what we learned in these classrooms has implications for what is likely on offer in classrooms taught by more typical teachers. As a description of well-regarded teachers' current practices related to argumentation literacy in the disciplines, our findings underscore the urgent need for teacher professional development to support the high levels of literacy learning envisioned by current educational reforms. Furthermore, measuring the effectiveness of these future professional development efforts depends on establishing baselines for opportunities to learn that are the focus of this study.

Our findings indicate that the kinds of preparation offered to teachers may not be adequate to shift the pervasive emphasis on content mastery above disciplinary reading and reasoning processes (ACT, Inc., 2013b; Porter et al., 2011), even among teachers who are otherwise skilled in fostering subject area learning. Integrating literacy into content area classrooms, in particular, may depend on providing the highest quality PD to counter ubiquitous content delivery practices (Cobb, Jackson, Smith, Sorum, & Henrick, 2013; Wilson, 2013). Research indicates that secondary teachers typically undervalue the teaching of reading and reasoning processes (ACT, Inc., 2013a, 2013b). Findings from the ACT National Curriculum Survey (2009; 2013b) suggest that high schools are not focused on teaching the essential literacy knowledge and skills needed for college and career readiness. Despite decades of research and reform aimed at increasing time devoted to teaching adolescent literacy skills (Biancarosa &

Snow, 2004), explicit instruction in academic and disciplinary reading practices is still the exception rather than the rule (ACT, Inc., 2009, 2013a). Indeed, observational studies confirm that literacy instruction is rare, even in English language arts (Grossman et al., 2010). This study extends previous findings related to literacy OTL by demonstrating that even highly regarded teachers with reputations for supporting disciplinary literacies provide scant support for the development of the complex literacies required for college and career readiness. This suggests that even otherwise effective teachers need help to re-envision and reshape curriculum and instruction to support the skills and dispositions instantiated in influential literacy reforms such as the Common Core State Standards and Next Generation Science Standards.

Limitations of the Study

We know that the instructional opportunities teachers create for students constrain what students have the opportunity to learn. In this paper, we have attempted to lay bare existing promising and problematic instructional practices that we believe should inform instructional design projects related to text-based argumentation from multiple sources. Nonetheless, in focusing on opportunities to learn presented by the teacher, our research presents only half the picture. Our existential description did not include the kind of analysis that would allow us to address the processes through which students acquire argumentation literacy through participation in argumentative dialogue with teachers and classmates—the heart of a sociocultural perspective. Thus, while our decisions about what dimensions of opportunity to learn to target are based on extant research about instruction that influences student learning outcomes given what was feasible within the limitations of our study, future studies are needed to understand how the different opportunities to learn influence student learning.

Conclusions

In core disciplines where text plays a central role in knowledge building, reading is the primary source of data that informs serious disciplinary argumentation. While well-designed argumentation tasks can potentially help students build new knowledge, tasks alone are not sufficient for success in disciplinary argumentation. Studies of argumentation underscore the reciprocity between argumentation and reading: reading can inform argumentation and the construction of disciplinary argument (Hillocks, 2010; Schwarz & Asterhan, 2010) and texts provide a vital space for the enactment of interactive argumentation as readers engage in the construction of meaning (Chinn & Anderson, 1998). Disciplinary learning and reading are thus inextricably linked.

Our study adds additional weight to this assertion by challenging the persistent perception among content area teachers that literacy instruction occurs at the expense of content learning opportunities. Our results speak forcefully to the fact that literacy opportunity to learn supports a disciplinary focus. Yet teachers in this study often provided students with limited opportunity to engage in the kinds of literacy tasks demanded by current reform initiatives. This was unexpected, given that our study focused on teachers whose instruction was reported to support high levels of disciplinary literacy and learning. While our observations of these teachers documented more frequent use of text than previous studies of content area instruction, their centrality to the authentic intellectual work of disciplinary reading and learning is greatly diminished from what we would view as ideal—or even rudimentary—if we are to achieve the vision of the new standards.

As we are finding in our continued work with teachers, these tasks are challenging for both teachers and students. They require a transformation in classroom culture that moves the intellectual work from the teacher to the students. This means relinquishing the ubiquitous

practice of providing content to students through power point, handouts, and lecture in favor of supporting students to develop their own disciplinary understandings by utilizing the literacy practices of the discipline, in dialog with disciplinary texts and with each other. To make this shift requires that significant material and intellectual supports be put in place for students *and for teachers*. This existential descriptive study points the way toward needed elements for subsequent instructional design, and thus provided the basis for current ongoing design based research collaborations with teachers. As indicated here and confirmed in our ongoing work, many subject area teachers need sustained professional development, effective instructional routines for engaging students in purposeful and productive intellectual work with texts, material resources that model and support cross-text disciplinary argumentation, and sustained support to reshape their curriculum and instruction in the intensity required to support the advanced literacy skills and dispositions envisioned by current educational reforms such as the Common Core State Standards (NGA & CCSSO, 2010). This is the vital work we have subsequently undertaken, informed by this descriptive study of students' opportunities to learn – designing effective opportunities to learn and resources for teachers, along with the ongoing support that will be necessary, to develop capacity for teaching and learning text-based argumentation with multiple sources in the disciplines.

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Table 1. Teacher Characteristics

Demographic Variable	Categories	Observed Teachers (N=34) % (n)	Nationally Representative Sample (2011) %
Gender			
	Female	76 (26)	65
	Male	24 (8)	35[7]
Total years teaching			
	≤ 5 years	17 (5)	26
	6-14 years	60 (18)	32
	≥15 years	23 (7)	40
Percent with Master's degree			
	Master's degree	80 (24)	55
Teaching certification			
	None[8]	10 (3)	16
	Elementary[9][10]	30 (9)	--
	Single subject	63 (19)	--
Subject(s) taught/observed[11]			
	ELA	44 (15)	40[12]
	Social studies/history	35 (12)	28
	Science	26 (9)	32
Grade(s) taught/observed			
	6-8	38 (13)	49[13]
	9-12	71 (24)	51
Number lessons observed			
	1-2	74 (25)	--
	3-5	26 (9)	--
Percent free/reduced lunch			
	Average % free/reduced lunch	48	50

Note. Based on 2011 statistics from Feistritzer (2011), Goldring, Gray, & Bitterman (2013) and U.S. Department of Education, National Center for Education Statistics (2013).
Note. Data is missing for total years teaching, degree, and certifications for four teachers. Consequently, percentages for these three variables are based on N's of 30. All other percentages are based on N's of 34.

[7] Averaged across middle and high school (Goldring et al., 2013). No middle school teachers in our sample were male.

[8] For national sample, percentage of "alternatively prepared teachers" (Feistritzer, 2011).

[9] In Illinois, Type 03 (elementary) teaching certificates authorize the holder to teach grades K -9. In California, Elementary (Multiple Subject) Teaching Credentials authorize the holder to teach in self-contained classrooms in elementary schools. However, a teacher authorized for multiple subject instruction may also be assigned to teach in any self-contained classroom (preschool, K-12, or in classes organized primarily for adults) and may serve in a core or team teaching setting.

[10] One teacher held both elementary/multiple subject and single subject credentials.

[11] Two teachers were observed teaching both ELA and history.

[12] Based on 100% of ELA, social studies/history, and science teachers (Feistritzer, 2011) (does not include other content areas).

[13] For national sample, grade level band is 5-8.

Table 2. Characteristics of Observed Lessons

	Discipline			
	ELA (N=34)	History (N=24)	Science (N=13)	Total (N=71)
Grade level				
11-12	13	8	1	22
9- 10	10	10	8	28
6-8	11	6	4	21
Total	34	24	13	71

Table 3. Percent Teachers and Mean Percent Class Time Teachers Allocated to Various Content Delivery Modes

	All Teachers (N=34) 3813 minutes		Discipline					
			ELA (n=15) 1866 minutes		History (n=12) 1338 minutes		Science (n=9) 609 minutes	
	% Teachers	Mean % Time	% Teachers	Mean % Time	% Teachers	Mean % Time	% Teachers	Mean % Time
Content delivery mode								
Teacher	91	20	80	15	100	26	89	26
Media	21	1	20	1	25	2	11	0
Working with text	97	55	100	66	92	51	100	42

Note. Duration across Content Delivery and Task categories does not add up to 100% of total lesson time for several reasons: students sometimes learned lesson content in ways other than teacher lecture/explanation, audio/video materials, or text—e.g., through labs or simulations; time allocated to housekeeping and giving directions did not involve any content delivery; and students occasionally learned content in multiple ways—e.g., working with text while listening to an audio-recording of a play. Similarly, because students were often asked to perform multiple tasks during a single segment, percentage time across Task categories does not add up to 100%.

Note. Two teachers were observed teaching both ELA and history. They appear in both columns. Consequently, the sum of ELA, history and science teachers adds up to two more than the total number of teachers. To calculate the percentage of class time allocated to various content delivery modes and tasks for these teachers, we used the duration of their ELA observations for ELA and the duration of their history observations for history.

Table 4. Percent Teachers and Mean Percent Class Time Teachers Allocated to Various Task Types

	All Teachers (N=34) 3813 minutes		Discipline					
			ELA (n=15) 1866 minutes		History (n=12) 1338 minutes		Science (n=9) 609 minutes	
	% Teachers	Mean % Time	% Teachers	Mean % Time	% Teachers	Mean % Time	% Teachers	Mean % Time
Task type								
Argumentation	35	10	47	10	42	17	0	0
Close reading	56	21	87	36	58	17	0	0
Cross-textual analysis	29	6	33	6	50	11	0	0
Disciplinary knowledge	94	53	93	49	83	70	100	60
Fact acquisition	71	17	60	11	75	23	78	25

Note. Duration across Content Delivery and Task categories does not add up to 100% of total lesson time for several reasons: students sometimes learned lesson content in ways other than teacher lecture/explanation, audio/video materials, or text—e.g., through labs or simulations; time allocated to housekeeping and giving directions did not involve any content delivery; and students occasionally learned content in multiple ways—e.g., working with text while listening to an audio-recording of a play. Similarly, because students were often asked to perform multiple tasks during a single segment, percentage time across Task categories does not add up to 100%.

Note. Two teachers were observed teaching both ELA and history. They appear in both columns. Consequently, the sum of ELA, history and science teachers adds up to two more than the total number of teachers. To calculate the percentage of class time allocated to various content delivery modes and tasks for these teachers, we used the duration of their ELA observations for ELA and the duration of their history observations for history.

Table 5. Percent Teachers and Mean Percent Class Time Teachers Allocated to Various Grouping Configurations

	Discipline							
	All Teachers (N=34) 3813 minutes		ELA (n=15) 1866 minutes		History (n=12) 1338 minutes		Science (n=9) 609 minutes	
	% Teachers	Mean % Time	% Teachers	Mean % Time	% Teachers	Mean % Time	% Teachers	Mean % Time
Grouping configuration								
Individual	88	16	87	16	83	11	89	20
Pairs	56	11	53	10	58	11	56	13
Small groups	59	18	53	14	67	19	44	20
Whole class	97	51	93	56	100	51	100	45

Table 6. Mean Percent Time Teachers Allocated to Various Tasks When Content was Delivered by the Teacher and by Working With Text

	Content Delivery Mode							
	Teacher				Working with Text			
	Total 733 min	ELA 306 min	History 249 min	Science 178 min	Total 2284 min	ELA 1184 min	History 857 min	Science 244 min
Task								
Argumentation	3	2	6	0	14	12	27	0
Close reading	6	14	1	0	29	50	23	0
Cross-textual analysis	3	2	6	0	8	7	18	0
Disciplinary knowledge focus	55	54	37	75	65	58	73	61
Fact acquisition	28	18	43	26	12	6	15	28

Note. Min=minutes; Total=Total lessons; ELA=English language arts

Note. Duration and percentage of time across categories of Content Delivery do not add up to 100 percent of total lesson time: time allocated to housekeeping or giving directions did not involve any content delivery, and students occasionally learned content in multiple ways—e.g., working with text while listening to an audio-recording of a play. Likewise, because students were often asked to perform multiple tasks simultaneously, percentage time across Task categories does not add up to 100 percent.

Table 7. Mean Percent Time Each Task Co-Occurred With Other Tasks

	Task				
	Argumentation	Close reading	Cross-textual analysis	Disciplinary knowledge	Fact acquisition
Task	Mean percent time (percent teachers) that tasks co-occurred				
Argumentation (519 min)	100 (35)	23 (50)	29 (58)	59 (75)	0 (0)
Close reading (1050 min)	11 (32)	100 (56)	3 (16)	46 (74)	7 (16)
Cross-textual analysis (284 min)	42 (70)	26 (30)	100 (29)	89 (100)	4 (10)
Disciplinary knowledge focus (2015 min)	13 (28)	20 (44)	8 (31)	100 (94)	11 (44)
Fact acquisition (599 min)	0 (0)	4 (13)	2 (4)	33 (58)	100 (71)

Note. Because some tasks occurred more frequently and for greater duration than others, relationships are asymmetrical. For example, argumentation was relatively rare, with only 519 minutes across observed lessons allocated to argumentation tasks. Tasks with a disciplinary knowledge focus, on the other hand, were relatively common, with 2015 minutes allocated to disciplinary knowledge focus. Consequently, the 347 minute overlap between argumentation and disciplinary knowledge focus represents 59% on average of the 519 minutes allocated to argumentation tasks, but only 13% on average of the 2,015 minutes allocated to disciplinary knowledge focus.

Note. Read across the table—e.g., 23 percent of argumentation tasks on average co-occurred with close reading, 29 percent of argumentation tasks on average co-occurred with cross-textual analysis, 59 percent of argumentation tasks on average co-occurred with disciplinary knowledge-building, etc.

Note. As described in the data analysis section, we used per teacher percent time to calculate mean percent time variables. Calculations for mean percent time are based on those teachers who allocated time to a particular task. For example, the denominator for calculating the mean percent time argumentation co-occurred with close reading was 12, the number of teachers who allocated time to argumentation.

Note. For task co-occurrences, percent teachers represents the percent of teachers who allocated time to a particular task co-occurrence. Calculations for percent teachers are based on those teachers who allocated time to a particular task. For example, the denominator for calculating the percent teachers contributing to the percent time argumentation co-occurred with close reading was 12, the number of teachers who allocated time to argumentation.

Note. In contrast to calculating percent teachers for task co-occurrences, percent teachers for each task represents the percent of the total number of 34 teachers who allocated time to that task, also shown in Table 4. For example, the argumentation x argumentation cell shows that 35% of the 34 teachers allocated time to argumentation.

Table 8. Percent Teachers and Mean Percent Time Spent in Different Grouping Configurations When Teachers Allocated Time to Various Content Delivery Modes

	Grouping Configuration							
	Individual (n=30) 620 minutes		Pairs (n=19) 457 minutes		Small Groups (n=20) 624 minutes		Whole Class (n=33) 2015 minutes	
	% Teachers	Mean % Time	% Teachers	Mean % Time	% Teachers	Mean % Time	% Teachers	Mean % Time
Content delivery mode								
Teacher	9	3	0	0	3	0[14]	91	98
Working with text	74	23	47	17	56	26	85	35

Note. Percent teachers is percent of the total number of 34 teachers who allocated time to a particular content delivery mode by grouping co-occurrence.

Note. As described in the data analysis section, we used per teacher percentages to calculate mean percent time variables. Calculations for mean percent of time allocated to different grouping configurations are based on the number of teachers who allocated time to the particular content delivery mode. For example, the denominator for calculating the mean percent time teachers allocated to working with text in individual, pair, small group and whole class settings was 33, the number of teachers who allocated time to working with text.

[14] Less than 1% time of teacher delivery of content on average occurred in small groups.

Table 9. Percent Teachers and Mean Percent Time Spent in Different Grouping Configurations When Teachers Allocated Time to Various Task Types

	Grouping Configuration							
	Individual (n=30) 620 minutes		Pairs (n=19) 457 minutes		Small Groups (n=20) 624 minutes		Whole Class (n=33) 2015 minutes	
	% Teachers	Mean % Time	% Teachers	Mean % Time	% Teachers	Mean % Time	% Teachers	Mean % Time
Task type								
Argumentation	18	20	15	12	18	19	32	52
Close reading	35	26	24	10	27	18	47	45
Cross-textual analysis	9	7	9	15	18	50	21	28
Disciplinary knowledge focus	59	12	38	11	53	25	88	52
Fact acquisition	27	15	15	11	6	2	71	73

Note. Percent teachers is percent of the total number of 34 teachers who allocated time to a particular task by grouping co-occurrence.

Note. As described in the data analysis section, we used per teacher percentages to calculate mean percent time variables. Calculations for mean percent of time allocated to different grouping configurations are based on the number of teachers who allocated time to the particular task. For example, the denominator for calculating the mean percent time teachers allocated to argumentation in individual, pair, small group and whole class settings was 12, the number of teachers who allocated time to argumentation.

Table 10. Disciplinary Variation in Mean Percent Time Spent in Different Grouping Configurations When Teachers Allocated Time to Various Content Delivery Modes

	Grouping Configuration											
	Individual			Pairs			Small Groups			Whole Class		
	ELA (n=13) 280 min	History (n=10) 207 min	Science (n=8) 133 min	ELA (n=8) 181 min	History (n=7) 203 min	Science (n=5) 73 min	ELA (n=8) 252 min	History (n=8) 265 min	Science (n=4) 107 min	ELA (n=14) 1112 min	History (n=12) 608 min	Science (n=9) 294 min
Content delivery mode	Mean Percent Time											
Teacher	4	0	7	0	0	0	0	0	0	96	100	98
Working with text	18	18	37	16	13	22	18	36	21	47	34	22

Table 11. Disciplinary Variation in Mean Percent Time Spent in Different Grouping Configurations When Teachers Allocated Time to Various Task Types

	Grouping Configuration											
	Individual			Pairs			Small Groups			Whole Class		
	ELA (n=13) 280 min	History (n=10) 207 min	Science (n=8) 133 min	ELA (n=8) 181 min	History (n=7) 203 min	Science (n=5) 73 min	ELA (n=8) 252 min	History (n=8) 265 min	Science (n=4) 107 min	ELA (n=14) 1,112 min	History (n=12) 608 min	Science (n=9) 294 min
Task type	Mean Percent Time											
Argumentation	24	14	0	5	21	0	12	29	0	60	42	0
Close reading	19	39	0	9	15	0	17	16	0	55	30	0
Cross-textual analysis	14	8	0	6	23	0	44	46	0	36	23	0
Disciplinary knowledge focus	8	11	20	14	11	9	14	36	29	64	41	45
Fact acquisition	2	14	32	0	9	27	0	4	0	98	73	46