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Disciplinary Literacy Pedagogical Content Knowledge (DLPCK) Today: An Exploration of Disciplinary Literacy Pedagogical Content Knowledge of Middle and High School Science, Social Studies, and English Language Arts

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DISCIPLINARY LITERACY PEDAGOGICAL CONTENT KNOWLEDGE (DLPCK) TODAY: AN EXPLORATION OF THE DISCIPLINARY LITERACY PEDAGOGICAL CONTENT KNOWLEDGE OF MIDDLE AND HIGH SCHOOL SCIENCE, SOCIAL STUDIES, AND ENGLISH LANGAUAGE ARTS TEACHERS

by

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Dedications

I would like to first dedicate this manuscript to God because it was through His grace that I had the presence of mind, health, perseverance, and fortitude to complete this journey. To my loving husband, Joseph, your selflessness, love, and encouragement carried me through the toughest of times. Thank you for believing in me. You are my world, and I love you. To my children, Lucille, William, Vincent and Anthony, thank you for your love and support, for holding me accountable to finish what I started, and helping me maintain my sense of humor. Your love and loyalty to our family mean the world to me. To my "daughters" Michele, Sara, and Meghan, and "son" Peeter, thank you for listening offering a kind word or encouragement. To my beautiful grandchildren, Harry, Viktor, Hazel, Adrianne and Roman, thank you for bringing unconditional love, joy and laughter to my life. Use the gifts God has given you and never, ever give up.

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To my superintendent of schools, thank you for permitting me to conduct this study in our school district. I hope that this body of research contributes to literacy instruction within and beyond the scope of our district so that all children reach their full literacy potential and never give up on their dreams.

Abstract

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AN EXPLORATION OF DISCIPLINARY LITERACY PEDAGOGICAL CONTENT KNOWLEDGE OF MIDDLE AND HIGH SCHOOL SCIENCE, SOCIAL STUDIES, AND ENGLISH LANGUAGE ARTS TEACHERS
2018-2019
Carol Thompson, Ph.D.
Doctor of Education

The purposes of this exploratory qualitative case study were to a) gain an understanding of middle and high school science, social studies, and English language arts teachers' disciplinary literacy pedagogical content knowledge (DLPCK), b) explore teachers' dispositions towards disciplinary literacy and c) to determine whether teachers' dispositions influenced disciplinary literacy instruction in the classroom. Using a pre - and post-survey, semi-structured interviews, professional development workshops, teacher reflections, and classroom observation field notes, this study discovered teachers' DLPCK was a combination of generic literacy and disciplinary literacy skills knowledge. Teachers' dispositions towards disciplinary literacy were found to be favorable because teachers recognized the importance of disciplinary literacy to their subject areas. Findings indicated a lack of pre-service disciplinary literacy training that limited teachers' DLPCK and influenced their dispositions towards literacy instruction in the classroom. After engaging professional development workshops, teachers reflected their need to continue learning disciplinary literacy strategies. This study offers a perspective on the importance of disciplinary literacy pedagogical content knowledge and its possible influence on literacy instruction in middle and high school.

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Chapter 1

Introduction

Over the course of the past ten years or more, literacy performance has been under close scrutiny and has served as an impetus for educational change. Basic literacy skills are no longer considered enough for students to be college and career ready. In order to address literacy, learning standards were revised to reflect the depth, breadth, and precise skills necessary for cognitively rigorous instruction to occur in all academic disciplines. In an effort to address the critical literacy skills necessary for students to be considered college and career ready, the Common Core State Standards (2010), currently referred to as the New Jersey Student Learning Standards (2016), demanded that teachers of academic disciplines such as Science, Social Studies, and English language arts infused disciplinary literacy instruction in their subject areas. However, as Chauvin and Theodore (2015) stated, "many students still struggle to master basic literacy skills, and many teachers in discipline-specific courses lack the knowledge and expertise to help students interpret the complex texts associated with each distinct discipline" (p. 1). Another factor that teachers of academic disciplines encounter is that textbook language may be inherently technical and written at the higher end of text complexity for specific grade-levels, making it increasingly difficult for teachers to instruct students in the discipline-specific literacy skills needed to comprehend complex texts.

That is not to say that teachers have not tried to uphold the "every teacher is a teacher of reading" mantra. In fact, discipline-specific teachers have employed generic literacy strategies that could be applied across all disciplines. Such skills included summarizing, questioning, and making inferences (Chauvin & Theodore, 2015).

However, “generic literacy approaches across the content areas have not produced the results we have looked for in our students’ literacy or content knowledge, skills, or performance” (Zygouris-Coe, 2012, p. 1).

Shanahan and Shanahan (2012) pointed out content instruction and literacy development need to be taking place in tandem at the secondary level. In order to do so, teachers must have the ability to instruct students in disciplinary literacy skills such as annotation through close reading, and while doing so, questioning the author, and identifying questions left unanswered by the text (Chauvin & Theodore, 2015; Moje, 2008, Shanahan & Shanahan, 2012). Skills such as making connections and making meaning of academic vocabulary are also considered critical when middle and high school students are being taught to read like a historian, mathematician, scientist, or writer.

The International Literacy Association (2015) identified the development of disciplinary literacy as vital in the role of discipline-specific teachers. Without it, students would not have the ability to make sense of discipline-specific reading demands placed on them in the content areas (International Reading Association, 2015). The only way for students to gain the skills and literacy practices needed to read content-area texts would be if disciplinary literacy instruction was provided by teachers in those fields of study (International Reading Association, 2015).

Though sometimes thought of congruently, disciplinary literacy and content area literacy should not be confused because they refer to separate, distinct approaches in literacy instruction (International Reading Association, 2017; Shanahan, 2012). Content area literacy instruction teaches general reading strategies that are used across all

disciplines (International Reading Association, 2017). Such skills include interpreting text through reading headings, making predictions, summarizing, brainstorming, revising and editing.

Disciplinary literacy instruction uses “literacy to engage in goals and practices that are unique to each academic discipline” (International Reading Association, 2017, p. 3). In order for texts to be interpreted, they have to be analyzed and critiqued using disciplinary literacy strategies. Writing should also be evaluated and revised based on discipline-specific criteria (International Reading Association, 2017). Instead of teaching generic reading strategies, teachers should focus on discipline-specific literacy practices necessary for students to read, write, and think like disciplinary experts in the field (Biancarosa & Snow, 2004).

The foundation of disciplinary literacy instruction is disciplinary literacy which is “anchored in the disciplines with explicit instruction focused on discipline-specific cognitive strategies, language skills, and habits of practice” (Fang & Coatoam, 2013, p. 628). Carney and Indirisano (2013) pointed out “the literature on disciplinary literacy suggests that while language is a universal consideration for the reader of any text, there are differences in the way language functions in the reading of history and literature” (p. 39). Therefore, disciplinary literacy instruction differs depending on the subject-area, and, as a result, disciplinary literacy is defined as “the shared ways of reading, writing, thinking and reasoning within academic fields” (Moje, 2007; Shanahan and Shanahan, 2008). Accordingly, each discipline has its own set of literacies based upon the content and nature of the discipline, critical vocabulary, text structures, and language of the discipline.

In order to meet discipline-specific needs, middle and high school literacy instruction should not focus on generic literacy, but instead, on disciplinary literacy (Fang, 2012). Again, the difference between content-area literacy and disciplinary literacy is that content area literacy requires the ability to "use reading and writing effectively as tools for thinking about and learning from texts across different school subjects" and assumes that the cognitive demands and generic reading strategies applied in all subject-areas and their differences abide in content only (Bean, Readence, & Baldwin, 2008; Fang, 2012, p. 19; Shanahan & Shanahan, 2012; Vacca, Vacca & Mraz, 2011). Basic reading skills are emphasized in content- area literacy, such as decoding, fluency, cognitive text processing strategies, such as predicting and visualizing, and generic learning strategies, such as highlighting text and note taking (Fang, 2012).

In contrast, disciplinary literacy instruction requires teachers to have the disciplinary literacy pedagogical content knowledge to instruct students on how to engage in cognitive practices that are similar to those practiced by content experts. It is grounded in the beliefs that reading and writing are integral disciplinary practices and disciplines differ in content and the ways in which content is produced, communicated and critiqued; "it is an essential part of disciplinary enculturation and socialization" (Fang, 2012, p. 20; Wineburg, 2001; Yore, Hand & Florence, 2004).

Disciplinary literacy focuses on the "knowledge and abilities possessed by those who create, communicate, and use knowledge within the disciplines" (Shanahan & Shanahan, 2008). Similarly, disciplinary literacy instruction requires teachers to have the disciplinary literacy pedagogical content knowledge to instruct students in understanding different literacies. For example, in history, students may read primary sources and need

to take the time period, author, and additional sources into consideration before, during, and after reading in order to conceptualize, evaluate, and determine the accuracy of the information. In science, students have to consider claims, reasoning, and evidence while examining graphs and data related to specific topics. In English language arts, students are often asked to identify a character's motives and development over the course of a text, themes, and the author's purpose. Therefore, teachers need to have the disciplinary literacy pedagogical content knowledge to be able to engage students in disciplinary literacy instruction.

As previously mentioned, the New Jersey Student Learning Standards (2016), hereafter referred to as the NJSLS, were developed to support disciplinary literacy classroom instruction. The standards focus on disciplinary literacy instruction and have called upon educators to lead the charge. The standards emphasize "literacy must be recognized and guided in content areas so that students recognize the academic vocabulary, media representations, and power of language inherent in the work of scholars and experts" (New Jersey Department of Education, 2016).

Disciplinary literacy and disciplinary literacy instruction should be considered critical and the basis for disciplinary literacy for middle and high school students because the NJSLS (2016) and the Companion Standards for Literacy Instruction for social studies, science, and the technical subjects are organized into grade-bands of grades six through eight, nine and ten, and 11 and 12. The grade-band standards outline what students should be able to do by the end of the grade-band. For example, standards RH.11-12.1 stated that students "Accurately cite strong and thorough textual evidence, (e.g., via discussion, written response, etc.), to support analysis of primary and secondary

sources, connecting insights gained from specific details to develop an understanding of the text as a whole." The progress indicator (RH.11-12.1) means that when reading history (RH), 11th and 12th grade students (11-12) should, by the end of 12th grade, be able to demonstrate that they have met that standard (New Jersey Department of Education, 2016). It should be noted that disciplinary literacy instruction falls under the disciplinary literacy umbrella. Teachers need a clear understanding of disciplinary literacy instructional practices and disciplinary literacy pedagogical content knowledge to transfer the ability to read, write, speak, and think like experts in the field.

Suggested actions needed to promote disciplinary literacy are as follows:

1. Provide an approach to content instruction that cultivates the skills for 21st century literacy: critical thinking, communication, collaboration, and creativity.
2. Take charge of designing authentic, real-world experiences and assessments.
3. Commit to a conceptual framework of learning by doing.
4. Provide opportunities for students to use inquiry, key habits of practice, and academic language.
5. Implement ongoing, job-embedded professional development and collaboration by discipline with teachers as designers and facilitators.

(Chauvin & Theodore, 2015; Perie, Grigg, & Donahue, 2005; Shanahan, 2015)

As previously noted, disciplinary literacy differs from content area literacy instruction. Content area literacy "focuses on study skills that can be used to help students learn from subject matter specific text" (Shanahan, 2012, p. 8). Disciplinary literacy "arises from some fairly disparate fields of study: educational psychology, yes, but also linguistics and the various subject-matter disciplines themselves-physics, history,

mathematics, etc." (Bazerman, 1985, 1997; Fang & Schleppegrell, 2010; Geisler, 1994; Halliday, 1998; Hynd-Shanahan, 2013, p. 93; Schleppegrell & Fang, 2008) For example, historians read and synthesize multiple sources and ideas that may or may not have provided sufficient information, however, they assembled those readings and made scholarly conclusions using their background knowledge to make conclusions, and used their ability to read and comprehend content-area texts using literacy practices of the field of study (Lee & Spratley, 2010, Moje, 2008, Shanahan & Shanahan, 2008).

The Common Core State Standards (2010), and most recently, the NJSLS (2016), recommended adolescents in grades sixth through eight received eighty- minutes of uninterrupted literacy instruction each day. The standards also outlined students needed to provide evidence to support their claims. In fact, "evidence remains a critical skill, interspersed throughout the standards, allowing students to ground their thinking in the work of authors and experts in literature and in the content areas" (Siniari & Wharton, 2016, p.1). The CCSS (2010) and NJSLS (2016) recognized such instructional responsibilities should not rest solely on the shoulders of English language arts teachers; instead, literacy instruction is a shared responsibility that required disciplinary literacy pedagogical content knowledge, otherwise referred to as DLPCK (International Reading Association, 2015).

As previously mentioned, disciplinary literacy and disciplinary literacy instruction are dictated by the New Jersey Student Learning Standards, therefore necessary in middle and high school classroom instruction. The NJSLS (2016), Companion Standards for history/social studies, science and the technical subjects outlined disciplinary literacy reading and writing skills. For example, by the end of ninth grade, students should be

able to “analyze in detail a series of events described in a text; draw connections between events to determine whether earlier events caused later ones or simply preceded them.” Explicit disciplinary literacy instruction is needed in order for students to be able to meet or exceed this literacy standard. Academic vocabulary is also addressed in the New Jersey Student Learning Standards (2016) as they state students should be able to “analyze the cumulative impact of specific word choices on meaning and tone” within a text.

The Common Core State Standards (2010) and the New Jersey Student Learning Standards (2016) have embedded reading and writing standards for science and the technical subjects in the Language Arts Literacy Companion Standards. For instance, standard RST.11-12.7 requires students to “integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.” In order to address the Companion Standards, teachers of academic disciplines need the disciplinary literacy pedagogical content knowledge to instruct students on how to meet the disciplinary literacy standards within a given subject-area.

Disciplinary literacy pedagogical content knowledge is needed in order to be able to interpret the standards and use them as the foundation or guide to instruct middle and high school students in the literacy of a given field. That being said, middle and high school teachers need to understand the implications of instruction within their discipline and transfer that knowledge to students. Therefore, pedagogical content knowledge continues to be a deciding factor in quality literacy instruction. In fact, “the landmark report by The National Commission for Teaching and America’s Future (1996) identified

teachers' knowledge as the key factor in student achievement. Teachers must possess the disciplinary literacy pedagogical content knowledge to instruct students on making connections, understanding discipline-specific academic vocabulary, and how to engage in a close reading of texts. Biancarosa and Snow (2004) agreed secondary teachers not only needed to be equipped with content knowledge and pedagogy; they also needed the knowledge and ability to support and develop students' literacy skills across the content areas.

In this qualitative case study, I sought to gain a better understanding of the disciplinary literacy pedagogical content knowledge of middle and high school science, social studies, and English language arts teachers. Through my research, I hoped to add insight into what teachers' dispositions towards disciplinary literacy were, and how or if their dispositions influenced classroom instruction. This qualitative case study may help the broader educational community develop a deeper understanding of teachers' disciplinary literacy pedagogical content knowledge, teachers' dispositions towards disciplinary literacy, and how their dispositions influenced disciplinary literacy instruction. Van Driel and Berry (2010) agreed teachers need knowledge of disciplinary literacy to plan the content, process and product of their lessons, and to understand and meet the needs of all learners; in particular, possible preconceptions or learning challenges of their students which may vary in each discipline.

Disciplinary literacy instruction is needed at all grade-levels; especially in middle and high school. Reading differs for students from earlier to latter grades, and research, along with national and local assessments, showed that students struggled with reading engagement, motivation to read, vocabulary, reading comprehension, and self-monitoring

while reading (Zygouris-Coe, 2012). Middle and high school students are required to interact with increasingly complex texts as they progress through each grade-level, therefore, explicit disciplinary literacy instruction is necessary for students to navigate what might be unfamiliar terrain. Moje (2016) likened entering a discipline as entering a new culture with a distinct language. Students need disciplinary guides or insiders to teach students how to read, write, speak, and think like experts in that discipline.

Fang and Schleppegrell (2010) concurred "reading success in the early grades is not the end of the story and middle and high school students need to develop more advanced levels of literacy to learn effectively from the more specialized, complex texts of secondary subjects" (p. 587). According to Moje (2008), a secondary reading pedagogy needed to be in place so students can build an understanding of how knowledge is constructed in a specific discipline rather than just learning facts, concepts, and ideas of a discipline.

That being said, content- area literacy and disciplinary literacy should not be considered as being mutually exclusive. Teachers need to infuse a combination of generic and disciplinary literacy skills and practices through rigorous literacy instruction that connects learning standards, students' interests, and backgrounds, which would provide the most effective form of balanced literacy instruction (International Literacy Association, 2017).

Purpose of Study

The purpose of this qualitative case study was to 1) explore the disciplinary literacy pedagogical content knowledge of middle and high school social studies, science, and English language arts teachers, 2) discover teachers' dispositions towards

disciplinary literacy, and 3) determine whether teachers' dispositions influence disciplinary literacy instruction in the classroom.

Central to the research agenda was the examination of teachers' disciplinary literacy pedagogical content knowledge (DLPCK). I contended that the ways in which teachers defined their DLPCK may have influenced their approach, lesson design, and delivery of disciplinary reading instruction within their academic disciplines. The thought was if content area teachers entered their classrooms with differing views and approaches to reading and writing, it may have led to fewer literacy infused lessons. To find the answers to these questions, the research incorporated a pre- and post- survey, semi-structured interviews, classroom observations, field notes from the observations, collegial conversations during the professional development work session discussions.

This qualitative case study connected to the larger educational policy arena because in order to promote workplace readiness skills and remain globally competitive, an investment in infusing literacy instruction across disciplines must be made by educators (Shanahan & Shanahan, 2008). Through their participation, teachers may have discovered the extent of their disciplinary literacy pedagogical content knowledge and how their educational philosophy and pedagogical content knowledge informed their understanding of how to infuse literacy instruction (Brookes & Normore, 2010). Thus, moving forward, the findings and recommendations from this study may prove to be useful for literacy classroom instruction.

Research Questions

This qualitative case study afforded me the opportunity to seek answers to the following research questions:

1. What are middle and high school social studies, science, and English language arts teachers' disciplinary literacy pedagogical content knowledge?
2. What are teachers' dispositions towards disciplinary literacy?
3. In what ways, if any, do teachers' dispositions towards disciplinary literacy influence classroom instruction?

Definition of Key Terms

The term *disciplinary literacy* has been formally defined as having "an emphasis on the knowledge and abilities possessed by those who create, communicate, and use knowledge within the discipline" (Shanahan & Shanahan, 2012).

Distinguishing *content area literacy* from *disciplinary literacy* can be confusing to some, but is relatively simple. As previously stated, content area literacy pertains to a generic set of reading skills that can be used across disciplines such as science, social studies, and English Language Arts, in order to improve reading comprehension. Examples of such instructional strategies would be the use of graphic organizers and brainstorming without regard to discipline-specific skills (Shanahan, 2012).

Literacy has been defined as a process by which individuals learn to use language (reading, writing, speaking, and listening) to communicate and to achieve their objectives. The reading process was characterized by ongoing development of interpersonal and interdependent ways of thinking, knowing, and interacting with texts

nested within sociocultural contexts (Gee, 2006) through which students gained access to text-based knowledge in its multiple and varied forms (Duke & Carlisle, 2011).

Pedagogical Content Knowledge (PCK) was defined as the theoretical framework that "focuses on subject matter content knowledge, pedagogical content knowledge, and curricular knowledge" and is "principally related to disciplinary literacy**"** (Shulman, 1986, 1987, p. 39). It referred to a second type of content knowledge that moved beyond subject matter knowledge to the "subject matter knowledge for teaching" that included knowledge of how to teach the "most useful forms of representations of ideas, the most powerful analogies, illustrations, examples, and demonstrations-in a word, the most useful ways of representing and formulating the subject that makes it comprehensive to others" (Shulman, 1986, 1987, pg. 39).

Disciplinary literacy pedagogical content knowledge (*DLPCK*) was an understanding of how classroom instruction and student learning transformed in response to the content area information learned, and the various ways of reading, thinking, and knowing that were connected to a specific discipline (Shanahan & Shanahan, 2008, 2012).

Rationale and Significance

This qualitative case study focused on teachers' disciplinary literacy pedagogical content knowledge (DLPCK) and was timely because educators, policymakers, and researchers have been concerned about the stagnant growth of student reading assessment results over the past decades. International reading scores have been evidenced in data from the Program of International Student Assessment (PISA). National reading scores

are reported through the National Assessment of Educational Progress (NAEP) reading scores.

The PISA (2012) tested 510, 000 15 and 16- year-olds across over 60 countries and focused on mathematics with a minor focus on reading. The United States ranked 24th out of 40 countries worldwide. The test was representative of 28 million 15 and 16-year-olds around the world and represented more than 80% of the global economy (OECD, 2012). On the PISA (2015), the United States ranked 25th out of 70 countries. The average mean on the reading assessment was 493 and the United States mean was 497.

To further compare reading assessment results, a commission established by the National Assessment Governing Board (2003) was asked to review and make suggestions about the usefulness of the grade 12 National Assessment of Educational Progress (NAEP). It was recommended that the commission explore the use of the grade 12 assessment as an indicator of academic preparedness for post-secondary education and training. To start, the Commission defined college and career students as those who were "academically prepared for entry-level college coursework" (NAEP, 2013). A number of contributing factors determined college readiness: content knowledge, cognitive strategies, learning skills, and transitioning skills (NAEP, 2013). According to the NAEP, students who scored at or above 302 on the NAEP reading scale were likely to possess college readiness skills. Nationally, in 2013, only 36% of students scored at or above a 302 on the NAEP reading scale, making the need for additional disciplinary literacy instruction critical across all subject areas.

NAEP findings show that fourth, eighth and twelfth grade national assessment results have experienced little change and students still struggled with reading**.** In fact, the Nation's Report Card (2015) found that 36% of fourth graders and 34% of eighth graders scored at or above proficient on the NAEP. Eighth graders scored lower on the 2015 NAEP than the 2013 assessment (Nation's Report Card, 2015). In 2013, 38% of the nation's twelfth-graders scored at or above proficient. Fourth grade NAEP (2017) reading scores remained unchanged from 2015, while eighth grade NAEP (2017) reading scores increased by one point.

Overall, assessment results over the past three decades have exhibited growth in reading. For example, in 1992 the average fourth-grader scored a 217 in reading, and the average eighth-grader scored a 260 in reading. In 2017, the reading scores of the average fourth and eighth-graders jumped to 222 and 267, respectively. Although minimal growth has been experienced over three decades, these test results further indicated a need for a continued focus on reading instruction.

According to recent standardized test scores and New Jersey Quality Single Accountability Continuum (NJQSAC) review, Hawkstown School District, the district this study is concerned with, had not met with proficiency in English language arts district-wide. The district is located in central New Jersey. The middle school had approximately 700 students and the high school had roughly 1,000 students. The middle school was identified as a Title I targeted assistance school which meant that students identified as basic skills were eligible for basic skills programs offered above and beyond the classroom. The high school was not a Title I school. The community is known for its high population of senior citizens and being a blue-collar suburban town.

At Hawkstown Middle School, according to the 2013 – 2014 test results, 56.4% of 6th graders, 55.9% of 7th graders and 77.2 % of 8th graders met with proficiency in English language arts. At Hawkstown High School, past HSPA scores averaged at a 92.7 % ELA proficiency rate, which was down from 93.5% for the 2013-2014 school year. The evolutionary change to incorporate literacy standards in the content areas was needed to increase rigor and college and career readiness so that students would be better prepared to compete globally.

Hawkstown School District's PARCC (2015) results demonstrated poor literacy results for middle and high school students. For example, only 19% of the district's high school juniors either met or exceeded grade-level expectations, 23% of high school sophomores, and 21% of freshman met or exceeded grade-level expectations. The high school scored lower than the state and PARCC consortium average. At the district's middle school, 44% of eighth graders, 36% of seventh, and 37% of sixth graders met or exceeded expectations (Hawkstown School District, 2016). The sixth and seventh grades scored lower than the state and PARCC consortium, however, eighth grade exceeded the state average by 1%, but was below the PARCC consortium by 2% (Hawkstown School District, 2016).

At the start, low scores may have been due to the PARCC refusal rates since neither the middle school or high school met the New Jersey Department of Education's 95% PARCC participation rate goal for 2015-2016. High school teachers reported students who had not initially refused to take the test decided on testing day to move quickly through the test without much effort. In addition, there could have been students who had previously met the graduation requirement through the multiple pathways

offered by the State of New Jersey, therefore, they may have felt they needed to take and pass the test to graduate.

With such results, it is worth noting that educators are charged with preparing students to be literate, college and career ready citizens. In reality, educators instruct students today for jobs that may not yet exist. In order to change the ebb and flow of disciplinary literacy instructional practices, educators need to keep pace with shifting societies and globally warranted literacy skills necessary to help ensure college and career readiness for students (Shanahan & Shanahan, 2008).

Keeping in mind that schools were designed to serve and form the society in which they function, educators have the responsibility of recognizing the change in global needs and the required literacy skills that students need to communicate. Today's students will compete with peers that have been educated in various educational systems around the world. Shanahan and Shanahan (2008) concurred "We have spent a century of education beholden to this generalist notion of literacy learning—the idea that if we just provide adequate basic skills, from that point forward, kids with adequate background knowledge will be able to read anything successfully" (p. 40). The truth is that elementary students received concentrated literacy instruction, but reading instruction waned once students reached middle and high school (Shanahan & Shanahan, 2008). Thus, the need for disciplinary literacy and disciplinary literacy instruction at the middle and high school levels.

Identifying the need for increased rigor and relevance, The Common Core State Standards (CCSS), now known as the New Jersey Student Learning Standards and Literacy Companion Standards for Social Studies, Science and the Technical Subjects

were developed to help ensure students can compete on a level playing field (Common Core State Standards, 2010; New Jersey Student Learning Standards, 2016). Shanahan and Shanahan (2008) point out "the Common Core Standards are explicit in requiring teachers to teach the literacy of science, literature, and history, and even states that are not part of the CCSS, such as Texas, are making the shift as well" (p. 628).

The need for increased rigor in literacy instruction at the middle and high school levels, specifically disciplinary literacy instruction, becomes most critical if students are to be college and career ready in reading, writing, listening and speaking (Common Core State Standards, 2010; New Jersey Student Learning Standards, 2016; Vacca, Vacca, & Mraz, 2014). Teachers need to be instructed on how to engage students in an intellectually vibrant educational setting where active participation in literacy instruction is the norm (Common Core State Standards, 2010; Heller & Greenleaf, 2007). Specifically, "the Common Core Anchor Standards and high school standards in literacy work in tandem to define college and career readiness expectations—the former providing broad standards, the latter providing additional specificity" (Common Core State Standards, 2010; New Jersey Student Learning Standards, 2016).

The Common Core State Standards (2010) and the New Jersey Student Learning Standards have drawn attention to disciplinary literacy. Content area high school and middle school teachers are now expected to guide students into discipline-specific literacy practices. However, teachers may be prepared to teach their subject area, but not many may be equipped to engage in disciplinary literacy instruction (Carney & Indirisano, 2013). Some teachers believe disciplinary literacy instruction will take away from their content area, therefore, it is imperative that disciplinary literacy instruction be

situated in the “service knowledge of acquisition” (Carney & Indirisano, 2013, p. 39). Such attitudes may be related to the fact that many teachers still did not understand the distinction between content area literacy and disciplinary literacy or how they are not mutually exclusive (Shanahan & Shanahan, 2015).

In the past, reading strategies have not aligned with the skills needed to read content -area texts. Disciplinary literacy draws upon each discipline instead of content area literacy skills, otherwise referred to as a generic set of reading skills that could be applied in any class (Shanahan & Shanahan, 2015). Some examples of generic reading skills included using graphic organizers to organize thoughts, making connections through the use of anticipation guides, and KWL charts that were meant to engage, motivate students to learn, and possibly raise student achievement.

As previously mentioned, disciplinary literacy differs in that it “invites students to join the disciplinary field itself,” encourages collaboration and interaction amongst peers, and requires students to view texts through the lens of a historian, writer, or scientist while engaging with the academic language of a discipline” (Shanahan & Shanahan, 2014, p. 629). More specifically, disciplinary literacy tries to “engage students in exploring content in the way insiders would conduct analysis, argument, and literacy that would be common in the field” (Shanahan & Shanahan, 2015, p. 10). Although disciplinary literacy has been recognized as critical in content area reading, there is a place for both disciplinary and content- area reading, but the learning standards focus on disciplinary literacy (International Reading Association, 2015). Some of the aspects of disciplinary literacy that would be expected to be seen are the ability to teach students

how to approach a text and read and think like a historian, scientist, writer, or mathematician (Juel, Hebard, Haubner & Moran, 2010).

Disciplinary literacy requires teachers to have the pedagogical content knowledge to instruct students on how to understand external factors that may have influenced an author's point of view and the context under which a text was written. In addition, while actively reading, teachers need to have the disciplinary literacy pedagogical content knowledge to help students develop critical thinking skills, such as how to identify questions left unanswered by the author. It also requires teachers to scaffold disciplinary reading instruction (Barton & Levstik, 2004; Wineburg, 1991, 2001). Wineburg and Martin (2004) maintained "this means teaching students to be informed readers, writers and thinkers about the past as well as the present" which results in critical analysis of the text (p. 45). Such practices encourage active reading and assist students in developing analytical reasoning, the ability to identify unanswered questions, and develop their own questions as they pertain to the text and engage in critical thinking (Beyer, 1987; 2008; Barton & Levstik, 2004; Levstik & Barton, 2005; Shanahan, 2004).

Paul and Elder (2006) explained:

> Critical thinkers are clear as to the purpose at hand and the question at issue. They question information, conclusions, and points of view. They strive to be clear, accurate, precise, and relevant. They seek to think beneath the surface, to be logical, and fair. They apply these skills to their reading and writing as well as to their speaking and listening. They apply them in history, science, math, philosophy, and the arts; in professional and personal life (p. 3).

Disciplinary literacy instruction requires teachers to have the pedagogical content knowledge to understand that every academic and non-academic text has its own "vocabulary, textual formats, stylistic conventions, and ways of understanding, analyzing, interpreting, and responding to words on the page" (Heller & Greenfield, 2007, p. 8). However, if middle and high school teachers perceived literacy instruction as an external factor to their content area, it might not become an integral part of teaching (Heller & Greenfield, 2007; Vacca, Vacca & Mraz, 2014).

Problem Statement

While evidence of disciplinary literacy in social studies, science, and English language arts middle and high school classrooms was found in some schools, emerging bodies of research were mixed as evidenced by the research of scholars such as Shanahan and Shanahan (2008, 2011, 2015) and Moje (2008, 2010, 2015). As a result, still not enough is known about the connection between teachers' disciplinary literacy pedagogical content knowledge and how or if that knowledge influenced classroom instruction. Further research pertaining to teacher's disciplinary literacy pedagogical content knowledge and its implications for literacy was needed. Future findings of this qualitative case study may be used to drive professional development offerings within department meetings, faculty meetings, used to make curricular decisions, provide data for professional learning communities, and benefit student achievement within Hawkstown School District.

As previously referenced, reading scores on international and national assessments have remained stagnant for decades. Disciplinary literacy has been identified as vital in the role of discipline-specific middle and high school teachers. Without it,

students will not have the ability to make sense of discipline-specific reading demands (International Reading Association, 2015). However, in order to put disciplinary literacy and disciplinary literacy instruction into context, they must be defined and understood. Moje (2016) explained literacy instruction never ends, and that specialized literacy learning is like entering a new culture. She also noted that literacy learning requires an apprenticeship, and that there is a common assumption that young children learn to read in elementary school and read to learn in secondary school, which is untrue. It takes time to learn the language of disciplines. Moje (2016) used the analogy that entering a new content- area or discipline was likened to entering a new culture with a foreign language. In order to navigate that culture, a cultural insider or disciplinary insider was needed because it would help to have someone who could assist with understanding the culture and language. According to Moje (2016), teachers need to be the disciplinary insiders who can teach students how to read and write in their disciplines.

In order to understand literacy, Shanahan and Shanahan (2008) suggested a pyramid of literacy development. Shanahan and Shanahan (2008) pointed out **"**although most students manage to master basic and even intermediate literacy skills, many never gain proficiency with the more advanced skills that would enable them to read challenging texts in science, history, literature, mathematics, or technology" (p. 45). Arguably, the pyramid represents a hierarchy of literacy skills that may not be linear, but rather cyclical in nature.

The pyramid represents a non-linear progression of literacy skills: Basic literacy or literacy skills gained through decoding and automaticity when encountering high-frequency words. Intermediate literacy that involves comprehension strategies,

vocabulary, common word meanings, and basic fluency, and disciplinary literacy, which includes literacy skills that relate specifically to English language arts, science, social studies, mathematics, and technical subjects. Progressing higher in the pyramid represents complexity of literacy skills needed but rarely taught. This hierarchy is not linear, but rather cyclical in nature. Subsequently, students may become proficient in multiple areas over time (Shanahan & Shanahan, 2008).

Although not new to the literacy scene, disciplinary literacy instruction has been attended to in middle and high school discipline-specific classrooms. Currently, expectations in secondary public schools include the idea that discipline-specific teachers have embraced discipline-specific literacy instruction in order to enhance students' content knowledge; however, there has been some resistance to those efforts. Shanahan and Shanahan (2008) contended resistance to disciplinary literacy can be cited as a contributing factor as to why "over eight million adolescents are unable to read on grade-level" (p. 8).

Content area teachers who refused to implement literacy instruction claimed to be "preserving their content", when, in reality, they were adding to the "94% of American children about to graduate from high school who cannot independently read and gain information from specialized text" (NCES, 2005, p. 8). In an era of accountability, middle and high school content area teachers who resisted infusing disciplinary literacy instruction in their classrooms were "ignoring decades of validated research that proves that integrating literacy instruction into content- area classes improves academic outcomes for adolescent learners" (Cantrell, et al., 2009; Krepps, 2000, p. 2).

That being said, implementing literacy standards within the content -areas may pose difficulties for teachers who lack the disciplinary literacy pedagogical content knowledge or believe literacy is not their area of expertise; yet, others may resist the demands of the literacy standards due to lack of professional development or pre-service training. Shanahan and Shanahan (2008) argued "explicit instruction of literacy strategies works; in fact, it is the most effective means of improving student comprehension across the curriculum" (p. 2). However, resistance to disciplinary literacy instruction remains. Burke (2011) noted, resistance to change may not be resistance, but rather, a reaction to the lack of acknowledgement regarding the loss that took place. Whenever there are changes, individuals feel there is a lack of choice, which may have also fostered resistance to change. For example, the Literacy Standards for History/Social Studies, Science and the Technical Subjects represented a shift from teaching generic content-area literacy skills to teaching literacy skills that required teachers to have the disciplinary literacy pedagogical content knowledge in order to do so.

Resistance to disciplinary literacy instruction may have stemmed from other areas: teachers' mental models about reading and writing instruction in the content areas, middle and high school traditional cultures, teachers' beliefs about their roles as content area teachers, disciplinary literacy content knowledge, and teachers lack of confidence to infuse disciplinary literacy instruction (Caine & Caine, 1998; Cantrell, et al., 2009; Leslie, 2004; Shanahan & Shanahan, 2008). Providing educators with professional development training where they can articulate their dispositions toward disciplinary literacy instruction, including instructional challenges and their disciplinary literacy pedagogical content knowledge is a critical component in order to gain teacher buy-in.

Resistance to disciplinary literacy has also been connected to social justice pedagogy, or teaching to produce social justice (Moje, 2007). In order to avoid social injustices, educators must provide students with learning opportunities that afford equal access to educational resources and conventional knowledge. They must also provide students with ample opportunities to grapple with, question, or challenge the ideas presented in a text so they can build upon existing knowledge or reconstruct current ways of thinking (Ladson-Billings & Tate, 1995). Fee (2009) expressed "failure to critique the historical and ideological forces that permeate our discipline means that our taken-for-granted attitudes and practices often conscript us into doing the work of social sorting" (p. 28).

Conceptual Framework

World culturalist views. World culturist views connect to disciplinary literacy teaching in that they seek to create educational change, expand upon existing teaching practices, and create lifelong learners through skill-building in communication, interpersonal skills, mathematics, engaging in inquiry learning, and working collaboratively with others (Spring, 2008). Appadurai (2008) asserted no longer can teachers work in isolation, but rather work together in a global community of learners through the "global flows of ideas, practices, institutions, and people" (p. 333). Teaching from a disciplinary stance and situating literacy within the disciplines of science, English language arts, and social studies would provide students with authentic learning experiences that transfer to the literacy skills needed to compete in a global economy.

Sociocultural perspective. Disciplinary literacy is grounded in social viewpoints that inform literacy instruction, include literacy growth, and sociocultural perceptions of learning (Alvermann & Moje, 2013; Gee, 2004; Vygotsky, 1978). The sociocultural perspective applies to disciplinary literacy instruction in that the reading process is characterized by the ongoing development of "interpersonal and interdependent ways of thinking, knowing, and interacting with texts nested within sociocultural contexts" (Carney & Indirisano, 2013, p. 40; Gee, 2004; Heath, 1991, p.3) through which students gain access to text-based knowledge in multiple and varied forms (Duke & Carlisle, 2011).

The sociocultural pedagogical perspectives in a disciplinary literacy context have been studied in a five-year community and school ethnographic study in a middle school located in Detroit, Michigan (Blumenfeld, Marx, Krajcik, Fishman & Soloway, 2000). The study focused on "everyday funds of knowledge, discourse constructs, and science literacy learning of middle school, urban, predominately Latino/bilingual students" and found *first space* (family, community) and *second space* (school or work) of knowledge and discourse, which resulted in a *third space* funds of knowledge (Carney & Indirisano, 2013). This *third space* is "a new hybrid space that is a critical, generative space where the unique funds of knowledge, language, and cultural perspectives of diverse communities are recognized, valued, and leveraged to advance students' literacy development" (Carney & Indirisano, 2013, p. 43; Moje, 2004).

Pedagogical Content Knowledge (PCK) framework. Pedagogical Content Knowledge (PCK) has been defined as the theoretical framework that "focuses on subject matter content knowledge, pedagogical content knowledge, and curricular knowledge"

and is “principally related to disciplinary literacy” (Shulman, 1986, p. 9). PCK requires teachers to be flexible in their teaching strategies while also providing students with content area knowledge by promoting the development of ways disciplinary experts interact with texts (Carney & Indirisano, 2013).

The PCK Framework and attributes connect to this exploration of grades six through 12 teachers’ disciplinary literacy pedagogical content knowledge and instruction in that “pedagogical content knowledge (PCK) is generally accepted as positively impacting teaching quality and student learning” (Evans, Elen, & Depaepe, 2015). Shulman (1986) introduced the concept “pedagogical content knowledge” (PCK) as a possible answer to the so-called “missing paradigm” in research and practice on teaching. Teaching was either approached by only focusing on content or by exclusively focusing on pedagogy” (Evans, Elen & Depaepe, 2015, p. 1; Shulman,1986, p. 8). Shulman (1986) proposed neither content nor pedagogy were mutually exclusive, and defined PCK as a teacher’s “own special form of professional understanding” (p. 8). The two main components of PCK that Shulman (1986, 1987) identified were how to present content area information and what makes learning in a specific discipline easy or hard for students. This included “teachers’ knowledge base, that is, content knowledge (CK), general pedagogical knowledge (PK), curriculum knowledge, knowledge of learners and their characteristics, knowledge of educational contexts, and knowledge of educational ends, purposes, and values” (Evens, et al., 2015; Shulman, 1987, p.8).

Professional development. Professional development offerings on disciplinary literacy are necessary in this, the age of professional accountability (Wilson, Grisham, & Sentana, 2009). In other words, the State of New Jersey Department of Education (2016)

holds teachers accountable for disciplinary literacy instruction through the New Jersey Student Learning Standards and the Companion Standards for Literacy in History, Science, and the Technical Subjects. In turn, the standardized tests that middle and high school students are required to take are based on those learning standards. Middle school teachers receive a student growth percentiles (SGPs) and counts a certain percentage towards their annual evaluation. Middle and high school teachers develop student growth objectives (SGOs) which based on their students. Therefore, middle school teachers have an SGP and an SGO that factor into their year-end evaluation. High school teachers have two SGO's, but no SGP. The New Jersey Student Learning Standards and the Companion Standards require middle and high school teachers to instruct students in reading, writing, speaking, and listening in all disciplines. If teachers are to be expected to infuse disciplinary literacy and disciplinary literacy instruction into their discipline, then professional development is needed to meet the demands set forth in the standards (Wilson, et. al, 2009). In order to do so, I created a series of three professional development work sessions that addressed disciplinary literacy instruction, and made distinctions between content area literacy and disciplinary literacy so that teachers understood the difference between the two. Teachers were encouraged to be honest and express their dispositions towards disciplinary literacy instruction and possible challenges they faced, such as not enough time to "cover the curriculum" due to literacy demands.

Kezar (2001) explained "change occurs as individuals with the organization adapt to its life cycle…change is the result of staff development and leaders who bring people along to organizational maturity" (p. 37). Evolutionary and revolutionary changes have caused leaders to take a participatory role in the changes to build trust and stakeholder

buy-in, however, the struggle may persist when it comes to disciplinary literacy instruction in the content areas.

Methods

As previously noted, central to the research agenda was the examination of grades six – 12 social studies, English language arts, and science teachers' disciplinary literacy pedagogical content knowledge. I contended the ways in which teachers identified, defined, and reflected upon their pedagogical content knowledge may have been associated with their dispositions towards, and approach to, disciplinary literacy instruction in the classroom. If teachers entered their classrooms with differing views and approaches to reading and writing, it may have influenced disciplinary literacy instruction. The research incorporated a pre- and post -survey, semi-structured interviews, three one-hour professional development work sessions, informal classroom observations, and field notes. This study focused on middle and high school teachers in Hawkstown School District, in a suburban, blue-collar town located in central New Jersey. The study is being conducted because of the rigorous literacy standards that are grounded in disciplinary literacy instruction in grades six - 12. Teachers need a combination of content and disciplinary literacy pedagogical content knowledge in order to be able to instruct students and meet the standards. Another reason for choosing middle and high school teachers for this study were the low to mid-range standardized test scores since the new standards and state assessment were put into place.

Position

My experiential knowledge of disciplinary literacy instruction and teaching stemmed from being an educator for the past 25 years in a combination of P – 16 settings.

Throughout that time, I have worked at all levels including post-secondary education. Most significantly, my work as a high school English teacher, elementary/middle school literacy coach, current role as a District Supervisor of Instruction for English Language Arts and Social Studies, and working as a post-secondary adjunct instructor in the Education Department of two universities fueled this exploration to discover teachers' disciplinary literacy pedagogical content knowledge.

Prior to my current role, I was a high school English teacher, who admittedly taught generic content area literacy skills that could transfer to all subject areas, but also engaged in disciplinary literacy practices. Before becoming a high school teacher, I worked at the elementary level as an in-class support basic skills teacher for first through fifth grades. Moving forward, as a reading specialist, I visited hundreds of classrooms and coached basic skills, special and general education teachers who taught kindergarten through eighth grade. As a district supervisor of instruction who has supervised teachers of kindergarten through twelfth grade, kindergarten through eighth grade, and sixth through twelfth grade, I continue to collaborate with teachers, formally and informally observe teachers in their classrooms, offer professional development, and provide feedback to teachers regarding literacy instruction within their content areas. Over the past ten years, my post-secondary experiences as an adjunct instructor teaching graduate and undergraduate literacy and co-teaching courses at Georgian Court University brought teaching and co-teaching literacy issues to the forefront through my students' 90-hour field experiences. I have also worked as an adjunct professor for Stockton University's alternate route Masters of Teaching program, which required me to instruct teacher-

candidates in disciplinary literacy practices. All of the aforementioned work experiences continue to provide me with the experiential knowledge to conduct this qualitative study.

Summary

This qualitative case study sought to examine grades middle and high school science, social studies and English language arts teachers' disciplinary literacy pedagogical content knowledge. The study is divided into five chapters: Introduction, Literature Review, Methods, Findings and Discussions, Conclusions, and Recommendations. The introduction provided a funnel-like overview, which included a broad to narrowed, or funneled, prospective of the importance of this qualitative study. It also included background information pertaining to teachers' disciplinary literacy content knowledge, definition of terms, such as literacy, disciplinary literacy pedagogical content knowledge (DLPCK), and the difference between content area literacy instruction and disciplinary literacy. Also included are barriers that may have been encountered in the study, related theoretical frameworks, and the personal qualifications and positionality of the researcher who conducted the qualitative study.

The contextual factors, such as the study taking place in a middle and high school setting with science, English language arts, and social studies teachers as research participants is outlined. Finally, the introduction discussed the challenges, benefits, and possible causes of potential staff resistance to disciplinary literacy. Ultimately, the introduction developed the problem that disciplinary literacy pedagogical content knowledge (DLPCK) may or may not influence teachers' approaches to disciplinary literacy in their subject area.

The literature review follows the introduction with supporting research derived from seminal studies of Moje, (2004, 2015), Shanahan and Shanahan, (2008, 2012, 2015), Shulman, (1986, 1987), and Wineburg (1991), and experts throughout the decades who have conducted studies on disciplinary literacy instruction. Connecting this study to the research of others may develop and help refine the problem. The review of the past findings of previous research may build an understanding about teachers' disciplinary literacy pedagogical content knowledge and how or if it influences classroom disciplinary literacy instruction. Hopefully, this study will move beyond what has already been discovered in similar studies (Krathwohl & Smith, 2014).

The methods chapter outlined how this researcher engaged in data collection, analysis, and addressed the research questions. As previously stated, a pre- and post - survey were given to research participants who then took part in semi-structured interviews, three professional development work sessions that pertained to the disciplinary literacy skills of close reading through collaborative annotation, tiered academic vocabulary, and making connections.

This researcher engaged in informal classroom observations to discover the disciplinary strategies research participants used with their classes, some of which were skills learned in one of the professional development workshops offered through this study or other disciplinary literacy strategies previously used by the teacher. During pre - and post -surveys, semi-structured interviews, classroom observations, and the professional development workshops, teachers' dispositions toward disciplinary literacy were also noted.

After having participated in three professional development work sessions regarding disciplinary literacy, research participants were asked to take a post-survey to see if their disciplinary literacy pedagogical content knowledge and classroom instruction had developed over time. Findings included dialogue regarding challenging or beneficial aspects of disciplinary literacy. Realistic limitations, such as school- year time constraints and teachers' personal external responsibilities were taken into consideration regarding access to teachers and students, the location and number of professional development work sessions being offered, the post-survey, and the researcher's positionality.

Chapter 2

Literature Review

This literature review offers an examination of studies related to DLPCK, teachers' dispositions towards disciplinary literacy, and how or if those dispositions might be related to disciplinary literacy instruction in the classroom. Learning has been thought of as a socially situated activity influenced by the cultural, historical, and affective context in which the learning occurred. Zygouris-Coe (2012) added "because of a global information-intensive society, the globalization of labor markets, economic demands, and the increasing demands of a technically advanced workforce, literacy has been viewed as a main factor for societies' financial growth and success" (p. 35). Reading ability, in particular, has been recognized as a "key predictor in students' academic success" (Zygouris-Coe, 2012, p. 36). Despite incremental improvements in reading performance of younger readers, literacy levels of adolescent learners have languished (Lewis, Encisco, & Moje, 2007; Shanahan & Shanahan, 2008). Researchers have found that "early reading improvement does not guarantee that students will be able to read and comprehend the specialized texts of English language arts, science, mathematics, and other content areas in middle and high school (Lee, Grigg & Donahue, 2007). This directly relates to the need for specialized disciplinary literacy instruction and for middle and high school teachers to have the disciplinary literacy pedagogical knowledge to do so.

With that in mind, literacy practices are domain -specific and created in specific contexts for certain purposes (Moje, 2015). When reading history, readers must have considered the context and purpose of the reading and empathize with the author based

on the context and purpose. If not, the reader may impose current worldviews on the subject that could have impeded the author's message (Moje, 2015). As such, Gee (1996) found it was through discourse used to communicate, that disciplinary literacy instruction rested. Scholars also argued "language-based practices are critical not only to disciplinary learning but also to civic participation and to efforts to attain social justice" (Lee & Spratley, 2010; Moje, 2007; Norris & Phillips, 2003).

Disciplinary literacy is not a new concept; therefore, it should be viewed as more of an apprenticeship than a skill that can be perfected by adolescent students while in middle or high school (Moje, 2015). In fact, for over fifty years, scholars have been urging content -area specialists to support discipline-specific literacy instruction (Moje, 2015). Recently, professional organizations and literacy councils at the international, national, state and local levels have concurred that literacy teachers and teacher educators need to be attuned to how students engage in disciplinary texts and 21st century literacy skills (Alvermann & Moje, 2013; International Reading Association, 2012). Clearly, disciplinary literacy has gained attention and moved to the forefront of solutions to develop adolescent literacy skills (Moje, 2015).

Disciplinary Literacy vs. Content Area Literacy

Disciplinary literacy differs from content -area literacy. Specifically, content -area literacy focuses on having content- area teachers instruct students in common reading strategies, whereas "disciplinary literacy standards are about teaching students to read like historians, scientists, mathematicians, and literary critics…the CCSS are about the former and not the latter" (International Literacy Association, 2015, p. 4). Disciplinary literacy has not simply referred to using generic reading and writing strategies to learn

about content area subjects, but rather the use of discipline-specific practices to “access, apply, and communicate content knowledge” (Alvermann, 2001; McConarchie & Petrosky, 2010; Shanahan & Shanahan, 2008).

Disciplinary literacy matters in that each discipline has specialized manners of thought, language, vocabulary, texts, and ways of communicating in writing (Shanahan & Shanahan, 2012). Researchers have found that disciplinary literacy instruction seeks to clarify different reading and writing skills at work throughout the disciplines. In addition, studies found that content- areas represented social constructs that required readers to possess the ability to deconstruct specific understandings and discourses/linguistic conventions that represented those ways (Bain, 2007; Hynd-Shanahan, Holschuh, Hubbard, 2004; Moje, 2007, 2008; Schleppegrell, 2004; Shanahan & Shanahan, 2008).

Disciplinary literacy learning and practice amounts to more than skill acquisition. Instead, social and cultural learning occurs as students practice social construction of the disciplines through disciplinary literacy practices in the classroom (Moje, 2015). The term discipline, in fact, relates to more than subject or content areas; “disciplines are, in effect, domains or cultures in which certain kinds of texts are read and written for certain purposes and thus require certain kinds of literacy practice” (O’Brien, Stewart & Moje, 1995).

Shanahan and Shanahan (2012) distinguished between content- area literacy and discipline- specific literacy; the former relates to study skills used to assist students in learning subject matter pertaining to specific texts, the latter, “an emphasis of the knowledge and abilities possessed by those who create, communicate, and use knowledge within the disciplines” (p. 8). To clarify, content area literacy pertains to techniques used

to make sense of text, and disciplinary literacy emphasizes the tools used by discipline-specific experts to take up the work in that field (Shanahan & Shanahan, 2012). In other words, "disciplinary literacy is…a way of learning that drills deeply into the very essence of what it means to come to know content" (Lent, 2016, p. 6).

Resistance to disciplinary literacy has been grounded in past requirements that stated "every teacher is a teacher of reading" which may have left teachers feeling unsupported and unprepared to teach generic reading and writing skills to their students. In response to this outcry, teachers felt they had limited time to incorporate literacy strategies into their packed curriculum (Alvermann, Moore, Hinchman, Phelps, & Waff, 1998; O'Brien, et al., 1995; Stewart & O'Brien, 1989). In an effort to debunk possible misconceptions about incorporating reading and writing in each discipline, research has found then when teachers encouraged disciplinary literacy, it enhanced and supported existing content (Draper et al., 2010; Moje, 2008). In order to get teachers onboard, collective efficacy would be necessary, which "asks for their [teacher] participation instead of their compliance" (Donahoo, 2017, p. 8). If, for example, middle or high school teachers held the belief that they were unable to infuse disciplinary literacy into their subject- area due to a lack of training or a negative disposition towards disciplinary literacy, then it is very likely that those beliefs might be manifested in their practice (Donahoo, 2017, p. 65).

> Different methods may be used to teach disciplinary literacy. One example would be if a social studies teacher asked that during reading, students considered the source of the information and any bias that source may have brought to text before reading the information as truth (Shanahan, 2010). Another instance

> would be in science, instead of having students memorize formulas, they would be asked to create different visual representations that coincided with the formulas so that they might make better sense of what they were learning (Shanahan, 2010).

Each subject -area presents potential challenges for teachers and learners that may have caused teachers to instruct students in a myriad of generic strategies, or content-area reading strategies. According to Lent (2016), "readers must know something about the content in order to use a strategy effectively" (p. 3). To that point, disciplinary literacy may meet that need. Disciplinary literacy has been "grounded in inquiry" and not about reading and answering comprehension questions (Lent, 2016; Moje, 2015). In fact, disciplinary literacy goes much further; it causes students to have the ability and skills to understand the purpose and context of what they are reading (Lent, 2016; Moje, 2015; Shanahan & Shanahan, 2012).

Beers and Probst (2016) found most of the non-fiction text read in middle school grades six, seven, and eight were articles, web-based material, and textbooks. At the high school level, "textbooks are the number one source of non-fiction for social studies, math, and science" (Beers & Probst, 2016, p. 34). Beers and Probst's (2016) study found:

> Of the teachers in the other disciplines, disciplines where we would have thought nonfiction reading would be significant, only 84% still reported that they assign only ten pages or fewer per week, and again, about half of those assign none…[and] only 17% said students learn content by reading it, while 43% said that students learn material through class lectures, and 40% said through class discussion (p. 36-37).

Perhaps one of the problems that can be cited is that national, state, and local assessments expect that students learn and make meaning through reading and classroom instruction, but has not focused on teaching reading skills (Beers & Probst, 2016). That being said, strategy instruction alone has not guaranteed students have understood the purpose and context of what they were reading. For example, science teachers, especially, argued that "students may apply the strategy to perfection, but have no conceptual understanding of the content due to a topic's complexity" (Lent, 2016, p. 3). Therefore, literacies differ in what they require readers to be able to do in order to read, write, and think critically like experts in a given field. Moje (2008) pointed out "Without careful attention to what it means to learn in the subject areas and what counts as knowledge in the disciplines that undergird those subjects, educators will continue to struggle to integrate literacy instruction and those areas" (Moje, 2008, p. 99).

Social studies might be considered both a science and a historical narrative because it deals with one person or a group's "imperfect recollection" of people who may or may not be living (Lent, 2016, p. 19). English language arts teachers hope their students come to class knowing how to read because of the packed curriculum that teachers are required to instruct students in fiction and non-fiction reading. English language arts teachers need to instruct students on how to detect multiple storylines, explore thematic connections, and make text-to-text, text-to-self, and text-to-world connections. To be clear, English language arts teachers should consider themselves teachers of literacy and literature.

Shifting the focus to a more discipline-based approach may help teachers understand that disciplinary literacy supports content learning (Lent, 2016). Eckert (2008)

maintained that the textual content became increasingly complex as students moved up in grade level; therefore, instructional time needed to be allotted to incorporate active integration of reading and interpretive skill instruction. Deshler, Hock and Catts (2006) argued:

> High schools cannot afford to deal with the large number of students who arrive in 9th grade without the fundamental literacy skills needed to succeed and at the same time raise standards. In short, the likelihood of successfully 'raising the bar' for high school graduates is extremely remote unless a way is found to 'raise the floor' for the large number of middle-school students who are entering high school lacking the necessary literacy skills (p.1).

When teachers engage in scaffolded disciplinary literacy instruction, their students may come to understand "how reading, writing, speaking, and thinking function in each discipline and are able to gather multiple perspectives about the role of literacy, creating a "culture of literacy" that will serve them well in college or career" (Lent, 2016, p. 4).

Disciplinary Literacy in Action

Academic disciplines require teachers to instruct students on subject area knowledge which includes "learning different ways of knowing, doing, believing, and communicating" (Moje, 2008, p. 99). With the advent of the New Jersey Student Learning Standards (2016), by the time a student reaches high school, 70% of what they read will be informational text. In addition, middle and high school students are required to locate evidence from multiple sources of information to support their ideas.

Disciplinary literacy in action within a middle or high school science classroom may vary due to the content being taught. Features that are indicative of disciplinary literacy instruction in science include corroboration and justification using claims, evidence, and reasoning to meet the performance expectations, or what students should be able to know or do (Next Generation Science Standards, 2013). Students would be taught to use disciplinary literacy close reading skills to interpret graphs, charts, and analyze data.

In a middle or high school social studies classroom, disciplinary literacy would include sourcing, using close reading skills to read primary and secondary sources, making connections to events that occurred prior or as a result of a specific event in history. Teachers would instruct students on how to analyze multiple texts and perspectives on a topic.

English language arts classrooms at the middle or high school would include disciplinary literacy skill instruction on how to identify plot structure, character motivation, how a character develops over the course of a text, and literal versus implied meanings.

Throughout all of the aforementioned subject-areas, students would be immersed in academic vocabulary.

Although there are specific natures to each subject -area that require discipline-specific skills, there are also disciplinary reading skills, such as close reading through collaborative annotation, making connections, and academic vocabulary that add to students' abilities to interact with complex text.

Close reading. Close reading through collaborative annotation is a disciplinary skill that transfers to social studies, English language arts, and science (New York City Department of Education, 2016). Gallop (2006) explained close reading as a widely applicable skill, of value not just to scholars in other disciplines, but to a wide range of students with many different futures. Students trained in close reading have been known to apply it to diverse sorts of texts-newspaper articles, textbooks in other disciplines, political speeches- and thus to discover things they would not otherwise have noticed. This enhanced, intensified reading can prove invaluable for many kinds of jobs as well as in their lives (p. 183).

Making connections. Classroom instruction focused on teaching students to make text connections, such as text-to-text connections, aids students in activating prior knowledge and how to refer to other texts to understand what they are currently reading. Including instruction on how to make text-to-self connections forms a connection between what students are reading and their personal experience, and text-to-world connections are the largest connections readers bring to a text (Keene & Zimmerman, 1997; Tovani, 2000). Teaching students to make connections promotes active reading and helps students remember what they read and to question the text (Tovani, 2000). In support of close reading, the National Assessment of Educational Progress (NAEP) made making reader/text connections a thinking strand within its framework (National Assessment Governing Board, 2002). Essentially, close reading was meant to uncover layers of meaning that lead to deeper comprehension of a single text or multiple texts (Boyles, 2013).

Making text-to-world connections requires teachers to instruct middle and high school students to access personal schema and relate what they are reading to anything they know about the world. L'Allier and Elish-Piper (2007) explained "text-to-world connections tend to be the most difficult for children to make as they may have limited knowledge of the world beyond their lives, families, school, and community" (p. 345). Teachers could model text-to-world connections as a think-aloud while sharing current events or historical information with students, thereby broadening students' horizons beyond the classroom. As teachers and students share their newfound information, connections are made between the text, self, and the world (L'Allier and Elish-Piper, 2007). By doing so, middle and high school teachers would then be adding information to students' background knowledge which may in turn make students more equipped to engage with complex text.

L'Allier and Elish-Piper (2007) indicated that "text-to-text connections focus on how the target text is related to other texts the reader has encountered. For example, text-to-text connections in an English language arts classroom may include comparing characters, plots, themes, writing style, and treatment of similar content" (p. 343). It has been suggested that teachers could instruct students to code text using post-it notes which would encourage close reading skills. Teachers would begin by modelling the use of text-to-text connections during readings completed in class. L'Allier and Elish-Piper (2007) noted, by using text-to-text connections in conjunction with a thematic unit, "multiple texts written by different authors on the same topic" could be explored (p. 345). Having middle and high school students read books written by multiple authors allows students to make text-to-text connections and build upon existing knowledge.

Academic vocabulary. Academic vocabulary is critical to student success. Teaching students to tier vocabulary in order to better understand academic vocabulary transfers to most subject areas; specifically, science, social studies, and English language arts. For example, science texts present students with challenges such as understanding technical vocabulary, or the way scientific language has been used within a text. Learning such terminology and syntax have shown to be important and sometimes difficult challenges of reading to learn in science. The technical vocabulary of science often includes Latin or Greek roots, and sometimes words may have one meaning in everyday discourse and different, highly specialized meanings in science (Novak, 2010).

Close reading instruction that includes how to retain and understand academic vocabulary "enables students to reflect on the meanings of individual words and sentences; the order in which sentences unfold; and the development of ideas over the course of the text, which ultimately leads students to arrive at an understanding of the text as a whole" (PARCC, 2011, p. 7). Since teaching has been associated with transferring skills from one subject-area to the next, teaching students close reading skills through collaborative annotation, making text connections, and using tiered vocabulary to make meaning of academic vocabulary could help fulfill the goal of teaching students to take what they learned from one text and apply it to another (Boyles, 2013).

Instructing students on how to make sense of academic vocabulary has been considered a transferrable skill to various disciplines. For example, social studies teachers could provide primary historical documents for students to read, comprehend, and try to make connections to current events. Primary source documents would include political and legal documents, newspaper articles, letters, diaries, artistic representations, film,

digital images, photographs and cartoons (Lee & Spratley, 2010). The ability to read historical documents, including current events about societal, economic and political issues, prepare students to be literate, informed citizens who might engage in informed debates and may prepare students to be college and career ready (Lee & Spratley, 2010). In order to do so, teachers would need to instruct students on how to comprehend discipline-specific vocabulary that is inherent to a particular field. Tiered vocabulary is a disciplinary literacy strategy that teachers could use to build students' disciplinary reading comprehension (Shanahan & Shanahan, 2012).

In English language arts classes, teachers instruct students on how to read literary text such as novels, plays, poems, and short stories. However, instead of modeling for students how to reconstruct inferred figurative inferences, teachers ask students to find symbolism (Lee & Spratley, 2010). Teaching close reading using the collaborative annotation strategy would provide students the time to read independently and collaboratively annotate text followed by academic discourse surrounding the annotations (New York City Department of Education, 2016). From that point, teachers would gradually release the responsibility of close reading onto the students.

The ultimate goal of disciplinary literacy is the Gradual Release of Responsibility (GRR). Scaffolded learning begins with modeling then providing time for guided practice. Finally, on the way to the gradual release of responsibility, teachers have the opportunity to guide students on how to annotate text, pose questions, observe patterns and literary devices in the texts, summarize, and make connections to other texts independently (New York City Department of Education, 2016).

Pedagogical Content Knowledge

Policymakers and school leaders agreed adolescents are in need of literacy development, "with *disciplinary literacy teaching* as one solution to developing the skills youth need" **(**Moje, 2015, p. 254**)**. That being said, disciplinary literacy instruction has been a key part of the broader effort to ensure students attained the necessary skills needed to succeed after high school (Heller & Greenfield, 2007; Moje, 2015; Vacca, Vacca, & Mraz, 2014). Consequently, disciplinary literacy requires teachers to have a deep content -area and literacy skills knowledge, however, content- area experts usually do not know everything there is to know about their specific discipline (Moje, 2015).

Middle and high school teachers should understand that every academic and non-academic text has its own "vocabulary, textual formats, stylistic conventions, and ways of understanding, analyzing, interpreting, and responding to words on the page" (Heller & Greenfield, 2007, p. 8). Moje (2007) argued that disciplinary literacy involves "uncovering, examining, practicing, challenging, and rebuilding the tools of knowledge production and critique" (p. 10) "…and to teach disciplinary literacy, teachers needed to involve learners in inquiry that allowed the learner to gain insight into how questions are asked and examined how conclusions are drawn, supported, communicated, contested, and defended" (Moje, 2015, p. 257).

Long gone are the days when students would be given lists of information to memorize without being asked to apply what they have learned. This has required a shift from teacher to student-centered instruction, and from passive to active learning (Alvermann, 2001). A more participatory approach would encourage student engagement and using a text as the conduit to literacy instruction rather than memorized information

that is not retained for long (Alvermann, 2001). If teachers emphasized the memorization of facts and deemphasized academic discourse, which requires cognitive apprenticeship, or the ability to think as an expert historian, mathematician, scientist or writer, but treated as an apprentice in the field, an educational disservice and social injustice would be done, as we would not be preparing students to be globally competitive. Certainly, content counts, but discipline-specific literacy instruction is necessary in all content areas if students are to be deemed college and career ready (Vacca, Vacca, & Mraz, 2014).

The path to disciplinary literacy instruction begins with middle and high school teachers reflecting on their disciplinary literacy pedagogical content knowledge. Some teachers have had the mindset that literacy instruction impeded on their content- area instructional time. In other words, they believed that content took precedence (Shanahan & Shanahan, 2008).

Disciplinary literacy instruction falls under the umbrella of disciplinary literacy. Disciplinary literacy is rooted in reading, writing, thinking critically and understanding what it means to learn in a subject-area. Teaching discipline-specific literacy skills could be thought of as the cornerstone of an intellectually vibrant educational setting that required sophisticated ways of applying literacy skills not usually taught in English language arts classrooms (Heller & Greenfield, 2007; Moje, 2008; Shanahan & Shanahan, 2012). Each content- area text differs from others; for example, math and science texts differ from each other and literary texts differ from math, science, and social studies (International Literacy Association, 2015). The International Literacy Association (2015) contended students would not develop the ability to make sense of the specialized reading demands of mathematics, history, science, or technical subjects in

English class without specialized disciplinary literacy instruction from content area teachers. Middle and high school students would not receive the specialized literacy instruction needed to gain knowledge of other content areas, which could not be gained from solely getting literacy instruction in English language arts classrooms (International Literacy Association, 2015).

Cognitive Apprenticeship

Disciplinary literacy requires the thinking used by expert scientists, mathematicians, historians, and writers. Teachers also need to instruct students in thinking of themselves as apprentices in each discipline who do not yet possess advanced or expert disciplinary skills, or as novices, which denotes the need for teachers to scaffold disciplinary literacy skills (Collins, Brown, & Newman, 1989; Schoenbach, Greenleaf, & Murphy, 2012; Hillman, 2014). Hillman (2014) noted "Literacy as mastery implies a long journey from novice to expert, similar to an apprenticeship" (p. 399).

If teachers thought of students as apprentices, students would be introduced to the reading, thinking, speaking, and writing of a field (Collins, Brown, & Newman, 1989; Gee, 2012; Schoenbach, Greenleaf, & Murphy, 2012). In this way, "an apprenticeship model deemphasizes didactic approaches in favor of observation, coaching, successive approximation of mature practices, and student reflection on problem-solving approaches" (Collins, Brown, & Newman, 1989, p. 399). Apprenticeship would encourage active learning and the opportunity for students to comfortably express what it is they were learning. Students would partake in guided literacy practices where teachers supported them through transitional literacy stages when students misapplied new

knowledge, and can learn from mistakes and monitor their own learning (Hillman, 2014, p. 399). Moje (2015) explained:

> If, however, teachers, school leaders, policy makers, and researchers reconceive of literacy teaching and learning as being about teaching young people the purposeful and meaningful literacy practices engaged by people within and across disciplinary domains, then teachers can embed literacy teaching practice in meaningful ways. Rather than expecting youth to arrive in the classroom with a preexisting motivation to learn a discipline, teachers can apprentice and guide students into their own understanding of the value and purpose of disciplinary reading, writing, and speaking (p. 255).

Researchers found emerging research concerning disciplinary literacy, but found there was much more that needed to be done, with special attention being paid to the social and cultural nature of disciplinary literacy (Hillman, 2014; Moje, 2015). The cultural nature of disciplinary literacy likens students entering a new discipline to entering an unfamiliar culture. Moje (2008, 2016) argued "we have not acknowledged that the disciplines themselves are replete with cultural practices and can be considered discourse communities students must navigate" (p. 99). In order to navigate that unfamiliar terrain, cultural insiders, or disciplinary insiders, are needed to assist students. The social nature of disciplinary literacy relates to establishing a "disciplinary identity," but to do so, teachers need to instruct students in content and disciplinary literacy simultaneously (Moje, 2008, p. 102).

In his work, literacy theorist, Gee (2000) explained how we all display multiple identities that distinguish us as certain types of people that form reader profiles and

identities. For example, as a high school English teacher, I read literature, both fiction and non-fiction. However, literature is also rooted in historical periods; therefore, I considered myself somewhat of a historian because of the background knowledge I needed to help me understand the text. Additional identities would also include historical fiction, humorist, gardener, cook, traveler, family member, mother, grandmother, wife, to name a few. Gee, (2001) subdivided identities into four categories:

1. Identities that are part of our nature and which we have little control (e.g. I am Italian-Irish-American, adult female, and eldest daughter).
2. Identities related to positions that we have attained and that may be confirmed by various groups or institutions (college graduate, public school administrator, married, U.S. citizen, New Jersey resident).
3. Identities that reflect personal traits or characteristics that others recognize in us and that define us as individuals (good sense of humor, listener, gardener).
4. Identities that we share with others through our associations with them or through group memberships (Yankees fan, literacy advocate, International Reading Association member).

Our various identities influence our reader profiles and include what we like to read because what we read is an extension of who we are as people (Buehl, 2011).

Studies have been done that centered on how literacy was used by professionals (Shanahan & Shanahan, 2008), and pre-service teachers' perceptions of disciplinary literacy instruction (Conley, 2012; Moje, 2008); however, a clear focus was needed on how teachers recognized literacy practices in their subject-areas (Learned, Stockdill, & Moje, 2011). Moje (2015) agreed that "unfortunately, much of the current work on

adolescent literacy is stripped of attention to the social and cultural nature of disciplinary teaching and learning, even much of the scholarship that identifies itself as being about disciplinary literacy development" (p. 255).

In the first two years of their study of middle and secondary school students, Shanahan and Shanahan (2008) revealed how content experts and secondary content teachers read disciplinary texts, made use of comprehension strategies, and taught those strategies to students. Their findings suggested mathematicians, scientists, writers, and historians read texts quite differently and recommended different reading strategies to comprehend and make sense of discipline- specific texts. The researchers spent the first year of their study discussing reading strategies with content area experts, and the second year was spent attempting to implement the strategies in urban high schools and in their own secondary teacher-preparation programs in Chicago in the areas of chemistry, history, and mathematics (Shanahan & Shanahan, 2008).

The researchers, known as literacy experts, rested their research on the assumption that content area teachers were resistant to disciplinary literacy instruction, especially when that instruction was supported by literacy experts who had little or no content area knowledge (Shanahan & Shanahan, 2008). However, researchers also recognized that, although disciplines share certain commonalities in their use of academic language, they also engaged in unique practices, such as differences in how the disciplines "create, disseminate, and evaluate knowledge, and these differences are instantiated in their use of language" (Shanahan & Shanahan, 2008, p. 48).

When it came to identifying disciplinary literacy reading strategies, Shanahan & Shanahan (2008) found experts recommended a series of reading strategies that differed

between subjects. Mathematicians emphasized close reading and rereading text as their top two strategies, while scientists were more interested in visualizing, recording formulas, and moving between visual representations, such as charts and graphs, to interpret information and add to understanding. Historians emphasized paying close attention to the author or source, who they were, possible biases, and the author's point of view or interpretation of events that should be judged for its truthfulness, making the point that both reader and author are fallible and positioned (Shanahan & Shanahan, 2008). In sum, history relied on document analysis, including primary, secondary or tertiary documents and film, which held various perspectives of events. Scientists were interested in creating knowledge through experimentation and statistical analysis and believed they could use existing knowledge to predict outcomes. Mathematicians were more theoretical in their approach to reading and problem-solving.

In their second year of research, Shanahan and Shanahan (2008) focused on creating discipline-specific literacy practices in classrooms, but were met with resistance by some educators when it came to strategy instruction. A new concept to most participants, content area teachers demonstrated disinclination towards literacy instruction; however, that feeling began to wane when they were introduced to discipline-specific reading strategies, such as note-taking or structured summarization, which required students to take charted notes (Shanahan & Shanahan, 2008).

It seemed if teachers perceived literacy instruction as an external factor to their content area, it may not have a chance to become an integral part of teaching (Heller & Greenfield, 2007; Vacca, Vacca, & Mraz, 2014). Infusing literacy instruction within the academic areas of science, social studies, and mathematics may be difficult due to time

constraints, teacher content-knowledge, and pedagogical tenets pertaining to disciplinary literacy instruction. The International Literacy Association (2015) recommended that students receive "explicit guidance in how literacy is used appropriately in the different fields…without any reduction in emphasis on the knowledge that students need to gain" (p. 4).

Shanahan and Shanahan (2008) described three stages of literacy development: basic literacy, intermediate literacy, and disciplinary literacy. Buehl (2011) explained primary teachers taught beginning readers foundational reading skills, such as how to decode words, recognize high-frequency words from spoken and written language, understand print conventions, and make meaning of words and symbols. In the intermediate phase, students moved from primary to upper elementary grades. It was in the intermediate phase that students implemented multiple reading strategies and "orchestrate their thinking routines to juggle several facts of reading at once" (Buehl, 2011, p.11). Students expanded reading fluency, vocabularies, and engaged in reading complex texts and text structures (Buehl, 2011). At this stage, few students were in the basic literacy phase; however, there were students who struggled with reading and reading comprehension (Buehl, 2011).

In the third phase, disciplinary literacy, students were required to navigate various levels of texts from "disparate and increasingly distinct academic disciplines" (Buehl, 2011, p. 12). Learners were expected to utilize general comprehension strategies to accommodate each subject area. Heller and Greenleaf (2007) noted, "To become competent in a number of academic content areas requires more than just applying the

same old skills and comprehension strategies to new kinds of texts. It also requires skills and knowledge and reasoning processes that are specific to particular disciplines" (p. 10).

Disciplinary literacy demands that reading and writing be viewed as contextually dependent practices that require students to respond to readings and writings in various ways (Gee, 2000). When students arrive at middle or high school, they may not have been adept at reading complex texts in different subject areas. For example, students "might be quite comfortable reading fictional works in a literature class, be less proficient reading biological texts, and feel helpless understanding the algebra textbook" (Buehl, 2011, p. 12).

Social Construct

Middle and high school content -area teachers should instruct students on how to participate in discipline-specific reading practices, and given the tools, students would need to implement such strategies if they were to enter into and succeed in the academic disciplines. Discipline- specific middle and high school teachers should be "developmentally, culturally, and linguistically responsive to student needs"; without it, many students are at risk for marginalization when they leave school (Alvermann, 2001, p. 2; Shanahan & Shanahan, 2008).

Although educators recognize the social changes that have increased the need for advanced literacy skills, as well as the importance and impact of literacy skills for today's students, problems continued to arise as students progressed in grade, and reading and writing instruction for middle and high school students has been limited with most secondary schools not even offering remedial reading or writing classes (Joseph, 2008; Shanahan & Shanahan, 2012). If society wants to continue building professions such as

accountants, lawyers, and doctors, to name a few, then students need to be afforded the opportunity to delve into the ways of generating and communicating knowledge valued in the discipline through oral and written language (Moje, 2015).

Situating disciplinary literacy instruction in the context of secondary content- area classrooms and connecting it to out-of-school social settings, such as the workplace or post-secondary education, provides insight as to the uses and functions of literacy in and outside of school (Gee, 2012). Therefore, the societal implications of disciplinary literacy instruction in secondary schools should not be overlooked by stakeholders. In fact, if society hopes to have students pursue careers in various disciplines, "(e.g., journalism, accounting, laboratory science, teaching), then students need the opportunity to apprentice into the ways of producing and communicating knowledge valued in the disciplines" (Moje, 2015, p. 259). Teachers need to instruct students in how to question authors purpose, ask questions, and understand how an academic discipline works in order to push back their knowledge of it (Moje, 2008, 2015).

Students need disciplinary literacy instruction in order to succeed in the workforce and post-secondary education, however, the human, cultural, and social aspects of disciplinary literacy should not be overlooked (Joseph, 2008; Moje, 2015). Researchers noted:

> Domains or cultures in which certain kinds of texts are read and written for certain purposes require certain kinds of literacy practice…and if disciplines are cultures-or subcultures-then it stands to reason that disciplines are also highly social and that members of disciplines approach their work with curiosity,

imagination, and passion (Ball & Lacey, 1984; Moje, 2015, p. 255; O'Brien, Stewart, & Moje, 1995).

Merely offering skill instruction "reduces disciplinary concepts to "stuff" to be mastered and disciplinary literacy practices to forms and procedures to be memorized (Moje, 2015). Disciplinary literacy instruction teaches students to navigate their academic courses, community, and lives (Moje, 2015).

The language practices, or discourse, that is, the ways of knowing, producing, communicating knowledge, speaking, listening, reading, and writing within disciplines are critical to disciplinary learning, civic life and attaining social justice (Gee, 1996; Lee & Spratley, 2010; Michaels & O'Connor, 1990; Moje, 2007; Norris & Phillips, 2003). Thus, a reconceptualization of literacy instruction is needed to include subject area instruction that concurrently infused literacy skills that supported critical reading and inquiry-based learning (Moje, 2008). Current policy statements from national and local professional organizations outlined the need for disciplinary literacy (See Appendix F).

Theoretical Frameworks

The conceptual framework for this study included multiple theoretical perspectives. Specifically, the findings of this study connected to Vygotsky's (1978) social learning theory, Bandura's (1986) social learning theory, Moje's (2008) disciplinary literacy theory, Shulman's (1986) pedagogical content knowledge, and James Gee's (1996) discourse theory. Vygotsky (1978) related to disciplinary literacy instructional practices because he believed in that individuals experienced intellectual and social growth through interactions with those around them, including teachers and their peers. In this study, the teachers who attended the professional workshops interacted with

each other and me to discuss the content of the workshop and how disciplinary literacy instruction fits into their content area.

Disciplinary literacy theory. Moje (2007) defined disciplinary literacy theory as literacy instruction that is centered on language and text within disciplinary subjects that potentially affords teachers and students socially just literacy instruction, and content area instruction that offers social justice and socially just pedagogy, which relates to the sociocultural prospectus on literacy; both of which concern themselves with equity and diversity (Moje, 2007; Hakuta & Santos, 2012). Working from a social justice perspective, opportunities to learn must provide access to basic knowledge and practices but must also have provided opportunities to question, challenge, and reconstruct knowledge (Ladson-Billings & Tate, 1995). Teaching students how to understand the discourse, that is, the "ways of speaking, listening, reading, and writing that reflect ways of disciplinary knowing and thinking…are critical not only to disciplinary learning but also to civic participation and to efforts to attain social justice (Lee & Spratley, 2010; Moje, 2007; Norris & Phillips, 2003). Moje (2015) expressed that disciplinary literacy theory holds that teachers possess the skills and knowledge to make sense of disciplinary evidence and can transfer that knowledge to students (Moje, 2015). That way, students can then transfer those skills to school and the workplace.

Moje's (2008) definition of disciplinary literacy theory adds the idea that "subject-matter learning is not merely about learning the stuff of the disciplines, it is also about the processes and practices by which that stuff is produced" (p. 10). Instead of referring to disciplinary literacy pedagogical content knowledge, Moje (2008) shortened it to disciplinary literacy theory.

Sociocultural theory. Pedagogical principles from the basic tenets of sociocultural theory relate to disciplinary literacy instruction because it views instruction as social practices not independent of each other, but rather codependent practices that interact with oral language (Besnier, 1995). Sociocultural research identified various literacies and academic language that represents a form of literacy where various reading and writing skills apply according to knowledge domains and disciplines (Blommaert, Street & Turner, 2007; Lee & Spratley, 2006; Moje, 2007, 2008; Street, 2003). As a result, literacy learning occurred through guided interactions over time (Vygotsky, 1978, 1986; Cole, 1996; Rogoff, 1990; Wertsch, 1991).

Bandura's (1986) social cognitive theory outlined the need for individuals to construct meaning and knowledge from their social influences. This theory related to teaching literacy in the content areas because it was through teacher – student relationships and the classroom setting that instructional practices developed along with teacher self-efficacy. Bandura (1999) contended individuals "function as contributors to their own motivation, behavior, and development within a network of reciprocally interacting influences" (p. 169).

Albert Bandura (1986) believed that people learn from social practices such as observing and modeling. In this study, teachers learned how to instruct students using disciplinary literacy strategies such as tiered vocabulary, collaborative annotation, and making connections by observing me model the strategy, then practicing the strategy independently, then collaboratively.

The sociocultural perspective also relates to the disciplinary literacy close reading skill of collaborative annotation in that the reading process was characterized by the

ongoing development of "interpersonal and interdependent" (Heath, 1991, p. 40) "ways of thinking, knowing, and interacting with texts nested within sociocultural contexts" (Gee, 2004, p. 40) through which students gained access to text-based knowledge in multiple and varied forms (Duke & Carlisle, 2011). Collaborative annotation supports close reading and provides a scaffold for students to access complex texts (Daniels & Steineke, 2011; New York City Department of Education, 2016).

Discourse theory. Disciplinary literacy is well-grounded in what social linguist, James Gee (1989, 2011), developed over the course of twenty years. Gee's (2011) discourse theory, which supports the concept of disciplinary literacy, "represents his 20-year evolution from focusing on isolated language to studying language in use shaped by the values of society and cultural context, including occupations" (Hillman, 2014, p. 398). Gee's (2011) theory supported classroom instruction that focused on teaching students to think like experts in the fields of mathematicians, scientists, historians, or writers (Moje, Luke, Davies, & Street, 2009; Shanahan & Shanahan, 2008) Gee (2012) explained:

> Discourses are ways of behaving, interacting, valuing, thinking, believing, speaking, and often reading and writing, that are accepted as instantiations of particular identities by specific groups....They are socially situated identities. They are, thus, always and everywhere social products of social histories (p. 3).

James Gee's (1996) discourse theory suggests that language is used for three things: saying, doing, and being. Gee (1996) stressed when speaking we inform, when acting, we do, and when we are something, we are engaged in the act of being. In order to understand what a writer or speaker is trying to say, we have to fully understand it.

Gradual release of responsibility. The gradual release of responsibility (GRR) instructional framework was used to guide this qualitative study. It was based on the combined works of Piaget (1952), Vygotsky (1962, 1978), Bandura (1965), and Wood, Bruner and Ross (1976); all of whom believed in teacher modeling that resulted in student responsibility for their own learning. Fisher and Frey (2014) explained "the gradual release of responsibility instructional framework purposefully shifts the cognitive load from teacher-as-model to joint responsibility of teacher and learner, to independent practice and application by the learner" which could occur over a short or prolonged period of time depending on student needs (p. 2). Instructional practice begins with a focus or purpose for learning, guided instruction, collaborative learning or a chance to practice with peers, and ends with independent practice (Fisher & Frey, 2014).

Close reading through collaborative annotation followed by the gradual release of responsibility (GRR) is a disciplinary literacy skill that transfers to social studies, English language arts and science. The gradual release of responsibility relates to close reading in that close reading requires intense modeling and guided practice followed by students working independently to apply the skill in other disciplines.

Scientific Literacy

The Next Generation Science Standards (2013) require that students are taught to read and evaluate claims, evidence, and/or reasoning related to a specific theory. Another example of what the standards warrant is that students are taught how to read, compare, and evaluate arguments. In their study to identify the types of arguments promoted in various contexts of three sections of high school chemistry class that involved 73 students, Abi-El-Mona and Abd-El-Khalick (2006) found "the lack of argumentation

observed has [had] more to do with the way instruction was undertaken in the participant classroom than with the context of instruction (i.e. traditional, disciplinary science content)" (p. 358). Researchers also found that content knowledge was a critical factor if argumentation was to occur. Abi-El-Mona and Abd-El-Khalick (2006) noted "such efforts need to target both pedagogical and epistemological aspects of instruction on argumentation and its role in knowledge building" (p. 358). The aforementioned researchers also explained their findings brought about questions regarding teachers' understanding of argumentation and what scientific argumentation might look like in the various educational contexts.

Clearly, making meaning of developmentally appropriate content should be the goal, and through disciplinary reading instruction, teachers have the ability to immerse students in the learning process (Shellard & Protheroe, 2004). This would be accomplished by engaging students in "society's science conversations by using real-world applications of science in instruction and by inviting students to discuss and debate relevant and motivating content" (Grant & Lapp, 2011). Sampson, Grooms and Walker (2010) explained "individuals that are able to engage in scientific argumentation must understand and be able to participate in the social processes that shape how knowledge is communicated, represented, argued, and debated in science" which is the basis of cross-cutting concepts that are related to disciplinary literacy instruction in science (Sampson, Grooms & Walker, 2010, p. 218; Next Generation Science Standards, 2013).

The International Literacy Association (2015) recognized that teachers need to instruct students to "compare and synthesize effectively the scientific information presented in prose with that presented in table or chart in science texts, but they also must

learn the various concepts and principles…presented in those texts…disciplinary literacy standards and disciplinary content have to go hand in hand" (International Literacy Association, 2015, p. 4).

In an attempt to increase instructional rigor, the Next Generation Science Standards (NGSS) emphasized scientific argumentation through the framework of claims, reasoning and evidence. The NGSS were developed under the guise that literacy demands in science would be taught to students entering the schoolhouse gate (International Literacy Association, 2015). The NGSS "represent a paradigm shift away from memorization of content knowledge towards a focus on developing disciplinary knowledge" (Cope, Kalantzis & Abd-El-Khalick, 2013, p. 420). Disciplinary literacy instruction needs to include the teaching of scientific argumentation which involves classroom teachers instructing students in the activities and skills needed to develop a coherent, empirically based scientific argument (Abi-El-Mona & Abd-El-Khalick, 2006). However, before students could engage in scientific argument, they would need to be taught how to make sense of scientific text through close reading annotation, making connections, and retaining academic vocabulary through disciplinary literacy classroom instruction.

Yore (2000) solidified the idea that "science reading is an interactive constructive process wherein the reader makes meaning by negotiating understanding among the science text and the reader's concurrent experiences and memories of the topic, science, science text conventions, and science reading procedures within a socio-culture context" (p. 107). Yore (2000) found the most difficult issue was convincing teachers who had not

received any literacy training to include explicit reading or writing instruction in their content area and to see value in doing so.

Literacy skills are critical to building knowledge in science (Next Generation Science Standards, 2013). The Next Generation Science Standards (2013) delineated a connection between literacy instruction and science:

> Reading in science requires an appreciation of the norms and conventions of the discipline of science, including understanding the nature of evidence used, an attention to precision and detail, and the capacity to make and assess intricate arguments, synthesize complex information, and follow detailed procedures and accounts of events and concepts. Students also need to be able to gain knowledge from elaborate diagrams and data that convey information and illustrate scientific concepts. Likewise, writing and presenting information orally are key means for students to assert and defend claims in science, demonstrate what they know about a concept, and convey what they have experienced, imagined, thought, and learned (p.1).

Therefore, it would be through teaching disciplinary literacy reading skills and engaging students in academic discourse in each subject area that students might gain the necessary strategies needed to comprehend complex texts in multiple fields of study. In order to meet this need, students need guidance and disciplinary literacy instruction without diminishing the knowledge and content of the subject area (International Reading Association, 2015).

Social Studies Literacy

The learning standards have been the starting point for instructional planning in all subject-areas. The Common Core State Standards for English Language Arts and Literacy in History/Social Studies, Science and Technical Subjects (2010), which have been renamed as the New Jersey Student Learning Standards (2016), stated language arts classrooms were not the sole source of literacy development (Altoff & Golston, 2012). In particular, social studies classes played an integral role in developing discipline-specific literacy skills such as critical reading and the ability to evaluate sources of information from which student construct worldviews along with the ability to reason and use evidence "that is essential to both private deliberation and responsible citizenship in a democratic republic" (Altoff & Golston, 2012, p. 5; Wineburg & Reisman, 2015). However, sourcing, or evaluating sources for their credibility, was not the only discipline-specific skill needed by students.

Wineburg and Reisman (2015) found contextualization skills required readers to "question the social and political circumstances surrounding the text in order to gain greater insight into the historical period…and causes students to bring the full weight of their intellect to the act of reading" (p. 637). For example, historians looked to the past to discover and situate their thinking in past morals, ethics, and agreements, and base their writings on such findings (Moje, 2015). It would be the reader who must then construct meaning from the text and context from which it was written.

Learning to think about and see the world through different lenses and to question the author's ways of seeing, knowing, and thinking, as in the ways in which one thinks, coupled with the ways authors use oral and written language, can be said to be the

essence of disciplinary literacy (Moje, 2015; Norris & Phillips, 2002). Too often, students depend on digital formats to determine the credibility of sources and surrender to the almighty browser (Wineburg & Reisman, 2015, p. 637). Without knowledgeable citizens who possessed the ability to evaluate and understand information, the information was meaningless (Wineburg & Reisman, 2015, p. 638).

In their qualitative study of two "expert" eighth grade U.S. History teachers, Monte-Sanco, De La Paz and Felton (2014), collected data through teacher interviews, observations and student work. Researchers explored disciplinary literacy and identified problems that teachers encountered such as their ability or lack of aligning literacy instruction with existing curriculum that they did not write, curricular goals, and materials that impacted literacy goals. The researchers found "orienting teachers toward disciplinary learning, ensuring a foundational understanding of their discipline, and providing teachers with tools to teach disciplinary literacy" were necessary steps to meet the demands of the disciplinary literacy (Monte-Sanco, De La Paz & Felton, 2014).

Instructional Leadership

Although the National Assessment for Educational Progress (NAEP) reading assessment scores have resulted in little to no improvement, few changes have been made to ensure disciplinary literacy is occurring in content area classrooms. Lagging instructional leadership may be the cause of the dearth of disciplinary literacy occurring in secondary classrooms. Moje (2015) argued disciplinary literacy has been at the forefront of educational issues since the early 1900s with reasons ranging from teachers' pedagogical beliefs, cultures, or knowledge to the culture of individual schools. However,

the reason for the absence of disciplinary literacy occurred because of the laser focus on literacy instead of the subject areas (Conley, 2008; Moje, 2015).

With that in mind, it should be noted that policymakers and instructional leaders, such as principals and supervisors who observe and evaluate teachers, should recognize that instituting disciplinary literacy practices is a spiraling, developmental process that requires time and resources (Moje, 2015). To do so, "schools and school districts must follow with plans to coordinate student learning and development across the grades so that curricula and pedagogical practices do not replicate targets already achieved and miss those yet to be hit" (Moje, 2015, p. 272). Zepeda and Mayers (2014) concluded "instructional supervision needs to become a habit in which administrators and all other educators continually examine instructional practices and the effects of instruction on student learning. It is as simple and complex as that" (p. 1).

Discourse and Inquiry

Teaching through the process of discourse and inquiry provides students the opportunity to participate in inquiry-based learning and results in a learner active classroom (Sulla, 2011). In the learner active classroom, Sulla (2011) contended, there were three goals: engaged learners, student responsibility for learning, and academic rigor grounded in problem-based learning. In order for information to be retained in long-term memory, it has to make sense and have meaning (Sousa, 2005). Therefore, hands-on learning does not necessarily equate to minds-on learning that requires students to think deeply about content (Sulla, 2011).

Teaching close reading skills, such as collaborative annotation, is related to disciplinary inquiry because it requires teachers to instruct students to think critically

about what they are reading by actively interacting with the text through annotation, making connections, and making sense of academic vocabulary. Disciplinary inquiry moves beyond memorizing definitions of facts or terms (Moje, 2015). Coleman and Pimentel (2012) agreed close reading and gathering information from specific texts should be an integral part of classroom literacy instruction.

Professional Development

Moje (2007, 2008, 2010) found that teaching disciplinary literacy has been about teachers providing all students with the opportunity to understand how disciplines work and to raise questions about the trustworthiness of disciplinary knowledge. Greenleaf, Schoenbach and Murphy (2014) agreed it was critical that teachers knew how to create a classroom culture that held students accountable through engaged academic literacy. In support of this, the International Literacy Association (2015) recognized educators needed to work together to plan and implement disciplinary literacy practices with the net result of meeting both discipline-specific and content area standards.

Suggested best practices that could be put into place included the promotion of collegial dialogue and ongoing professional development and training (Whitfield & Moore, 2007). Williams (2002) acknowledged:

> Successful teachers of reading comprehension must respond flexibly and opportunistically to students' needs for instructive feedback as they read. To be able to do this, teachers must themselves have a firm grasp not only of the skills that they are teaching, but also of *instructional* strategies that they can employ to achieve their goal. Many teachers find this type of teaching a challenge, most likely because they have not been prepared to do it" (p. 244).

Collaborative practices that employ an interdisciplinary approach may aid in meeting discipline-specific literacy standards. For instance, English teachers might teach students fundamental reading and argumentative writing, while social studies teachers have students analyze and synthesize arguments made by historians or famous individuals. Teachers might also have students present their own arguments on a given topic or topic of choice. The International Literacy Association (2015) contended the need for grade-level teams across content areas to collaborate, plan, implement, assess and evaluate disciplinary literacy instruction and assessments.

Teaching through context. To teach disciplinary literacy, teachers need to engage learners in questioning techniques, drawing conclusions, how to offer support or evidence related to their ideas, and how to communicate and defend their ideas to specific audiences (Moje, 2015). Both veteran and novice teachers and school leaders could benefit from professional development opportunities to assist them not only in bringing research-based disciplinary literacy practices into content area classrooms, but gaining the skills and knowledge to teach students to question ideas and construct meaning and purpose of ideas within the contexts they are written. Recognizing the need for professional development also means moving from the “one shot workshop” that may serve as a reminder to teachers that they instruct using disciplinary literacy strategies and thought processes, to more meaningful professional development that will assist in building the inquiry learning framework embedded in disciplinary literacy instruction (Moje, 2015).

Literacy professional development. Disciplines are human constructions, and, as a result, are thought of as discourse communities and cultures that are to be read and written for specific purposes and audiences, and they require specific types of literacy practices (Gee, 2001; Moje, 2015). Disciplinary literacy involves the teacher's ability to engage students in inquiry learning so students can delve into questions and gain insight into how questions are asked, types of questions that area asked and examined, and how conclusions are drawn, supported, communicated, contested, and defended (Moje, 2015). However, teachers may need professional development in order to transfer their pedagogical content knowledge of disciplinary literacy practices to students.

Wilson, Grisham and Smetana (2009) found that literacy professional development brought about change in participating teachers' classroom instruction. Their year-long qualitative professional development literacy study was "based on the idea that change is primarily an experientially based learning process for teachers, in that teachers needed multiple exposures to and experiences with the techniques for change to occur" (Wilson et al., 2009, p. 709). In the course of the study, Wilson, et al. (2009) used pre and post questions pertaining to the Question, Answer, Response (QAR) strategy and found teachers responded differently after having attended professional development sessions by providing more detailed responses to describe QAR because they had internalized the instructional implications of using QAR in the classroom.

Wilson, et al. (2009) also examined 120 lesson plans for QAR instruction. Another data source was questions asked that pertained to QAR at the end of each professional development workshop. Their findings suggested a compelling thought: "…Secondary content teachers may learn to welcome effective teaching strategies

provided they see that the learning of content, so important to middle and high school teachers, is the central notion of such teacher preparation and professional development, not merely "reading" (Wilson, et al., 2009, p. 716). Wilson, et al., (2009) admitted additional research involving classroom observations was needed to further validate their exploratory study.

Discipline-specific reading strategies. In their two-year study, Shanahan & Shanahan (2008) found a difference between how content area teachers and content experts read text by using comprehension strategies and teaching those strategies to their students. Both content area teachers and experts used different comprehension strategies, therefore, certain reading strategies were more aligned with certain texts than others (Shanahan & Shanahan, 2008). Through their study, Shanahan & Shanahan (2008) found discipline specific reading comprehension strategies could be useful to today's students who are required to have advanced literacy skills in college and the workplace.

Grant and Lapp (2011) indicated that empowering teachers with professional growth opportunities pertaining to disciplinary literacy may contribute to critical literacy skills and socially responsible literacy; both of which may result in students who possess critical literacy skills that lead to social responsibility in the workplace and post-secondary education. For example, teachers could do so in science by learning to engage students in discussions centered on real-world science-related topics and instructing students on how to make connections by using real-world applications of science to engage in academic discourse to debate content that is meaningful and relevant to the content at hand and students' lives. Doing so would be empowering to both teachers and students and create a more participative classroom (Grant & Lapp, 2011).

Teachers need to view disciplinary literacy as more than teaching literacy skills that may be useful to students within a specific discipline (Moje, 2015). Moje (2015) found teachers needed professional development on how to instruct students to use disciplinary literacy skills to "navigate across multiple domains of life, including disciplinary domain" causing students to "navigate their school classes, their communities, and their lives" (Moje, 2015, p. 256).

Whatever the process, professional development should be "sustained, collaborative, and discipline-rich" in nature (Moje, 2015, p. 273). It must relay that disciplinary literacy practices are action-oriented and require learner active classrooms where students of all abilities interact authentically and meaningfully with multiple texts across the disciplines (Moje, 2015, p. 273). Moje (2015) added professional learning supports are needed to afford teachers time to collaborate, discuss, and plan disciplinary literacy.

Summary

Disciplinary literacy should be viewed as more than content- area reading instruction. Specifically, disciplinary literacy requires that content- area teachers work together to collaboratively develop and plan lessons so that English language arts and content- area standards are being met. Middle and high school teachers need to develop in themselves the disciplinary literacy pedagogical content knowledge to instruct students the reading and writing skills necessary to analyze and synthesize texts across multiple disciplines or in the workplace while utilizing disciplinary literacy skills. Therefore, disciplinary literacy should be viewed as an apprenticeship of skill-building that students

begin to develop in secondary school and transfer to post-secondary education and the workplace.

Engaging students in different ways of knowing, producing, communicating knowledge, speaking, listening, reading, and writing within disciplines has been said to be critical to disciplinary learning, civic life, and attaining social justice (Gee, 1996; Lee & Spratley, 2010; Michaels & O'Connor, 1990; Moje, 2007; Norris & Phillips, 2003). Working from a social justice perspective, opportunities to learn must provide all learners to access basic knowledge and practices, but also demands opportunities to question authors, challenge findings, and reconstruct existing schema (Ladson-Billings & Tate, 1995).

Since disciplines are considered human constructs, it made sense that disciplinary literacy was situated in the context of secondary content area classrooms. Furthermore, connecting disciplinary literacy to uses and functions of literacy in and outside of school provided social implications that should not be overlooked by educators because such implications have the capability of impacting students' college and career choices (Gee, 2012).

The International Literacy Association (2015) acknowledged content area teachers were in need of sustainable, job-embedded, and classroom focused professional development that did not include one-shot workshops. Instead, long- term grade -level and departmental cross discipline collaboration was necessary for teachers to plan, implement, assess, and evaluate assessments (International Literacy Association, 2015).

Instructional leaders, such as teacher leaders, administrators, literacy coaches, reading specialists, and content experts needed to draw from their areas of expertise and

continue learning so they are able to address disciplinary literacy needs of youth and middle and high school teachers (International Reading Association, 2004; International Reading Association, 2010; International Literacy Association, 2015). Having teachers reflect on their DLPCK, their dispositions towards disciplinary literacy, and how or if their dispositions shaped classroom instruction might go a long way in providing effective, meaningful disciplinary literacy professional development.

Professional learning communities, study groups, workshops, and professional conferences also offered teachers the opportunity to work together (International Literacy Association, 2015). However, it must be noted the expertise lies with content area teachers' combined knowledge of literacy, content- area standards instruction, and offering lessons that are both engaging and authentic to further student learning (International Literacy Association, 2015).

Theoretically, disciplinary literacy relates to sociocultural theory, disciplinary literacy theory, and discourse theory. The first because it views literacy, that is, reading and writing, as social practices that are codependent practices that incorporate oral language, instead of mutually exclusive practices that do not intersect (Besnier, 1995). Again, viewing disciplinary literacy as a sort of apprenticeship connected to sociocultural theory and the idea that such learning occurs through guided interactions with peer and educators over a period of time (Vygotsky, 1978, 1986; Cole, 1996; Rogoff, 1990; Wertsch, 1991).

Disciplinary literacy theory related to a socially just pedagogy that incorporated the sociocultural prospectus on literacy concerning itself with equitable and diverse educational opportunities for students (Moje, 2007; Hakuta & Santos, 2012). That way,

students could then transfer those skills to school and the workplace. In order for that to occur, teachers needed to possess disciplinary literacy pedagogical content knowledge and understand discipline-specific literary skills, practices and knowledge of how texts work in their disciplines (Moje, 2015, p. 271).

Discourse theory could also be related to a socially just pedagogy and disciplinary literacy. Van Dijk (1981) noted discourses to be a critical part of education because "most learning materials: manuals, textbooks, instructions, classroom dialogue….and how the uses of various texts influence the processes of learning… [and] the acquisition of knowledge, beliefs, opinions, attitudes, abilities, and other cognitive and emotional changes which are the goals of institutional education" (p. 1 – 2).

Chapter 3

Methodology

Research Design and Strategies of Inquiry

This qualitative case study centered on 18 middle and high school science, social studies, and English language arts teachers' disciplinary literacy pedagogical content knowledge, their disposition towards disciplinary literacy, and how or if their dispositions influenced classroom instruction. This study aimed to elicit information through collected and inductively analyzed data from pre- and post- surveys, semi-structured interviews, three one-hour professional development workshops, one pre-arranged classroom observation, and professional discourse centered around disciplinary literacy that occurred during interviews, workshops, and classroom observations (Creswell, 2014; Creswell-Plano-Clark, 2011; Fink, 2013; Rossman & Rallis, 2012; Rubin & Rubin, 2012). All of the professional development workshops were planned and facilitated by the researcher. This qualitative case study will add to the body of literature that has surrounded classroom disciplinary literacy instruction in middle and high school science, social studies, and English language arts classrooms.

The purpose of this qualitative case study was to 1) explore the disciplinary literacy pedagogical content knowledge of grades six through 12 science, social studies, and English language arts teachers, 2) discover teachers' dispositions towards disciplinary literacy, and 3) determine if or how teachers' dispositions towards disciplinary literacy instruction influenced discipline-specific literacy classroom instruction.

The topics of the three professional development workshops were developed based on the pre-survey and interview findings and related to disciplinary literacy pedagogical content knowledge. In other words, the disciplinary literacy strategies supported disciplinary literacy pedagogical content knowledge in that they addressed how to read, write, speak, and/or think like experts in a specific field of study. Based on the pre-survey and interview findings, the main goals of the professional development were two-fold: a) to build discipline-specific academic vocabulary instructional skills b) to develop close reading instructional methods, including making connections, that could be used in discipline-specific classrooms.

I approached this study with the understanding that teachers had many demands placed on them from student growth objectives, student growth percentiles, a new teacher evaluation model, and societal pressures to educate students who entered the schoolhouse gate with their own background knowledge and language of communicating in and outside of school. The research questions, theoretical frameworks, and research that shaped my understanding of disciplinary literacy, and teachers' disciplinary literacy pedagogical content knowledge solidified taking a qualitative approach to the study. Again, I sought to explore teachers' disciplinary literacy pedagogical content knowledge in science, social studies, and English language arts, teachers' dispositions towards disciplinary literacy, and how or if their dispositions toward disciplinary literacy influenced disciplinary literacy instruction in the classroom.

Table 1

Context of Study: Middle and High School Student Demographics

Student Population	Middle School (N=700)	High School (N=1,000)
Students with Disabilities	19%	16%
Economically Disadvantaged	31%	32%
English Language Learners	1%	1%
Chronic Absenteeism	12.5%	10.5%
4-Year Graduation Rate	n/a	90.5%

Note. This information was taken from the 2016-2017 New Jersey School Performance Report published by the New Jersey Department of Education. The information was included to provide the reader with additional information related to the middle and high school demographics.

Research Participants and Context

This qualitative case study took place in a suburban school district of approximately 2,821 students, grades pre-k through 12, located in central New Jersey (See Table 1).

In 2016 – 2017, the middle school had a 31% free and reduced lunch rate which qualified it as a Title I school with a targeted population of students eligible for Title I services above and beyond the school day. Meaning, students considered Title I basic skills were eligible for after school English language arts and Mathematics support programs where they would receive instruction from certified teachers above and beyond the instruction students received during the course of the school day. Basic skills students were also placed in co-taught English language arts and Mathematics classes where two certified content area teachers collaboratively taught three classes in a full – year block schedule of 87 -minute classes. Approximately 700 students attended the middle school. Absenteeism was identified as needing improvement with 12% of its student body

considered chronically absent from school. Teaching staff averaged fourteen years of teaching experience (New Jersey School Performance Report, 2016-2017).

The high school encompassed grades nine through 12, but was not a Title I school. Classes were heterogeneously grouped without tracking. There were honors, advanced placement and inclusion classes. Basic skills classes in English language arts and Mathematics were team taught by two subject-certified teachers. The high school was in the process of converting to a 4 x 4 block schedule comprised of a fall and spring semester. An A/B schedule was followed in Advanced Placement classes. The high school housed approximately 1,000 students with 1% representing English language learners. Absenteeism was identified as an area in need of improvement with 10.5% of the student population being absent for 10% of the days enrolled, which identified them as being chronically absent. Teachers averaged eleven years of teaching experience (See Table 2).

As previously noted, the study took place in both the middle and high school locations. The locations were selected based upon teachers' work hours. The high school day ended an hour earlier than the middle school day, therefore data collection took place in both schools as an added convenience to research participants. Meaning, when the school day ended, teachers did not have to travel to another school to participate in the study. In addition, I have offices located in both locations, which added flexibility and access to all of the grade-appropriate resources needed to conduct the professional development and informal classroom observations. Building and central office administration approved of the locations being used for my study.

Table 2

Context of Study: Teacher Demographics and Student/Teacher Ratio

Level	Teachers' Average Years of Experience
Middle School	13.6
High School	11.2

Level	Student/Teacher Ratio
Middle School	11:1
High School	11:1

Note. The information in this chart represents the total teaching staff at the middle school, and the total teaching staff at the high school. The average years of teaching experience and student/teacher ratios were included to provide the reader with more information regarding middle and high school demographics. The information was taken from the 2016 – 2017 New Jersey School Performance Report.

The study centered on middle and high school science, social studies, and English language arts general and special education teachers. Teachers were sent an e-mail that described the study and asked that they respond if interested. A total of 18 teachers responded to the request, and were representative of the middle and high school. Once I received their responses, I sent interested potential research participants the link to a Qualtrics pre-survey which also included an introductory notation stating that by completing the pre-survey teachers had consented to participate in the study. The introduction to the Qualtrics pre- and post-survey also stated there would be no risks or discomfort associated with the study, and no direct benefits other than possibly contributing to the current body of disciplinary literacy research.

Participants were advised that all information would be kept in a secure, password-protected computer, and that all research participants' names would be kept confidential. Information gleaned from data collection and analysis would be kept for seven years, after which point it would be destroyed. The last question on the survey

asked participants if they could be contacted to participate in the study. All of the 18 teachers who completed the voluntary pre- survey agreed to participate in the study and to additional contact. Therefore, the sample included a total of 18 self-selected participants.

Once the research participants agreed to participate in the study, 18 semi-structured interview appointments were made through secured e-mail contact. The interviews took place in my high school or middle school office, depending on the teacher's home school. At the start of each semi-structured interview, each participant was given a consent form, time to review the form and sign it. I explained that they were giving consent to partake in semi-structured interviews, pre and post surveys, professional development workshops, and informal classroom observations. Furthermore, all participants were informed in writing and verbally reiterated that their identity would remain anonymous in the study and that all data would be confidential and kept in a secure, password-protected computer or locked in an unnamed location for seven years. After seven years, the data would be destroyed.

Research participants who voluntarily agreed to take part in the study were also asked to attend three professional development work sessions. During the professional development work sessions, semi-structured interviews, and classroom observations, I hoped to gain an in-depth understanding of participants' disciplinary literacy pedagogical content knowledge, their disposition towards disciplinary literacy, and how or if their disposition influenced classroom instruction (Patton, 2002). I collected and examined multiple types of data, recognizing that "different kinds of data give different views or vantage points" (Strauss, 1987, p. 27).

Throughout the course of this study, I examined the following: a) pre- and post-survey results that demonstrated an understanding of and disposition toward disciplinary literacy and how they influenced instruction; b) semi-structured interviews in which teachers answered a series of four questions from a semi-structured interview protocol created by the researcher. The protocol asked that participants discuss what disciplinary literacy means to them in their content area, what experiences they have had that influenced their description of disciplinary literacy, whether disciplinary literacy mattered in their content area, and in what ways disciplinary literacy was addressed in their classrooms c) field notes from three one-hour professional development after-school workshops created and facilitated by the researcher and d) field notes from classroom observations conducted by the researcher.

The first professional development workshop focused on providing information about why disciplinary literacy was necessary. The workshop included discussion about international, national, state, and local literacy score data, which segued into the topic of academic vocabulary—specifically, tiered vocabulary. During the second session, participants were introduced to the close reading skill of collaborative annotation. The third session continued discussion about collaborate annotation, and incorporated the importance making text-to-world, text-to-self, and text-to-text connections.

The workshop topics related to disciplinary literacy pedagogical content knowledge, disciplinary literacy, and disciplinary literacy instruction because they highlighted how each subject has a specialized literacy and ways of understanding, reading, speaking and thinking. The workshops included literacy instructional methods that centered on language and text within disciplinary subjects which relates to

disciplinary literacy pedagogical content knowledge because the strategies would be used to teach students how to understand discourse, ways of speaking, listening, reading, and writing that reflect ways of disciplinary knowing and thinking (Lee & Spratley, 2010; Moje, 2007; Norris & Phillips, 2003). The main objective of the workshops was to have teachers leave with a better understanding of disciplinary literacy and for them to reflect on their disciplinary literacy pedagogical content knowledge while learning with and engaging in discourse with their peers. The workshops were also meant to have teachers leave with a toolbox of three disciplinary literacy instructional strategies that might be implemented in their classrooms.

My positionality within the study was that of a district administrator and instructional leader who supervised middle and high school English language arts and social studies which could be considered backyard research. I avoided insider bias by reporting the data findings as they emerged, discovered themes based on the data, and created workshops based off of the themes that became evident through data analysis. I tried to avoid insider bias by inviting all middle and high school social studies, science, and English language arts teachers general and special education teachers to take part in this study. All participants were self-selected and no one was excluded from the study.

Table 3

Context of Study: Research Participants, Subject-Area and Grade-level

Level	Number of Participants
Middle School	10
High School	8
Subject-Area	Number
English	5
Science	6
Social Studies	7

Note. The information in this chart represents the total number of research participants who volunteered to take part in the study.

In this qualitative case study, I sought to explore the following primary research question**:** What is the disciplinary literacy pedagogical content knowledge of middle and high school science, social studies, and English language arts teachers? Related to this question, I also explored the following sub-questions: a) What are teachers' dispositions towards disciplinary literacy instruction? b) In what ways had grades six - 12 social studies, science, and English language arts teachers' dispositions towards disciplinary literacy influenced classroom instruction?

Data Collection

Pre- and post-surveys. In order to cultivate interest, I distributed, through email, a letter of interest to potential research participants. If interested, self-selected research participants met with me for an explanation of the study, including the Qualtrics pre- and post -survey, semi-structured interviews, disciplinary literacy workshops, informal classroom observations, and field notes to obtain their agreement to participate in the study (Appendix D). All participants signed a permission form prior to engaging in the process of data collection.

The purpose of the pre- and post- survey was to provide rich data about middle and high school science, social studies, and English language arts teachers' educational and work experiences, pedagogical content knowledge of disciplinary literacy, and how or if teacher dispositions towards disciplinary literacy instruction influenced classroom instruction.

Prior to data collection, pre and post surveys were created, and a semi-structured interview protocol was established by the researcher. Ultimately, the information from the pre-survey and interviews served as the impetus that drove the workshop topics.

Again, this study took place during the course of one school year. Research participants were asked to complete an online pre-survey through Qualtrics and were given a two-week window to respond. The post-survey was provided to teachers at the end of the study after classroom observations were conducted (Appendix E). The pre- and post- survey asked the same questions. They not only asked teachers about their disciplinary literacy pedagogical content knowledge, but also inquired about the highest level of education they completed, years of service, and disciplinary literacy pre-service training. Once completed, the pre- and post- surveys were disaggregated using Qualtrics. The data was analyzed in order to meet the needs of teachers attending the professional development work session content. Surveys were advantageous due to the economy of design and brief turnaround time. Fink (2013) asserted "surveys are used to collect information from or about people to describe, compare, or explain their knowledge, feelings, values, and behavior" (p.1).

As noted, 18 participants were self-selected middle and high school social studies, science, or English language arts teachers drawn from a pool of individuals who

responded to an invitation to partake in the study. However, 12 out of 18 research participants attended three professional development workshops: eight middle school teachers and four high school teachers. This was a variation from the original eighteen participants who voluntarily agreed to participate in the study. The variation in the number of research participants who attended the workshops occurred due to the fact that three teachers coached sports and had planned practices every day after school, two teachers went out on leave, and one teacher noted personal family obligations that kept them from attending the workshops.

As previously noted, the content of the one-hour workshops was planned based on pre-survey and interview findings and were conducted after school in the high school and middle school over the course of one month. Teachers were given advanced notice of the workshop dates and times through email so they could plan accordingly. I also offered alternative dates for teachers to attend. In other words, if a high school teacher was unable to attend the workshop at the high school, he or she could attend the workshops at the middle school as an alternative. In the end, eight middle school teachers attended the workshops at the middle school and four high school teachers attended the workshop at the high school (See Table 5). Therefore, this researcher conducted the same three one-hour workshops in both schools, which added up to six workshops in total; three at the middle school and three at the high school. Conferences were not held after the pre- and post-surveys, interviews, or classroom observations, which could be seen as a limitation to the study because I had no way of knowing if teachers continued to infuse disciplinary literacy practices in their classrooms.

Teachers were also made aware that they were to consider trying one or more of the disciplinary literacy strategies that they learned in the professional development series in their classroom. Teachers were reminded that I would conduct one prearranged classroom observation in their natural classroom setting while instructing students using one or more of the disciplinary literacy strategies learned in the professional development workshops. Based on pre-survey and semi-structured interviews, and using disciplinary literacy as the umbrella that the workshops fell under, workshops were centered on the following disciplinary literacy skills: academic vocabulary, collaborative annotation, and making connections.

Semi-structured interviews. A total of 18 interviews were conducted which provided a forum for participants to privately share their disciplinary literacy pedagogical content knowledge, teaching experiences with disciplinary literacy instruction, and their dispositions towards disciplinary literacy in general. The interviews were scheduled with voluntary research participants through email contact. I offered teachers the opportunity to be interviewed after school or during their prep period which would have been during the course of the day. centered on four questions that were prepared in advance with the hope that empathetic, authentic conversations would occur (Appendix A). Taking an "empathic stance elicits elaborated, meaningful narratives that are layered and complex" (Josselen, 2013, p. 11).

As a reminder to the reader, disciplinary literacy is the umbrella under which disciplinary literacy instruction falls. Disciplinary literacy has been defined as having a combination of content knowledge, experiences and skills along with the ability to read, write, listen, speak and think critically in a given subject area or field. Disciplinary

literacy instruction requires teachers to have the disciplinary literacy pedagogical content knowledge, the ability to instruct students in the ways of thinking, writing, listening, speaking and thinking critically in a given subject area or field with the understanding that different skills required when reading specific subjects such as social studies, science or English language arts. In other words, disciplinary literacy pedagogical content knowledge is necessary for teachers to be the disciplinary insider that students need to help them navigate complex texts and discipline-specific language.

After having been engaged with research participants in rich discussion to reveal their disciplinary literacy pedagogical content knowledge, disposition towards disciplinary literacy, and how or if that disposition influenced disciplinary literacy instruction, I hoped that insight and vivid details might have provided answers to my research questions (Rubin & Rubin, 2012).

I arranged one-hour interview appointments with each research participant prior to meeting with them. High school participant interviews took place in my high school office. Middle school participant interviews took place in my middle school office. In both instances, the interviews were pre-arranged, after school meetings. Each meeting took roughly one-hour. All research participants agreed to have their interviews recorded for future coding purposes, and it was made clear that follow-up questions would be asked based on responses. I was sure to insert casual talk in between questions to reassure research participants of the non-threatening atmosphere that existed and assisted in making them feel more comfortable with the interview process (Rubin & Rubin, 2012).

Disciplinary literacy professional development. Three one-hour disciplinary literacy professional development workshops were planned and facilitated by the researcher based on the results of the pre-survey and interview data findings. Twelve participants attended three one-hour workshops conducted in both the middle and high school (See Table 5). As previously noted, the workshops were conducted in the middle and high school to address time constraints that teachers may have experienced due to after school help, after school programs, or personal obligations. The high school and middle school operated on different bell schedules; therefore, the workshops could not have taken place at the same time or place. As a result, there were three workshops for middle school participants and three workshops for high school participants. The high school workshops were conducted in an English language arts classroom at the high school for one hour after school. The middle school workshops were conducted in a computer lab at the middle school for one hour after school.

Workshops

Tiered vocabulary. The first workshop for the middle and high school participants focused on tiered vocabulary. Tiered vocabulary was chosen as a theme because through interview findings few participants identified academic vocabulary as being related to disciplinary literacy or disciplinary literacy instruction which spoke directly to teachers' disciplinary literacy pedagogical content knowledge. As previously stated, eight middle school teachers attended three middle school workshops, and four high school teachers attended three high school workshops. This was a variation from the original 18 research participants due to various reasons stated previously in this chapter.

The academic vocabulary workshop started by having participants answer four questions that were projected on the board:

1. How would you define disciplinary literacy?
2. What does deeper learning look like in your discipline?
3. If you had to name the most important skill students need in your discipline, what would that be? How does it compare to skills they need in other disciplines?
4. What has been your approach to literacy learning within your discipline in the past? What works? What would you like to change?

After that, an overview of the data sources used for this study were reviewed again (pre and post- surveys, semi-structured interviews, professional development workshops, informal classroom observations, and professional discourse centered around disciplinary literacy). The purpose of the study was discussed:

- Explore the disciplinary literacy pedagogical content knowledge (DLPCK) of grades six through 12 science, social studies, and English language arts teachers
- Discover teachers' dispositions towards disciplinary literacy instructional practices
- Determine if or how teachers' dispositions towards disciplinary literacy influenced disciplinary literacy instruction in the classroom

Teachers were reminded that the purpose of this qualitative case study was an attempt to gain insight to and answer the aforementioned questions which would be achieved through pre- and post-survey responses, semi-structured interviews,

professional development workshops, informal classroom observations/field notes, and professional discourse grounded in disciplinary literacy.

The significance of the study highlighted the global, national, state, and local test scores on assessments such as the PISA, NAEP, SAT, ACT, and PARCC and the decades long stagnant growth in literacy scores on those assessments. Providing a "funnel" of assessment results that ended with local literacy scores provided participants with a broader perspective on the state of literacy around the globe and locally. For example, "group and subgroup averages have only marginally increased on the National Assessment of Educational Progress (NAEP), and incremental progress has been made in reading at grades four and eight" (National Center for Educational Statistics, 2015). It was also shared with participants that12th graders scored lower in reading in 2015 than they did in 1992 (Conley, 2018; National Center for Education Statistics, 2015).

The Common Core State Standards (2010) and New Jersey Student Learning Standards (2016) were discussed so teachers could review the grade-band expectations in the content areas and how literacy was not only the responsibility of language arts teachers, but the responsibility of every subject-area teacher. In particular, the requirements of the New Jersey Student Learning Companion Standards were discussed with participants.

Developed to raise the rigor of literacy instruction, the addition of the Literacy Standards for Social Studies, Science and the Technical Subjects which were recently renamed the Companion Standards, began at grade six and scaffolded literacy skills through grade-bands of sixth through eighth, ninth through 10th, and 11 -12th grade. In the middle and high school workshops, I stressed the fact that the main focus of the

standards resided in providing evidence, determining word meanings, and how information was presented: the use of primary and secondary sources, the ability to evaluate an author's claims and evidence, following multi-step procedures, determining the meaning of academic language, symbols, and other domain specific words, and the ability to compare and contrast, evaluate and synthesize information from more than one text (Common Core State Standards, 2010) are literacy skills that needed to be addressed in every classroom. Teachers were made aware of research that stressed the importance of disciplinary literacy instruction and how "the Common Core Standards are explicit in requiring teachers to teach the literacy of science, literature, and history, and even states that are not part of the CCSS, such as Texas, are making the shift as well" (Shanahan & Shanahan, 2008, p. 628). These rigorous standards demand that disciplinary literacy and disciplinary literacy instruction take place in all subject areas.

In order for teachers to build their disciplinary literacy pedagogical content knowledge, discussion needed to ensue regarding the literacy learning standards; specifically, the Companion Standards. The rigor of the standards should not be understated. For example, The New Jersey Student Learning Companion Anchor Standards for History, Social Studies, Science and the Technical Subjects (2017) state by the end of tenth grade, students should be able to:

> NJSLSA.R1. Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
> NJSLSA.R2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.
> NJSLSA.R3. Analyze how and why individuals, events, and ideas develop and interact over the course of a text.

NJSLSA.R4. Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.
NJSLSA.R5. Analyze the structure of texts, including how specific sentences, paragraphs, and larger portions of the text (e.g., a section, chapter, scene, or stanza) relate to each other and the whole.
NJSLSA.R6. Assess how point of view or purpose shapes the content and style of a text.
NJSLSA.R7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.
NJSLSA.R8. Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.
NJSLSA.R9. Analyze and reflect on how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.
NJSLSA.R10. Read and comprehend complex literary and informational texts independently and proficiently with scaffolding as needed.
(New Jersey Department of Education, 2016)

The workshop continued with discussion surrounding the conditions needed in order for students to meet with literacy success which were then presented and discussed with attendees: supportive families, early diagnosis of reading problems, the need for content area reading and writing in all academic areas, community buy-in that values literacy and understands how literacy may lead to increased economic development locally and globally, adequate literacy instructional time, engaging instruction that intrinsically motivates students, and well-prepared and trained educators from all content areas who have a deep understanding of reading and writing research and instructional strategies.

The end-goal for middle and high school educators was to have students be able to apply skills and strategies learned in their content- area and transfer that learning to

real-life situations or other content areas, which is otherwise referred to as the transfer of learning. We discussed the instructional steps of "I do it, we do it, you do it together, and you do it alone" as the gradual release of responsibility framework that the workshops followed, and as being critical for the transfer of learning to take place.

Prior to having immersed teachers in tiered vocabulary, content area literacy and disciplinary literacy were clearly defined. Disciplinary literacy was defined as being a combination of content knowledge, experiences and skills, and the ability to read, write, listen, speak, and think critically in meaningful ways within a specific subject or field of study. I added that disciplinary literacy was having the ability to read like a historian, mathematicians, scientists or literary critics (Alverman & Moje, 2013; Catapult Learning, 2014; International Literacy Association, 2015; Shanahan & Shanahan, 2012; Catapult Learning, 2014). Disciplinary literacy was explained as being anchored in specific disciplines and required explicit instruction. Content area literacy was defined as a set of generic literacy skills commonly used in each subject-area that often consist of summarizing and the use of graphic organizers.

Disciplinary literacy pedagogical content knowledge (DLPCK) was then defined so that teachers developed a working vocabulary related to this study and could think about their own DLPCK throughout the workshops. This explanation was necessary based on pre-survey and interview data where teachers had difficulties connecting disciplinary literacy and what disciplinary literacy instruction was needed in the classroom which pointed to a lack of disciplinary literacy pedagogical content knowledge. In order to build their DLPCK, they needed to first understand what it meant. Disciplinary literacy pedagogical content knowledge was defined as having an

understanding of the relationship between how classroom instruction and student learning transform in response to the content area information being learned and its connection to the various ways of reading, thinking, and knowing that are connected to a specific discipline (Shanahan & Shanahan, 2008; 2012).

Tiered vocabulary was then introduced and discussed with participants. The three tiers of vocabulary were projected in a pyramid on the board and explained as: Tier 1—words used in everyday conversation; Tier 2—cross-curricular words or terms; Tier 3—discipline-specific academic vocabulary seen mainly in a specific academic discipline.

The word "BAR" was projected on the white board, and teachers were asked to write down all the meanings of the word "BAR" they could think of collaboratively. After having collaborated, teachers shared their meanings. Teachers then compared their responses those projected. After this group activity, I explained that the word 'BAR' would be considered a tier two word because it crossed disciplines and had different meanings depending on the context in which it was being used.

The possible benefits of tiered vocabulary instruction were explained to teachers. First, I pointed out that students might use words across disciplines which may improve reading comprehension. Teachers may also have witnessed students taking ownership of their learning because of their newfound comprehension of discipline-specific texts using the supportive strategy of tiered vocabulary.

After modeling how to tier vocabulary, research participants read a short excerpt from Seymour Simon's book *Volcanoes,* a science discipline-specific text. I modeled a first reading by reading the text aloud to teachers. I projected an image of the excerpt on the board. Then together we discussed words such as 'early' being a tier one word and

‘volcano” being a tier three word, but the word ‘crust’ could be a tier two word because it applied to different subject-areas. There could be crust on bread, or as in this case, crust referred to the top layer of rock. I explained that tier one and tier three words were the easiest to identify because the tier one words were common, every day words, and tier three words belonged to specific subject areas or fields of study.

The workshop then transitioned when I asked teachers to take five minutes to reread the text independently and to identify the remainder of tier two and tier three words from the excerpt. Teachers were asked to underline tier two words in red and circle tier three words in blue. Following the gradual release of responsibility (GRR) framework stage of “you do it together,” teachers were then placed in pairs to share the words they had identified independently as tier two and tier three vocabulary.

Afterwards, I projected a color-coded image of the text on the board with tier two words noted in red and tier three words noted in blue. Participants were asked to compare their tiered words to the model on the board and discussed how the disciplinary literacy instructional strategy of tiered vocabulary could be used in their classrooms.

Having teachers articulate ways they could infuse tiered vocabulary in their content area related to the socio-cultural theory because teachers engaged in the social practice of interacting with each other with oral language. Through discourse, teachers inadvertently discovered academic vocabulary in their specific subject – areas related to the academic language that represented their fields of study. The practice of having teachers tier words independently or collaboratively also related to the sociocultural theory because tiering vocabulary was interactive, interdependent, and inter and intrapersonal.

Disciplinary literacy theory also related to this strategy because it promoted instruction that was centered on the language and text within a discipline that afforded teachers and students socially just literacy instruction and content area instruction (Moje, 2007). Engaging in this workshop had the potential to build upon existing disciplinary literacy pedagogical content knowledge so that teachers would possess the skills and knowledge to make sense of words within a discipline-specific text and could transfer that knowledge to students. As a reminder to the reader, teachers were provided with academic vocabulary professional development which was a direct result of interview findings. Few teachers identified academic vocabulary as a part of disciplinary literacy or disciplinary literacy instruction in their content area.

This tiered vocabulary workshop related to the primary research question that explored the disciplinary literacy pedagogical content knowledge because very few teachers identified academic vocabulary as part of disciplinary literacy or disciplinary literacy instruction. Yet, to be a disciplinary insider, the language of the discipline has to be understood. Through discourse, teachers also revealed their dispositions towards disciplinary literacy spoke to the two sub-questions that guided this study.

Additional vocabulary instructional support strategies such as the Frayer Model, which included the word, the definition of the word, characteristics of the word, and examples and non-examples was discussed as well. Nonverbal representations were also discussed where teachers would have students identify the word, construct a visual representation of the word's meaning, a description of the word, and personal associations or characteristics of the word.

Marzano's (2009) Six Steps to Teaching Vocabulary were then discussed with the group. Due to teacher familiarity with the Frayer Model and Marzano's six steps to teaching vocabulary and time constraints, the strategies were not elaborated on throughout the workshop. Rather, the workshop remained focused on tiered vocabulary instruction.

Collaborative annotation. The main focus of the second professional development workshop that took place at the middle and high school was the close reading strategy of collaborative annotation. During interviews, teachers identified close reading as a disciplinary literacy skill that students needed to have in order to comprehend subject specific texts, therefore, I developed a workshop centered on the close reading strategy of collaborative annotation. Again, 12 participants attended the workshops; eight middle school teachers attended the middle school workshops and four high school teachers attended the high school workshops.

First, teachers were asked to answer the following questions:

1. What is close reading?
2. How do you teach students to read text closely in your content area?
3. Does close reading take away from content area instruction?

Afterwards, the idea of using text-dependent questions was discussed along with how evidence is needed from the text to support ideas and part of what the New Jersey Student Learning Standards require in the Literacy Companion Standards for social studies, science, and the technical subjects. For example, the group discussed how the Next Generation Science Standards require claims, evidence and reasoning. Therefore, when students read or engage in a scientific experiment or lab, they must support their

claims or the claims of others with evidence and reasoning. I also explained that responding to text-dependent questions in social studies may mean reading a primary and secondary source, extrapolating evidence from the text, and considering any bias that the author may have brought to the topic which led into a discussion about the differences between content area literacy and disciplinary literacy.

The distinction between content area literacy and disciplinary literacy was reiterated and discussed amongst participants. Once again, I explained that content area literacy was comprised of a set of generic, common skills. Disciplinary literacy required students to read like historians, scientists, mathematicians, and literary critics (Alvermann and Moje, 2013; International Literacy Association, 2015; Shanahan and Shanahan, 2012). I went on to explain that a combination or balanced approach that incorporated content area knowledge and disciplinary literacy skills was necessary in every content area. The only way of achieving that would be through disciplinary literacy instruction which was necessary in all subject areas and fields of study. However, the caveat to that instruction was the teacher's disciplinary literacy pedagogical content knowledge.

In order for teachers to have the disciplinary literacy pedagogical content knowledge, meaning, they fully understood the specialized literacies necessary to speak, write, and read about their respective subject areas or fields of study, they needed the skill set to comprehend the content and offer disciplinary literacy instruction to their students. The close reading workshop was developed to build upon teachers' disciplinary literacy pedagogical content knowledge derived from the pre-survey and interviews. Since teachers identified the need for students to be able to engage in close reading in their interviews, the workshop continued by introducing collaborative annotation.

The close reading strategy and instructional steps of collaborative annotation were then introduced to teachers as an opportunity for collaborative classwork, and disciplinary literacy instruction that supported the gradual release of responsibility (GRR), and promotes critical thinking through close reading of discipline-specific texts. I explained the collaborative annotation steps should take roughly 20 minutes and transition from whole group, to small group, to whole group.

Research participants were broken up into groups of two or three. The collaborative annotation close reading strategy consisted of three rounds. Each teacher was provided with a background essay taken from a social studies document-based question packet (DBQ) on the Salem Witch Trials entitled "What Caused the Salem Witch Trials?" which was affixed to a jumbo post-it note and placed in the center of each group. Each group member also received an individual copy of the background essay for independent reading annotation. I then explained the following steps involved in collaborative annotation:

1. Teacher explains objective, collaborative annotation and provides model to class
2. Teacher read text to whole class
3. Students re-read text independently
4. Teacher transitioned students to groups of three
5. Students choose a colored marker to represent their annotations (each student annotates in a different color)
6. Students create a marker "color key" on bottom of poster to denote their comments in the color they chose to write them
7. Students annotate text
8. Students comment/pose questions/ in response to peer annotations
9. There is to be no talking; silent discussion only
10. Teacher circulates and poses additional questions and comments to students on the poster to spark more "silent discussion"
11. When time is up, groups place posters around the classroom
12. Teacher provides clipboards with Venn Diagram or other compare/contrast graphic organizer or student/class generated graphic organizer so students note similarities and differences on annotations

13. Students engage in a station/gallery walk noting similarities and differences
14. Reconvene as a whole class to discuss similarities and differences in annotations

(New York City Department of Education, 2016)

During the first round, I read the article to participants who followed along reading silently to themselves. Next, I asked research participants to read the article for a second time independently and annotate their copy of the text with questions, comments or insights as they read. Following that, teachers worked together to engage in silent annotation where they silently annotated a larger poster-sized copy of the same text I had read to them and they had read independently. Participants were asked to use their independently annotated document as a reference as they posed written questions and comments to their group on the larger poster- sized copy of the article. Again, it was during this time that research participants were required to think critically and record their questions, comments, and reactions about the content they read on the large printed copy (New York City Department of Education, 2016). As teachers worked together in groups, I circulated the classroom annotating their texts with questions and comments that they had to respond to in writing. After reading my silent annotations, they responded to them.

When done, one group member posted the large poster on the classroom wall. In their groups, research participants then engaged in a gallery walk to read the questions and comments that their colleagues had about the background essay. Teachers then regrouped and engaged in a whole group discussion that focused on sharing their annotations and asking questions regarding the article and/or classroom instruction of the skill. Afterwards, research participants were asked to complete a reflection sheet that

asked about their experiences in the work session and their disciplinary literacy pedagogical content knowledge (Appendix H).

Collaborative annotation related to disciplinary literacy theory in that it would be used in discipline-specific classrooms and requires disciplinary literacy instruction centered on language and text within a specific field of study or subject area. Collaborative annotation also relates to disciplinary literacy theory because it requires teachers to have the disciplinary literacy pedagogical content knowledge to be teach students how to understand the different ways of reading, writing, speaking, listening, and making sense of disciplinary evidence that reflects ways of disciplinary knowing and thinking, and ultimately, transfer that knowledge to students (Moje, 2007).

Collaborative annotation related to discourse theory in that it required teachers to consider ways of behaving, interacting, valuing, thinking, believing, speaking, and reading and writing (Gee, 1989, 2011). Discourse theory relates to disciplinary literacy and disciplinary literacy classroom instruction focused on teaching students to think like experts in the field of study.

Collaborative annotation related back to the primary research question regarding disciplinary literacy pedagogical content knowledge and teachers' dispositions towards disciplinary literacy. Evidence of that relationship emerged through teacher discourse during the workshop which will be discussed in chapter five.

Making connections. The primary focus of the third professional development workshop for middle and high school participants was the disciplinary literacy skill of making connections. Again, the theme of making connections emerged through teacher interviews, therefore a workshop was developed based on interview findings where

teachers identified making connections as a disciplinary literacy skill needed in their content area. The one-hour workshop was offered after school on two separate dates at the middle school and high school. Twelve participants attended the third workshop: eight middle school teachers attended the middle school one-hour workshop after school and four high school teachers attended the one-hour high school after school workshop.

The workshop started by having teachers answer the following questions: What are the most important skills students need in your discipline? How does those skills compare to skills they may need in other disciplines? Teachers discussed their responses and were provided with articulation time to discuss their thoughts with their colleagues. The group then discussed the relationship between making connections and close reading. We reviewed collaborative annotation, which was the disciplinary literacy skill learned in the second workshop and how making connections enhanced reading comprehension in their subject-areas and built background knowledge because participants engaged in discourse that required them to think like experts in the field.

I then introduced the three different types of connections: text-to-text, text-to-self, and text-to-world and the annotations t/t, t/s, and t/w that coincide with each connection. I explained that text-to-text connections are made when the reader connects what they are reading to a text previously read. A text-to-self connection occurs when a reader makes a connection to personal experience or previous knowledge. Finally, a text-to-world connection means the reader makes connections between the text and world events.

After introducing each type of connection, teachers were provided with their copy of the Salem Witch Trial background essay, “What caused the Salem Witch Trials?” from the collaborative annotation workshop to practice making connections. Teachers then

reread and annotated the background essay again, making text-to-world, text-to-text, and text-to-self connections during reading. When finished, we discussed during-reading connections and annotations. The group discussed how they made t/s, t/w connections in the collaborative annotation workshop when they read the article independently and then collaboratively.

The group discussed making connections between subject-areas and how they could collaborate on specific topics to make learning more meaningful for students across all disciplines. For example, an unexpected conversation related to the Salem Witch Trials occurred at the middle school workshop where teachers discussed if students were reading about the Salem Witch Trials in English language arts, the science teachers could build on that by teaching a lesson or two on the ergot theory and how it was believed that the Puritans ate wheat that was infected with a fungus that caused them to hallucinate, and the social studies teachers could discuss mass hysteria and the historical and political context of the Salem Witch Trials. This conversation added to the rich discourse that was necessary for teachers to collaboratively discuss disciplinary literacy and how disciplinary literacy instruction is also collaborative in nature. Engaging in such discourse addressed teachers' disciplinary literacy pedagogical content knowledge by collaborating their ideas that transferred to all of their subject-areas, but could be addressed differently according to their field of study.

This workshop related to sociocultural theory because through their articulation, teachers were able to view instruction as a social practice, not independent of each other, but codependent practices that interact with oral language (Besnier, 1995). It also relates

to Gee's (1989, 2011) discourse theory because it supports classroom instruction focused on teaching students to think like experts in the field.

Classroom Observations/Field Notes

After attending the professional development workshops, a total of 12 classroom observations were conducted. Field notes provided evidence of teachers' disciplinary literacy pedagogical content knowledge, dispositions towards disciplinary literacy, and whether or not those dispositions influenced classroom instruction. As a reminder to the reader, 18 research participants responded to the pre-survey and took part in semi-structured interviews, however, 12 participated in the professional development workshops, and subsequently, were observed in their classrooms.

Classroom observations were scheduled with teachers through e-mail after they attended the three professional development workshops on tiered vocabulary, collaborative annotation, and making connections. Therefore, teachers were aware that I was visiting their classroom on a pre-arranged date and time. The purpose of the classroom observations was to observe teachers in action instructing students on using one or a combination of disciplinary literacy strategies learned in the workshops: collaborative annotation, making connections, and/or tiered vocabulary within their disciplines. As a reminder to the reader, disciplinary literacy is the umbrella which disciplinary literacy instruction falls. Disciplinary literacy instructional strategies may differ at times because different skills are needed depending on the subject-area or field of study.

Each classroom observation was one class period amounting to 45 - 47 minutes at the high school and middle school. High school classes followed a block schedule;

however, I remained in the classrooms for one- half of the class period which amounted to roughly 45-47 minutes. In each classroom, teachers provided a desk for me to use to observe the class. Field notes taken during classroom observations. I tried to capture words and phrases that represented each teachers' disciplinary literacy pedagogical content knowledge and disposition towards disciplinary literacy. Additionally, classroom observations assisted me in identifying patterns and themes content area teachers may or may not have wished to discuss or were inherently aware of that related to disciplinary literacy and disciplinary literacy instruction in their content area (Rossman & Rallis, 2012).

Informal classroom observations provided data that connected to purposeful actions that were expressive of deeper values and beliefs about disciplinary literacy and disciplinary literacy instruction in the content areas (Rossman & Rallis, 2012). Field notes were taken during classroom observations to capture actions and words pertaining to teacher's disciplinary literacy pedagogical content knowledge, dispositions towards disciplinary literacy, and whether teacher dispositions influenced classroom disciplinary literacy instructional practices.

During classroom observations, I observed teachers' disciplinary literacy pedagogical content knowledge through the words they used to instruct students, and how or if their dispositions towards disciplinary literacy shaped classroom instruction after having attended the professional development workshops. Informal classroom observations were one data source that provided answers to my research questions. In support of this, Rossman and Rallis (2012) concurred that observations were "fundamental to all qualitative inquiry" (p. 192).

Credibility

Rossman and Rallis (2012) acknowledged for research to be useful, potential readers must trust in its integrity. To help ensure credibility, a triangulation matrix (Appendix B) and Data Analysis Chart (Appendix C) were created that included the research questions and data sources; pre and post surveys, semi-structured interviews, informal observations, and how the data was analyzed. Through triangulation, the credibility of this research was strengthened because multiple sources of information were incorporated (Stringer, 2007). Triangulation also created an audit trail that confirmed the research took place and exposed data to observers and included field notes, recordings, surveys and interview protocols. Taken together, these would confirm the veracity and trustworthiness of the research (Stringer, 2007; Toma, 2006).

Internal Validity

Fink (2013) explained when employing the use of surveys, internal validity almost always threatened validity because research participants were aware of their participation in the study and may have resulted in reactive effects. In other words, because teachers knew they were taking part in a study, they may have responded atypically to questions posed on the survey (Fink, 2013). Fink (2013) asserted "threats to internal validity include selection of participants, history, maturation, testing, instrumentation, and statistical regression" (p. 113). Since research participants were self-selected grades six – 12 content area teachers, the selection process was not random, therefore, making internal validity a threat.

Data Analysis

Qualtrics pre- and post-survey. The pre- and post-surveys were administered and tallied electronically using Qualtrics. Research participants completed the pre- and post- surveys within specific time-frames: the pre-survey was available for a two-week period as was the post – survey. Each survey contained the same 13 questions. The pre-survey was released to potential research participants first, and they were given a two-week period to respond. The post-survey was made available at the end of the study after classroom observations were completed and research participants were given two weeks to respond.

The surveys were piloted by one independent teacher who was not a research participant so that I could test its content and clarity prior to releasing it to potential research participants. The piloted questions were the same on the pre- and post- survey and posed no difficulty to the independent teacher who piloted each survey.

In order to avoid missing data, it was critical to review the first completed pre-surveys as soon as possible because teachers may have misunderstood questions, may not have wished to respond to certain questions or directions, may have been unsure of how to respond, or found the format difficult to use (Fink, 2013). As I reviewed the pre-surveys, it was interesting to note that there was almost an even number of high school and middle school participants, and that they were also almost evenly divided amongst science, social studies and English language arts.

Research participants were asked to answer the same questions on the pre- and post-surveys. Although some may have argued that forcing a response from research participants would have been considered coercive, creating an online survey that did not

permit respondents to proceed to the next question without answering the first provided research participants with the opportunity to internalize questions, and hopefully, answer authentically and to the best of their ability.

As previously noted, the post-survey took place after classroom observations were completed, and research participants were given two weeks to respond, but that time was extended to provide more time to participants who had not yet responded. There were 11 participants who responded to the post-survey in comparison to the 18 participants who answered the pre-survey (See Table 4). The variation in the number of participants who responded might be attributed to the post-survey being sent out at the end of the school year when teachers typically have many year-end responsibilities.

Table 4

Post-Survey Participants

Middle School	Number
English	2
Social Studies	1
Science	1
High School	Number
English	3
Social Studies	3
Science	1

Note. This table represents the total number of middle and high school teachers who participated in the post-survey.

Cycle I In vivo coding was used to identify common responses. Cycle II pattern coding was used to identify patterns of data such as number of years teaching, education,

and teaching certification. The findings were then organized into tables (See Tables 7 - 11).

Semi-structured interviews. As previously noted, after completing the pre-survey, 18 research participants were asked to voluntarily participate in semi-structured interviews. An interview protocol containing four questions was created by the researcher and respondents were scheduled to meet with me at a pre-determined time and place, either at one of my offices, their classroom, or a conference room within the high school or middle school for the interview (See Appendix A). As previously stated, middle school teachers chose to be interviewed in my middle school office and high school teachers chose to be interviewed in my high school office. One hour was allotted for each interview.

Each research participant was informed that the interview would be recorded for future reference in disseminating data to discover the answers to my research questions. In the semi-structured interview, the questions were asked in a conversational manner. Understandably, the "human experience is storied, and the aim of the narrative interview is to invite the telling of storied accounts. The content of what is told reflects the process of the telling**"** (Josselson, 2013, p. 8). Rich discussion surrounding disciplinary literacy pedagogical content knowledge emerged from the interviews along with information about teachers' dispositions towards disciplinary literacy. Roulston (2010) explained interviews reflected issues surrounding individual realities, how those individuals construct meaning in the context of their setting, and what it means to know.

All interviews were transcribed by the researcher in order to intensely immerse myself in research participants disciplinary literacy pedagogical content knowledge,

dispositions towards disciplinary literacy, whether or not those dispositions were related to disciplinary literacy instruction in the classroom (Rubin & Rubin, 2012). Data was organized using two cycles of coding for interviews.

After having completed 18 semi-structured interviews, I conducted an initial reading of the interviews followed by multiple readings that ended in transcription, and segmenting or coding of the interviews (Stringer, 2007). In Vivo coding was used during Cycle I coding where words and phrases from participants were compressed, but captured each participant's voice. I noted words and phrases that were repeated and "summarized segments of data to prioritize and honor the participant's voice" (Miles, Huberman & Saldana, 2014). As I analyzed the data, I reflected on the words and phrases used by participants to describe their knowledge of and what disciplinary literacy meant to them, which helped reveal their disciplinary literacy pedagogical content knowledge, disciplinary literacy instruction in their subject-area, which also provided insight into their dispositions towards disciplinary literacy, and whether or not their dispositions influenced classroom instruction.

In Cycle II, pattern coding was used to identify patterns and themes that emerged from the words and phrases identified in Cycle I coding. Since there was a large amount of data overall, pattern coding was used as a way to condense data into more meaningful units of analysis (Miles, et. al, 2014, p. 86). It was through pattern coding that themes emerged Transcribed data, participant's words, the repeated use of specific words and phrases, and my interpretation of those words were the primary source of data in this qualitative case study which was central to ethical research (Rossman & Rallis, 2012). Pattern coding was used in order to provide a reorganization and reanalysis of the data

using a different coding method. Identifying patterns within participant responses assisted me in establishing themes and aided in constructing meaning (Miles & Huberman, 1994; Saldana, 2012).

After pattern coding, code reduction occurred through the identification of overlap or redundancy in the preliminary codebook that noted multiple codes and verbatim examples. I then collapsed the codes into themes. Any common patterns that emerged were of particular interest and captured the core experiences and shared dimensions of the setting and/or phenomenon (Patton, 2002)**.** For example, I counted the number of times words or phrases were mentioned in interview transcriptions. The idea of making connections was referenced 28 times in participant interviews, therefore, I found it to be a pattern, and subsequently, identified it as a prevalent theme related to disciplinary literacy and instruction. the same method was used to identify all interview themes referenced in this study.

Chunking the data even further guided the major findings of my research. The data and examples were used to create the story that the data implied. Pattern coding was used as the coding method to help me make sense of the data, explain the findings, connect the findings to research, and draw conclusions that could be communicated to others using thick description (Rossman & Rallis, 2012).

Classroom observation field notes. As previously noted, twelve classroom observations were conducted; eight at the middle school and four at the high school (See Table 5). Field notes were taken during classroom observations and during professional development discourse to record the actions and words of research participants. Cycle I in vivo and Cycle II pattern coding were used and modeled after Miles, Huberman, and

Table 5

Workshop and Classroom Observation Participants

Middle School	Number
Social Studies	4
Science	4
High School	**Number**
English	2
Chemistry	1
Physics	1

Note: This table represents the total number of middle and high school teachers and their subject-areas who attended three disciplinary literacy workshops and were observed in their classrooms instructing students in at least one of the disciplinary literacy strategies learned in the workshops.

Saldana (2014) and highlighted teachers voices as they demonstrated their disciplinary literacy pedagogical content knowledge and dispositions towards disciplinary literacy in the classroom setting.

As I engaged in analyzing classroom observation field notes through Cycle I in vivo coding, I immersed myself in the words and phrases teachers used to instruct students in the disciplinary literacy strategies teachers had learned in the professional development workshops. Ideas that had developed during cycle I coding emerged as themes in cycle II pattern coding. Therefore, it was through cycle II pattern coding that patterns and themes emerged. Through cycle II pattern coding, I was able to identify patterns and themes that captured the essence of teachers' disciplinary literacy pedagogical content knowledge, their dispositions towards disciplinary literacy, and whether or not their dispositions influenced disciplinary literacy instruction in the classroom.

Reflections. After participating in three professional development work sessions, research participants were asked to respond to reflection questions pertaining to the strategy learned that day (Appendices G, H, I). Reflections were to serve as a rich form of data collection as a result of participating in professional development sessions as they had the potential to capture the authentic thoughts and experiences of research participants. This reflective tool caused the three teachers who responded to consider their disposition toward disciplinary literacy instruction in the classroom and their disciplinary literacy pedagogical content knowledge.

Data was analyzed using Cycle I and Cycle II coding to identify common themes. Once determined, those themes served as a source of rich discussion in research findings and future implications of this study. In this qualitative case study, critical teacher reflection related to sociocultural theory in that it sought to re-conceptualize the thinking and subsequent classroom disciplinary literacy practices of participating teachers (Ebadi & Gheisari, 2016).

Three teachers out of the ten who attended the professional development workshops completed the reflections which could have been due to time constraints. The one-hour workshops took place for an hour after school. That meant that research participants' workday was extended for an hour each time they attended a workshop. I also placed the reflection sheets in all of the 12 research participants' school mailboxes who attended the professional development workshops which provided participants another opportunity to respond, however, in the end three middle school teachers completed the reflection sheets.

Limitations and ethical considerations. There were limitations to this case study; the most obvious being my supervisory role within the district, which could have been considered an ethical consideration. Bias could have entered into the study if research participants began to score higher ratings in their evaluations due to the disciplinary literacy strategy instruction, they received through the professional development sessions offered through this study, and subsequently, may have been implemented in the classroom. However, throughout this qualitative case study, I minimized bias by first creating a pre- and post-survey using Qualtrics which also generated data findings. In addition, all classroom observations were pre-arranged, announced observations that were not considered formal observations or part of the teacher's evaluation. Some may have considered this a limitation to the study, however, it seemed to assuage participant's fears that they would be observed trying out a new strategy with students that they had never done before that time. Participants understood that the sole purpose of the classroom observation was to collect data for this qualitative case study.

Classroom observations were announced; therefore, teachers were aware of the date and time they were going to be observed, and pre- conferences were not conducted to discuss the lesson I was going to observe. Similarly, pre- and post-conferences were not arranged to discuss the lesson, disciplinary literacy instruction, or disciplinary literacy pedagogical content knowledge. In that way, having had no pre- or post-conference might be considered a limitation to this study because I had no way of knowing whether disciplinary literacy practices continued nor was I able to provide teachers with guidance prior to their lesson.

Another limitation to the proposed study was that it was considered backyard research because the research was conducted in my immediate work setting. Creswell (2014) explained backyard research may have compromised my ability to disclose information or cause an imbalance of power. As such, I had the responsibility of "showing how the data will not be compromised and how such information will not place the participants (or the researcher) at risk" (Creswell, 2014, p. 188). This was accomplished through ongoing open communication with research participants and the understanding that they could leave the study at any point in time without repercussions. In the same way, participants were made aware there were no rewards for participating in the study other than the possibility of adding to the current body of research surrounding disciplinary literacy. Rossman and Rallis (2012) added the need for qualitative researchers to "use their interpersonal dispositions and skills – within their ethical principles—to understand the way participants see them and their purposes" (p. 147). Multiple strategies for validation were used, such as triangulation, and using rich, thick description to convey research findings (Creswell, 2014).

Finally, another limitation to this qualitative case study were the reflection sheets. The purpose of the teacher reflections could have been explained in more depth so that participants understood why they were being asked to reflect on their experiences and how they might use the strategy they had learned in the professional development workshop in their content area.

Summary. The methods of data collection used in this qualitative case study were a pre- and post- survey, semi-structured interviews, professional development workshops, classroom observations and teacher reflections. Triangulating data added to the validity

and credibility of data findings. Through triangulation, the credibility of research was strengthened because multiple sources of information were incorporated to determine findings, implications and future recommendations (Stringer, 2007).

Research participants completed a pre-survey prior to participating in semi-structured interviews and three disciplinary literacy professional development sessions. Professional development was developed based on the emerging needs revealed through the pre-survey and interviews. During semi-structured interviews, professional development work sessions, and classroom observations, field notes were taken and later coded, chunked, and compressed to break down the data into the most prevalent themes.

An ethical and empathetic approach was taken in research participant semi-structured interviews. Participants took part in one conversational interview that ascertained answers to my research questions regarding disciplinary literacy. Open and In Vivo Coding was used to code data which was then chunked and compressed to identify common themes. Pattern coding was then used to identify common themes.

One classroom observation was performed to observe teachers instructing in their content areas. Classroom observations also provided rich information regarding teachers' disciplinary literacy pedagogical content knowledge, dispositions towards disciplinary literacy, and how or if their dispositions shaped classroom instruction. Field notes were taken during observations and used to identify major themes.

Chapter 4

Findings

This chapter outlines the data analysis and findings of this case study which was conducted in order to explore grades middle and high school science, social studies, and English language arts teachers' disciplinary literacy pedagogical content knowledge (DLPCK), their dispositions towards disciplinary literacy, and how or if their dispositions influenced classroom instruction. In total, 18 teachers took part in the pre-survey and interview process; 12 teachers attended the professional development workshops and were observed in their classrooms, and six out of the 12 teachers who attended the professional development workshop and were observed in their classrooms responded to the post-survey (See Table 6). The findings of this study will be addressed systematically in the order they took place. The first findings will pertain to the pre-survey and post-survey results, followed by semi-structured interviews, and informal classroom observation findings. Connections to theoretical frameworks and theory will be made throughout each section in order to reinforce or connect findings.

Participant Sample and Setting

As a reminder to the reader, this study took place in Hawkstown School District, a suburban district located in central New Jersey. This case study initially consisted of 18 middle and high school science, social studies, and English language arts teachers. The number of research participants varied throughout each phase of the study for various reasons that are discussed in further detail in this chapter.

The interviews, workshops, and classroom observations took place at the middle and high school, depending on the teacher's home base. Teachers chose to be interviewed

in my office at either the middle or high school depending on where they taught. Middle school teachers attended three one-hour workshops after school in a computer lab at the middle school. High school teachers attended three one -hour professional development after school workshops in an English language arts classroom at the high school. Classroom observations were conducted on a predetermined date and time in collaboration with the teacher being observed in the middle or high school, again, depending on where the teacher's classroom was located. In other words, teachers were aware of the date and time that I would be observing them in their classrooms.

Table 6

Post-Survey Participants: Attended Workshop and Classroom Observations

Middle School	Number
English	1
Social Studies	1
Science	1
High School	**Number**
English	2
Physics	1

Note. This table represents the number of teachers who participated in each phase of this case study: pre-survey, interviews, three disciplinary literacy workshops, were observed in their classrooms, and participated in the post-survey.

This chapter will provide an in-depth discussion of the findings of this study which were guided by the following research questions:

1. What is the disciplinary literacy pedagogical content knowledge of middle and high school social studies, English language arts and science teachers?

2. What are teachers' dispositions towards disciplinary literacy in the classroom?
3. In what ways have grades 6 – 12 social studies, science and English language arts teachers' disposition towards disciplinary literacy influenced classroom instruction?

In this study, there were eight teachers whose teaching experience ranged from zero to 10 years, eight teachers whose teaching experience ranged from 10 – 15 years, and two teachers with 15+ years of experience. There were 18 teachers who took part in the pre-survey and semi-structured interviews. Five participants taught English language arts, six taught science, and seven were social studies teachers. Ten taught middle school and eight were high school teachers.

In the pre-survey, nine participants responded they were required to take a literacy course in college, one learned about disciplinary literacy during student teaching, seven learned from direct teaching experience and one teacher was unfamiliar with disciplinary literacy. When asked about on-the-job training, four teachers were unsure if they had taken part in disciplinary literacy training, six stated they received training in department meetings, three teachers noted they learned of disciplinary literacy in faculty meetings, three teachers answered they had attended after school workshops, and two teachers responded they had not engaged in any job-embedded disciplinary literacy training.

In general, during semi-structured interviews research participants agreed that disciplinary literacy was important within their content areas; specifically, the following themes emerged through the interview data: making connections, real-world application, academic vocabulary, close reading, critical thinking, professional training and ongoing support. Participants also noted specific issues that impeded their ability to infuse

disciplinary literacy practices into classroom instruction such as time, student motivation, lack of pre-service training, and the need for additional professional development.

Although participants were thinking about the importance of disciplinary literacy and its relevance to their content areas, an unexpected theme emerged through the pre – survey data, which was the lack of pre-service training participants received in post-secondary school. Nine participants said they received disciplinary literacy training in their teacher education courses that required that they enrolled in one literacy class. There was one participant who enrolled in two pre-service literacy courses in a post-secondary institution.

In semi-structured interviews, teachers demonstrated a general understanding of disciplinary literacy, but there were some who based their definition of disciplinary literacy on inferences they made during the interview process. During semi-structured interviews, teachers revealed they understood the importance of literacy in their content areas. Relatedly, they mentioned how disciplinary literacy was critical to real-world application, making connections, and college and career readiness.

During informal classroom observations, teachers infused one of the disciplinary literacy strategies introduced in the professional development series. As demonstrated in the professional development series of workshops that this researcher provided to participants, teachers applied what they learned about close reading, tiered vocabulary and/or making connections in their content areas. During and after their observations**,** two middle school science teachers expressed to this researcher that they were pleased to see students engaged in close reading using collaborative annotation. They emphasized how their students expressed that they looked forward to engaging in collaborative annotation

again. High school science teachers also commented about how students retained academic vocabulary better after having engaged in a tiered vocabulary lesson.

This chapter provides details about teachers DLPCK and any factors or limitations that may have affected data collection. In addition, the data collection process is outlined and includes details pertaining to the data collection timeframe and any variations from the proposed data collection process are noted.

In this chapter, I referred to observation and interview transcripts. Each quoted excerpt from a transcript has a reference indicating the source from which it was taken either from observations (OB) or (TI) teacher interviews. The number following the reference (TI1) or OB1) was specifically assigned to that research participant. For example, a quote from an interview with Teacher 1 was cited as TI1. If it were an observation of Teacher 1, it would be cited as OB1. In addition, TI numbers relate to OB numbers for teachers who participated in both the interview and observation. For instance, TI1 is the same teacher as OB1. The related numbers go up to 11. There were no related OB after the number 12. For example, TI12 did not have an observation (OB), which held true for participants numbered 12 – 18.

Although information from the professional development sessions and surveys are referenced in this chapter, direct quotes were derived from semi-structured interviews and informal classroom observation field notes unless otherwise noted. In order to maintain grammatical and syntactical uniformity, quotes were edited while preserving the meaning of what was being said within the context of the interview or observation.

As a reminder to the reader, 12 of the 18 teachers participated in both the semi-structured interviews and informal classroom observation, 11 out of 18 teachers

participated in the post survey, and 18 research participants responded to the pre-survey. Reasons for that change included the fact that one research participant left the district while another went out on leave. Four of the participants coached sports and could not attend the after-school workshops, therefore, they did not attend the workshops and were not observed in their classrooms. As such, 12 out of 18 participants attended the professional development workshops and were observed in their classrooms. Again, while 18 participants responded to the pre-survey and participated in the interviews, 11 responded to the post-survey. Out of the 11 who took the post-survey, six had attended the workshops and been observed in their classrooms.

Pre- and Post-Surveys

The pre- and post-surveys were created using Qualtrics and were completed independently by each research participant within a two-week timeframe. As previously noted, 11 research participants took the post-survey which is a variation from the 18 who responded to the pre-survey (See Table 4).

It should also be noted again that the twelve research participants who attended the professional development work sessions, and subsequently, were observed in their classroom setting represented a variation from the initial 18 research participants. Therefore, data has been included that is representative of research participants who attended the three workshops, were observed in their classroom setting, and responded to the post-survey (See Table 6). As previously discussed, these variations were due to multiple factors: personal obligations of research participants, coaching responsibilities, end-of-year teaching responsibilities, or perhaps I had reached the saturation point with

research participants and the study was taking more of their time than they originally anticipated.

Research participants ranged in teaching experience, education, and certification. Teachers' experience ranged from 1 – 15+ years. The inclusion of general and special education teachers added to the differentiated perspectives, dispositions towards disciplinary literacy, and information pertaining to teachers' disciplinary literacy pedagogical content knowledge. Pre and post survey data were collected and stored on Qualtrics, analyzed, and yielded the following results (See Table 7).

Table 7

Characteristics of Middle and High School Teachers: Experience, Education, Cert.

Years of Teaching Experience	Number
0 – 5	4
6 – 10	4
10 – 15	8
15+	2
Highest Level of Education Completed	Number
Bachelor's Degree	8
Some graduate school	6
Master's Degree	1
Master's Degree +	2
A second Master's	1
A Doctoral degree	0
Current Teaching Certification	
Standard Certification/Traditional Route	12
Standard Certification/Alternate Route	4
Standard Certification (MAT)	1
Certificate of Edibility with Advanced Standing (Traditional)	0
Certificate of Eligibility (Current Alternate Route)	1

Note. The majority of participants had 6 – 15+ years of teaching experience with a standard teaching certification with a bachelor's degree. Four out of 18 had at least one Master's degree. One participant had a second Master's degree.

Teaching experience. In this study, 12 out of the 18 research participants had six – 15 years teaching experience. Four participants had zero – five years' experience. Eight participants had earned a bachelor's degree, while six stated they had some graduate school experience. Two teachers had earned a master's degree plus additional credits, and one teacher earned two master's degrees. None of the respondents earned a doctorate degree.

The number of respondents to the pre and post survey are indicated in Table 2. As noted, there were changes in the number of research participants who took the post-survey which varied at the middle and high school levels. The pre-survey yielded 10 middle school and eight high school participant responses. Post-survey responses were not aligned with the number of pre-survey participants. As previously noted, it may be surmised that coaching, job-related, and personal responsibilities may have been contributing factors. In addition, the post-survey was administered towards the end of the school year when teachers have added responsibilities which may have hindered their ability to complete the post-survey. It should be noted that the findings indicated the teachers with the least amount of teaching experience did not follow through with every part of this study, but teachers with six – 15 years of teaching experience followed through with each phase of the study.

A total of 10 middle school and eight high school teachers took part in the pre-survey (See Table 8), and only 11 participants took the post-survey. Six out of those 11 attended the professional development workshops that occurred in each school after interviews, were observed in their classrooms after the workshops, and then took the post-survey (See Table 6).

Subject-areas varied amongst participants: five English language arts, six science and seven social studies teachers participated in the pre-survey. In the post-survey, there were five English language arts teachers, two science teachers, and four social studies teachers. There were nine teachers who taught in a 45-50-minute block, two who taught in a full year block of 80 to 90 minutes, and seven teachers who taught in a four by four semester block of 70 to 90 minutes.

Table 8

Characteristics of Middle and High School Teachers: Grade-levels, Subjects, Class Meetings

Grade Levels	Pre	Post
Grades 6 – 8	10	4
Grades 9 – 12	8	7
Subject Areas	Pre	Post
English Language Arts	5	5
Science	6	2
Social Studies	7	4
Frequency of Class Meetings	Pre	Post
Traditional 45 – 50 min	9	3
Full year block 80 – 90 min	2	3
Traditional with lab period 45-50 min, 5 days, plus a double lab period	0	0
Block A/B 70 – 90 min, full year	0	0
Block 4 x 4 70-90 min. semester	7	5

Note. As previously noted, 11 research participants took the post-survey which is a variation from the 18 who responded to the pre-survey. In the pre-survey subject areas were almost equally represented. In the post-survey, English language arts and social studies.

The information represented in Table 8 is significant due to the differences in class period schedules. For example, during this study nine teachers taught in a traditional 45-50-minute class period, which was a sharp decrease in instructional time

compared to those who met with students for 80-90 minutes every day over the course of the school year.

Table 8 illustrated seven high school teachers taught in a 4 x 4 semester block which meant their instructional time was approximately 90 -minutes from September until the end of January. After the end of the fall block or semester, students moved on to their semester two classes which ran from February until June. English language arts teachers at the middle school taught in a block schedule of 87- minutes every day. This meant that middle school students received a double block of language arts for an entire school year. The differences in instructional time at the middle and high school may be indicative of the time constraints teachers identified as a barrier to disciplinary literacy instruction in the classroom.

Disciplinary literacy pedagogical content knowledge. As a reminder, this qualitative case study sought to explore the disciplinary literacy pedagogical content knowledge of middle and high school social studies, science and English language arts teachers. Also, keep in mind that disciplinary literacy is the umbrella under which disciplinary literacy instruction falls, and that disciplinary literacy varies from subject to subject. As previously discussed, when reading science, readers are required to consider claims, evidence, and reasoning. When engaging with a social studies text, readers are called upon to consider bias or contributing historical events that took place that may have shaped the turn of events that occurred over time. While reading an English literature text, readers would be required to consider how characters develop over the course of the text, identify themes, and how the actions and inactions of characters shape the outcome of the story.

In the same way, disciplinary literacy instruction requires teachers to have the disciplinary literacy pedagogical content knowledge to instruct their students in the academic literacies needed to read, write, speak and comprehend like experts in their specific subject-area or field of study. Therefore, disciplinary literacy and disciplinary literacy instruction are interrelated in that they are both part of what constitutes a teachers' disciplinary literacy pedagogical content knowledge.

When reviewing the data from this point forward, it is important to note that there were three professional development workshops and classroom observations that took place in between the pre- and post -survey. The workshops changed how people thought of disciplinary literacy and disciplinary literacy instruction as seen in the post-survey data where there were no teachers who were unsure whether they infused disciplinary literacy instructional practices in their classrooms.

In order to ascertain teacher's disciplinary literacy pedagogical content knowledge, the pre-survey asked teachers about the number of times per week they believed they infused disciplinary literacy instruction in their content area. As noted in Table 9, 18 teachers responded to the pre-survey. Two teachers responded that they infused disciplinary literacy instruction once per week, another stated they engaged in disciplinary literacy instruction one time per week, five teachers indicated they infused disciplinary literacy three times per week, four teachers claimed to have infused it four times per week, and two teachers noted they infused disciplinary literacy twice per week. Interestingly, three teachers were unsure as to whether they had infused disciplinary literacy practices at all which speaks directly to their lack of disciplinary literacy pedagogical content knowledge because they were unable to identify whether or not they

engaged in disciplinary literacy instructional practices in their classrooms. As a result, the pre-survey responses were used to inform the after school professional development disciplinary literacy instructional workshops offered to research participants.

Table 9

Characteristics of Middle and High School Teachers: Infusing Disciplinary Literacy

Times per week of infusing disciplinary literacy in classroom instruction	Pre	Post
1	2	0
2	1	2
3	5	5
4	4	2
5	2	2
I do not infuse disciplinary literacy practices	0	0
I am unsure whether I infuse disciplinary literacy practices	3	0

As previously stated, pre-survey findings were significant because three teachers were unsure whether they infused disciplinary literacy in their classrooms. On the other hand, five teachers stated they infused disciplinary literacy every day, however, during the interview process some teachers defined disciplinary literacy as generic literacy strategies, which will be discussed in further detail in this chapter. Therefore, it could be deduced that there was a lack of post-secondary/pre-service training which may begin to be addressed with additional training in colleges and universities, which connected to future findings of this study.

Another finding to keep in mind is the post-survey data revealed that out of the eleven research participants who responded to the post-survey, six had attended the

professional development workshops and been observed in their classrooms: three middle and three high school teachers (See Table 6). The remaining five who took the post-survey had participated in the pre-survey and had been interviewed, but they had not attended the professional development or been observed in their classrooms due to various circumstances previously discussed in this chapter.

Post-secondary pre-service training. Pre-survey results from 18 participant responses showed that when asked about their disciplinary literacy pre-service training, nine teachers stated they had at least one pre-service literacy course, one teacher stated he or she learned about disciplinary literacy during student teaching, seven teachers learned from direct teaching experience, and one teacher stated he or she was unfamiliar with disciplinary literacy. The pre-survey results also related to the primary research question regarding teacher's disciplinary literacy pedagogical content knowledge because more than half of the participants responded they had only one college course that addressed disciplinary literacy, while others claimed to have learned about disciplinary literacy on the job. This pointed to a need for additional post-secondary training.

Post-survey results demonstrated that eight participants recognized they had participated in job-embedded professional development, two had attended after school workshops, and one was unsure. Again, a reminder to the reader that 11 out of 18 research participants responded to the post-survey; six of the 11 who responded to the post-survey had attended the professional workshops and had been observed in their classrooms.

Professional development. Participants were also asked about job-embedded professional development regarding disciplinary literacy. Pre- survey results noted in Table 10, showed teachers participated in professional development through a combination of department meetings, faculty meetings or after school workshops. However, there were four teachers who were unsure as to whether or not they had training, and two teachers stated they had no disciplinary literacy training at all.

In the pre-survey, 10 teachers stated they needed additional professional development, three wished to visit a peer's classroom to see disciplinary literacy in action, and one teacher requested a focus group. Four teachers claimed they needed no additional support.

Table 10

Characteristics of Middle and High School Teachers: Trainings and Additional Supports

Disciplinary Literacy Pre-Service Training	Number	
Yes, in an education course	9	
No, I learned during my student teaching	1	
No, I learned from direct teaching experience	7	
I am not familiar with disciplinary literacy	1	
In-District Training	**Pre**	**Post**
I am unsure	4	1
Yes, in department meetings	6	8
Yes, in faculty meetings	3	0
Yes, in after school workshops	3	2
No	2	0
Additional Supports Needed to Implement Disciplinary Literacy	**Pre**	**Post**
Additional professional development	10	4
Additional classroom visitations	0	0
Focus group	1	2
Peer classroom observation	3	2
I do not need additional support	4	3

The findings of the pre- survey data were significant and related to the primary research question regarding teacher's disciplinary literacy pedagogical content knowledge. Responses demonstrated teachers were uncertain as to whether they had engaged in disciplinary literacy professional development in the workplace. This finding spoke volumes to their lack of job-embedded disciplinary literacy training, pre-service training, and, ultimately, their disciplinary literacy pedagogical content knowledge.

As evidenced in Table 10, two teachers responded they had not engaged in any form of in-district training, and four out of 12 participants felt they needed additional

professional development. Two participants were interested in participating in disciplinary literacy focus groups, and two wished to observe their colleagues using disciplinary literacy strategies in their classrooms. In other words, although 12 participants stated they had professional development through department, faculty or after school workshops, 10 out of the 18 respondents noted the need for additional professional development.

Also noted in Table 10, post-survey data demonstrated evidence that eight participants felt the need for additional support in the way of professional development, focus groups, or peer classroom observations. However, as expressed previously, six out of the 11 teachers who took the post-survey attended the professional development workshops, were observed in their classrooms, and responded to the post-survey. Three teachers out of the 11 responded they had no need for additional professional development, and seven responded they needed focus groups or peer classroom visitations. This finding related to teacher's disciplinary literacy pedagogical content knowledge and how teachers' dispositions towards disciplinary literacy influenced classroom instruction. Their responses demonstrated a genuine interest to engage in extensive disciplinary literacy instruction learning opportunities. By doing so, they would build upon existing disciplinary literacy pedagogical content knowledge, thus, serving as a springboard for teachers to infuse learned literacy practices in their classrooms.

It may be deduced from post-survey data that teachers did not wish to have additional classroom observations related to disciplinary literacy, however, teachers demonstrated interest in observing their peers infuse disciplinary literacy practices in their content area. As previously noted, three out of eleven participants answered they felt

additional professional development in any form was necessary. It may be surmised that either teachers felt confident in their abilities and pedagogical content knowledge to infuse disciplinary literacy in their classes, or their responses may be indicative of the fact that they felt confident in the disciplinary literacy strategies addressed in the professional development workshops which will be discussed at length in this chapter.

In the post-survey, eight participants stressed the need for additional support, however, they did not request the need for administrative support which may have demonstrated a divide among teachers and school leaders or a lack of comfort in trying new strategies in the classroom while being observed by an administrator. Instead, teachers expressed more of an interest in discussing disciplinary literacy practices with their peers, visiting other classrooms, or attending internal or external additional professional development (See Table 9). Overall, the findings indicated that in the pre and post surveys, the majority of teachers recognized the need for further disciplinary support, which related back to the primary research question regarding teacher's disciplinary literacy pedagogical content knowledge.

Semi-Structured Interviews

After the pre-survey, 18 research participants took part in semi-structured interviews from which themes were generated by counting the number of times teachers mentioned specific words or phrases they believed related to disciplinary literacy or that demonstrated their dispositions towards disciplinary literacy and disciplinary literacy instruction; all of which related back to the primary research question and sub-questions.

Similarities and differences were found between the surveys and interview data. For example, in the pre-survey, although five teachers responded that they infused

disciplinary literacy at least three times per week in their classrooms, four infused it four times per week, two infused disciplinary literacy five times per week and two teachers instructed students on disciplinary literacy one time per week, it was derived through the interview process that teachers were, in fact, speaking of generic content literacy skills such as summarizing or using graphic organizers. Evidence of this was derived from the very first interview question which asked teachers to define disciplinary literacy. Examples included teachers' definitions of disciplinary literacy as "incorporating disciplinary literacy" (TI1) or "a term I have not seen very often" (TI2) or "read and understand the things we are doing" (TI3). Other responses honed in closer by expressing "incorporating language arts into science" (TI4) and having described it as "interdisciplinary" in nature (TI5). Moving on, there were those who define disciplinary literacy as a way to "introduce concepts through articles…read material with different viewpoints" (TI9). Such definitions spoke directly to teachers' disciplinary literacy pedagogical content knowledge that included their knowledge of content and disciplinary literacy instruction.

Teachers described disciplinary literacy as important and connected to real-world and life application. They elaborated that it involved classroom instruction that included recognition of opposing viewpoints and the ability to make text-to-self, text-to-text, and text-to-world connections. They specifically noted the need for classroom instruction that addressed the ability to understand discipline-specific vocabulary, engaging in close reading, and being able to read multiple texts and produce evidence-based writing, which related to critical thinking skills; a key element of disciplinary literacy. The interview data and subsequent coding yielded the following themes (See Table 11).

Table 11

Interview Themes

Themes	Codes	Code Occurrences
Making Connections	understand, crucial to the world, real-life events, understand importance, short story, poems, song lyrics, math class, history class historical documents, short story, word problems, background, novels, content area texts, primary sources, writing, other fields, areas, classes, subjects, text-to-world, text-to-text, text-to-self connections	28
Real-World Application	environment, situation, practice for life, broaden horizons, life situations, careers, literacy, resume, cover letter, job applications, job interviews, practice, putting yourself in a situation, real-world, life skill, authentic,	17
Academic Vocabulary	self-selected vocabulary, preset vocabulary, pre-teach, hard, in-context, tier three vocabulary	4
Close Reading	read, close reading, mark up, make marks, annotate, effectively analyze, viewpoints, opposing viewpoints, similar viewpoints, compare, historical evidence to support claim, text types, active reading, text-structure, think, formulate ideas, express, analyze, sort, develop, deduce, decision-making, predict, change views	31
Professional Training and Support	professional development, Advanced Placement training, literacy, handouts, department meeting professional development, create, activities, lesson plans, Mini Q's, building initiative, collegial discussions, two literacy courses in college, past work experience, read in discipline, professional journals, one literacy course in graduate school, content literacy workshops	43
Teacher Disposition	super important, important, most important thing possible crucial to world and real-life events, practice for life, skill, transfers to other subject areas, how I teach my content, discipline-specific, I love it, routine, uncomfortable, time constraints, pressed for time, out of comfort zone, important	43

Table 11 (continued).

Note. The codes listed above are a representative sampling of codes from which themes emerged. The reason for listing the themes in such order was so the reader could see the progression of themes that emerged in data analysis. In addition, academic vocabulary was placed in the middle of the chart so the reader could see the juxtaposition that very few research participants responded that academic vocabulary instruction was critical. Yet a large number of participants thought it important that students make connections, apply disciplinary literacy to authentic learning or work situations, and felt that professional training was lacking in their post-secondary education. for students to understand the content. Themes were generated by counting the number of times research participants used the words to describe disciplinary literacy, professional training, or demonstrated their dispositions towards disciplinary literacy.

Professional training and support. One of the most prevalent themes that emerged from semi-structured interviews and pre and post survey data was the need for ongoing professional training and support regarding disciplinary literacy. As stated in Table 10, nine participants responded that they had taken a literacy course in college, seven said they learned on the job, one teacher learned about disciplinary literacy during student teaching and another was unfamiliar with disciplinary literacy.

As noted in Table 11, multiple themes emerged through the interview process and resulted in two themes that stood out most prominently: professional training and support and teacher disposition. Teachers felt they were not required to take more than one or two literacy courses in college. This finding aligned with pre-survey results, and built the case for additional job-embedded professional development. It could also be surmised that if teachers expressed they had minimal disciplinary literacy training, it might also be concluded that they may have had limited disciplinary literacy pedagogical content knowledge.

The interview process provided teachers with the opportunity to discuss what disciplinary literacy meant to them in their content area, their dispositions towards

disciplinary literacy, and through their responses, this researcher might gain a better understanding of whether or not their dispositions towards disciplinary literacy influenced classroom instruction. During interviews, teachers articulated some of the training they had or had not received in college or the workplace. For example, a middle school social studies teacher pointed out that "disciplinary literacy was not necessarily talked about in undergraduate school, but it was incorporated that reading, writing, literacy strategies had to be included and incorporated into your subject area" (TI1). A middle school science teacher explained "I don't know that I've had any…" (TI3). Another teacher credited a "background in language arts" prior to becoming a middle school science teacher. Others named specific workplace professional development they had attended or the one literacy course they were required to take in college that addressed disciplinary literacy.

Interview data revealed that all research participants recognized that disciplinary literacy mattered in the content areas; however, when asked about previous training, teachers explained they had little to no pre-service disciplinary literacy instruction training in their college or university programs. Teachers spoke about having one or two college classes while others had none. An English teacher recalled having to take two specific literacy courses as a part of pre-service training while a science teacher noted: "and then it's like taking the language arts and putting into science that was hard for me" (TI4).

On the other hand, a high school science teacher reminisced about her high school science teacher who greatly influenced her: "My science teacher was really good about incorporating articles in classroom discussions, so I took that and applied it to my

classroom" (T9). Another teacher explained that practical experience was his teacher: "I would say more of my past work experience has helped me. I've understood that I really can't learn about how the business environment or the disciplines that I'm practicing until I read about it every day. College has helped me in that way" (T15). An English teacher recognized: "this [disciplinary literacy] isn't a practice for English, this is a practice for life" (T17). A chemistry teacher related: "When I first started taking workshops, one of the workshops I took was a Chemistry Heritage Society class. It was a one-week course over the summer…and she sucked us all in. At the end she asked, 'Do you understand how knowing the history of your subject can suck your students in...the woman had such a gift" (TI14).

Teachers highlighted their exposure to disciplinary literacy which included Advanced Placement training, department meetings, collegial discussions, past work experience, having read professional journals, and sparse pre-service training as inconsistent avenues for professional learning.

Relating pre-survey and interview data together, it may be surmised that findings indicated the need for additional training. The pre-survey data in Table 9 presented eight teachers infused disciplinary literacy one to three times per week, and six teachers infused it four to five times per week. Yet, during semi-structured interviews, in general, teachers had difficulty defining disciplinary literacy. This may beg the question that if teachers had trouble defining disciplinary literacy, how do they know if they infused it in classroom instruction? This question also led to the finding that related to the lack of post-secondary disciplinary literacy training identified by teachers in the pre-survey.

Based on such findings, it may be said that teachers may have been lacking disciplinary literacy pedagogical content knowledge and were in need of additional training. Articulation meetings may prove useful in engaging teachers in discourse which may assist teachers in gaining clarity about disciplinary literacy practices, build upon disciplinary literacy pedagogical content knowledge, and perhaps provide additional ways to weave disciplinary literacy into the fabric of classroom instruction.

In this study, both novice and seasoned teachers acknowledged that their experience with disciplinary literacy was limited in their pre-service training. This finding was striking due to the fact that teachers were expected to teach to their State dictated subject area and literacy standards, but felt they were lacking the training in order to do so. Acquiring and developing the disciplinary literacy pedagogical content knowledge needed to infuse disciplinary literacy instruction required practice and reflection. With the necessary training, instructional practice, and exposure to best practices, teachers in all academic areas may have the ability to infuse disciplinary literacy in their content areas.

Making connections and real-world application. The theme of making connections emerged through teacher interviews. During our conversations, teachers recognized the importance of instructing students in making connections to personal experiences, the world around them, or other texts. Teachers mentioned that it was critical that students were able to read historical documents, and connect what they were reading to real-world experiences with the possibility of learned information transferring to other content areas. It is also important to point out that the findings were directly related to teachers' disciplinary literacy pedagogical content knowledge, their

dispositions towards disciplinary literacy, and whether their dispositions influenced classroom instruction.

Research participants revealed that whether they were teaching students a novel, a scientific phenomenon, or reading a historical document, making connections was critical to reading comprehension in their disciplines. Additionally, teachers noted the importance of assisting students in connecting what they were learning in the classroom to their lived experiences outside of the schoolhouse gate which led to discussions about students' lack of background knowledge, motivation, and their difficulty reading complex texts.

The significance of these findings cannot be understated because authentic learning occurs when students make connections to self, world, texts or media. All areas of learning are affected by schema, which is "how we store our knowledge, how we learn, and how we remember what we have learned" (Keene & Zimmermann, 2007, p. 71). Comprehension of what is being read may improve when students are taught to be cognizant of activating prior knowledge, and have the ability to relate relevant past experiences to new information and build upon the old to create new knowledge.

Teachers in this study recognized the importance of background knowledge in that it gave each individual a different connection to what was being learned. Teachers identified the need for students to make authentic connections to what they were reading in the classroom, instructional strategies designed to build students personal schema, and background knowledge.

As evidenced above, teachers reported that they connected their subject-areas to the real-world experiences they encountered and projected how literacy skills transferred

to college and career readiness. As a result, teachers explained their goal was to teach students how classroom instruction related to the outside world. Teachers emphasized the use of outside articles related to their subject areas that could be used to help students make the connections. Teachers also asserted that disciplinary literacy instruction was not only meant for the classroom, but once attained, a skill that would transfer to future careers. This finding is relevant in that it related to making connections and the transfer of learning to college and career.

Clearly, reading is a multifaceted process that involves interaction between the text and the reader which requires a multitude of skills. When focused discipline-specific reading strategies, such as the ability to making authentic connections, is scaffolded into classroom instruction, teachers and their students reaped better reading comprehension. In this study, teachers and students utilized a variety of applicable disciplinary literacy methods that were practical, thereby increasing comprehension as they created their own "disciplinary literacy toolbox" of applicable real-world reading strategies.

Academic vocabulary. The theme of academic vocabulary developed from interviews. In their interviews, very few teachers discussed academic vocabulary as part of disciplinary literacy or disciplinary literacy instruction. This finding directly related to the research question regarding teachers' disciplinary literacy pedagogical content knowledge because when discussing specific disciplinary skills and strategies addressed through classroom instruction, few teachers identified the need for academic vocabulary instruction as critical to disciplinary literacy instruction in the classroom. Those who acknowledged the need for academic vocabulary instruction noted the importance of tier three academic words and their relatedness to reading comprehension. That is to say, a

limited number of teachers recognized the importance of instructing students on domain-specific vocabulary and subject-specific reading comprehension. Learning domain specific vocabulary involved spiraled vocabulary strategy instruction in a scaffolded process that called upon teachers at each grade level and in all subject areas to reinforce and build upon learners' prior vocabulary skills and word knowledge.

The New Jersey Student Learning Standards for Science, Social Studies, and English Language Arts (2016) are considered the springboard for instruction. The Companion Literacy Standards and content -area standards specifically outlined the importance of middle and high school teachers engaging students in academic vocabulary. As such, the literacy standards that accompanied discipline-specific standards must be addressed in content area classrooms and reinforced through classroom instruction in all disciplines. As noted in Table 11, during semi-structured interviews, vocabulary was not emphasized by most participants when discussing disciplinary literacy, which could be considered a critical finding because vocabulary is directly related to reading comprehension in all disciplines. Yet, academic vocabulary was not at the forefront of being considered a disciplinary literacy practice by teachers. It could be surmised that this finding was related to teachers disciplinary literacy pedagogical content knowledge.

These findings indicated the need for one of the workshops to center on academic vocabulary. As a practice, academic vocabulary instruction is a necessary factor for reading comprehension. In the classroom, teachers might approach this disciplinary literacy practice by having instructed students on the three tiers of vocabulary: tier one

words being common, everyday words, tier two words would be seen across disciplines and tier three words would be the academic vocabulary specific to a certain discipline.

Close reading. Close reading instruction was identified as a critical factor related to disciplinary literacy by teachers. Close reading involved the ability to teach students how to make logical and relevant inferences and to cite textual evidence to support their ideas. Such skills as identifying evidence to support claims, analyzing complex text, and comparing and contrasting viewpoints to formulate and express ideas were found to be crucial to discipline-specific reading instruction. Through interviews, teachers concurred that close reading was a skill that needed to be taught in their disciplines. They also noted close reading as critical in reading multiple types of texts for different purposes and how that would assist students in connecting learning to other subject areas, as well as future college and careers.

These findings were significant in that this is the age of evidence-based writing when the learning standards demand that students have the ability to read grade-level texts and to analyze and make meaning of what they have read. Although research participants identified close reading as a disciplinary literacy skill that needed to be consistently addressed in all subject-areas, they also recognized the need for ongoing professional training and support in disciplinary literacy close reading instructional practices. The findings related to the primary research question regarding teachers' pedagogical content knowledge and the second research question that explored teachers' dispositions towards disciplinary literacy because they found close reading to be critical to their discipline, but at the same time, indicated a need for further professional development. Research participants seemed willing to learn more about disciplinary

literacy strategies that could be used in their classrooms. Thus, based on interview findings, I created an after school close reading collaborative annotation professional development workshop.

Teacher dispositions. The theme of teachers' dispositions emerged from the interviews and related to the second and third research questions regarding teachers' dispositions towards disciplinary literacy and whether or not their dispositions influenced classroom instruction. As evidenced in this study, teachers' dispositions towards disciplinary literacy have influenced whether or not disciplinary literacy was infused in their content areas. During interviews and pre- and post- surveys, teacher responses included phrases noted in Table 11, however, their ability to define disciplinary literacy did not align with their dispositions towards it or disciplinary literacy instructional practices.

Teachers exhibited their dispositions towards disciplinary literacy and disciplinary literacy instruction during interviews. For example, a middle school social studies teacher stated that "reading should not just be a reading language arts skill…it has to be incorporated in all of the subject-areas…because it further enhances student's abilities to understand content curriculum through different means and sources" (TI1). In contrast, a high school English teacher stated disciplinary literacy was "what I am about, but for other teachers in different disciplines, I think it's a little harder to get used to" (TI10). The findings related to their dispositions towards disciplinary literacy, and the possible influence their dispositions may have had on disciplinary literacy instruction in the classroom. The middle school social studies teacher recognized that literacy instruction should be addressed in social studies as well as English language arts. The high school

English teacher noted that teachers in other academic subject-areas may struggle with disciplinary literacy instruction.

As evidenced in the following excerpts from semi-structured interviews, teachers had varying thoughts, understandings, and experiences which influenced their interpretations as to their roles regarding student accountability related to their level of disciplinary literacy pedagogical content knowledge and ability to implement disciplinary literacy instruction as it applies to their specific subject-area or field of study.

Teachers various thoughts, understandings, and experiences with disciplinary literacy instruction created a disconnect between their instruction and the skills they stated students needed when reading content area texts or articles. For example, participants discussed that although their goal was to gradually increase the complexity of reading material and scaffold instruction to the gradual release of responsibility, teachers noted students were ill- prepared for independent readings due to text complexity or students' lack of intrinsic motivation to read which led to student disengagement. On the other hand, teachers discussed that they recognized the importance of disciplinary literacy, and their goal to develop the best possible writers and readers; however, when considering their approach to disciplinary literacy for students, they remained dependent on the prior teachers' disciplinary literacy instruction, which may or may not have occurred in a student's academic career. In other words, teachers identified the skills students should have in order to interact with, comprehend, read, write and speak in their subject-area, however, they seemed unclear about how to infuse disciplinary literacy skill instruction in their classrooms. Evidence of this was seen in the following remarks:

One science teacher stated, “If they [students] don’t understand…if they can’t grasp the way things are being talked about or written about, then they’re not going to be able to understand the subject matter well” (TI3).

Another science teacher noted:

> I 100% think that it’s very important in content classes because a lot of the material they are presented with is non-fiction and they have to be able to pull out the information to support whatever argument they are trying to make…[they] have to be able to explain what it is [they have] found or did not find…why? What did you do? And how can we correct it? So it’s kind of hand-in-hand. (TI4)

Yet another science teacher stated:

> …In Physics, those students, especially the AP students, understand a great deal of it although we still have to talk about some of the underlying factors. Honestly, some of the articles written in those magazines, I don’t even understand. So, it’s really higher level…My regular Physics- type students like ReadWorks. It’s a fantastic way to get some articles that are physics-related or science-related for them because it’s at a lower level and they really understand it and they don’t get frustrated. You don’t want to frustrate your reader. You’ve got to make sure it’s appropriate for their level. (TI14)

An English teacher explained:

> “…it means …not only reading fiction, non-fiction, fantasy, but actually reading scientific, social studies, technology…those kinds of texts, and being able to understand what they mean from skills learned previously” (TI6).

A social studies teacher reflected:

> "It's (disciplinary literacy) a term that I haven't seen very often, and I guess my interpretation of it, right or wrong, is creating strategies for literacy that are, I don't want to say standardized, but consistent and helps students become better in specific subject-areas" (TI2).

The aforementioned discourse reflected that teachers were able to identify the disciplinary literacy skills necessary for students to comprehend complex texts. Moreover, teachers were able to ascertain the necessity for students to be able to transfer their learning from the classroom to college and career readiness. Teacher disposition and expectations seemed to have influenced the implementation of disciplinary literacy in the classroom – whether it was through the use of below grade -level text to ensure student comprehension or if existing instruction was dependent upon the perception that students should be equipped with the disciplinary literary skills needed to comprehend on or above grade- level discipline specific texts upon entering their classrooms.

In sum, through the interview process, teachers stated they addressed disciplinary literacy skills in their classrooms through curriculum, close reading, annotation, having students analyze texts, identifying claims and evidence, discussion, primary sources, vocabulary and making real-world connections. Teachers noted that using primary sources or having students compare multiple sources using critical thinking skills was a key component of disciplinary literacy instruction within their classrooms. None of the above can be accomplished without professional development and ongoing support.

Professional Development Workshops

Research participants were asked to attend three professional development work sessions that I created and facilitated based on data from the pre-survey and interviews.

The first workshop centered on tiered vocabulary because very few research participants mentioned academic vocabulary as being a part of disciplinary literacy or disciplinary literacy instruction. The second workshop focused on close reading/collaborative annotation because teachers identified close reading as a skill that students needed in order to interact, comprehend, read, and analyze subject-specific texts. The third workshop overlapped with the close reading workshop because it focused on the importance of making text-to-text, text-to-self, and text-to-world connections, which is a skill that is used during close reading.

As a reminder to the reader, the one-hour professional development workshops were held after school at the high school in an English language arts classroom, and three one-hour professional development sessions were offered after school at the middle school in the computer lab. Teachers were notified two weeks in advance of the workshops. If teachers could not attend the workshop being offered at their school, they had the option of attending the same workshop on a different date at the other school. For example, if a high school teacher was unable to attend the workshop, he or she could attend the middle school workshop. As previously noted, the first of the three workshops centered on vocabulary.

Professional development session one: Tiered vocabulary. In order for teachers to gain an understanding of disciplinary literacy, it was necessary for them to conceptualize or put disciplinary literacy into context. I modeled the workshop following the gradual release of responsibility model, otherwise known as the I do, we do, you do it together, you do it alone, model. I started the workshop by providing an overview of the one-hour workshop.

I first reviewed the purpose of the study was to explore what they knew about disciplinary literacy as it applied to their field of study, their dispositions towards disciplinary literacy, and whether their dispositions influenced disciplinary literacy instruction in their classroom. reviewed data points by sharing international, national, state and local standardized reading and writing test scores with teachers.

In their interviews, few teachers identified the need for vocabulary instruction. Once teachers were able to put disciplinary literacy into context, we spoke about the relevance of vocabulary instruction, and how it was connected to disciplinary literacy. During the workshop teachers were asked what students needed to be able to do to meet with success in teachers' specific subject areas. Overall, middle and high school teachers identified the need for close reading, identifying words, determining word meanings through context clues.

When asked about vocabulary instruction, teachers related that the idea of tiered vocabulary was new to most of them, and they had not practiced it with students in their classroom. In our discussions, teachers expressed that "students are afraid to ask about words" and "tier three words are words they just need to know." When discussing an assignment, one high school teacher commented, "They didn't have to include that vocabulary…but we wanted to see some of those tier three words, some of those higher - level words. They didn't know how to fit them in there…they took the easy road…" Such dialogue demonstrated teachers' disciplinary literacy pedagogical content knowledge, dispositions towards disciplinary literacy, and its influence on disciplinary literacy in the classroom. These statements also connect to the idea that there were those who thought they understood disciplinary literacy and disciplinary literacy instruction, but there

seemed to be a disconnect between classroom instruction, teacher expectations and student performance.

Teachers then read an excerpt from Seymour Simon's book *Volcanoes*, and were asked to work together to identify tier one, two and three words. As a reminder to the reader, tier one words are common, every day words, tier two words are words that cross disciplines, and tier three words are considered academic words specific to a content area. During this time, teachers identified and sorted the words into tiers. The following discussion was an example of how two teachers went about determining tiers. The number one indicates teacher one and the number two denotes teacher two in the discussion.

1: Well I'm thinking that "molting" is probably a tier-three word.
2: And "magna".
1: "Magna".
2: "Magma".
1: "Magma"… and…
2: I was thinking "mantle"
1: Yeah.
1: Three.
1: We went to the words, and then something like "crust" would be a tier-two because that could be in multiple situations, right?
1: "Volcanoes" probably tier-two.
2: Something that's explaining, yeah
1: "Molten" "melted" or "molten", I would say "melted" would be a tier-two.
2: Right.
1: "Molten" would be a tier-three.
2: Tier-three, yeah.
1: "Magma", we already said that.
2: "Crust", again, tier-two.
1: Yeah… "lava"? I think that's a word they know.
2: Yeah.
1: I wouldn't say that's a tier-three word, I would say that's a tier-two word.

Engaging in academic discourse and wordplay related to discourse theory in that through their discussions and the tiered vocabulary strategy, teachers realized there were different ways of creating word knowledge and different ways of sharing that knowledge in in their specific disciplines. In turn, such an exercise also related to discourse theory because it supported classroom instruction focused on teaching students to think like experts in a given field, and part of thinking like an expert in a given field is using and understanding the language of the field. Again, Moje (2016) stressed the need for cultural insiders or disciplinary insiders to help those new to the culture or discipline navigate their way through the language of the culture. Those cultural insiders were the teachers.

After this exercise, I projected the correct responses so teachers could compare their answers to mine. I explained that this disciplinary literacy vocabulary instruction activity could be used in their classrooms without taking away from their content areas. Including tiered vocabulary instruction that directly related to their content areas may assist students in comprehending complex text and transfer to other content areas where students would use applicable tiered vocabulary. It was also suggested that teachers create tiered word walls in their classrooms that may serve as a reminder to students. In addition, I suggested that teachers have students maintain a tiered vocabulary list in their binders that they could use as a reference when writing and apply the tiered vocabulary words and use them within the context of what they are learning.

Marzano's (2009) six steps to teaching vocabulary were introduced to teachers as the bridge that connects prior knowledge to new knowledge. The importance of modeling and teaching students how to articulate predicted word meanings with their peers and individually. The steps were explained as follows:

1. Provide a description, example or explanation of the new term. Determine what students already know. Provide the meaning of the word. Explain word features. Provide examples through images, stories, experiences and/or drama
2. Ask students to explain the meaning through linguistic or non-linguistic representations.
3. Ask students to create a picture, symbol or graphic that represents the meaning of the word.
4. Engage students in activities that add to their knowledge of the vocabulary terms such as classifying, brainstorming related words, examining affixes and roots, comparing and contrasting, creating metaphors or analogies, identifying similarities and differences.
5. Ask students to engage in academic discourse to discuss the terms with one another. Doing so may assist in correcting misconceptions students have about word meanings. Teachers can assign roles to students: Etymology Expert, Root Researcher, Synonym/Antonym Explorer/Discusser Leader. Teachers could also engage students in a pair/share activity in which students are paired in groups of two to discuss vocabulary words.
6. Engage students in vocabulary games to reinforce word meanings.

(Marzano, 2009)

Summary. Tiered vocabulary is an instructional strategy for teachers to engage students in critical thinking and problem solving – either collaboratively, or independently after modeling and group practice have been incorporated in classroom instruction. Vocabulary instruction is critical to students reading comprehension and

academic success (Marzano & Simms, 2013; National Reading Panel, 2000), and "part of a person's knowing a word is actually part of a person's knowledge about the world, and the more a reader knows about the world, the better they are able to understand what they read," therefore, "if knowledge is the lynchpin, then knowing multiple meanings of a single word might be just as important as knowing several words" (Lawrence, Hagen, Hwang, Lin & Lervag, 2018, p. 27).

Through semi-structured interviews, few teachers identified the need for vocabulary instruction in their specific disciplines. Research participants who felt it relevant indicated the importance of teaching students' discipline-specific vocabulary that would aid in reading comprehension. Through the use of tiered vocabulary and Marzano's (2009) six steps to teaching vocabulary, teachers were provided with research-based best practices that could be used in their content area classrooms

During the tiered vocabulary workshop, teachers engaged in the process of tiering vocabulary through word play and peer articulation. Teachers were asked to determine the tier of each word. As noted, teachers discussed tier categorizations by having sorted words. They noted how tier two words crossed over into various subject areas. The purpose of the disciplinary literacy vocabulary instruction activity was for teachers to make the connection between their learning experiences and how they might implement such strategies in their classrooms. Both of which may have caused growth in teachers' disciplinary literacy pedagogical content knowledge and disposition towards disciplinary literacy.

The findings of this were demonstrated in the post-survey since out of the six teachers who attended the three workshops and were observed in their classrooms none

of them answered that they were unsure whether they infused disciplinary literacy or unsure whether they had attended any workshops surrounding disciplinary literacy. The findings were also evident in classroom observations where each teacher who attended the professional development workshops was observed teaching their class using one or more of the disciplinary literacy instructional strategies learned in the workshops. The willingness of the teachers to plan and implement lessons using one or more of the strategies demonstrated their disciplinary literacy pedagogical content knowledge and dispositions towards disciplinary literacy.

Although academic vocabulary is critical to reading comprehension, close reading and vocabulary go hand-in-hand when it comes to disciplinary literacy reading instruction. In order to address that need, the second professional development workshop focused on collaborative annotation.

Professional development session two: Collaborative annotation. During semi-structured interviews, teachers identified the need for close reading instruction in their disciplines, therefore one of the professional development sessions focused on collaborative annotation, a disciplinary literacy close reading strategy. Specifically, teachers discussed the importance of students having the ability to read and comprehend discipline-specific texts that may have been written above their reading levels. Teachers pointed out their frustration that students were unable to comprehend articles, textbooks, or pieces of literature without teacher guidance.

The second professional development session included information about close reading; specifically, collaborative annotation. The session started by having participants answer the following questions:

1. What is close reading?
2. How do you teach students to read text closely in your content area?
3. Does close reading take away from content area instruction?

I explained that close reading was defined as multiple readings of one or more texts. Examples included having students perform a first read and annotate the text, a second read by the teacher while students listen, a third read where the teacher reads and models annotations, and finally, a fourth read by students as they locate evidence and answers.

The Next Generation Science Standards require students to engage in claims, evidence and reasoning. The English language arts standards require middle and high school students to locate evidence and engage in close reading of multiple texts. The New Jersey Department of Education (2016) noted:

Developing literacy skills within specific content areas is an important life skill for students as they prepare to be college and career ready. The mutually supportive nature of the New Jersey Student Learning Standards for English Language Arts (NJSLS-ELA) and the New Jersey Student Learning Standards for Science (NJSLS-S) made disciplinary literacy integration an opportunity for students to develop proficiencies in language arts as it applied to science.

The New Jersey Student Learning Standards for Social Studies also address the need for the integration of disciplinary literacy skills. In their explanation, the New Jersey Department of Education (2016) emphasized, “minor revisions were made to the 2009 Social Studies Standards for one of the following four reasons - to provide clarity,

increase accuracy, adjust pedagogical expectations or to address grammatical issues" (p. 2).

To bridge any potential gaps between their understanding of disciplinary literacy and content area literacy, the differences between the two were discussed with teachers. Teachers were then shown how to implement collaborative annotation within their content areas. Each group of teachers was given a piece of poster paper with a social studies related article regarding background information about the Salem Witch Trials was affixed to the center of the paper, leaving room for teachers to record their collaborative annotations without verbal communication. It was explained that the key to collaborative annotation is that participants could only communicate their comments and questions through annotations in the margins of the large piece of white paper. I explained that I would also circulate the classroom and read their annotations and comment or ask questions that they were required to answer, which would hold them accountable.

I explained that the strategy could be used with groups of three students and should take no more than 20 minutes. My instruction explained that collaborative annotation provides time for students to engage in collaborative group work, served as a building block towards the gradual release of responsibility (GRR), utilized discipline-specific texts, and encouraged critical thinking skills that promoted thinking like a historian, scientist or literary critic. The following steps were explained and engaged in by research participants:

1. Teacher explains objective, collaborative annotation and provides model to class
2. Teacher read text to whole class
3. Students re-read text independently

4. Teacher transitioned students to groups of three
5. Students choose a colored marker to represent their annotations (each student annotates in a different color)
6. Students create a marker "color key" on bottom of poster to denote their comments in the color they chose to write them
7. Students annotate text
8. Students comment/pose questions/ in response to peer annotations
9. There is to be no talking; silent discussion only
10. Teacher circulates and poses additional questions and comments to students on the poster to spark more "silent discussion"
11. When time is up, groups place posters around the classroom
12. Teacher provides clipboards with Venn Diagram or other compare/contrast graphic organizer or student/class generated graphic organizer so students note similarities and differences on annotations
13. Students engage in a station/gallery walk noting similarities and differences
14. Reconvene as a whole class to discuss similarities and differences in annotations (New York City Department of Education, 2016)

Participants assumed the role of active readers during this collaborative annotation close reading exercise. During the activity, teachers seemed engaged and enthusiastic about having non-verbal conversations with their peers. They read each other's comments and questions and responded in writing to answer or posed another question. After the activity, teachers seemed eager to try the strategy with their classes.

During this professional work session, one teacher brought to light how in the past, close reading emphasized highlighting and underlining different parts of texts, particularly when attacking word problems. However, this particular teacher noted he or she now approached close reading with an open-ended approach where students read the problem and tried to figure out how to solve the problem on their own and then share that approach with their peers.

> This, the teacher added, made for cool discussion, which in the past I never had because I always taught it as one approach…like if I'm teaching velocity. In the past, I'd say, here's the equation. I'd underline the initial velocity for them on an

> overhead projector. I would show them the time. Okay, so now here's how you'd figure out acceleration. I'd give them the equation. Now students could do that, or they might make a graph and do it that way, or they might do something that is completely something I wouldn't think of but still come up with the same answer. So, there's multiple approaches now that I don't' delve into the words because it's up to them to look at the words and figure out how to use them for what they need. So, the way I used to teach was for the bottom of the class. (T2)

The significance of the aforementioned discourse outlined one teacher's disciplinary literacy pedagogical content knowledge and how it influenced her disposition towards disciplinary literacy instruction in the classroom; both of which relate to the three research questions that guide this qualitative case study. This particular teacher spoke about releasing responsibility onto students in a problem-based learning classroom culture. In the same way, another teacher pointed to the fact that problem-based learning remained a part of classroom instruction, but again, T2 noted that students were unaccustomed to implicit instruction and the teacher as the guide on the side. In fact, this teacher noted "When I do problem-based with my kids, they look at me like "what, you're not going to give me the answer? The teacher added: "I do problem-based learning mostly in my AP classes and that's really it. It's an adjustment for them. Once they get it, they know" (T2). Again, this demonstrates the teacher's disposition towards disciplinary literacy and how problem-based learning was an advanced placement way of teaching, but not for general education students. It can be inferred that the teacher felt the general population of students did not possess the skills set to take part in problem-based

learning. This finding was significant because it demonstrated that the teacher's disposition influenced classroom instruction.

Teacher expectations set the stage for student performance. Based on teachers' discussions during the collaborative annotation workshop, it seemed that some teachers had preconceived notions regarding their students' abilities to read complex discipline-specific text. There were comparisons made between how a class of advanced placement students were the only class who could possibly read complex text and how lower level readings were used to supplement the general and special education inclusion classes. Teachers felt students were unaccustomed to implicit instruction and having the teacher in the room as the guide on the side.

Summary. Close reading/collaborative annotation was a critical component to disciplinary literacy instruction as evidenced through teacher conversations during the workshop. It was collaborative in nature and promoted academic discourse amongst participants, therefore optimizing the learning experience. Through their engagement in collaborative annotation, teachers were empowered to include multiple methods of close reading, including collaborative annotation, in their classes. Although teachers pointed out challenges they encountered while having students read the text multiple times to identify patterns, bias, symbolism, external factors, authors' purpose, or various other text features, they acknowledged the value of close reading instruction.

Providing teachers with a workshop on close reading was necessary because they identified close reading as a disciplinary literacy skill that was needed by students in order for them to interact and comprehend with texts in their discipline or field of study during interviews. The findings from this workshop demonstrate a clear connection to

disciplinary literacy, dispositions towards disciplinary literacy instruction, and the influence that teachers' dispositions have on disciplinary literacy instruction in the classroom. Through their own words, teachers exacted preconceived notions regarding student ability to engage in disciplinary literacy practices, and instead lowered the level of the text as not to frustrate readers. At the same time, the teacher noted how difficult the text was to comprehend, therefore, since it was difficult for him or her to understand, a lower level reading was used in the classroom. In reality, if students are unable to comprehend a complex text, they need a disciplinary insider to teach them how to engage in doing so.

Professional development session three: Making connections. The focus of the third professional development session was making connections. Research participants engaged in discussion surrounding text-to-text, text-to-world, and text-to-self connections. In order to make learning meaningful, it had to be linked to everyday life (Moje, 2014). Specific connections required student background knowledge. One teacher commented on students' inability to make connections:

> Well, I also don't think they have the confidence. We just read ***A Modest Proposal,*** which is by Jonathan Swift, and it's a proposal, and it's modest because he's trying to get the government's attention in Ireland during the potato famine. There was no food. His proposal is "when a child gets to be one year old, because we have so many children in this country, we should cook them and eat them" Right? It's a "modest proposal," it's an attention getter, it's all it is. (T1)

The teacher continued to explain:

> We had the students read an article from the *New York Times* about how they eat dogs in Thailand, and it was very well written, and it was written in the same kind of format as *A Modest Proposal*, but it was written mostly like an op-ed. There were some words in there and the kids were like "Well I don't know what this means." So I said "Alright, well tell me the gist of this paragraph. Tell me what you think that word means." Students answered, "Well I think it means…" So, I said "well you're right".

The teacher explained how students had struggled with comprehending the text, yet disciplinary literacy instruction did not occur. According to the teacher, students expressed how the op-ed from the New York Times was too difficult for them to read. The teacher then moved on and explained the next part of the assignment that involved academic or tier three vocabulary:

> So then they had to create their own "modest proposal," and we had some vocabulary that we wanted them to include in that. They didn't have to include that vocabulary, but we wanted them to see some of those tier three words, some of those higher-level words. They didn't know how to fit them in there, I said "You just read *A Modest Proposal*, you just read this op-ed from the New York Times…." [students responded] "Well that op-ed was hard to read, anything from that is hard to read."

As the teacher went on to explain, the lesson transitioned into students being assigned a writing assignment that required them to write their own "modest proposal" and overall student performance:

> I said, "Ok well let's see how you do with *The Modest Proposal*, and they had to write their own "modest proposal." They didn't do a bad job, but it was still, in my opinion, it was dumbed down. They [students] just took the easy road "Well this is what I'm proposing" it was something to do with something here (in school) that you would want to change. It was something that's going on here like cutting classes or how would you address that? I wasn't impressed. They didn't want to try. It's too hard. Even when I give them the sample PARCC test that's online about John Adams and his wife, they're confused, they don't understand it. It's history and they don't understand it. (T1)

It could be deduced from the teacher's explanation that the teacher's learning expectations were not aligned with the goals and objectives of the lesson. Most importantly, it was clear through the teacher's admission that students could not perform the writing task or identify tier three words, that disciplinary literacy instruction was not part of this particular lesson or unit. It might also be inferred that students had not developed a toolbox of disciplinary literacy strategies that they would refer to when self-monitoring their reading comprehension. Clearly, through this explanation, the teacher was aware of tiered vocabulary and its role in reading comprehension. However, through her explanation, it seemed that the lesson kept moving without the teacher taking the pulse of the class and use that "teachable moment" to infuse disciplinary literacy instruction on tiered vocabulary and making connections.

Teachers discussed the differences in student background knowledge and its effect on literacy. For example, when speaking of vocabulary instruction, specifically, the word "subscript," a middle school science teacher recollected introducing the prefix

"sub" to students and using the explanation that "sub is below" (TI3). Next, the teacher connected the word "subscript" by breaking the word apart "script means writing," therefore "the little number goes below the writing", however, the teacher expressed "students still don't remember it, but that's one of the things I try to do to get them to understand that words are not really foreign" (TI3). The same teacher explained the importance of making connections and how doing so influenced future learning. In that case, students seemed to lack the background knowledge and engagement in the learning process to understand the meaning of the word and retain it for future use.

A high school English teacher expressed the importance of making connections by stating "this isn't a practice for English, this is a practice for life" (TI17), while another high school teacher explained that the information that students read in school should not be derived only from textbooks, but should be connected to the real-world, specifically, "things that are out there in the real world that they could grab themselves and learn from…talking to professionals…reading articles…that help us to continue to learn" (TI15). These findings supported the concept that educators came to the classroom with their own individual experiences, background knowledge, teaching styles, and disciplinary literacy pedagogical content knowledge. Furthermore, the findings indicated each teacher's disposition affected how or if disciplinary literacy was taught in the classroom which related back to the research questions that guided this study.

In order to demonstrate how making connections might be infused in their classrooms, in this work session, I discussed the idea of making interdisciplinary connections between the Salem Witch Trials, McCarthyism, The Red Scare, and the Ergot Theory. I asked teachers to consider ways in which teams of teachers from multiple

disciplines could work together to plan standards-based lessons on this or any other topic that incorporated making connections. For example, I explained that the English language arts teacher would read the literature, the social studies teacher could then include documents, such as a document-based question (DBQ) artifacts connected to McCarthyism and the Red Scare.

Without prompting, at that point, a science teacher realized the science-related connections that could be made and offered that instruction on the effects of toxicity on the human body could be included to help students make cross-curricular connections. I added that discussion regarding pandemics that cause mass hysteria could be part of instruction as well.

This articulation was significant because it may have assisted teachers in making curricular connections to other disciplines and encouraged collegial sharing so teachers did not feel isolated in their attempts at disciplinary literacy instruction. The result could have had the potential to influence teachers' dispositions towards disciplinary literacy and their disciplinary literacy pedagogical content knowledge. This finding related to the sociocultural theory in that it was rooted in the social practice of instruction and how the subject-areas could interact with each other to create deeper meaning for learners. This conversation added to the rich discourse that was necessary for teachers to collaboratively discuss disciplinary literacy and how disciplinary literacy instruction was collaborative in nature. Engaging in such discourse built teachers' disciplinary literacy pedagogical content knowledge by collaborating with each other on ideas that transfer to all of their subject-areas, but could be addressed differently according to their field of study.

This workshop also related to socio-cultural theory because through their articulation, teachers were able to view instruction as a social practice, not independent of each other, but codependent practices that interact with oral language (Besnier, 1995).

As evidenced in the pre-surveys and semi-structured interviews, it appeared that some teachers maintained the disposition and expectation that students should be able to perform discipline specific tasks without having disciplinary literacy instruction at the outset of an assigned task. As noted above, teachers referred to external factors, such as a change in student demographics and community changes, as key factors in not only teachers' disposition towards disciplinary literacy instruction, but also students' ability to make connections. Taken together, the aforementioned discourse and comments spoke to teacher's disciplinary literacy pedagogical content knowledge, disposition towards disciplinary literacy, and how teachers' dispositions influenced disciplinary literacy instruction in the classroom which were the research questions that guided this qualitative case study.

Summary. Teachers identified making connections as critical to comprehending content, however, teachers identified students' background knowledge as being a barrier to students' ability to do so. Teachers argued that students' personal schema had sometimes not met the demands of the multiple texts being read in their classes. Teachers identified multiple reasons for students being unable to make connections including a change in community demographics, ability to use disciplinary reading strategies independently to comprehend difficult text, and how to use context clues or identify word parts to grasp the meaning of academic vocabulary or tier two or three words.

These findings were significant because teachers identified barriers that influenced their disciplinary literacy and placed some of the onus on student demographics. It should be noted that part of what we do as educators is show learners how and why learning is important. That being said, in this professional workshop I demonstrated to teachers how they could make connections on similar topics in other content areas, therefore modeling and encouraging a transfer of meaningful learning. Through professional discourse, teachers became enthusiastic about working together to develop interdisciplinary units on common curricular topics that incorporated disciplinary literacy instruction. This finding was encouraging because it spoke to teachers disposition towards disciplinary literacy and how their dispositions might influence classroom instruction.

Classroom Observations

One scheduled informal classroom observation of each participant in the classroom occurred after having attended the professional development work sessions. Since the observations were pre-arranged, participants were aware that I would be visiting their classroom to observe them on a particular day and time. Observations were arranged in advance through email or one -on- one discussions. Participants were asked to consider trying one or more of the disciplinary literacy strategies learned in the workshops: close reading through collaborative annotation, tiered vocabulary, or making connections.

Observation field notes were taken throughout each observation. Classroom observation notes were analyzed and an initial coding was done using In vivo coding. A second coding was conducted and the following themes emerged related to teacher

dispositions towards disciplinary literacy: teacher mindset and teacher expectations. The findings below are organized and presented by topic.

Classroom observations: Collaborative annotation and making connections. During observations, it was noted that teachers' dispositions towards disciplinary literacy may have been influenced by teacher and student rapport as they worked together deciphering complex texts. For example, I observed a middle school social studies teacher in a general education class of 25 students with no in-class support teacher and no special education students. After introducing collaborative annotation to students, the social studies teacher circulated the classroom and assisted them with the language of an article that was written in the 1860s because he anticipated that students would experience difficulty understanding the vernacular of that time period. In doing so, the teacher demonstrated disciplinary literacy pedagogical content knowledge as he required students to read as historians, ask question of the text, and make sense of the vernacular using in the writing (OB2).

Further evidence of a teacher instructing students to make connections were seen during a classroom observation of a middle school general education social studies teacher practicing the close reading strategy of collaborative annotation with students. The teacher challenged students to think critically and instructed them to annotate their article with "something that surprised them or challenged their way of thinking" and had them "formulate questions they may have had about what they read" (OB2). Instructing students to ask critical thinking questions required them to make text-to-self, text-to-world, and possibly, text-to-text connections.

Another example of teacher disposition towards disciplinary literacy was noted when a middle school general education science teacher introduced collaborative annotation as an alternative way of communicating to her class. The teacher explained to students that they would be engaging in their own version of non-verbal communication. The teacher made the connection that in an era of dominant information technology as a means of immediate and effective communication that individuals were hesitant to speak out loud. As such, collaborative annotation facilitated classroom discussion and encouraged deeper analysis.

In this instance, the teacher discussed how to improve the chemical makeup of fireworks. The teacher ended the session with a conclusion that connected to the Fourth of July, and how students would then have a better understanding of the colors that light up the summer sky. In the end, the teacher requested that students reflected on their collaborative annotation experience and expressed “I love how you all communicated as a group. I loved your comments. Think about it. We talked about chemical makeup and changes” (OB4).

A middle school science teacher who taught a collaborative annotation lesson made the connection between the periodic table and the elements contained in fireworks that create the beautiful shapes we see. This class of sixth- grade general education students was about to embark on making connections and collaborative annotation. There were no English language learners in the class and no students required an individualized learning plan.

The teacher started the lesson by making a text-to-self and text-to-world connection to the Fourth of July (OB4). This same teacher questioned students on the

author's purpose by asking "What problems are the author's trying to fix?" (OB4). As the teacher introduced collaborative annotation to the group, she projected a model of an annotated text to the class and held students accountable by stating "Don't be surprised if I come around and comment on what you have written. I'm going to give you eight minutes" (OB4). This discourse connected to teachers' dispositions towards disciplinary literacy and how positive dispositions may have influenced instruction because the teachers held students accountable for their work, but also modeled expectations and engaged in the annotation process with students. In turn, taking such steps may have been a step in building the teachers pedagogical content knowledge, and may have influenced the teacher's disposition towards disciplinary literacy.

A high school special education language arts teacher infused collaborative annotation through the use of an article about how a computer that used algorithms was used to determine the authenticity of Shakespeare's works. This particular class of eight special education students with individualized education plans was about to engage in collaborative annotation. The teacher explained that students were going to read an article about how computer technology used algorithms to determine the authenticity of William Shakespeare's works. The teacher explained that the article related to the fact that the class was soon embarking on reading Shakespeare's tragedy, *Romeo and Juliet*, in class. In doing so, the teacher explained the text-to-text connection that was made between the article and the play.

After introducing collaborative annotation to students and explaining the steps involved, the teacher read the article to the students. The teacher followed the I do, we do, you do it together, you do it alone, model of the gradual release of responsibility that

was discussed in the after-school workshops. After reading the article to students, they were asked to read the text independently. The teacher explained how students would read the article, and annotate the article with their questions and comments. Following their independent read, students were placed in groups of two. They used their annotated copy of the article as a reference and engaged in collaborative annotation on a shared copy of the article. The teacher stressed that students were not permitted to speak, and instead, had to mark the text with their comments, questions, and insights.

The teacher set the expectation that comments were to be "quality comments", circulated the classroom and commented on student annotations. For example, on one group's paper, the teacher wrote, "This is a good question you are asking. How accurate is stylometry?" (OB10) which demonstrated the teacher's ability to use her disciplinary literacy pedagogical content knowledge when providing disciplinary literacy instruction in the classroom. The teacher adjusted the strategy by instead of writing her comments or questions to students on the article, the teacher made verbal comments to students such as, "why are computers smarter" and "what did they do to give them the edge?" The teacher explained how students would read the article, then write down their questions and comments on a shared copy of the article. The teacher ended the activity with a gallery walk where students identified similarities and differences from their own annotations to those of their classmates.

On one hand, the expectation was for the gradual release of responsibility; however, the teacher adjusted instruction to the needs of her learners. In the end, having students compare and contrast similarities and differences allowed students the

opportunity to compare their interpretations to those of their classmates and perhaps gain a more in-depth understanding of the reading.

The teacher's actions demonstrated disciplinary literacy pedagogical content knowledge and ability to use that knowledge to infuse disciplinary literacy instruction in her special education English language arts classroom without compromising the content or rigor of instruction.

Another middle school science teacher opened a collaborative annotation lesson by asking students "What are some alternative ways of communicating besides talking with spoken words? Give some examples and tell if it is as effective" (OB4).

Classroom observations: Tiered vocabulary. A high school special education Physics teacher introduced tiered vocabulary to eight students in a departmental Physics class. Each student had an individualized learning plan. There were no English language learners in the classroom. The teacher started the lesson by projecting the three tiers in a triangle on the board. Next to it, the teacher wrote the sentence "Once you kick the ball, it will remain in motion unless acted upon by force." After introducing and explaining each tier, the teacher provided time for guided practice when students identified tier one, two, and three words in the sentence. Afterwards, the teacher asked that students provided her with the answers and circled each word in a different color. The teacher then asked: "Would you say that in this particular sentence there are words specific to science?" Students identified the words, "motion and force" as being tier three words. The teacher then provided another sentence: "Olympic swimmers took to wearing full-body suites in the water, which made swimmers sleeker and reduced underwater friction" (OB9). Students tiered the words. The teacher then provided yet another sentence for student

practice then led into the lesson further by explaining, “These sentences were pulled from the articles we are going to be reading today (OB9). The teacher handed out an article posted on a large poster board to each student and continued:

> I want you to read the article first then underline tier one words in green, circle tier two words in red, and draw a box around tier three words in blue. Then we are going to read through the articles together, and you and your partner are going to go through and tier the vocabulary. After we read through the article “How Soccer Can Help Us Understand Physics,” I want you to define the tier three words (OB9).

The teacher made the connection between student learning and Newton’s First Law of Motion: unless acted on by force, an object will stay where it is. Gravity alone is a force. Students made connections between studying Sir Isaac Newton in their history class and discussed in which tier his name would fit best. The group decided that Newton should remain in tier three because he would be discussed mostly in science. The teacher continually circulated the classroom and engaged in conversations about which tier students had placed certain words and modeled how to tier words for those students who needed additional instruction. Through modeling and circulating the classroom, the teacher engaged in rich discourse, monitored student progress, and praised students’ efforts.

In this lesson, the teacher modeled the gradual release of responsibility by scaffolding the lesson. She explained each tier (tier one, tier two, tier three) and modeled the activity. Students were paired to identify and tier words. The teacher noted to students that in another class some students put the paper in front of them, leaving the other

student to do nothing. After observing this, the teacher asked that students collaborated with their partners.

These findings denoted the teacher's disposition towards disciplinary literacy and her level of disciplinary literacy pedagogical content knowledge in that she had high expectations that all students participated and cooperated in the tiered vocabulary activity. This particular special education high school science teacher also provided additional instruction to groups of students who exhibited the need during the activity, without compromising the rigor of the lesson (OB9). This differs from the expectations previously discussed regarding one general education high school science teacher's idea to lower the reading level for whole classes of students which represented her expectations because she did not want to frustrate readers. In contrast, this science teacher maintained high expectations for herself and her students.

A note to the reader that this particular Physics class was a departmental science class that contained students reading well below grade-level, yet they successfully met the teacher's rigorous objectives and learning goals due in part to the teachers disposition towards her students, her disciplinary literacy pedagogical content knowledge, and disposition towards disciplinary literacy instruction. Classroom instruction such as those explained above should be considered significant findings because if research participants did not stress the importance of engaging in word play to discover word meanings, then their classroom instruction may not have included academic vocabulary instruction on a regular basis.

The instructional dialogue teachers used to explain the strategies exhibited their disciplinary literacy pedagogical content knowledge. For example, an eighth-grade

general education science teacher introduced tiered vocabulary by using an article about black holes. There were no English language learners in the class or students with individualized learning plans. The teacher stated:

> The article we are going to read today is about black holes from *Science News for Students* that is written at a 7.9 grade-level, which is almost eighth grade. At the end of this article, there is a list of Power Words. I want to start with the Power Words. You will get two white boards per table. We have Tier one words which are not all that powerful so you won't find them in the Power Words. Tier two words you might hear in another class like math or social studies or on the news. Tier three words are powerful words that are related to science only. Tier three words you would hear only in a specific setting. Our setting is science class. As you go through those words, one board is for tier two words and the other board is for tier three words…With your group, go through the power words and decide which ones are Tier two or tier three. Then we will see what we think and if we agree on those words. (OB3)

This particular research participant chose to infuse disciplinary literacy by using a science article that was related to what students were studying in the present unit without taking away from the content. The teacher scaffolded instruction by first explaining tiered vocabulary, then provided time for students to practice independently, then in groups sorting and tiering words on white boards as they engaged in academic discourse about the words.

Classroom observations showed teachers who attended the professional development work sessions demonstrated an understanding of how disciplinary literacy

practices, such as collaborative annotation, engaged students in non-verbal content-specific collaborative conversations without taking away from content.

Evidence of teachers' disciplinary literacy pedagogical content knowledge and their dispositions towards disciplinary literacy and instruction were evident during classroom observations when teachers explained the strategy, whether it was collaborative annotation, tiered vocabulary or making connections. Through these classroom observations, special education and general education teachers incorporated disciplinary literacy instruction in their classrooms. Their instructional methods followed the gradual release of responsibility framework. Most teachers modeled the practice and provided an example prior to having students engage in using the strategy. After modeling the practice, students were asked to work together to tier vocabulary, use collaborative annotation to close read, and make connections while doing so.

Teacher Reflections

Three middle school teachers completed the reflections sheets for each of the three workshops. The lack of responses was due to multiple reasons: timing, research participants had reached the saturation point because I had asked much of them, or external responsibilities. After teaching all day, research participants attended a professional development workshop where they were expected to engage in disciplinary literacy discussions. Another reason for the lack of responses could have been because I asked much of my research participants by having them take a pre-survey, engage in a one-hour interview, attend three one-hour workshops, and be observed teaching one of those strategies in their classroom setting.

Summary

The findings of the qualitative case study, the pre-survey, indicated teachers felt the need for ongoing disciplinary literacy professional development. Teachers ranged in teaching experience, grade-level, and subject -area expertise, therefore, their expressed need was not related to a lack of teaching experience, but rather, based on their feedback, an insufficient amount of disciplinary literacy training. Evidence of this can be found in the pre-survey, which yielded 11 out 18 research participants who expressed the need for additional professional development.

According to post-survey results, four out of 12 participants expressed the need for more professional development after having participated in the disciplinary literacy professional development work sessions. Such results may be indicative that teacher's disciplinary literacy pedagogical content knowledge was influenced as a result of participating in the work sessions and implementation of the strategies in their classrooms.

In the next phase, semi-structured interviews, the following themes were revealed: making connections, real-world application, academic vocabulary, close reading, professional training and support, and teachers' dispositions towards disciplinary literacy. The aforementioned themes of professional training and teacher disposition related back to pre-survey and post-survey results. Evidence of this can be found in the pre-survey and post-survey where four respondents stated they did not need further professional development support.

Interestingly, a change between the number of times per week teachers infused disciplinary literacy was found. For instance, in the pre-survey, five teachers responded

they infused disciplinary literacy in their classrooms at least three times per week, four answered they infused it four times per week, and three answered they were unsure if they had or had not infused disciplinary literacy at all. Post-survey findings deduced that none of the teachers were unsure if they infused disciplinary literacy in their classes. As a result, it may be surmised that those who responded to the post-survey were not confused about whether they had or had not implemented disciplinary literacy practices in their classrooms and that either through the interview process or the professional development, their understanding of disciplinary literacy instruction may have been illuminated and clarified. However, it should also be noted that six out of the eleven research participants who answered the post-survey had attended the professional development sessions and been observed in their classrooms. The professional development sessions focused on tiered vocabulary, close reading collaborative annotation, and making connections which were offered to support teachers' current disciplinary literacy pedagogical content knowledge.

Classroom observations revealed a shift in dispositions towards disciplinary literacy, and, as a result, their instructional practices. After having observed research participants apply the disciplinary literacy strategies discussed in the work sessions with their students in the classroom, it could be surmised that teachers may have fostered a renewed relationship with close reading. For example, during collaborative annotation lessons, teachers engaged with their students as both parties annotated and answered questions and comments from each other about what they were reading.

The tiered vocabulary lessons allowed teachers and students to build rapport, and more importantly, these activities demonstrated to teachers that they possessed the ability

to infuse strategies in their classrooms without depending on a student's past academic experience with regard to disciplinary literacy. In sum, this finding approximated that teachers' dispositions shifted closer to infusing disciplinary literacy instruction than moving away from it.

There were two unexpected, critical findings of this study. The first was the lack of pre-service disciplinary literacy training required of teachers in post-secondary schools, even though teachers were expected to infuse disciplinary literacy according to subject specific standards outlined by the New Jersey Student Learning Standards. The second finding was that teachers did not identify academic vocabulary as a critical component of disciplinary literacy. Vocabulary, particularly academic vocabulary, or tier three words, have proven to be important to students understanding of content area subjects such as social studies, science and English language arts. Few teachers mentioned vocabulary as being a part of disciplinary literacy during semi-structured interviews. Therefore, it could be surmised that this finding spoke to teachers' disciplinary literacy pedagogical content knowledge prior to the professional development sessions.

Chapter five will include discussion of the major findings explained in chapter four and future implications and recommendations to help answer questions regarding teacher's disciplinary literacy content knowledge, their dispositions towards disciplinary literacy, and how or if their dispositions influenced disciplinary literacy instruction in the classroom.

Chapter 5

Discussion, Conclusions, and Recommendations

Literacy is sometimes deemed the role of the English language arts teacher rather than an interdisciplinary effort. As a result, there may be teachers who viewed literacy instruction as unrelated to their specific subject-area, therefore, they may not have perceived the connection that disciplinary literacy had to their content-area. To that point, teachers' dispositions towards disciplinary literacy may not have been favorable because they may not have envisioned themselves as teachers of reading or writing, but rather, specialists in their field. Their outlook may have been to leave literacy instruction to the language arts teachers because literacy has been thought of as an English teachers' area of expertise. In order to discover teachers' tenets regarding disciplinary literacy, this qualitative case study was designed to explore the disciplinary literacy pedagogical content knowledge of middle and high school science, social studies and English language arts teachers, their dispositions towards disciplinary literacy, and to determine whether or not their dispositions influenced disciplinary literacy classroom instruction.

This chapter includes discussion of the major findings related to teachers' disciplinary literacy pedagogical content knowledge (DLPCK), their dispositions towards disciplinary literacy, and whether their dispositions towards DLPCK influenced classroom instruction. Also included is discussion of the unexpected finding of insufficient pre-service disciplinary literacy training. The chapter concludes with discussion about the limitations of the study and future recommendations for practice and policy.

A funneled data approach provided a detailed picture of literacy on the international, national, state, and local levels. As evidenced by standardized test scores and norm-referenced assessments such as the PISA, NAEP, PARCC, PSAT, SAT, and ACT, reading scores across the country have not demonstrated marked growth. Understandably, many conditions contributed to the lackluster scores including external influences such as poverty, lack of resources and limited home support.

As previously stated, the primary interest of this study was to engage educators in conversations about their disciplinary literacy pedagogical content knowledge, their dispositions towards disciplinary literacy, and to discover how or if their dispositions toward disciplinary literacy influenced classroom practices in their classrooms. As a result, through professional discourse, the intent of this study was to identify, make aware, and/or build upon, if necessary, teacher's disciplinary literacy pedagogical content knowledge. Research-based disciplinary literacy best practices were offered in professional development work sessions so that teachers considered including them in classroom instruction, and to realize the possibility that disciplinary literacy skills such as those addressed in the professional development workshops, are needed by middle and high school students to help them navigate unfamiliar terrain of a field of study.

In this study, the findings supported the notion that teachers were well-versed in content area literacy strategies, but as over half of the research participants responded in the pre-survey, that additional pre-service and workplace disciplinary literacy professional development were necessary. Through data analysis, themes developed and resulted in the following findings:

1. Teachers consistently noted the need for increased pre-service training. Meaning, teachers needed more than one or two post-secondary classes centered on general literacy instruction strategies. As evidenced in this study, teachers should not be expected to learn disciplinary literacy instruction on the job. At that point, teachers are inundated with multiple job-related responsibilities, and may not have the capacity, time, or energy to teach disciplinary literacy to themselves. The data collected in this study supported the finding that teacher's disciplinary literacy pedagogical content knowledge would be fostered by offering additional training at the post-secondary level to education students studying to become teachers.
2. Teachers consistently expressed the need for ongoing support and professional development. Novice and veteran teachers expressed the need for ongoing disciplinary literacy support and professional development from external and internal resources that address disciplinary literacy and standards-based instruction. The New Jersey Student Learning Standards and the Companion Standards require that teachers infuse disciplinary literacy into the content areas. Ongoing professional development and support are necessary in order for teachers to adhere to the rigorous demands of the content and literacy standards.
3. Ongoing administrative support is necessary in order for teachers to feel supported in their disciplinary literacy instruction efforts. In order for that support to be in place, administrative training on disciplinary literacy would be necessary so that administrators would recognize research-based best practices in disciplinary literacy instruction in the classroom when conducting formal and

informal classroom observations and walk-throughs. Academic discourse centered on disciplinary literacy instruction in department, grade-level, faculty, and professional learning community meetings would be an excellent opportunity for administrators and teachers to share challenges and successes regarding literacy in the classroom and across disciplines.

4. Teachers' dispositions towards disciplinary literacy were mixed. Most teachers were eager to discuss their dispositions towards disciplinary literacy instruction, while others demonstrated their dispositions by having placed the sole responsibility on students for their lack of reading motivation and overall performance. Those who participated in the work sessions incorporated disciplinary literacy strategies within their classrooms, and afterwards, more than half of all participants stated they would like to continue learning about disciplinary literacy either through ongoing training, focus groups, or observing their peers infuse disciplinary literacy practices in their classrooms. Overall, after engaging in the professional development sessions, teachers recognized the importance of disciplinary literacy instruction in their subject area and its transferability to other subject areas, college, and the workplace.

Interpretation of Findings

These findings aligned with or added to critical points noted in the literature review. The interpretation of findings denoted a relationship between teachers' disciplinary literacy pedagogical content knowledge, lack of pre-service training, and the need for ongoing support in the way of professional development, administrative support, collegial collaboration, and disciplinary literacy instruction in the classroom. In turn, the

aforementioned findings were connected to the research questions that guided this study, and what researchers had to say about disciplinary literacy, teachers disposition towards disciplinary literacy, and teacher training.

Disciplinary Literacy Pedagogical Content Knowledge and Dispositions (DLPCK)

As previously noted, the research questions explored middle and high school teachers' disciplinary literacy pedagogical content knowledge, their dispositions towards disciplinary literacy and whether or not their dispositions influenced disciplinary literacy instruction in the classroom. The pre-survey findings demonstrated most of the 18 teachers who took the pre-survey incorporated reading and writing instruction within their classrooms a regular basis, some even on a daily basis, and recognized its importance.

At the start of this qualitative case study, 18 teachers' answered questions related to their dispositions towards disciplinary literacy. Teachers described disciplinary literacy as "important" and "connected to real-world" and "life application." They explained disciplinary literacy as a life skill that transfers to college and the work place. Teachers articulated that disciplinary literacy involved classroom instruction that included recognition of "opposing viewpoints" and the ability to "make connections." Few teachers noted the importance of academic vocabulary; however, many noted the importance of close reading of complex texts. However, in the pre-survey and prior to the professional development sessions, most of the 18 teachers found disciplinary literacy instruction difficult to articulate, therefore a disconnect between teacher expectations and classroom instruction emerged.

During the after school professional development workshops that 11 out of the 18 middle and high school teachers attended, there were teachers that demonstrated a disposition that noted the importance of disciplinary literacy, but sometimes blamed external influences for poor performance by students in the classroom. Specifically, external factors such as changes in demographics or lack of student motivation were two factors that teachers believed hindered students' academic progress or ability to meet the rigorous demands of disciplinary literacy. When speaking about making connections, a teacher commented on students' ability to make connections by stating "Our demographics have changed, I mean a lot of things in the community have changed, you know, so it's more than just one thing, it's a lot of things (T2)." This teacher looked to the changes that had occurred in the demographics, student population, and other reasons why students may have struggled with making connections when they read. Although a legitimate point, disciplinary literacy knows no boundaries. As such, disciplinary literacy instruction would be considered a socially just way to teach all students how to engage with texts in all subject-areas. In that way, no students' circumstances would marginalize them or their ability to learn how to read discipline – specific texts, build background knowledge, and make connections.

Also related to the primary research question was the unexpected finding that teachers felt the need for ongoing support and professional development in order to feel confident in their abilities to foster disciplinary literacy practices in their classrooms, and hence, build upon their DLPCK. As previously noted, every discipline has different expectations, different ways of creating knowledge, different ways of sharing and evaluating that knowledge. Disciplinary literacy involves a different approach to reading,

writing, speaking and thinking critically in a given subject-area or field of study (Shanahan, 2014). As students enter different disciplines, they need disciplinary insiders, their teachers, to help them navigate the language of the discipline (Moje, 2016). High quality disciplinary literacy instruction begins with a growth mindset. One way to instill a growth mindset would be to continually offer ongoing support. Ensuring pre-service teachers are given sufficient post-secondary training and that all teachers have access to ongoing job-embedded professional development would be a first step towards building teachers' disciplinary literacy pedagogical content knowledge, and may, in turn, influence their dispositions towards disciplinary literacy and disciplinary literacy instruction in the classroom.

In the post-survey, six out of the 11 who responded were participants who attended the professional development workshops and were observed in their classrooms. Four of those teachers responded they needed additional professional development while others identified the need for additional peer collaboration opportunities or focus groups. However, teachers may also benefit by working with disciplinary experts in their field. For example, perhaps in the future a scientist, historian or literary critic might attend a series of work-embedded professional development sessions to discuss approaches to reading in their specific discipline. Having such guidance may not only build DLPCK through modeling, but also provide the impetus for teachers to continue to take risks by adding cognitive rigor to their existing instructional methods.

The larger implications of this study were for teachers to build their disciplinary literacy pedagogical content knowledge and become aware of how their DLPCK influenced classroom instruction which related to back to the research questions that

guided this study. In their studies, scholars (Wineburg, 1991; Learned, 2018) found students who were engaged in disciplinary literacy instruction in the classroom read more critically, were able to identify authors' biases, the "sociohistorical contexts in which texts were written, and they looked across documents to corroborate interpretations" (Learned, 2018, p. 193). Disciplinary literacy practices "restore agency to the reader by positioning him or her as a critic of authors' credentials and agendas" (Learned, 2018, p. 194; Wineberg & Reisman, 2015, p. 636). Furthermore, Learned (2018) discussed how "disciplinary literacy teaching and learning supported focal participants' reading skills and identities" as disciplinary literacy instruction was found to be "both rare and powerful," (p. 198), and caused struggling readers to "thrive as readers, thinkers, and young people" and fostered critical literacy skills (Learned, 2018, p. 201). It can be said that some reading problems may be inherent or stem from a lack of home support or foundational skills, however, the culprit is more likely a lack of instruction in reading complex text throughout the upper grades (Greenleaf & Hinchman, 2009).

Throughout this qualitative case study, teachers disposition towards disciplinary literacy were evidenced through their words. The findings of this study suggested that teachers' dispositions towards disciplinary literacy did influence classroom instruction. Some teachers blamed extrinsic factors such as changing demographics, and intrinsic factors such as student motivation, on poor literacy performance in the classroom. As previously noted, teachers need ongoing training and support to gain a clear understanding of the disciplinary literacy instructional practices related to their specific subject-areas and how disciplinary literacy instruction would not take away from, but rather build upon, students' abilities to think, speak, read, and write like experts in a

given field of study. In turn, such efforts would enhance teachers' existing disciplinary literacy pedagogical content knowledge and perhaps shift teachers' dispositions towards disciplinary literacy instruction.

In this study, the disciplinary literacy strategies of collaborative annotation, tiered vocabulary and making connections were not used a means unto themselves. Instead, general literacy practices, such as building background knowledge, guiding whole group reading, marking the text, and assigning groups were imbued with disciplinary purpose and served to deepen learning (Learned, 2018).

Larger Issues of Literacy Education

Impact on academic achievement. As demonstrated through international, national, state and local standardized assessment results, "the United States is failing to meet the goal of teaching students to read. Forty percent of high school graduates lack the required literacy skills that employers desire (Houck & Novak, 2016; National Governors Center for Best Practices, 2005), "and two-thirds of students at the 4th and 8th grade levels are not proficient readers" (National Assessment of Educational Progress, 2014). Spires, Kerkoff, Graham, Thompson and Lee (2018) reiterated the 2015 NAEP results for eighth and twelfth graders were troubling because "thirty-four percent of eighth graders scored at or above proficiency, and 24% performed below the basic level in reading. Only 4% of eighth grade students and 5% of twelfth grade students performed at the advanced level of proficiency (i.e., able to make connections across texts, evaluate and justify evidence, etc.)" (p. 1402). These deficient scores were aligned with the trend that has been seen over the last few decades across the United States**,** and has been on the radar of educators and researchers alike.

In an effort to meet changing literacy demands, there has been a laser-like focus placed on literacy instruction in the educational arena, starting with the Common Core State Standards and its rigorous literacy demands in all disciplines. However, even with the concentrated focus on literacy instruction, in essence, "these data have remained essentially unchanged for more than two decades, despite the heavy emphasis on reading instruction and assessment that's been in place since the implementation of the No Child Left Behind Act of 2001" (Houck & Novak, 2016, p. 5).

Teaching students to read a variety of specialized texts and write for diverse purposes has to be ongoing with a commitment from all teachers because "effective instruction-regardless of school location, student demographics, or financial constraints-leads to greater student learning" (Houck & Novak, 2016, p. 5; Hattie, 2008; Marzano, Pickering, & Pollock, 2004). Researchers have found no stopping point for literacy instruction. Meaning, if a student was reading on grade-level when leaving 5th grade, he or she would remain at a 5th grade reading level if not consistently taught how to read, interpret, and analyze complex texts (Houck & Novak, 2016, p. 5; Joftus, 2002). There is a need for continuous literacy instruction in each discipline to sharpen reading and writing skills and to be able to comprehend, internalize, and transfer knowledge from progressively more complex and sophisticated texts (Houck & Novak, 2016). The starting point would be to create a symbiotic relationship between secondary and post-secondary teacher expectations that begins with pre-service training.

Professional Growth

Pre-service training. Pre-service training is one of the ways in which all teachers would enter the field of education with an arsenal of disciplinary literacy skills and pedagogical content knowledge to be able to teach literacy within their content areas. Conley (2008) described secondary and post-secondary education as being "loosely connected" and instruction being "imprecise at best" (p. 3). In order to bridge the gap, disciplinary literacy pedagogical content knowledge is a necessity for pre-service teacher candidates. Love (2008) explained the "three components of 'literacy pedagogical content knowledge' (LPCK):

> Knowledge about how spoken and written language can be best structured for effective learning; recognition that subject areas have their own characteristic language forms and hence entail distinctive literacy practices; and capacity to design learning and teaching strategies that account for subject-specific literacies and language practices" (p. 1).

As a reminder to the reader, in the first phase of this study, the pre-survey, the majority of research participants noted they had one, perhaps two, literacy courses during their pre-service teacher training. Yet, teachers new to the profession have been expected to infuse disciplinary literacy within their content area in adherence to the expectations of the New Jersey Student Learning Standards (2016) and Companion Standards. Teachers also stated they either learned on the job during professional development workshops, department meetings or during their student teaching experiences, but expressed the need for additional training.

Currently, “in 2018, teacher education programs are innovative, but they also face challenges. Opportunities for innovations include areas such as critical literacies, reading foundations, disciplinary literacies, and digital literacies” (Sailors, Martinez, & Trevino, 2018, p. 1). Despite outcries for teacher preparation programs to include literacy courses in pre-service teacher course requirements, an ongoing struggle exists between what is expected in the field and pre-service literacy training (Brady, 1976; Hafner, 1970-1971; Mason, 1972; Sailors, Martinez, & Trevino, 2018). Engaging in one pre-service disciplinary literacy course may not be adequate (Scott, McTigue, Miller, & Washburn, 2018; Hall, 2005).

To reiterate, pre-service teachers planning to enter the field of education need specialized disciplinary literacy training that entails more than one course. Without the proper training, research has found that pre-service teachers may not possess the disciplinary literacy pedagogical content knowledge and specialized literacies necessary to infuse disciplinary literacy instruction into their classrooms. For example, a teacher of science may not have the pre-service or workplace training; especially “if teachers have not studied science beyond the middle years of secondary school, they may lack science-specific literacies themselves, further limiting their capacity to teach these literacies effectively” (Feez & Quinn, 2017).

In their study of pre-service teachers who attended an Australian university, Feez and Quinn (2017) stressed the importance of pre-service training that highlighted the language of science and integrating science and specialized science literacies resulted in higher levels of student engagement, on task learning time, and professional learning opportunities for pre-service teachers. In their study, they found that collaborative

planning, observing and reflecting on teaching practices paved the way for meaningful professional development for pre-service candidates (Feez & Quinn, 2017).

Teachers need intense pre-service literacy training that results in socially just disciplinary literacy pedagogical content knowledge. Socially just pedagogical content knowledge is needed in teacher education programs in order to level the playing field because "at every step, teachers make instructional decisions that either work to promote a more equitable society – or under the guise of "neutrality," they perpetuate hegemony" (Dyches & Boyd, 2017, p. 1).

Professional development. Fullan (2011) pointed out if you want to change people's behavior, change their situation. In order to change the situation, resolution, empathy and simplicity are necessary. Leaders need to believe that failure is impossible and measure small examples of success (Fullan, 2011). Dweck (2006) and Colvin (2008) agreed that "it is not fixed talent but mindsets and situational learning that make the difference. People with fixed mindsets see mistakes as negative and try to avoid mistakes or hide them" (Fullan, 2011, p. 47).

Through leadership and teacher collaboration, resolute school leaders and teacher leaders who exhibit personal and professional growth can be made. Fullan (2011) stressed with a growth mindset "you learn through practice. You look for and seek growth in yourself and in others. Your attitude toward mistakes is completely different from the attitudes of those with fixed mindsets. You expect to learn from your mistakes. You believe that there is room for improvement in yourself and in others" (p. 47). In this study, teachers' dispositions towards disciplinary literacy were such that they were willing to try disciplinary literacy instructional practices, but either lacked the

disciplinary literacy pedagogical content knowledge and confidence in their abilities to do so without support or transferred the responsibility on students to understand the literacies of their academic area after having engaged in general content area literacy skill instruction.

Disciplinary Literacy Pedagogical Content Knowledge

Specialized literacies. Disciplinary literacy pedagogical content knowledge (DLPCK) refers to teachers' combination of content and pedagogical knowledge. Specifically, Shulman (1986) described pedagogical content knowledge as the most effective manner of transferring knowledge in a given content area as well as a teacher understanding of the benefits and challenges learners might encounter during learning. Evens (2015) added that Schulman (1986) "considered other categories in teachers' knowledge base, that is, content knowledge (CK), general pedagogical knowledge (PK), curriculum knowledge, knowledge of learners and their characteristics, knowledge of educational contexts, and knowledge of educational ends, purposes and values" (Evens, 2015, p. 1).

Disciplinary literacy attends the fact that every teacher in every content area teaches literacy as it pertains to that specific discipline. Schmoker (2011) referred to literacy as the spine of instruction that holds everything together, and attributes poor literacy skills as the lead cause of college dropout rates. According to Schmoker (2011), Conley (2005) pointed to four intellectual standards that were paramount among disciplines:

1. Read to infer/interpret/draw conclusions.
2. Support arguments with evidence.

3. Resolve conflicting views encountered in source documents.
4. Solve complex problems with no obvious answers.

If teachers do not grow their disciplinary literacy pedagogical content knowledge, their students may lack the aforementioned skills necessary to engage in cognitively rigorous literacy tasks at any level of their academic or workplace careers. Another factor in growing disciplinary literacy pedagogical content knowledge is for teachers to think of themselves as disciplinary insiders who help their students navigate complex texts in a given discipline. As disciplinary insiders, teachers need a full understanding of the different types of literacies and disciplinary literacy skills needed to read, write, speak, and think critically about texts like an expert in a given field of study.

Science literacy. In this study, science teachers who participated in semi-structured interviews recognized the importance of disciplinary literacy, however, they cited the need for additional pre-service training, job-embedded professional development, and collegial support. After having observed science, social studies and English language arts teachers use disciplinary literacy strategies of collaborative annotation, tiered vocabulary or making connections in the classroom, I realized that if the expectation was for teachers to infuse disciplinary literacy instructional practices into their classrooms, they needed ongoing workplace professional development on how to do so. As a result of ongoing training, teachers would weave disciplinary literacy practices into the fabric of their specific disciplines.

In New Jersey, science teachers use the Next Generation Science Standards (NGSS) when setting learning objectives and goals. High school students have to complete fifteen credits in lab -based science courses in order to meet graduation

requirements. The courses include biology, chemistry, physics or environmental science and one more lab-based science course (NJDOE, 2016). Along with the mathematical and engineering practices, disciplinary core ideas, and crosscutting concepts, the NGSS also demand that teachers include the prescribed language arts connection to reading and writing, hence, disciplinary literacy, as a part of instructional expectations. Therefore, science teachers need to instruct students in the academic literacies attached to the science courses they teach.

In this study, middle and high school science teachers stated they infused related readings and instructed students using general content area literacy strategies. In particular, one middle school science teacher noted the importance of close reading, but after collaborative annotation instruction, that teacher realized there were different ways in which to engage students in close reading. Through the use of collaborative annotation, tiered vocabulary or making connections, teachers reveled at the depth and insightful questions, ability to make meaning of academic vocabulary, and make connections that were exhibited by students. Overall, science teachers expressed the need for further practice using disciplinary literacy instructional strategies to read science texts which was a similar sentiment of their peers who taught social studies.

Social studies literacy. Like their science colleagues, the findings of this study demonstrated that social studies teachers recognized the importance of teaching students what they considered to be close reading of primary documents and analyzing two or more sources. In retrospect, social studies teachers were using a combination of generic content- area reading strategies and disciplinary literacy strategies such as those taught in the professional development workshops. In this study, social studies teachers reported

engaging in source literacy by having students read primary and secondary sources either guided by the teacher or independently. Teachers noted student inability to comprehend texts based on either a lack of background knowledge or a lack of reading comprehension skills. During this study, middle and high school social studies teachers recognized the importance of critical literacy skills such as evaluating sources, identifying historical evidence to support claims and formulate ideas, and interpreting world views, however, teaching students how to do so indicated the need for more training.

In social studies, researchers have found disciplinary literacy strategies lend themselves to discourse and academic vocabulary (Johnson, Watson, Delahunty, McSwiggen, & Smith, 2011, p. 104; Gee, 1996). The New Jersey Student Learning Standards (2016), and the College, Career, and Civic Life Framework for Social Studies, otherwise referred to as the C3 Framework, (National Council for the Social Studies, 2013) specifically describe "the disciplinary inquiry and literacy practices that students of various grade bands ought to be learning in the natural and social sciences, respectively" (Rainey, 2015, p. 53). In addition, the companion standards for social studies, science and the technical subjects, and naturally, the language arts literacy standards, demand literacy instruction at each grade-level in order for students to be able to effectively participate in a democracy, and to be college and career ready by the end of their high school academic career (Altoff & Golston, 2012).

English language arts literacy. English language arts teachers, like other content area teachers, are thought to be experts at teaching literature. However, little attention has been given to the application of disciplinary literacy theory to language arts which has left teachers without clarity or understanding of how disciplinary literacy applied to their

content area; these are teachers "who design and occupy critical spaces of literacy learning for young people in schools and are expected to contribute meaningfully to disciplinary literacy instruction" (Rainey, 2015, p. 54).

Therefore, in response to the increasing demands of cognitive rigor, language arts teachers must be considered literature and literacy experts. As a result, English teachers should have considered themselves as teachers of literacy, or disciplinary insiders, using literature as the vehicle to attain their means. Language arts teachers instruct students in all areas of literacy noted in the New Jersey Student Learning Standards (2016). This rethinking of academic literacies has caused strife amongst some educators who remained tied to particular works of literature without honing disciplinary literacy skills needed to comprehend, analyze and construct meaning of complex texts.

Disciplinary literacy pedagogical content knowledge (DLPCK) in language arts means that the teacher's content and pedagogical knowledge engage in an interdependent dance. Based on the findings of this study, a set of shared literacy practices that would create a common language among language arts teachers was needed. The concept of having ELA teachers instruct using a shared set of literacy practices was supported by "empirical scholarship that focuses on participating in literary studies" such as Rabinowitz's (1987) theory of notice and significance that focused on the reader's ability to determine important and insignificant information in a text, the ability to construct meaning, ability to predict and anticipate future actions, and the ability to determine and ask questions that were left unanswered by the text or author.

Shared disciplinary literacy instructional practices should be consistent and supported by ongoing training for teachers and school leaders. In this study, two high

school and one middle school English teacher incorporated collaborative annotation, tiered vocabulary or making connections into their classroom instruction. Those too, may be considered shared literacy practices so that all teachers would engage in the shared literacy practices that have the potential to transfer to other disciplines. In order for this to occur, school leaders need to take an active role in the learning and training process.

Implications

Educational change. Clearly, change is needed if literacy skills are expected to improve. In order for those changes to occur, the Common Core State Standards, now known as the New Jersey Student Learning Standards, "have made a start by bringing renewed attention to the need for *all* teachers -at every grade level and in every subject area - to be literacy teachers" (Houck & Novak, 2016, p. 5). School leaders need to not only know disciplinary literacy practices by name, but to also identify the practices in the classroom during classroom visits, have the ability to explain how the practices were implemented, and identify teacher's professional development needs based on information gleaned from informal classroom visits and collegial discourse (Houck & Novak, 2016).

Leadership. School leaders have to take the context of teaching into consideration when making instructional demands of teachers. Fullan and Hargreaves (2013) agreed "the price of ignoring the context of teaching is failed idealism, guilt and frustration at not being able to meet the standards, criticism of teachers who fail to make the changes, and erratic leaping from one innovation bandwagon to another" (p. 6). Consistency in literacy expectations across disciplines, ongoing professional support, and

collegial collaboration are necessary in order for sustained, socially just literacy instruction to take place.

Professional practices. School leaders must also devote time to educate themselves on disciplinary literacy practices so that they identify what they are observing when moving through classrooms in walk-through observations or formal teacher evaluations. After all, in order for teachers to be fully supported by their supervisors, there has to be a common language and understanding of literacy expectations. If administrators do not know what they are observing, teachers would not be credited in their observations for the instructional methods used in the classroom. On the other hand, teachers may not take an instructional leap into disciplinary literacy due to their own fears of failure or that they would not be credited for their efforts, but penalized due to a lack of disciplinary literacy knowledge by the observing administrator.

Recommendations

Professional practice: Leadership. Recommendations are two-fold for principals and other school leaders.

Focused disciplinary literacy classroom visits. If the goal is to get teachers and leaders on board with disciplinary literacy practices, then focused disciplinary literacy classroom visits must be performed on a regular basis. Schmoker (2011) argued there are three essential criteria needed in schools: "a reasonably coherent curriculum (what we teach); sound lessons (*how* we teach); and far more purposeful reading and writing in every discipline, or *authentic literacy* (integral to both what and how we teach)" (p. 2). No longer can the status quo be acceptable in content area classrooms. Instead, a focused effort on literacy, even if it means abandoning additional programs, needs to take place.

One way of initiating a focused priority on literacy in all classrooms would be achieved through intentional classroom visits centered on literacy instruction.

In practice, formal classroom observations may fall short of their intended purpose, which would be to observe teaching practices at their best. In general, informal classroom walk-through forms are a checklist with or without look-for's and do not list specific effective disciplinary literacy practices. Therefore, current classroom visitation methods may have provided little information that would be useful in determining whether disciplinary literacy practices were being used in the classroom, the professional development needed by teachers or school leaders, or useful data upon which rich collegial discourse could occur (Houck & Novak, 2016).

In this study, after having participated in professional development work sessions, teachers were asked what types of further supports they felt were needed in the to support disciplinary literacy pedagogical content knowledge and classroom instructional practices. In their responses, teachers did not opt for additional classroom visits by administrators, but there were teachers who felt collegial sharing and peer to peer classroom visitations to observe their colleagues implementing disciplinary literacy strategies would be helpful. In retrospect, this may have been because teachers felt uneasy about being observed or judged by administrators while infusing disciplinary literacy practices teachers had learned during the workshops offered through this study at the novice or beginner level.

Teachers may have considered the fact that perhaps the administrator observing them may not have had disciplinary literacy training. This, in turn, might create uneasy feelings about whether or not teachers' instructional efforts would be recognizable to

administration because they would be unable to identify observable disciplinary literacy practices in action. Stein and Nelson (2003) recognized if educational leaders are not well-versed in literacy instruction, they will experience difficulty identifying those practices and teacher qualifications to meet literacy expectations. In order to build trust and consensus, changes to classroom visitations should be considered by district leaders (Houck & Novak, 2016).

Literacy classroom visits. Despite an increased emphasis on literacy instruction, principals and other school leaders need a working knowledge of literacy instructional practices and learning. Reeves (2008) supported this notion by stating, "If school leaders really believe that literacy is a priority, then they have a personal responsibility to understand literacy instruction, define it for their colleagues, and observe it daily" (Houck & Novak, 2016, p. 91).

One suggested change from a general classroom visit or walk-through is to move towards a Literacy Classroom Visit (LCV) model (Houck & Novak, 2016). By incorporating "brief, frequent, informal, focused" visits to classrooms to gather data related to literacy instruction and student learning, school leaders and teachers would then have the ability to engage in collaborative follow-up conversations (Houck & Novak, 2016, p. 8). Through the LCV model, teams or individuals would observe teachers and follow – up classroom visits with collaborative school leader/classroom teacher discussions focused on research-based best practices and to identify any patterns identified in collected data that would be representative of all literacy instruction as a learning community (Houck & Novak, 2016).

Accordingly, the LCV model "integrates general instructional practices, such as the gradual release of responsibility, (Pearson & Gallagher, 1983), differentiated instruction (Tomlinson & Allan, 2000), and purposeful student engagement" (Houck & Novak, 2016, p. 9). Leaders would perform intentional, ongoing classroom visits focused on disciplinary literacy practices in every discipline. According to Houck and Novak (2016), collecting literacy classroom data over time can:

- Establish a body of evidence about a school or district's overall literacy culture and instruction.
- Identify instructional patterns within teacher teams, grade levels and content areas.
- Pinpoint resource needs and reduce unnecessary budget expenditures.
- Guide planning for professional learning and professional learning community (PLC) content.
- Establish common beliefs, practices, and language within the community
- Inform a school community about the implementation of professional learning goals.
- Ensure that students are learning and mastering grade-level standards and expectations

(p. 11).

Literacy is not a linear process (Abi-El-Mona, 2016; Brozo, Mormon, Meyer, & Steward, 2004; Rumelhart, 1994). In interviews, teachers implemented general content - area reading strategies, but stated they needed additional disciplinary literacy training. In order to build disciplinary literacy pedagogical content knowledge, teachers and school

leaders need disciplinary literacy and content area literacy training on an ongoing basis to build their disciplinary literacy pedagogical content knowledge. It is only through workplace professional development or intense pre-service literacy training that educators would see the congruent relationship between the two be realized. In fact, "in resisting the dichotomous relationship, and ‘‘reconciling the divide’’ (Cervetti, 2014) content- area literacy and disciplinary literacy should be viewed as complementary practices" (Spires, et al., 2018, p. 1406).

As such, a balanced literacy approach is necessary in all disciplines. This means that a combination of content area and disciplinary literacy approaches should be a large part of classroom literacy instructional practices. The result would be "learning on the diagonal" in which students actively and simultaneously display growth in their disciplinary habits of thinking and their content area knowledge" (Spires, et al., 2018, p. 1405). In order for this to happen, explicit instruction is needed so that students can build disciplinary literacy skills over the course of time.

Fullan (2011) stressed "grasping change involves giving people new experiences they end up finding intrinsically motivating, [and] realized effectiveness is what motivates people to do more" (p. 51-52). Asking that teachers and school leaders take collective ownership of their understanding and learning of disciplinary literacy practices is critical for systemic, lasting change to occur.

Professional practice: Teachers and leaders. Recommendations arising from this study for teachers and leaders focus on their own learning.

Mental models of learning. If teachers are to be content and disciplinary literacy experts, teachers and school leaders need to fully grasp the purpose of disciplinary literacy practices and might then engage in a progressive mental model of learning that ranged from beginner to expert level (Kim, 2012), and at each stage, teachers and leadership would exhibit observable differences in how they approached a task (Bogard, Sableski, Arnold, & Bowman, 2017). Moving through each stage of learning and becoming aware of their level of learning would increase capacity and the degree of autonomy so that people could exercise judgement in making headway in disciplinary literacy mindsets and practices. This, in turn, would create sustainable change because "the drive of sustainability is the peer culture" (Fullan, 2011, p. 53).

Just as students move through stages of learning development, so do educators. Educating teachers and leadership on the five stages of their own learning would engage them in practitioner-driven based learning that might prove to be intrinsically motivating "because people find them emotionally meaningful relative to their values and their ability to fulfill them" (Fullan, 2011, p. 56).

In this study, participants were asked to attend professional development workshops and then be observed in their classroom settings implementing a disciplinary literacy strategy learned in one of the workshops. In retrospect, perhaps discussion surrounding learning stages would have given teachers more confidence in their abilities to move forward with the strategies because they would not feel as though they were expected to be disciplinary literacy experts after attending three workshops. Such

experiences might have also relieved some of the pressure teachers were under and assisted school leaders who may have unrealistic expectations of themselves and teachers based on the pressures that they encounter due to state mandates, standardized testing and rigorous learning standards. Learned (2018) concurred in the educational arena “teachers and students navigate demanding schedules, increasingly standardized learning objectives, and ever-shifting social and instructional arrangements” (p. 191).

In this study, teachers expressed they had minimal, if any, formal disciplinary literacy training or ongoing disciplinary literacy professional development in the workplace. Based on that fact, teachers and leaders should not be expected to lead or provide teachers on the ins and outs of disciplinary literacy without having been trained themselves. In order to achieve this, teachers and school leaders need to be cognizant of their learning progression while moving through the stages: novice, advanced beginner, competent learner, proficient learner, and expert (Dreyfus & Dreyfus, 2005). Dreyfus and Dreyfus (2005) explained this learning model:

> The novice has learned abstract, conceptual knowledge, free of context, but has not yet made connections between knowledge and practice and, therefore, has difficulty applying conceptual knowledge to relevant work situations. They display rigid compliance with taught rules and procedures. The advanced beginner recognizes situations in which conceptual knowledge is applied, but does not discern which aspects of a problem situation are most important. They approach all aspects of work separately and with equal importance. The competent learner can determine which elements of a situation are critical, but due to limited connections and retrieval cues, does not apply the full range of

> knowledge that is relevant to the situation. They rely on deliberate planning and formation of routines. A proficient learner identifies and evaluates the problem holistically and applies relevant concepts and skills to the situation. They possess the ability to prioritize actions and adapt to the situation at hand. An expert intuitively decides about what the problem is and how it may be resolved, relying on a tacit understanding instead of rules and guidelines… Highly effective educators' mental models of content area instruction integrate pedagogical skills, content knowledge, and context-specific conditions. They bring this tacit awareness to the instructional context, and it determines what and how they perceive, act on, and respond to during the teaching-learning cycle (p. 46-47).

In this way, teachers and leaders would be better equipped to identify research-based disciplinary and content literacy instructional practices, disciplinary literacy pedagogical content knowledge, and how their dispositions regarding disciplinary literacy influence classroom instruction.

Professional practice: Teachers. Recommendations specific to teachers revolve around collaboration and disciplinary literacy instruction training.

Collaboration for practice. Collaboration is at the heart of educational change, learning, teacher performance, and student achievement. In an effort to sustain continual improvement, professional learning communities should be utilized for what they were intended; time for professionals, the disciplinary insiders or experts in their fields, to engage in the ongoing learning process about strategy instruction, which would be the basis of their collaborative investigation, in a community, a safe, non-threatening place

where teachers can share their thoughts and experience personal and professional growth (DuFour & DuFour, 1998).

Through careful examination of disciplinary literacy instructional practices and self-reflection on their disciplinary literacy pedagogical content knowledge, their dispositions towards disciplinary literacy, and whether or not their dispositions influence classroom instruction will emerge and possibly shift. Education has experienced a multitude of changes over the past ten years, both in terms of including a change in learning standards and subsequently, standardized assessments.

Beginning with the learning standards as the basis for discussions, teachers would meet regularly to assess how they and their students were meeting content and literacy standards in their discipline. This would be done through formative and summative data analysis and would consist of both qualitative and quantitative data that could be derived from all of the disciplinary literacy strategies learned in the professional development workshops in this study. Collaborative annotations, the ability to tier and define academic vocabulary, and making connections are observable behaviors that would serve as qualitative data. Teachers could use such data as a starting point for data analysis in professional learning communities.

A sense of urgency must be communicated to stakeholders, and in this case, student literacy and teacher's disciplinary literacy pedagogical content knowledge warrant that urgency. Collaboratively establishing a mission, values, and goals would provide the first steps in becoming catalysts of change (DuFour & DuFour, 1998). When possible, offering teachers collaborative planning time would go a long way in providing time for teachers to collaboratively plan and discuss disciplinary literacy instruction.

Results of that instruction and emerging needs could then be discussed, analyzed, and assessed in ongoing professional learning communities.

The school district in which this study was conducted does offer common prep periods and morning meeting times at the middle school, but due to scheduling, common prep periods are not always possible at the high school. However, the high school has a period five at the end of the school day. Its primary use is for after school help, faculty or department meetings. Department and faculty meetings are conducted once per month at both schools. Perhaps the schedule would permit common planning time during that time. Middle school teachers can use common prep time to collaboratively plan disciplinary literacy instruction and build it into their everyday lessons.

Consensus is necessary, and working in professional learning communities helps build rapport, common visions, and a common language. Consensus building takes place during professional learning community discourse. Together, teachers would be able create group norms, set goals, and create a common disciplinary literacy vision.

Balanced literacy approach. Reading instruction does not end in elementary school. A combination of content area knowledge and disciplinary literacy instructional approaches would facilitate a balanced literacy approach in middle and high school classrooms. Spires (2018) referred to it as "learning on the diagonal" which is when "students actively and simultaneously display growth in their disciplinary habits of thinking and their content knowledge" (p. 1405). Contrary to what publishing companies and literacy "program" developers might have us believe, there are no silver bullet programs that will solve all of our literacy ails. Instead, a collective effort is needed that involves disciplinary literacy instruction training that educates teachers on how to use

disciplinary texts and build existing disciplinary literacy pedagogical content knowledge. That means that teachers would gain an understanding of how to instruct students on how to read, write, speak and think like experts in the field by infusing disciplinary literacy instruction along with content instruction in their classrooms. Included in a balanced literacy approach is teacher's reflection on their expectations versus students' skills.

Policy. For teachers and school leadership to effect change, policy shifts must also occur at the federal and state levels.

Federal and state literacy funding. If teachers are expected to instruct students using the New Jersey Student Learning Standards (2016) and Companion Standards for literacy in social studies, science, and the technical subjects, schools must be supported by policies that ends cuts to federal and state funding, and provides funds delegated to disciplinary literacy instruction which would include mandatory literacy coaches in every school to support teacher's disciplinary literacy instructional practices in the classroom. Literacy coaches could also be used to provide staff and administrative training, assist in organizing and facilitating discussions surrounding disciplinary literacy in professional learning communities.

As Moje (2016) pointed out, teachers need to be disciplinary insiders, however, if they lack the disciplinary literacy pedagogical content knowledge, and they do not have access to an ongoing, sustainable support system, chances are that teachers are not providing the disciplinary literacy instruction that students need to grapple within a given discipline. Assuring that funding was available would ensure that trained, literacy professionals would serve as the disciplinary insiders that teachers need to navigate the language of their fields of study and transfer that knowledge onto students.

Further research. The following are recommendations for future research regarding disciplinary literacy pedagogical content knowledge, teachers' dispositions towards disciplinary literacy, and how or if teachers' dispositions influence classroom instruction.

Post-secondary training. The idea that professional training is necessary to enter the field of education is well established and required by states for licensing. However, additional attention must be given to the pre-service disciplinary literacy training that is being offered to students in post-secondary learning institutions. If the New Jersey Department of Education demands that through the companion standards, every content area includes disciplinary literacy instruction, then pre-service training must meet that demand by requiring students to take more than one or two literacy courses. Otherwise, student teachers and novice teachers are being sent into the field without the training they need to teach disciplinary literacy skills in their given field of study. Without that training, students are not receiving the disciplinary literacy instruction they need to read, write, think critically, and understand complex texts like experts in the field.

As Moje (2016) pointed out, every teacher needs to be a disciplinary insider who can assist students in navigating the terrain and language of a given discipline. However, if both the student and the teacher are new to the discipline and culture, who will lead them? The teacher would not have the disciplinary literacy pedagogical content knowledge to understand that different literacies exist that involve different ways of speaking, listening, reading and writing. Prospective teachers need to understand that specialized literacy learning is like entering a new culture and requires an apprenticeship (Moje, 2016). Therefore, it is critical that additional research is needed with regards to

how current college and universities are building students disciplinary literacy pedagogical content knowledge and meeting disciplinary literacy needs.

Standardized testing. The saying goes, "If you always do what you've always done, then you'll always get what you've always gotten." Such is the case regarding standardized test scores on the international, national, state, and local levels. As discussed in this study, standardized reading test scores have remained stagnant for decades, even though there has been a herculean push to get the rock (literacy test scores) up the hill, there has been incremental change. Certainly, it could be surmised that multiple external factors contributed to such bleak scores such as poverty, lack of resources, and family and community support. However, how can it be that reading scores have increased so little over the course of the last decade? How can we, as educators, as a society, allow that to be the case? The results of this study and the literature review support the idea that educators and policymakers have tried to address literacy issues, but with little success. Therefore, a cross-sectional analysis of the assessments needs to be conducted, meaning the skills addressed on the assessments need to be compared with the disciplinary literacy instruction students are receiving in the classroom. Such actions would inform further research and possible policy change. The study could be expanded to include mathematics as well.

Conclusion

Educators enter the classroom with individual experiences, background knowledge, and differentiated learning styles. By the time they reach the schoolhouse gate, they should be well-prepared with a combination of content knowledge and disciplinary literacy pedagogical content knowledge in order to provide balanced instruction to their

students in their chosen content area so that students develop both content and literacy simultaneously. In order for that to take occur, disciplinary insiders are needed in all subject -areas to teach students how to navigate and learn the culture and language of a given discipline.

Through conducting this qualitative case study, I have learned that just as a novice teacher would be new to the teaching profession, oftentimes, students are newcomers to a subject-area or perhaps they need assistance or excel in a given field. I have learned to think of students as apprentices in disciplinary literacy; therefore, they need the disciplinary insider or expert in the field to guide them. I have also learned that disciplinary literacy instruction needs to be addressed at the post-secondary levels so that incoming teachers have the disciplinary literacy pedagogical content knowledge to instruct students in their disciplines. Through this body of research, it can be concluded that disciplinary pedagogical content knowledge gauged how well teachers could define disciplinary literacy or engage in disciplinary literacy instructional practices. Clearly, disciplinary literacy instruction differs according to the subject area. In this study, teachers' dispositions towards disciplinary literacy influenced classroom instruction. As a result, teachers expectations influenced student learning outcomes.

Literacy learning never ends. There is a common assumption that young children learn to read in elementary school and read to learn in middle and high school. According to Moje (2016) this is untrue. We are always learning to read and reading to learn; therefore, disciplinary literacy standards and academic content have to go hand in hand (International Reading Association, 2015). Educators, policymakers, and communities have to engage in collaborative practices that are focused on disciplinary literacy which

will create a model for disciplinary literacy instruction. As a community of learners, we must consider the serious implications of the stagnant literacy scores on international, national, state, and, in many instances, local standardized test scores. Without a concentrated effort and investment in disciplinary literacy pedagogical content knowledge, dispositions towards disciplinary literacy and disciplinary literacy instruction will remain unchanged, and subsequently, students will experience the results of that and so will standardized test scores.

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Appendix A

Semi-Structured Interview

Thank you for participating in this interview. Your participation is completely voluntary, which means you are free to withdraw from this study at any time. The information ascertained from this survey will be used to gain insight into your pedagogical content knowledge of disciplinary literacy and to what extent disciplinary literacy practices are infused into your lesson plans.

1. Please describe what disciplinary literacy means to you. In other words, elaborate on your disposition towards teaching disciplinary literacy in the classroom.

2. What experiences (i.e. professional development, education, and exposure) have you had that have impacted your description of disciplinary literacy?

3. Does disciplinary literacy matter in content area classrooms such as social studies, science, or English language arts? Why or why not?

4. In what ways are disciplinary literacy strategies and skills addressed in your classroom?

Appendix B

Triangulation Matrix

Triangulation Matrix

Research Questions	Data Source #1 Observations	Data Source #2 Survey	Data Source #3 Interviews
What is the disciplinary literacy pedagogical content knowledge of grades 6 - 12 social studies, English language arts, and science teachers?	Pre and post survey	Pre and post survey	Semi-structured interviews
What are grades 6 - 12 science, social studies and English language arts teachers' dispositions towards disciplinary literacy?	Pre and post survey	Pre and post survey	Semi-structured interview
In what ways, if any, do teachers' dispositions towards disciplinary literacy influence classroom instruction?	Analysis of field notes from teacher observations	Analysis of teacher pre and post survey	Analysis of interview data

Note: Through the use of the triangulation chart, multiple data sources are connected in order to validate and increase trustworthiness of research methods.

Appendix C

Data Analysis Chart

Data Analysis Chart

Data Source	Analysis Techniques	Interpretation Techniques
Observation/Field Notes	Coding observations for common themes	Connect findings with survey responses and field notes; memos; member checking
Surveys	Identify common themes through coding	Connect findings with observations and interviews; consult informed colleague/second coder
Interviews	Cycle I – Open & In Vivo coding Cycle II – Pattern coding; code mapping	Collapse themes

Note: This table explains how the data will be analyzed and interpreted using multiple methods of data analysis.

Appendix D

Research Participant Letter

Dear Teacher:

My name is Linda Saraceno. I am a doctoral student in the Department of Education at Rowan University, Glassboro, New Jersey. This semester I will be conducting a qualitative study using a questionnaire that explores teachers' disciplinary literacy pedagogical content knowledge, professional development, and the potential challenges of disciplinary literacy in the classroom. This survey will provide rich information that will be used to inform the study.

You will be asked to answer questions regarding your background, professional development and how that may influence your ability to infuse disciplinary literacy instruction in the classroom, and your disciplinary literacy pedagogical content knowledge. The potential benefits of this study are to add to the existing body of research regarding disciplinary literacy and teacher professional development.

There are no potential risks of participating in this survey, and the survey should only take about 15 minutes to complete. Your responses are completely anonymous as they will be automatically aggregated and compiled in a spreadsheet; consequently, no responses can be linked to you. All data will be stored in a password protected electronic format. The results of the study will be used for scholarly purposes only and the data will be destroyed in five years.

All high school and middle school science, social studies and English language arts teachers will be invited to complete the online survey using Qualtrics, an online survey program. By continuing and completing the survey, you acknowledge that you have read this information and agree to participate in this research. You are always free to withdraw your participation at any time without penalty.

If you have any questions, feel free to contact me at 732-278-6035 or lsaraceno@gmail.com with "Disciplinary Literacy Survey " in the subject. You may also email me to request a certificate of participation for evidence towards your professional activities and reflection. Your email will not be linked to your responses. Your participation is sincerely appreciated.

Best Regards,

Linda Saraceno

Ed.D Candidate

Educational Leadership, Rowan

Appendix E

Pre and Post Survey Questions

1. How many years have you been teaching?

- 1 to 5 years
- 6 to 10 years
- 10 to 15 years
- More than 15 years

2. What is your highest level of education completed?

- A bachelor's degree
- Some graduate school
- A master's degree
- A master’s degree plus extra graduate credits
- A second master's degree
- A doctoral degree

3. What teaching certification do you currently have?

- Standard certificate through a traditional college education program (completed student teaching)
- Standard certificate through alternate route program
- Standard certificate through a Master's in Teaching (MAT program)
- Certificate of Eligibility with Advanced Standing (student teaching during 2015-16)
- Certificate of Eligibility (currently an alternate route participant)

4. During your teacher education, did you receive training on disciplinary literacy?

- Yes, in an education course.
- No, I learned from during my student teaching experience
- No, I learned from direct teaching experience.
- I am not familiar with disciplinary literacy.

5. During your employment in the district, have you received training on disciplinary literacy?

- I am unsure.
- Yes, in department meetings.
- Yes, in faculty meetings.
- Yes, in after school workshops.
- No

6. What grade level(s) do you teach? (Can choose more than 1)

- Grade 6 – 8
- Grade 9 - 12

7. Which content area(s) do you teach?

- English language arts
- Science
- Social Studies

8. How frequently does your class meet? (Choose the option closest to your schedule)

- Traditional (45- 50 minutes, 5 days a week)
- Full year block (80 – 90 minutes, 5 days a week)
- Traditional with lab period (45- 50 minute periods, 5 days a week plus 1 double lab period)
- Block A/B (70-90 minutes, A-B full year)
- Block 4x4 (70-90 minutes, semester)

9. How many times per week do you infuse disciplinary literacy practices in your classroom instruction?

- 1x per week
- 2x per week
- 3x per week
- 4x per week
- 5x per week
- I do not infuse disciplinary literacy practices.
- I am unsure whether I infuse disciplinary literacy practices.

Appendix F

U.S. Policy Statements on Adolescent Literacy

Table 1.2 U.S. Policy Statements on Adolescent Literacy

Organization	Policy Statement
American College Teaching Program	"Not enough high school teachers are teaching reading skills or strategies and many students are victims of teachers' low expectations. Another likely reason that high school students are losing momentum in readiness for college-level reading is that reading is simply not taught much, if at all, during the high school years, not even in English courses" (American College Teaching Program, 2006, p. 4).
A Report to Carnegie Corporation of New York. Reading Next: A Vision for Action and Research in Middle and High School Literacy	"It is clear that getting third graders to read at grade level is an important and challenging task, and one that needs ongoing attention from researchers, teacher educators, teachers, and parents. But many excellent third-grade readers will falter or fail in later-grade academic tasks if the teaching of reading is neglected in the middle and secondary grades" (Biancarosa & Snow, 2004, p. 1).
International Literacy Association	"Students will not develop the ability to make sense of the specialized reading demands of mathematics, history, science, or technical subjects in an English class. That's why it is imperative that disciplinary literacy instruction be provided by teachers in those fields of study" (International Literacy Association, 2015, p. 3).
National Academy of Education; The National Institute of Education; The Center for the Study of Reading	Reading, like playing a musical instrument, is not something that is mastered once and for all at a certain age. Rather, it is a skill that continues to improve through practice (The Report of the Commission on Reading, 1985, p. 16).

National Association of Secondary School Principals	It becomes even more critical that secondary content area teachers better understand and teach specific literacy strategies to help students read and extract meaning from the written material used to teach the course content (National Association of Secondary Principals, 2005, p. 1).
National Council of Teachers of English	In middle and high school, students encounter academic discourses and disciplinary concepts in literary, historical, informational, scientific, and technical texts that span such fields as science, mathematics, and the social sciences. This kind of academic reading requires specialized reading strategies to access complex texts (Shanahan & Shanahan, 2008). These new forms, purposes, and processing demands require that teachers show, demonstrate, and make visible to students how literacy operates within the academic disciplines (Keene & Zimmermann, 1997; Tovani, 2000; Duffy, 2009).

Note: Adapted from Buehl, D. (2011). Mentoring students in disciplinary literacy. Developing readers in the academic disciplines. Newark, DE: International Reading Association.

Appendix G

Teacher Reflection I

Directions: Please reflect on the professional development experience on close reading collaborative annotation that you have taken part in today.

1. Has your disposition changed towards close reading in your specific discipline? If so, how? If not, why?

2. In what ways could the close reading skill of collaborative annotation be instructed in your classroom?

3. How has this experience deepened your understanding of close reading?

4. What further support do you need to build your knowledge of disciplinary literacy instruction in your content area?

Appendix H

Teacher Reflection II

Directions: Please reflect on today's professional development experience focused on making text connections.

1. Has your disposition changed towards making connections instruction in your specific discipline? If so, how? If not, why?

2. In what ways would making connections be instructed in your classroom?

3. How has this experience deepened your understanding of close reading?

4. What further support do you need to build your knowledge of making connections in your content area?

Appendix I

Teacher Reflection III

Directions: Please reflect on the professional development experience on how teach academic vocabulary using concept maps that you have taken part in today.

1. Has your disposition changed towards academic vocabulary instruction in your specific discipline? If so, how? If not, why?

2. In what ways would the academic vocabulary strategy of using concept maps be instructed in your classroom?

3. What further support do you need to build your knowledge of disciplinary literacy instruction in your content area?