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What's the Purpose?: A Mixed-Methods Exploration of Reading in the Disciplines in High School Classrooms

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Abstract

Disciplinary literacy has gained traction as an important conceptual framework for guiding research and practice in K-12 settings, and part of disciplinary literacy instruction involves supporting students as readers in the disciplines. Research suggests that disciplinary experts have discipline-specific purposes for reading. In this qualitative-dominant, mixed-methods study, five high school classrooms were studied to explore what kind of purposes teachers establish for reading in the disciplines and how students respond to reading in the disciplines. Teachers' ($n = 7$) instructional practices and intentions were explored via observations and interviews, and high school students' ($n = 137$) perceptions of texts and related instruction with discipline-specific readings in English, Social Studies, and Science were studied via survey. Each classroom was one case in this collective case study with subsequent quantitative analyses to explore differences in students' perceptions of texts and related instruction based on their reading levels. Results suggest that teachers created reading purposes aligned with three main goals: fostering general comprehension, building disciplinary topic knowledge, and enacting disciplinary expert habits of reading. Findings also suggest that students articulated the purposes for reading generally, but with few connections to the reading practices of disciplinary experts. Additionally, students were forthcoming in identifying the kinds of reading support they found most helpful. Chi Square analyses of the student level data showed no significant differences between students' perceptions of reading in the disciplines based on students' reading levels. Implications, particularly related to the distinction between disciplinary literacy and reading in the disciplines, are explored.

Keywords: secondary school, purposes for reading, comprehension, disciplinary literacy

Introduction

Reading in the disciplines within secondary schools has held the gaze of researchers and policy-makers for decades. At the same time, the decades-long stagnancy of low reading scores on the National Assessment of Educational Progress (NAEP) for high school students (McFarland et al., 2019) has urged attention on adolescent reading. Indeed, one major comprehensive report on adolescent literacy, *Time to Act* (Carnegie Council on Advancing Adolescent Literacy, 2010), was aptly titled to reflect this urgency. And, researchers and policy-makers have, to some degree, heeded the call. Efforts to support content area literacy, which can also be explained as general, intermediate literacy skills (Shanahan & Shanahan, 2008) within and across content areas, have been widely enacted in the professional literature and professional learning initiatives for many years (Brozo, Moorman, Meyer, & Stewart, 2013). In the early 2000s, the focus shifted to disciplinary literacy (DL), which involves more attention to the unique language and literacy demands of the academic disciplines. Project READi, a collaboration of leading learning scientists funded by the U.S. Department of Education (<https://www.projectreadi.org/>), has been deeply involved in understanding disciplinary reading processes and instruction since 2010. While content area literacy and disciplinary literacy have,

arguably, been framed as a false dichotomy, they do in fact complement each other. Calls for the “radical center” (Brozo et al., 2013, p. 354) between these two frameworks make sense for many classrooms and allow for attention to adolescents’ reading in a range of reading levels. In other words, approaches that apprentice students into engaging with the unique demands of reading, writing, speaking, and listening in the disciplines, while also supporting students with intermediate literacy skills, can support all readers.

Supporting all readers is critical given the increased attention to reading in the disciplines, as well as the standards- and assessment-based emphases on reading informational and complex texts (National Governors Association Center for Best Practices, 2010; National Research Council, 2013; NCSS, 2013; Whitten, Labby, & Sullivan, 2016; Workman, 2014). Increasing informational texts in the disciplines has the potential to be highly beneficial to students – more (successful) reading often is (Whitten, Labby, & Sullivan, 2016). But, adolescents who have struggled with reading development can face daunting challenges with disciplinary reading (Fagella-Luby, Graner, Deshler, & Drew, 2012). Years of difficulty, coupled with increased reading demands, make it important to attend to the experiences and needs of adolescents with histories of reading difficulties.

The purpose of this qualitative-dominant, mixed methods study was to explore reading in the disciplines in high school classrooms with students who represent a wide range of reading levels. There were three targeted areas of exploration in this study. First, we explored if and how high school teachers in social studies, science, and English/language arts (ELA) established purposes for reading in the disciplines. Next, we explored high school students’ perceptions of discipline-specific texts and the instruction they received around those texts. These two purposes of the project, exploring teachers’ purposes for reading and students’ perceptions of texts and instruction, drove a qualitative inquiry. Finally, we identified how students’ reading levels related to their perceptions of their reading experiences in high school classrooms. This quantitative inquiry investigated whether adolescents at different reading levels responded to disciplinary texts differently, which is particularly important given that the current educational climate in the US pushes for increased informational reading in K-12 schools. Overall, this mixed methods, multi-faceted exploration of reading in the disciplines in high school includes a consideration of teacher practices and perceptions, students’ perceptions of their experiences with texts and instruction, and students’ reading levels. *Specifically, we sought to identify if teachers establish purposes for reading in the disciplines, and whether there were relationships among teachers’ instruction, students’ experiences, and students’ reading levels.*

Conceptual Framework

The current study explores reading in the disciplines, and therefore was primarily informed by scholarship in disciplinary literacy (Fang, 2012; Moje, 2015; Shanahan & Shanahan, 2008). According to Fang (2012), disciplinary literacy

refers to the ability to engage in social, semiotic, and cognitive practices consistent with those of content experts. It is grounded in the beliefs that reading and writing are integral to disciplinary practices and that disciplines differ not only in content but also in ways this content is produced, communicated, and critiqued. (p. 19-20)

In other words, when individuals have attained high levels of proficiency with the language and literacy demands of a specific discipline, they can likely engage with disciplinary experts using the distinctive discourse norms and tools that help to construct and communicate meaning in that discipline. For example, in educational research, disciplinary tools we utilize include: using headings in a research paper, positioning our work within (or against) established research findings, and stating the implications of our findings for students, teachers, and others. In other words, there are disciplinary norms, practices, and knowledge that are unique to each discipline. And, these norms, practices, and knowledge have implications for how teachers can and should support students’ reading in the disciplines. The rapidly developing body of scholarship in disciplinary literacy offers a number of conceptual and methodological tools for readers in the disciplines. For example, emerging from work in Project ReadI, as well as earlier work in DL (Moje, 2015; Shanahan & Shanahan, 2012), Goldman and colleagues (2016) identified core constructs of disciplinary literacy. Those constructs interact in unique ways in each discipline, and they are: (1) epistemology, (2) inquiry practices and reasoning strategies, (3) overarching concepts, principles, themes, and frameworks, (4) forms/representations of information and types of text, and (5) discourse and language structures (Goldman et al., 2016, p. 6). Drawing on these core constructs allows for a comprehensive approach to exploring the unique literacy practices in each discipline.

While a comprehensive look at all of the core constructs was beyond the scope of the current research, we drew on this foundational work in disciplinary literacy to better understand teachers' goals and students' experiences with reading in the disciplines.

Reading in the Disciplines

Clearly, disciplinary literacy involves a wide range of discourse norms and knowledge frameworks. The current study, however, zeroed in on one essential component of reading in the disciplines. Informed by Goldman et al.'s (2016) explanations of disciplinary reasoning and overarching knowledge frameworks, this research focuses on *purposes* for reading disciplinary texts. Research that explores how disciplinary experts engage in reading offers insights on reading purposes (Moje, 2008; Shanahan & Shanahan, 2008). For example, Shanahan and Shanahan (2008) found that mathematicians read closely, and re-read regularly, attending to every word and symbol to construct an accurate representation of a problem. Schleppegrell's (2004) review of the language demands of mathematics echoes these unique reading processes. Historians, however, consider authors, biases, interpretations, and desired messages when they enter into readings (Shanahan & Shanahan, 2008), as well as engage in the historical thinking skill of "sourcing" (Wineburg, Martin, & Monte-Sano, 2013). In a different vein, chemists regularly transfer prose to equations and diagrams, and vice versa, and consider how what they are reading can be used to extend scientific knowledge in related research/experiments. Finally, Rainey's (2016) scholarship explicates the practices that literary scholars engage in while reading, which include "seeking patterns, identifying strangeness, articulating a puzzle, considering possibilities, considering contexts, and making a claim" (p. 62). In sum, disciplinary purposes for reading are linked to the work of the disciplines, including discipline-specific inquiry, problem-solving, and analysis. And, these disciplinary reading practices offer some "goalposts" for how teachers might set purposes for reading in the disciplines.

Related Literature

Research on reading comprehension was central to this work, both long-established scholarship like the RAND Reading for Understanding framework for reading comprehension (Snow, 2002) and newer considerations specific to adolescents (Barnes, 2015). According to the RAND framework, reading comprehension is a complex initiative that involves reader-level factors, text-level factors, activities with or purposes for reading, and the larger sociocultural context (Snow, 2002). The current research is focused on perceptions of texts and related instruction, not reading comprehension as a measured outcome. However, the same set of factors that influence reading comprehension – reader, activity, text, and sociocultural context – also influence adolescents' perceptions of their reading experiences in secondary classrooms.

The Reader Component and Reading in the Disciplines

Within the reader component, individual differences in readers will influence their responses to texts and instruction. Those individual differences include demographic descriptors, lived experiences related to culture, language, and socioeconomic factors (among many others), and learning differences. Specifically, Snow (2002) identifies how readers bring "cognitive capabilities..., motivation..., knowledge..., and experiences" (p. xiii-xiv) to a text. Importantly, all individual differences result in different interactions with texts and with activities around texts (Barnes, 2015; Lee, 2015). With respect to reading in the disciplines, Moje (2008) identified the preconceptions students have about what "counts" as literacy in different content areas. Furthermore, the unique language demands of schooling (Schleppegrell, 2004) and of the academic disciplines (Fang, 2012) can position students as disciplinary "insiders" and "outsiders" (Gee, 2014). Whether students identify as an insider or outsider is often related to a mismatch between the language of schooling and their out-of-school language experiences.

An additional consideration for the reader component of the Rand model is reading proficiency. In particular, there is a strong association between comprehension and foundational elements of literacy knowledge including alphabetic, phonological, spelling, and vocabulary knowledge (see Castles, Rastle, & Nation, 2018 for a review of these relationships). These relationships may be important when exploring how readers perceive texts in the disciplines. Given the unique language demands of different disciplines (Fang, 2012), readers often need exposure to and explicit instruction with disciplinary language in order to be able to access that language.

The Text Component and Reading in the Disciplines

Within the text component, a number of factors are at play, especially within a disciplinary framework. There is wide variability in texts, and these impact adolescents' comprehension and experiences with text (Snow, 2002). Texts can vary based on text structure and format, syntax and vocabulary, genre and readers create mental representations of texts based on all of these factors. In the disciplines, text structures and forms and specialized vocabulary are used with specific discourse structures to convey ideas in ways that are aligned with disciplinary norms (Fang, 2012). With respect to the types of texts students encounter in disciplinary instruction, there is an important distinction to be made. Disciplinary texts used in K-12 settings can be quite different from expert disciplinary texts (Doerr & Temple, 2016; Johnson, Watson, Delahunty, McSwiggen, & Smith, 2011). *Expert disciplinary texts* (e.g. scientific journal articles, historical primary source documents) can provide opportunities to approximate the reading practices of experts in a discipline. At the same time, *pedagogical disciplinary texts* (e.g., textbooks; Galloway, Lawrence, & Moje, 2013) include in-text scaffolds, such as embedded definitions and visual support, that can help all students, and especially those at basic and intermediate levels of reading development, build disciplinary knowledge. Incorporating both types of texts in text sets can provide opportunities for supporting reading comprehension in the disciplines, because pedagogical disciplinary texts can serve as scaffolds for expert disciplinary texts (Lupo, Strong, Lewis, Walpole, & McKenna, 2017).

The Activity Component and Reading in the Disciplines

The activity component refers to the purposes for reading and the activities readers engage in while they read. Reading activities include purposes for reading, tasks during reading, and outcomes related to these purposes and tasks (Snow, 2002). In the current study, the activity component primarily includes purposes and activities established by teachers. The instructional expectations or guidelines for interpreting a text, as well as students' own purposes for reading (Hynd-Shanahan, 2008), influence how readers engage with text. Considering reading activities both broadly and within reading in the disciplines, one factor contributing to the readers' experiences is how well they engage and leverage their knowledge base (Cervetti, Wright, & Hwang, 2016; Lupo, Tortorelli, Invernizzi, Ryoo, & Strong, 2019).

Related to leveraging knowledge bases, successful reading includes the "ability to adjust processing" based on the reading purpose (Linderholm & van den Broek, 2002, p. 778). Experts in a discipline have specific purposes for reading that align with their specific disciplinary objectives (Goldman et al., 2016; Shanahan, Shanahan, & Misischia, 2011). To apprentice students into this habit of reading with a purpose that supports specific problem-solving or analysis, teachers must be aware of the unique language demands of their disciplines. In a four-year study looking at middle school teachers' perspectives on reading in math, Doerr and Temple (2016) found that the first step to teachers setting purposes for reading was understanding that texts in each discipline are different, and, thus, should be read for purposes and with strategies specific to the disciplines.

Also related to activity and purpose, teachers can set purposes for reading that are more general or more aligned with expert practices in a discipline. Just as there are disciplinary texts and pedagogical disciplinary texts, there can be purposes for reading that are more or less aligned to discipline-specific goals of inquiry, problem-solving, or analysis. Types of texts and purposes for reading parallel Goldman et al.'s notion of a "classroom disciplinary community" versus the actual discipline community of experts. High school classrooms have adolescents, not disciplinary experts, as their most important stakeholders. As such, readings, purposes for readings, and scaffolds likely need to be carefully "engineered" (Moje, 2015) to meet adolescents' wide-ranging needs as readers in the disciplines. To date, however, there is little guidance for high school teachers on how to establish purposes for reading in the disciplines.

The Sociocultural Component and Reading in the Disciplines

Finally, the sociocultural component houses the reader-text-activity interactions, as well as interacts with each one. This larger sociocultural context considers the variety of contexts that mediate students' experiences (Snow, 2002, p. 12). The sociocultural context includes the classroom, but also extends to all those contexts of the lived experiences of the reader. The most pressing sociocultural norms in the current study belong to two, interacting contexts – the local classroom communities of each classroom in the study and the broader discourse communities of each discipline. Clearly, these do not capture all elements of the sociocultural contexts in which students engage. However, this study was guided by a focus on reading in the disciplines in high school classrooms. Thus, the classrooms themselves, the

text features of readings in the disciplines (Fang, 2012), students' identities as classroom and disciplinary insiders or outsiders (Gee, 2014), and activities/purposes for reading in the disciplines (Shanahan & Shanahan, 2008), were the most relevant sociocultural contexts.

Rationale and Research Questions

Given the expectations of both teachers and students to engage with reading in the disciplines, there is a need to better understand how teachers establish purposes for reading and how students perceive their experiences with discipline-specific readings. Addressing the text, reader, and activity components of reading in the disciplines allows for a consideration of the most important stakeholders in high school classrooms: adolescents and their teachers. This qualitative-dominant inquiry begged the consideration of one more student-level factor – student reading proficiency. Given the arguments that struggling readers may not be able to truly engage in components of disciplinary literacy, including reading in the disciplines, (Fagella-Luby, et al., 2012), we sought to explore whether students at different reading levels had different perceptions of their experiences. This secondary quantitative inquiry sheds even more light on the experiences of students in high school classrooms. This mixed-methods inquiry is novel in that little is currently known about the ways that K-12 teachers approach, or frame, reading in the disciplines. And, even less is known about students' perceptions of reading in the disciplines, and of the instruction they receive around texts. The research questions driving this work were:

1. What kinds of purposes do high school teachers establish for reading in the disciplines?
2. What are high school students' perceptions of reading in the disciplines?
3. To what extent do high school students' perceptions of reading in the disciplines differ based on their reading levels?

Methods

To answer our research questions, we used a qualitative-dominant, mixed methods design (Johnson, Onwuegbuzie, & Turner, 2007). Because our goal was to explore reading in high school classrooms, we employed collective case study design with five cases (Stake, 1995; Multiple-Case Design per Yin, 1994). This approach allowed for more breadth than depth, as compared to a single case study approach. Additionally, given our goal to explore patterns of reading purposes across disciplines, collective case study was appropriate. Following our qualitative exploration of five classrooms, we enumerated some of the qualitative data for a follow-up quantitative inquiry. A correlational approach was used to explore how patterns of students' perceptions of disciplinary texts and instruction potentially differed between different types of readers.

Context and Participants

Participants were high school teachers ($n = 7$) and students ($n = 137$) in a metropolitan school district in the western US. The district included over 100 schools, with an average student to teacher ratio of 18 to 1 (U.S. Department of Education Institute of Education Sciences, 2017). The district was made up of over 66,000 students, 16% of whom were designated as English Language Learners (ELL) and 13% of whom had Individualized Educational Plans (IEPs) (U.S. Department of Education Institute of Education Sciences, 2017).

The seven teachers and 137 students comprised five classrooms. (Two of the classrooms had teams of two teachers.) Participating teachers were almost all mid-career teachers, and they were recruited based on their participation in other professional learning initiatives in vocabulary and reading. This recruitment qualification allowed for confidence that the teachers were regularly using disciplinary texts in their classrooms. Each teacher selected one target class to focus on for the project, and that is how participating students were identified.

Each of our five bound cases (Smith, 1978) included a teacher or teacher team, their students from one target class, and three different reading episodes (explained below in the qualitative data sources section). Table 1 describes each of the five bound cases, along with the disciplinary goals that were driving the teachers' work with the readings they used with their students.

Insert Table 1 about here

Procedures and Data Collection

Our primary set of data sources came from what we called *reading episodes*. Each reading episode was comprised of three components: a lesson observation, a student survey, and a teacher interview. Three reading episodes per class were completed, totaling 15 reading episodes. Before the first reading episodes, students completed a spelling inventory to determine their approximate reading levels.

Following is a description of each data source: spelling inventories, teacher observations, lesson materials, student survey responses, and teacher interviews. The interviews and surveys were first piloted with one secondary teacher. Based on the teacher's feedback and researcher evaluations, the interview and survey protocols were revised to better meet the needs of the teachers, the students, or both.

Academic Vocabulary Spelling Inventory (AVSI)

The AVSI (Author, 2016) is a 20-item spelling inventory in which students hear word - sentence - word, and then spell the word to the best of their ability. The 20 words were selected from Coxhead's Academic Word List (Coxhead, 2000) to represent developmental levels of spelling, which typically map on to developmental levels of reading (Bear, Invernizzi, Templeton, & Johnston, 2016). Internal consistency for the AVSI is reported at .085, while split-half reliability is reported at .75 (Author, 2016). One of the researchers administered AVSIs, with a script, to all students prior to the first reading episode for each class.

Teacher Observations

For each of the three reading episodes for each classroom, we observed a lesson in which a class was starting a new text. The teachers were not necessarily introducing new practices during these observations. Rather, they informed us of the days in their planned instruction that involved starting a new reading, and we observed them at those times. All observations were conducted by either one or two researchers. The observations were recorded and later transcribed, and observation notes were captured in an observation protocol. In addition to documenting minute-by-minute notes on the full lesson, the observation protocol provided guiding questions for the researcher to consider during the observation. For example, "*What were the specific directions given to the students before they began reading?*" (See supplemental materials for the observation protocol.)

Lesson Materials

All instructional materials from each observation, such as texts, note takers, etc. were collected. Some reading episodes included a full class period introducing the disciplinary text, with reading and activities on the following days. Other episodes included the text introduction, reading, and after reading activities during the same class period. Teachers chose disciplinary texts from a variety of sources ranging from popular periodicals to primary source documents. Lesson texts and materials were referenced in both the student surveys and the interviews.

Student Surveys

After the students engaged in a lesson that introduced a new disciplinary reading, and after the students read the disciplinary text, we visited the classroom again. This visit might have happened the same day or a few days later, depending on the text and the class. Students were given 20 minutes to handwrite their responses during our visit, and all survey responses were later typed. The five open-ended survey questions were:

1. Why do you think your teacher asked you to read [Title of Text for Reading Episode]?
2. What was challenging about reading...?
3. What was easy about reading...?
4. Did your teacher do anything that helped you learn more from ... than you would have learned reading the text on your own? What did he/she do?
5. What could you or your teacher have done differently to help you learn more from...?

Teacher Interviews

On the same day as the student surveys, we conducted semi-structured interviews with the teacher, which were recorded and later transcribed. Each interview was completed in a location chosen by the teacher and lasted from 40 to 110 minutes. One or two researchers led the interviews. An interview protocol with 12 open-ended questions was used on which the interviewer took notes. An example of an interview question was, “Do you think students learned from the reading? Did they learn what you intended or something else?” (See supplemental materials for the interview protocol.)

Data Analyses

We analyzed our data in three phases. To better understand how teachers create purposes for reading, phase one looked at all five classrooms across all reading episodes. In phase two, we analyzed students’ perceptions of texts and related instruction based on their survey responses. Lastly, the relationships between students’ approximate reading levels and students’ survey responses were examined in phase three.

Phase One: Teachers’ Instructional Decision Making around Reading in the Disciplines

Our within case analyses used axial coding (Vollstedt & Rezat, 2019) to identify: 1.) if teachers set a purpose for readings; 2.) how teachers framed instruction around texts; and 3.) what teachers’ responses to the readings and related instruction were. To begin, we closely examined the data sources for each individual teacher by looking at their reading episodes. We first considered each reading episode independently, using case study tables (Miles & Huberman, 1994) to document initial noticings. Beginning with the observation protocol and notes, we looked to get a sense of what each lesson entailed. The corresponding teacher interview was read next to get an understanding of the teacher’s perspective on the lesson. We then read through the student surveys for the reading episode. The within case analysis of reading episodes concluded with us using a thematic approach (Braun & Clark, 2006) to write up a narrative describing the reading episode.

To begin looking across the reading episodes for all teachers, the research team met multiple times to discuss both their case study tables and narratives for each reading episode. Our collaborative conversations centered on what we identified as the initial categories of 1.) teachers’ cognizance of student challenges and strengths related to disciplinary texts; 2.) relationships between teachers’ and students’ identified purposes for readings; and 3.) who was doing what at different points in the lesson. Cross-case analyses ensued with a closer look at these categories across all five classrooms and 15 reading episodes. Data across teachers were compared, contrasted, and reorganized, and then collapsed across cases (Saldana, 2009). Finally, the case studies were reread numerous times, and an outline of potential findings with participant quotes and counterevidence helped confirm cross-case findings.

Phase Two: Students’ Perceptions of Texts and Instruction

We next looked at the students’ survey responses. Three researchers participated in multiple stages of analyses for the surveys. In the first stage, all three researchers coded the survey data from two of the same cases, considering each question individually. This ensured inter-coder reliability and allowed for a list of common, emergent codes to be developed. Talking through our analysis of these cases to collapse our codes, 49 initial codes were identified from the 1837 open-ended survey question responses. For example, survey question one, which asked students why they thought their teacher asked them to read the text, included the codes “specific disciplinary topic learning” and “critical evaluation of sources,” among others.

The second stage of survey coding involved reanalyzing all the data from each case using the common codes. As we worked independently, any new codes that emerged were later negotiated in a follow-up meeting until consensus was reached. Stage three of survey analyses included categorizing the coded data. We first worked independently to document which category each of the 49 codes naturally fell into. Then we met several times to look across the survey question responses and discuss our categorization. Consensus was reached, and the following were identified: *responding to self*, *responding to text*, and *responding to instruction*. Each of us also identified a set of several codes that did not fit into any of these categories, and a fourth category related to uncertain answers, named *I don’t know*, was created.

Phase Three: Relationships Between Students' Reading Levels and Perceptions of Texts and Related Instruction

First, students' approximate reading levels were identified by using their AVSI scores as a proxy for reading level. Because the AVSI was developed with the same developmental spelling and reading stages as other spelling inventories, AVSI performance can serve as a conservative proxy for reading proficiency (Bear et al., 2016). To divide the sample into readers with higher and lower reading proficiency, a cutpoint of 11 words correct out of 20 was used. Based on the design of the AVSI, a cutpoint of 11 separates those words that rely primarily on knowledge of syllables and affixes, versus those words that draw on derivational morphology. Derived words occur with greater frequency in written language than in oral language (Corson, 1997). Therefore, competency with phonological, orthographic, morphological, and semantic knowledge is typically necessary for accurate spelling of derived words. As such, students who scored from 0-11 were referred to as emerging secondary readers (ESRs), and those students who were already in the Derivational Relations stage of spelling (scoring from 12-20), were referred to as derivational relations readers (DRRs). Table 2 outlines the approximate reading levels of the students in each class. Three of the classes were made up of 87% of DRRs or higher, while the other two classes were made up of 31% and 64% of DRRs.

Insert Table 2 about here

Data analysis in phase three concluded by looking at relationships between students' reading levels and students' survey responses. The four categories of survey responses, described in the previous section – *responses to self*, *responses to text*, *responses to teaching*, and *I don't know* – were used. Chi Square analyses determined whether there were any significant patterns in students' responses to texts and instruction based on reading levels of students.

Results

Research Question 1: How Teachers Establish Purposes for Reading

Research question one asked, what kinds of purposes do high school teachers establish for reading in the disciplines? To answer this question, we present aggregate data for the five case studies. (See supplemental materials for a detailed look at two illustrative cases).

Teachers Established Different Degrees of Discipline-Aligned Purposes for Reading

Overall, the data suggested that all teachers set clear purposes for reading that were explicitly mentioned during class, or during the teacher interview, or, most commonly, both. Their knowledge of students' struggles and successes with reading in their respective disciplines appeared to guide their instructional decision making. In particular, the reading levels represented in each class impacted teachers' decision making around the scaffolding provided for each text. Table 3 provides the purpose for each reading, and includes the text title, author, and source.

Insert Table 3 about here

Table 3 demonstrates the wide variety of reading purposes, which teachers created based on their knowledge of the discipline, the text(s), and the students. However, across the 15 reading episodes, a trend emerged in the *degree* of alignment between the reading purposes and the practices of disciplinary experts. To elaborate, some of the reading purposes were designed to support students with what Shanahan & Shanahan (2008) explained as "Intermediate Literacy" skills, such as summarizing or identifying the main idea. Next, some of the reading purposes were linked to specific disciplinary topics, but appeared to promote only general knowledge-building of those topics. Finally, some of the reading purposes are much closer to approximating the practices of disciplinary experts. This last type of reading purpose encouraged students to engage in discipline-specific analysis or problem-solving. Figure 1 shows the reading purposes from Table 3 organized into these three categories, and it illustrates how these three categories of reading purposes are not mutually exclusive and likely operate on a continuum. For example, as illustrated in Figure 1, some reading purposes encourage general comprehension skills and discipline topic knowledge at the same time.

Insert Figure 1 about here

Teachers Scaffolded Readings Based on Student Need

Building a classroom community that is engaged in reading in the disciplines certainly requires relevant purposes for reading. However, that is just the beginning. To support students in *meeting* those purposes, our analyses suggested that all of the teachers provided scaffolding (Wood, Bruner, & Ross, 1976) before, during, and after reading. While there were no clear differences, based on discipline, in the general instructional routines teachers used to frame readings, their framing of the readings was different based on their perceptions of their context and of students' needs.

During the interviews, each teacher spoke about the reading levels represented in their classes. They were aware of and knowledgeable about their students' reading needs in relation to their course goals and to reading in their disciplines. Lina predicted that "the bulk of [her students] are not independent readers" at the grade level unless the text is broken down for them. When describing the approach to unit planning in their ELA classroom, Lina mentioned the following, which highlights her awareness of the scaffolding needed for students' reading success:

We also try to scaffold the first part of the unit significantly and then there's usually one text that we scaffold less to see what they can do...Usually in a unit, there will be ten texts. Again, we'll lead in three to four of them and then we move it into partner read or group read and then eventually read independently...

Teachers also used their knowledge of their students' reading abilities for planning what their students would do before, during, and after each reading. For example, Mason, the AP U.S. History teacher, scaffolded analysis after each reading, while other teachers, such as Lina and Shelia, focused more heavily on setting their students up with background knowledge and guiding questions before they began reading. Mason described how he relied on his students to bring prior knowledge on the text from other classes and from homework readings. He stated that the requirement for students to read outside of class was simply a function of an AP course:

I assume that they do the reading. I assume they're coming with some pre-knowledge, so I tell them in the beginning that at some point during the year, whatever we cover is dependent on them because I can't, we can't, do it all...We have to go from 1491 through yesterday.

He went on to explain that students in his class knew that to be successful, they had to read independently for homework, in class, or both, and come to class ready for discussion, either whole or small group. Mason utilized texts to build students' understanding of history concepts and to require them to practice historical thinking skills. He once described a focal text as "largely just an access point" for the court case they were studying.

With respect to scaffolding reading in science, Katie described her choice and use of texts as a way to help her students learn "the point of the science" and start to question what they read. Katie mentioned that the students' comprehension of texts was important because she wanted them to understand different perspectives on what they were learning in class. Her larger goal, however, was to teach her students to think critically about texts and about science. This usually meant that students read texts independently and then spent class time evaluating the text and relating it to larger concepts through discussion. For example, students read a text from *Science Alert* about plastic-eating bacteria. The purpose for reading was to "compare popular current events news sources to scientific research articles to determine how accurately the scientific material is represented." Katie briefly set up the reading by having students contemplate the author's purpose. The majority of the lesson was student led, with students first reading the text independently and then discussing the text with a partner to collaboratively write up an evaluation of the text.

In a related science example, one of Leah's environmental science lessons focused on before reading activities. Students were preparing to read a text on the water cycle from *National Geographic*. The purpose for reading was to determine the various human impacts on water. This day's lesson had students building background knowledge on the content of the text and making predictions about the text using an instructional routine known as Prediction Café (Zwiers, 2014). Leah used a combination of small group, partner, and whole group discussion, as students evaluated quotes from the focal text. Like Katie, Leah valued students' consideration of different perspectives:

I feel like when students read something on their own, they say 'oh, yeah, I've got it,' but then when they talk to somebody else about it, they start to realize, 'oh, well, your thinking is a little bit different from mine.' So maybe we're both right but you maybe think of something I didn't...

When explaining her choice to focus on before reading activities, as well as read aloud to students and have them read collaboratively, Leah stated: “many of them would’ve shut down really early in reading that article had I just given it to them and asked them to read it on their own.” Instead, she scaffolded students’ understanding of important concepts before they read a text and then had them work together to analyze the text.

Shelia and Lina also followed this practice of framing readings to first help students understand the concepts in the text before they began reading. Because they were committed to providing access to texts for those students who were reading significantly below grade level, they provided opportunities for students to first build context and key concept knowledge as one pathway to support comprehension. Relatedly, Janice noted in *American Studies* that “we just stop a lot and talk about [the content].” She discussed the importance of helping students make connections between historical content and the literature they were analyzing as they read.

Importantly, in all cases, the teachers determined reading purposes based on what their students needed to work toward with knowledge and skills in their respective disciplines. The teachers’ knowledge of the reading ability of their students then informed how much scaffolding they would provide once the reading purpose was established.

Research Question 2: Students’ Perceptions of Texts and Related Instruction

Research question two asked: What are high school students’ perceptions of reading in the disciplines? Following our coding process, students’ experiences with the discipline-specific texts initially represented 49 different codes. Table 4 shows the codes for each question with the number of student responses for each code in parentheses.

Insert Table 4 about here

Across all student responses, prominent themes emerged. With respect to purposes for reading, the most common response (57%) among all cases was students’ articulation of learning about a specific, disciplinary topic. For what was challenging across all texts, 43% of responses identified the technical language of the texts and the rest of responses referenced a variety of other reasons. Nineteen percent of responses suggested that the readings were not challenging. What students found easy across all texts was a combination of general ease of reading (26%), along with the help of background knowledge on the readings (18%) and helpful text structures within the readings (17%). Students identified multiple effective types of scaffolding, with the most commonly referenced scaffolds as direct explanation or elaboration around texts (31%), and the presence of group work and discussion around texts (26%). Finally, about 29% of responses indicated that teachers could not have done anything else to support the reading process. At the same time, about 41% of responses suggested that the presence of more teacher explanation, additional resources around text, or more background knowledge-building would have provided additional, effective support for reading in the disciplines.

As explained in Phase 2 of the analyses, an inductive approach (Thomas, 2006) was used to make sense of the 49 individual codes. Both individually, and then through group consensus, the research team noted that students’ responses clustered around attributions they were making to the text, the instructional environment, or themselves. There was also a smaller set of codes that did not make attributions to anything, such as when students answered with a variation of “I don’t know” or “nothing”. In short, students were attributing their reading experiences to: (1) their own emotions, motivation, knowledge, and interest, (2) text features, structures, and content, (3) instructional activities, teacher actions/behaviors, and instructional support, and (4) neutral and uncertain responses.

We labeled these four categories as *self*, *text*, *instruction*, and *IDK* (I don’t know). These categories appeared particularly meaningful in what they revealed about how students think about themselves, the texts they are reading, and their instructional support. For example, a student’s stance might differ based on whether they situated reading challenges in the text, such as identifying challenging language, versus in themselves, such as identifying their own lack of knowledge. Table 5 shows the four final categories with types of responses that were included in each.

Insert Table 5 about here

Research Question 3: Associations Between Students' Perceptions and Reading Levels

Research question three asked, to what extent do high school students' perceptions of texts and instruction differ based on their reading levels? With the previously-mentioned four categories in place – text, instruction, student, and IDK – we sought to determine if there were differences in types of responses based on students' reading levels. To answer this question, the qualitative data used to answer question two was enumerated and used in correlational analyses.

Reading Experiences as Related to Approximate Reading Levels

As previously described, the AVSI scores were used to identify lower readers and higher readers in our sample. Emerging secondary readers (ESRs) scored 11 or lower out of a maximum of 20, and derivational relations readers (DRRs) scored 12 or higher. Table 2 above describes the readers in each class.

To begin, there was a meaningful association between approximate reading level and classroom $X^2(4) = 32.57, p < .001$. The Environmental Science and ELA had more ESRs, while AP US History and Biomedical Science had more DRRs. American Studies had a relatively even split between the two types of readers. To determine if there were meaningful associations between types of responses and students' approximate reading levels, we used Chi Square analyses. First, we collapsed students' responses across each of the three reading episodes. We then looked at the patterns of responses for each of the five survey questions for each reading episode. Table 6 presents this data.

Insert Table 6 about here

An important pattern related to the collapsed response data is that the questions themselves elicited certain types of responses. For example, it is clear that questions one, two, and three all elicited more responses about the texts themselves, which makes sense given that the questions asked about the purposes for reading and the easy/challenging parts of the reading. Questions four and five naturally elicited more responses about instruction, because they asked what the teachers did, or could do, to support students' reading.

The patterns of responses for each question during each reading episode were analyzed for meaningful distributions based on students' approximate reading levels. In other words, we looked at the percentages for both the emerging secondary readers (ESRs) and the derivational relations readers (DRRs) and generated five Chi Square analyses, one for each survey question, to explore potential differences between how readers at different levels perceived the texts and related instruction¹. None of the analyses showed significant differences between the ESRs and the DRRs. In other words, the perceptions of the texts and related instruction for both levels of readers clustered similarly in the four types of response: self, instruction, text, and IDK. Table 7 shows the percentage breakdowns for both types of readers, as well as the non-significant Chi Squared results.

Insert Table 7 about here

Discussion

Secondary teachers have the complex task of supporting students as readers in the academic disciplines. Instruction that meets the needs of all learners is influenced by many factors, including the discipline, the texts, the teachers' assessment of goals and needs, and the students' experiences and reading skills. The current study captures, simultaneously, the experiences of students and teachers in working with discipline-specific texts. Overall, the findings suggest the following.

First, the teachers in this study used their knowledge of their discipline and their students to establish purposes for reading. The *types* of purposes the teachers set showed that the teachers were often simultaneously supporting students' general comprehension as well as knowledge of disciplinary topics and practices. The teachers also used their knowledge of their students to make instructional decisions about when, how much, and what kinds of scaffolding would best support students. Second, the students in this study could generally identify purposes for reading that were aligned with their teachers' goals and expectations. They were not "in the dark" while they were reading; they generally understood why their teachers were asking them to read. However, the word "generally" is key here; it

¹ All of the responses for survey question one, from all three reading episodes, were collapsed, and then the distributions of the responses for the ESRs were compared with those of the DRRs. The same process was then completed for the next four survey questions.

appeared that some of the discipline-specific reading purposes and practices that were articulated by the teachers in the interviews were not evident to the students. While the teachers sometimes had broader goals, often related to modes of inquiry or critique unique to a discipline (Goldman et al., 2016), the students equated the purposes for reading with learning about discrete topics in a discipline. An additional key finding with students was their ability and willingness to clearly articulate what scaffolds they needed to take away more from the readings. Finally, the extent to which students were developing or proficient readers was not associated with whether they situated their reading experiences in the domains of text, self, instruction, or “IDK”. Following is discussion of the findings from each of the research questions for the study.

Research Question 1: How Teachers Establish Purposes for Reading in the Disciplines

The teachers in our study identified specific purposes for reading for every reading episode. In general, they were intentional with how they foregrounded readings for their students, and they were sensitive to their students’ learning needs. There did, however, appear to be different levels of alignment with expert disciplinary practices in the teachers’ reading purposes. The teachers’ purposes suggest that there may be three levels of reading purposes, organized from more general to more aligned with the expert practices of experts, as illustrated in Figure 2.

Insert Figure 2 about here.

The first level, Reading Purposes for General Comprehension, maps on to Shanahan and Shanahan’s (2008) “Intermediate Literacy.” Purposes at this level show teachers’ intentions that their students will be able to summarize readings and identify main ideas. An example of this type of purpose is Leah’s purpose from her first reading episode, “Determine the various human impacts on water.” The second level is Reading Purposes for Building Disciplinary Topic Knowledge. When teachers set these purposes for reading, they are likely trying to support their students’ development of specific content knowledge. While Leah’s purpose above includes identifying the main idea of the text, the purpose also promotes students’ knowledge of environmental science content. This is represented in Figure 2, which is intentionally nested. The current study suggests that these types of purposes are far from mutually exclusive. Specific disciplinary knowledge may be eventually used with inquiry that requires expert disciplinary practices, but the purpose for reading in this case is to build general knowledge about a topic typically studied in a subject area at school. Given the role of knowledge in comprehension (Cervetti, Wright, & Hwang, 2016; Lupo et al., 2019), reading purposes aligned with level two likely support future reading comprehension. Finally, the third level involves Reading Purposes for Engaging in Practices of Disciplinary Experts. With these types of purposes, teachers are asking students to read for purposes that mirror those of disciplinary experts (Goldman et al., 2016; Shanahan & Shanahan, 2008).

Importantly, these levels are not, nor should they be, aligned with singular expectations for students at different levels of reading proficiency. Contrary to recommendations put forth by Fagella-Luby et al. (2012), all five cases in the current study showed teachers engaging in, to varying degrees, all three levels of reading purposes regardless of the reading levels of the students in their classrooms. The teachers in the current study devised their reading purposes based on their disciplines and the specific readings at hand. Then, they consistently used reading scaffolding, as recommended by Fagella-Luby et al. (2012) and Brozo et al. (2013), to invite *all* of their students into the readings.

Research Question 2: Students’ Perceptions of Texts and Related Instruction

Students’ responses to the surveys resulted in two important patterns. First, students were articulate and forthcoming with their understandings of *why* they were reading, what was easy and challenging for them, and what kinds of instructional support impacted their reading experiences. Overall, how adolescents explained their perceptions of texts and related instruction reinforced related research on (1) how they engage with their reading (Guthrie, 2008; Kim et al., 2016), (2) what they attribute challenges to (Louick et al., 2016), and (3) how they identify and rely on instructional support (Greenleaf & Hinchman, 2009).

Second, teachers’ and students’ purposes for reading appeared to be related, but only at the surface. Even when teachers articulated reading purposes that were aligned with how experts might read in the disciplines, the students’ responses were largely centered on learning about specific disciplinary topics. An example of this comes from Mason’s classroom. Mason’s first reading episode was focused on Article III of the United States Constitution. In his interview, Mason explained that he had emphasized four different disciplinary purposes for students during his lesson. Both

Mason and his students had their eyes on specific historical content. However, Mason's stated purposes involved more historical analysis, while his students' responses focused on learning information about on specific topics.⁵⁴

Research Question 3: Associations Between Students' Perceptions and Reading Levels

When collapsing student responses across texts and classrooms, there appear to be minimal differences in how readers at higher and lower levels respond to readings and instruction. None of the themes differentiated between reading groups, in contrast to research that shows differences in cognitive processes between different reading groups (Linderholm & van den Broek, 2002). All readers saw themselves benefitting from explicit teacher support, from group work and discussion, and from additional related and multimodal resources. This finding aligns with recent work by Lupo and her colleagues (Lupo et al., 2019), who found that 9th-grade students had similar comprehension outcomes with both easier and harder versions of the same texts. Their conclusion that "most students, even if struggling with comprehension, can read challenging versions of texts when accompanied by instructional support" (p. 1), resonates with the current findings. The parallel finding in the current study would be that most students can work with multiple types of reading purposes, given appropriate amounts of instructional scaffolding.

Implications: Reading in the Disciplines or Disciplinary Literacy?

By way of implications, we pose a question. What is the difference between supporting reading in the academic disciplines and promoting engagement in disciplinary literacy? The current study is an in-depth exploration of reading in the disciplines that investigates teachers' intentions and students' experiences. To connect back to the RAND framework (Snow, 2002), the text, activity, and reader elements all interact in important ways in reading in the disciplines. Students situated their experiences with reading and instruction in the texts themselves, in their own perceived strengths and weaknesses, and in the activities/routines in their classrooms. In other words, students' perceptions of texts and related instruction directly map on to the RAND framework for comprehension.

Disciplinary literacy, however, relies heavily on the sociocultural component of the RAND model. "Classroom disciplinary communities" (Goldman et al., 2016) that are "engineered" (Moje, 2015) to "apprentice" (Greenleaf et al., 2011) students into the disciplines start with real problems and involve real work in the disciplines. They are informed by disciplinary ways of viewing the world, asking questions, and solving problems (Goldman et al., 2016). While the participating teachers were seemingly aware of the expert disciplinary practices they wanted their students to start building, their students focused on the need to learn about specific disciplinary topics. Granted, the current study did not examine all aspects of classroom culture or disciplinary units of study. Still, this difference between teachers' intentions and students' perceptions could belie classroom (and school) sociocultural contexts as contexts that value topic knowledge over disciplinary apprenticeships.

Further related to the distinction between reading in the disciplines and disciplinary literacy, inviting students into reading and inviting students into disciplinary "work" are not the same thing. As Goldman et al. (2016) explained, many observational studies in secondary science show a much stronger emphasis on delivering content than on doing the disciplinary work of scientists. Generally, students learn to scan science texts for information, rather than engage intellectually with texts to construct deep understanding or to use texts as sources for inquiry (Berland & Hammer, 2012; Norris & Phillips, 2003). Similarly, in social studies, Vansledright (2014) explained the importance of approaching historical texts by applying "clusters of carefully honed heuristics," to go beyond the direct comprehension of meaning, which is oftentimes the focus of high school reading (p. 344). He goes on to mention that even advanced high school students approach historical texts with the ability to apply reading strategies, such as rereading and summarizing; yet, they rarely bring an evaluative lens to question the trustworthiness of texts. Such reading activity tends to produce transitory surface and text-base-level representations of text, rather than integrated models of science phenomena or historical analysis (Coté, Goldman, & Saul, 1998). Thus, over many years of schooling, students are socialized into the discourse community of learning about academic topics in school, as opposed to the discourse community of scientists, historians, and other disciplinary experts. While the teachers in the current study were striving, based on their interview data, to approximate the practices of disciplinary experts, much of what we observed harkened to learning disciplinary content for school purposes.

However, teachers and school communities can buck this socialization, as evidenced by recent science interventions from Project Readi (Goldman et al., 2019) and as encouraged by Moje's recommendations (2015). Inviting students into inquiry in the disciplines (in contrast to what students may perceive as the "work" of, for example, 11th grade),

may allow students to identify and approximate the reading habits of disciplinary experts. Starting with inquiry, and letting purposes for reading follow, can build opportunities for *all* students to access disciplinary reading. As Moje (2007) asserts, disciplinary literacy instruction, at its foundation, should be socially just instruction with access and scaffolding for all students. This notion of access and scaffolding to support *all* readers relates to the current research, specifically with respect to Figure 2. To engage many different types of readers, teachers can establish reading purposes that encourage practice of intermediate literacy practices (e.g. summarizing, predicting, monitoring comprehension) as well as discipline-specific learning goals (e.g. learning about a discipline-specific topic or approach to analysis).

Furthermore, the current study suggests that, while framing secondary classrooms with the work of disciplinary experts, setting a clear purpose for reading in the disciplines is just the beginning. *Scaffolding* for reading in the disciplines remains critical. Based on the nearly 2000 reflections on reading in the disciplines from students in this study, explicit instruction on discipline-specific language and disciplinary concepts are essential supports for reading in the disciplines. By way of example, the teachers in the current study demonstrated a wide range of literacy supports to engage their students in disciplinary reading. Practitioner volumes (e.g. Buehl, 2011 and Zwiers, 2014) and recent research (e.g. Lupo et al., 2019) similarly share numerous scaffolds for reading in the disciplines. Finally, several scholars have offered successful models of professional learning and intervention, particularly in social studies, that support teacher knowledge about discipline-specific language. This professional knowledge can translate into explicit instruction for students on disciplinary discourse communities, as well as improved student outcomes in engaging with disciplinary norms (Achugar, Schleppegrell, & Oteiza, 2007; De La Paz, et al., 2017).

Conclusion

Recommendations for Future Research

This comprehensive examination of high school students' reading in the disciplines offers guidance for future research. First, the higher and lower reading groups were based on spelling performance. The inclusion of specific comprehension outcomes should be used in related studies. More broadly, future research should be designed to look at multi-unit and multi-year impacts. The current study was intentionally designed to cast a wide net over multiple readings in multiple classrooms to better understand the kinds of reading purposes that high school teachers create. Examinations of comprehensive units were beyond the scope of the current study, and future research should consider how unit goals that support the apprenticeship of students into disciplinary practices do (or do not) drive purposes for individual readings.

Also expanding on the current study, future research should consider how the kinds of purposes teachers set relate to reading comprehension and discipline-specific knowledge building. The current study centered students' voices and perceptions about their reading experiences. However, researchers and practitioners alike are vested in supporting adolescents' reading comprehension. A study that explores comprehension and discipline-specific knowledge as outcomes, and how those outcomes relate to reading purposes, would enrich the current picture.

Related to the survey in the current study, responses were coded as self, instruction, text, IDK, but responses were not coded for the tenor or directionality of the response. In other words, we were not exploring value judgments, but rather identifying where students situated their reading experiences. While the categories of codes were relevant for the current research questions and aligned with the RAND framework, future research should include consideration of how critical or constructive the responses were.

An additional direction for future research would be to include interviews and/or focus groups with participating students that might shed further light on their perceptions of disciplinary texts and corresponding instruction. While the student surveys provided a rich data source and allowed us to explore patterns within and across classrooms, the reliability of students' self-reported responses could be questioned based on things like social desirability and motivation to write and/or divulge information. Ultimately, because the adolescent voices in this work offered such clear insight into how they perceived themselves and their reading, we suggest that researchers continue look for ways to include input from the disciplinary novices that make up our secondary classrooms.

Final Thoughts

This study demonstrated the importance of honoring adolescents' challenges and frustration (Greenleaf & Hinchman, 2009; Kim et al., 2016). The teachers were attuned to their students' needs and consistently made efforts to scaffold disciplinary texts based on those needs. This study also shows the importance of checking in with students regularly for feedback on instructional supports (Unrau & Quirk, 2014 cited in Kim et al., 2016). The adolescents in our study offered ample feedback on what did and did not work for them; leveraging that feedback for instructional decision-making may make a real difference in students' reading experiences and overall disciplinary learning. Finally, the current study suggests that disciplinary purposes for reading can be constructed to help students both learn disciplinary content from their reading *as well as* read in ways that support disciplinary analyses and problem-solving.

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