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Examining How Novices, Apprenticing Experts, and Disciplinary Experts Approach Reading Academic Texts

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EXAMINING HOW NOVICES, APPRENTICING EXPERTS, AND DISCIPLINARY
EXPERTS APPROACH READING ACADEMIC TEXTS

By

Hali A. Tavalisky

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EXAMINING HOW NOVICES, APPRENTICING EXPERTS, AND DISCIPLINARY
EXPERTS APPROACH READING ACADEMIC TEXTS

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ABSTRACT

EXAMINING HOW NOVICES, APPRENTICING EXPERTS, AND DISCIPLINARY EXPERTS APPROACH READING ACADEMIC TEXTS

By

Hali A. Tavalisky

First-year college students are often unprepared for college-level reading, writing, and discourse. It is important to understand how various instructional practices affect students' reading and writing abilities. The purpose of this study was to explore how reading and writing instruction grounded in a sociocognitive and combined-use theoretical framework affected participants' reading and writing outcomes and reading attitudes. The dependent variables were participants' a) reading comprehension, b) summary and synthesis abilities, c) reading attitudes, and d) reading strategy application. Six participants were recruited from a first-year developmental reading course. How participants (novices) approached academic texts compared to three English graduate students (apprentices) and three English professors (experts) were examined. Participants' (n=4) quantitative measures increased, while their qualitative measures showed an increase in reading strategy application and verbalizations. A meta-level analysis of quantitative and qualitative data showed that experts spent the least amount of time on the initial read through and the most amount of time writing and rereading. Additional outcomes were discussed.

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This thesis follows the format prescribed by the *American Psychological Association* and the Department of English.

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LIST OF ABBREVIATIONS

DRP®: Degrees of Reading Power

ISARA: Isakson Survey of Academic Reading Attitude

PI: Principle Investigator

RSA: Reading Strategy Application

INTRODUCTION

In this study, I examined how English instructors (disciplinary experts), English graduate students (apprenticing experts), and first-year college students enrolled in a developmental reading course (novices) approach fiction and nonfiction texts. Specifically, I analyzed how grounding direct reading and writing instruction in both a sociocognitive and combined-use theoretical framework affects participants' reading comprehension, summary and synthesis abilities, and reading attitudes in a college developmental reading course. With a mixed-methods case study design, qualitative and quantitative analysis were used to examine participants' learning outcomes and perspectives (Creswell & Plano Clark, 2011).

Historically, research has been conducted on content-area literacy for adolescents from the 1960s to present day (Graesser, McNamara, & VanLehn, 2005; Herber, 1970; Niles, 1965; Vacca & Vacca, 2002). Shanahan and Shanahan (2012) conducted a meta-analysis on content-area literacy while emphasizing “that what readers need is a common set of reading strategies that could be applied, perhaps with some minor adjustments, to varied content-area texts” (p. 8). In the past decade or so, the Common Core Standards mandated that instructors incorporate reading and writing in all content-areas at the middle school and high school levels. However, studies have shown that students are not actually being taught how to read and write like experts and still arrive at college underprepared (Butrymowicz, 2017). Although research has been done on adult learners (Gleason & Nuckles, 2015), almost no disciplinary literacy research has been conducted

with adult learners, especially research grounded in sociocognitive and combined-use theoretical frameworks.

In order to discuss disciplinary literacy, it must first be defined and differentiated from content-area literacy. According to Shanahan and Shanahan (2012), content-area literacy studies focus on teaching general reading and study strategies, while disciplinary literacy studies focus on expert-novice comparisons:

Content-area literacy focuses on study skills that can be used to help students learn from subject matter specific texts. Disciplinary literacy, in contrast, is an emphasis on the knowledge and abilities possessed by those who create, communicate, and use knowledge within the disciplines to teach techniques that a novice may use to make sense of disciplinary text. In other words, disciplinary literacy emphasizes the unique tools that the experts in a discipline use to engage in the work of that discipline. (p. 8)

Due to a lack of disciplinary literacy research at the college level, instructors do not have enough information for proper implementation of disciplinary literacy instructional practices. Without adequate instruction in disciplinary literacy, many students are unable to perform discipline-specific college level reading and writing tasks (Butrymowicz, 2017). The current study explores how first-year students enrolled in a developmental reading course approached disciplinary texts pre-and post-instruction, compared to apprentices and experts in the field of English studies and literacy studies.

Definition of Terms

- Content-area literacy “focuses on study skills that can be used to help students learn from subject matter specific texts” (Shanahan & Shanahan, 2012, p. 8),

specifically, generic skills such as using graphic organizers and foundational reading strategies.

- Developmental reading course refers to a course for probationary students that serves to close the literacy gap between underprepared first-year students and their peers by providing students with the necessary reading and writing skills to critically read at the college level. The course is titled *Approaches to Academic Literacy and Study*.
- Disciplinary literacy “is an emphasis on the knowledge and abilities possessed by those who create, communicate, and use knowledge within disciplines” (Shanahan & Shanahan, 2012, p. 8).
- Probationary students refer to students flagged by the university as at-risk of failure due to low ACT/SAT scores and/or low GPAs, and subsequent poor reading comprehension as evidenced by Degrees of Reading Power (DRP®; Nelson et al., 2011) placement scores.
- Reading attitude has been defined as “a state of mind, accompanied by feelings and emotions, that makes reading more or less probable” (Smith, 1990, p. 215).
- Reading comprehension has been defined as “the process of simultaneously extracting and constructing meaning through inter-action and involvement with written language” (Snow, 2012, p. 11).
- Reading motivation is “an individual’s goals and beliefs concerning reading” (Guthrie & Alao, 1997).
- Self-efficacy is “one’s belief that he or she possess the abilities to attain specific goals” (Tracey & Morrow, 2012, p. 132).

Theoretical Framework

Research into the reading-writing connection has increased in the past few years, but little research has been conducted using sociocognitive and combined-use frameworks (Shanahan, 2016, p. 202). There has been some evidence that reading and writing should be taught together, especially with a student-centered approach. Sociocognitive theory provides a framework for how to integrate an effective student-centered learning environment, with an emphasis on the reading-writing connection. The combined-use model explores how to teach reading and writing together by emphasizing which elements to focus on, such as reader and author awareness, and methods that experts use within each discipline. Reading and writing are essential for college success (Alsup, 2015; Nussbaum, 2010). With two-year community colleges and four-year public universities admitting, at shockingly high percentage rates, students reading and writing anywhere from a fifth-grade level and above, understanding how to close the literacy gap among prepared and underprepared first-year students becomes crucial (Butrymowicz, 2017). College professors cannot assume that freshmen know how to read and write at the college level within each discipline. Students' frustration at not having the literacy tools to understand complex disciplinary texts leads to extremely low retention rates of this population (Butrymowicz, 2017). The current study explores how to close the literacy gap between underprepared students and their peers by modeling for students how to use literacy tools to engage in discipline-specific academic discourse.

Sociocognitive Theory

Research framed by sociocognitive theory is of primary interest to the current study, particularly the work of Bandura (2001; 2005). Bandura argues that learning is a social event that occurs through observation and modeling. Sociocognitive theory has now broadened to include an agentic approach, which “is to intentionally make things happen by one’s actions” (Bandura, 2001, p. 2). Thus, a person gains awareness after his or her realization that behavior is intentional. By using a purposeful behavioral approach with modeling, students’ self-efficacy and self-regulation will increase as well as their motivation.

Self-efficacy. Self-efficacy is “one’s belief that he or she possess the abilities to attain specific goals” (Tracey & Morrow, 2012, p. 132). By breaking tasks down and modeling them, instructors slowly build their students’ self-efficacy, while apprenticing students into various disciplinary fields. People with highly perceived self-efficacy attempt and accomplish more than people with low perceived self-efficacy. With each accomplishment, a person’s motivation increases, and higher levels of motivation have been shown to run parallel with increased student achievement (Bandura, 2005).

Self-regulation. Human motivation and performance are ruled by social incentives and self-evaluative incentives in relation to personal standards. In order to “exercise self-influence, individuals have to monitor their behavior, judge it in relation to a personal standard of merit, and react self-evaluatively to it” (Bandura, 2005, p. 20). Personal standards are formed through a series of social influences and lived experiences. When given a goal with a purpose, individuals regulate their behavior, become motivated, and

provide self-incentives. In addition, when individuals monitor and reflect on their behavior, they in turn may also increase their self-efficacy (Bandura, 2002).

Instructors should not only model direct strategy instruction but should also ensure that students are aware of what behavior is intentional within the modeling. When educators follow modeling with opportunities for students to participate in guided practice, successful learning outcomes usually result. Only once literacy skills are understood can they be used to create something new. Since creativity stems from synthesis of existing knowledge into new ways of thinking and acting, Bandura's (2005) self-efficacy approach to scaffolding helps students to become "contributors to their life circumstances not just products of them" (26).

Sociocognitive theory has been used in research to improve mental health and managerial systems; however, little research has been conducted within organized education, especially in framing reading research (Tracey & Morrow, 2012, 132). Previous research in education focuses mainly on the elements of self-efficacy and motivation within sociocognitive theory for general study purposes. Bandura (1993) discussed how students' self-efficacy beliefs determine their level of motivation and academic accomplishments. The higher a student's self-efficacy, the more motivated he or she is to be successful. Bandura's (2001; 2005) research focuses on modeling, self-efficacy, and self-regulation using three modes of agency: personal, proxy, and collective. According to Bandura (2002), "successful functioning requires an agentic blend of these different modes of agency" (p. 270).

Modes of agency. Individuals use personal agency to directly influence themselves and the environment within their control. A proxy agent is outside of a

person's direct control, such as social conditions and institutional practices. All other tasks sought can only be achieved through social interdependence or group collaboration, such as when tasks are delegated out. The three modes must work together because of the direct effect on a person's or group's efficacy beliefs, which have the potential to enhance individual or group functioning (e.g. children's reliance on parents, marital partners' interdependence, or citizens' reliance on their legislative representatives' actions). For example, people do not live in isolation and are unable to master everything life has to offer. Thus, many of the things people want are only achievable through "socially interdependent effort" and individuals must collaborate with others to "secure what they cannot accomplish on their own" (Bandura, 2001, p. 13).

Lindgren, Leijten, and Van Waes (2011) researched how writing uses all three modes of agency. The writer is the personal agent while the reader becomes the proxy agent since reading is outside of the writer's control. The instructor becomes the collective agent in that the writers in the study depend upon the task instructions. Using sociocognitive theory to examine how best to model audience awareness, the researchers provided a writing task and followed up with an interview to see who understood the goal of the task. Three different groups of writers participated in the study: 10-year-olds, 14-year-olds, and professional writers. Each group had to write three different pieces: an instructive text, a persuasive letter, and an informative text. After all three tasks were completed, "participants were interviewed about their writing experience and what they perceive[d] as important in writing, with a particular focus on the reader" (p. 196). The youngest group "were aware of a reader, but on a basic level, and that they revised mainly to adapt their texts to writing conventions" (p. 215). The 14-year-olds were

similar to the professionals with their awareness of the reader and adaption of their texts with the reader in mind. However, the 14-year-olds differed from the professionals in “genre, writing strategies, and writing conventions” (p. 215). The Lindgren et al. study helps show the bidirectionality of the reader-writer relationship. Examining the reader-writer relationship and the interdependence the two components have may help instructors better implement reading and writing strategies within their classrooms to increase learning and close literacy gaps between probationary students and their non-probationary peers.

Shanahan’s (2016) meta-analysis on the reading-writing connection “conceptualizes reading and writing in terms of ‘reader-writer’ relations” (p. 195). Meaning, reading and writing are about communication. Students must be taught how to see and participate within that conversation. By putting the focus on reader and author awareness, both reading comprehension and persuasive writing are improved. Shanahan examined the different ways it is possible to “improve writing by enhancing *reading* behaviors” (p. 202). For example, thinking about a reader’s awareness of author, pointing out author’s craft and understanding why the author used each element can enhance reading behaviors. However, he noted that there has been little research exploring the reading-writing connection of first-year college students within a sociocognitive framework.

In the current study, grounding research-based instructional practices in sociocognitive theory may increase first-year probationary students’ success rates in college by closing the literacy gap between them and their non-probationary peers. Sociocognitive theory works with the combined-use model to help students get the most

out of the reading-writing relationship. The sociocognitive theory provides a framework that enhances the reading-writing elements emphasized by the combined-use model.

Combined-Use Model

The combined-use theoretical model focuses on the relationship between reading and writing, and the theory embodies the importance of a bidirectional relationship (Tierney et al. 1989). According to Shanahan (2016), this bidirectionality “tries to improve writing by enhancing reading behaviors” while using various approaches which have been shown to “increase the length and quality of writing” (p. 202). For example, in order for writing to be improved through reading, the reader must be able to understand author’s craft. Once a student is able to recognize author’s craft while reading, he or she will be able to mimic those elements within his or her own writing.

According to Shanahan, when the combined-use model is implemented successfully, the value of bidirectionality of reading and writing becomes clear for students. Students can effectively use literacy once they see that the tools of reading and writing are “separate processes that can be combined to accomplish a goal or solve a problem” (p. 195). Due to the bidirectionality of the reading-writing relationship, advocates of the combined-use model believe teaching both reading and writing skills at the same time emphasize the interconnectedness of strategies used for both reading and writing. Elements of adolescent literacy research from both *Reading Next* (Biancarosa & Snow, 2006) and *Writing Next* (Graham & Perin, 2007) have been shown to be effective in teaching reading and writing skills. Including the same instructional components in first-year developmental reading curriculum may help probationary students increase their reading and writing skills. For example, college students struggle with writing

summaries (Ulper & Okuyan, 2010). The adolescent literacy constructs from *Reading Next* and *Writing Next* promote building the literacy strategy toolbox to better close the literacy gap among students in developmental courses. Once students are shown how to use reading and writing strategies, student learning outcomes in both areas have been shown to improve (Friend, 2001). When students' literacy achievement increases, their self-efficacy increases, which tends to have a snowball effect leading to more attempts and success in education (Bandura, 1991; 2001).

According to Marsh (2015), teaching a skill, like summarization, should involve the tenants of both reading and writing. Marsh outlines the tenants of reading and writing, which include *interactive* reading, *transcendence*, and *effective* transfer. *Interactive* reading occurs “when students dialogue or ‘converse’ with a text using annotation and note-taking to make connections between and among texts while also linking texts to self/experience, larger issues, and a broader community or ‘world’ of social interactions” (p. 64). *Transcendence* “moves students beyond superficial understandings of both texts and the issues raised in texts” (p. 64). Transcendence is achieved when connections are drawn through summary and synthesis writing and text-based conversations. Effective transfer occurs when the skills taught “transfer [to] learning in every subject, but they also transfer to our daily lives and help students become community members who think for themselves, advocate for themselves, and can process the complexity of the world around them” (p. 65). According to Gee (2008) and Rogers (2004), when students are able to use the literacy tools of an academic discipline to create, they are then members of that discourse community. By becoming part of the discourse community, students' self-efficacy increases which is “vital for success” (Bandura, 2002, p. 273). The transference

of these skills beyond the English department to other disciplines is the key to effective disciplinary literacy and closing the literacy gap between probationary students and their peers. Although Marsh's (2015) research was a survey of instructors' thoughts and methods, the data show that more research is needed in this area, exploring the potential to increase probationary students' literacy achievement through implementation of pedagogy emphasizing the reading and writing connection.

Minimal research has been conducted at the college level when looking at the reading-writing connection, and there is almost no research in this field in relation to students enrolled in developmental literacy courses (Shanahan, 2016). Advocates of the combined-use model emphasize the importance of integrating reading and writing instruction equally, which may increase student achievement in both areas. Students' improved reading and writing skills may transfer to other disciplines, which is especially important for students entering college on probation and taking developmental classes. The combined-use model also supports modeling and imitation, the same elements in sociocognitive theory that have been shown to be beneficial when teaching reading strategies, writing strategies, and increasing self-efficacy (Bandura, 2001).

The current study will examine how grounding literacy instruction in both the sociocognitive and combined-use theoretical frameworks may increase first-year probationary students' reading comprehension, summary and synthesis abilities, reading attitudes and self-efficacy, leading to probationary students' increased motivation and engagement. Currently, high numbers of probationary students in college are unable to perform the necessary reading and writing tasks, leading to low retention rates (Butrymowicz, 2017). According to Butrymowicz, "96% of 911 campuses reported

having students who required remediation” (p. 9). Of these students, the majority are fresh out of high school and not older adults returning to college. Minimal research investigating how to close the literacy gap between students in probationary classes and their peers has been conducted at the college level. The current study examined various methods to close the literacy gap between underprepared students and their peers. The sociocognitive and combined-used frameworks are used to conceptualize the necessary reading and writing strategies probationary students need to succeed, while examining how their self-efficacy effects their academic work.

Literature Review

This section explores the history of disciplinary literacy research, reading comprehension and assessment, reading motivation and assessment, and the reading-writing connection. Since many first-year probationary college students are lacking the requisite college level literacy skills, adolescent disciplinary research will be explored. After reviewing disciplinary literacy research, reading comprehension and reading motivation research will be analyzed. An examination of research investigating why reading strategies are important and how to teach them within a sociocognitive and combined-use theoretical framework will be conducted. The section culminates with an exploration of the reading-writing connection and how teaching both may increase students' reading and writing skills. Looking at each individual construct, it became clear how each construct is connected and contributes to student learning when embedded in a sociocognitive and combined-use theoretical framework. After examining this body of research, it became evident that little research with first-year probationary students has been conducted.

A common construct deemed important in researching each of the above components is modeling. Bandura (2005) defines modeling as a:

Cognitive representation conveyed by modeling serve as guides for the production of skilled performances and as standards for making corrective adjustments in the development of behavioral proficiency. Skills are usually perfected by repeated corrective adjustments... [and] monitored enactment with instructive feedback serves as the vehicle for converting conception to proficient performance...

provides the information for detecting and correcting mismatches between conception and action. (p.12)

Modeling is central to the sociocognitive and combined-use theoretical frameworks and in the evidence-based practices examined in the following sections.

Disciplinary Literacy Research

According to Shanahan's (2012) meta-analysis, disciplinary literacy stems from content-area literacy, which was first discussed in Whipple's (1925) article focusing on "instructional applications of the relation of reading content subjects" (p.12). Research since then focused on the "identification of important vocabulary... [and] the availability and effectiveness of various instructional procedures" (p.12). Content-area research promoted reading proficiency as subject distinct, yet endorsed general approaches to reading for all subjects. This idea led to disciplinary literacy and studies of how experts approached reading their discipline-specific texts. The first disciplinary literacy research study was conducted by Shanahan and Shanahan (2008). There have been more disciplinary studies executed with adolescents since then. Shanahan and Shanahan (2008) claim that despite current research, adolescent literacy levels have not changed since the early 1970s (p. 56). Instructional efforts have focused on "highly generalizable skills and abilities, such as decoding, fluency, and basic comprehension strategies" (p. 56). However, solely relying on these foundational strategies is seen as problematic for middle school and high school students, since disciplinary texts are highly specialized and students do not receive discipline-specific instructions to read and write disciplinary texts. Shanahan and Shanahan have used their research data to improve literacy curriculum. Not only do instructors of developmental reading classes teach a wide range

of reading strategies, they must also model which strategies each discipline requires of readers. Since no research in the area of disciplinary literacy has been conducted with first-year students in developmental reading classes, the current study seeks to address this gap.

A study by De La Paz and Felton (2010) examined the impact of historical reasoning strategy instruction on eleventh grade students in two groups: the control group and the group that received the instructions on historical inquiry strategies. Four classes from two schools with a total of 160 eleventh graders participated in this study. Each school had one control and one comparison group. The comparison group received historical reasoning and argumentative writing strategy instruction, and all other materials used were the same for both the control and comparison group. Pre- and post-essays were written on the topic for measurement purposes. The length, quality, argument analysis, claims, rebuttals, and document use of essays were compared. The results show that essays written by students who received the instruction were longer, had greater historical accuracy, were more persuasive, and had more elaborate claims and rebuttals.

In addition, Hynd-Shanahan, Holschuh, and Hubbarb (2004) conducted research investigating how disciplinary literacy strategies were taught in three study skills courses within a southeastern university. Participants responded to questionnaires and participated in pre-and post-interviews. Thirteen participants were selected based on their responses to the first questionnaire to participate in the interviews; their interviews were then transcribed and analyzed. The researchers examined how student thinking and strategy use changed. From pre- to post-implementation, three themes emerged from the data: “(a) Thinking about a historian’s job increases disciplinary knowledge; (b) Students

struggle with subjectivity/objectivity and relativism, and (c) Students change their strategies and their ideas about what it means to read about historical events” (p. 157).

After the disciplinary unit on reading history and subsequent interviews, it was determined that twelve of the thirteen participants viewed historians as constructivists and history texts as arguments. In addition, participants believed they were more capable of engaging in the same kind of thinking and strategies used by historians and that their learning strategies moved from task completion to critical thinking.

Both of these studies show the importance of disciplinary literacy and how it may influence students’ reading, writing, and critical thinking abilities; however, these studies only focus on one element, reading. The purpose of the current study combines reading and writing with discipline-specific literacy to increase comprehension, critical thinking, and writing skills while providing foundational strategies that will help first-year students in developmental reading courses succeed academically. By teaching discipline-specific reading and writing skills together, students’ reading comprehension should increase, and reading comprehension is central to academic success.

Reading Comprehension and Assessment

In order to increase reading comprehension, it is important to teach reading strategies using metacognition. Flavell (1979, 1987) defines metacognition as “one’s knowledge about his or her own cognitive processes and one’s ability to reflect on learning experiences to regulate future learning experiences” (p. 22). According to Ness (2009) and Shanahan and Shanahan (2008), very little teaching of these elements occur together, contrary to research showing the importance of integrating metacognition into reading instruction (Joseph, 2010).

Joseph (2006, 2008) suggests that students develop effective learning strategies through the practice of metacognition starting in middle school. Joseph (2006) argues that it is beneficial to start teaching metacognitive skills to middle schoolers because the text is not as discipline-specific as high school and college. Starting in middle school allows students to become familiar with metacognition before applying it to more complex texts. Joseph also offers suggestions for instructors that help promote metacognitive awareness that encourages students to complete tasks and reflect on their cognitive processes. Joseph (2008) also asserts that with the increase of technology, it is crucial that “direct literacy instruction using authentic materials in all content-areas is needed to prepare students for the future” (p. 58). Additionally, Joseph emphasizes that without the ability to read various texts, students will not become independent learners and will not be successful (p. 58).

According to Farkas (2015), there is no one group of reading strategies; instead, there are foundational reading strategies that have been shown to increase students’ reading comprehension when used flexibly (see Appendix A). These specific comprehension strategies have been defined as “deliberate, goal-oriented attempts to control and modify the reader’s efforts to decode text, understand words, and construct meanings of text” (Afflerbach, Pearson, & Paris, 2008, p. 368). Edmonds and colleagues (2009) conducted a meta-analysis to understand how explicit reading strategy and instruction effected adolescent students’ comprehension; the results were positive (Edmonds et al., 2009). It has been well documented that adolescents’ ability to apply reading strategies increases their reading comprehension (Cantrell & Carter, 2009; Edmonds et al., 2009; Fisher et al., 2011). However, reading strategy instruction tends to

disappear in middle school, high school, and college instruction (Bosley, 2008; Ness, 2009), contrary to research showing that explicit strategy instruction promotes both reading and writing transference across disciplines (Cantrell et al., 2014; Gee, 2008).

When reading strategies are taught with metacognition, students should be provided an example and explanation of why each strategy is important (Farkas, 2015). Farkas examined how using metacognition to teach before-, during-, and after-reading strategies effected middle school students' reading comprehension:

When students see how their teacher applies the reading strategy to complex content-area texts, they are better able to transfer strategy application to their own reading (Shanahan & Shanahan, 2008). For example, if a teacher wants students to monitor their comprehension while reading, the teacher must first define the strategy for students. Then, students need to see their teacher struggle with the content-area text and in turn, apply the reading strategy to repair his or her understanding of the text and to reach a depth of understanding. Students are thus learning to monitor their own comprehension through their teacher's metacognitive modeling. (p. 37)

Thus, integrating modeling through metacognitive think-alouds has been shown to be a staple in improving not only reading comprehension (Kieffer & Lesaux, 2007) but also reading motivation (Fulmer & Frijters, 2011).

It is important to scaffold more difficult texts so that students' reading comprehension will improve; moreover, it is important to realize when students are struggling with how and when to use the reading strategies and to provide extra modeling and guided instruction so as not to reduce their reading comprehension, nor their

motivation to read (Chandler & Sweller, 1991; Schade Eckert, 2006; Stanovich, 1990). Additional modeling and instruction should be provided based on formative assessment of students' reading comprehension and strategies in which they struggle. The goal is to provide ample guided practice in reading using evidence-based strategies (Farkas, 2015). In addition, to assess the appropriate use of strategies, Farkas required students to annotate text using coded strategies (see Appendix A). Students' annotations served as a window into their reading comprehension and critical thinking.

Modeling and scaffolding help students develop self-regulatory mechanisms, a key component to motivation (Griffith & Ruan, 2005). Subsequently, reading strategies also help build a literacy academic vocabulary. Studies have shown that increased academic language and active reading increase students' motivation and self-efficacy (Bandura, 1993; Snow, 2010).

Reading Motivation and Assessment

Even though reading patterns of adults can be used to predict employment and community involvement, there has been minimal research conducted on adult reading motivation (Schutte & Malouff, 2007). However, numerous reading motivation studies have been conducted at the elementary school, middle school, and high school levels. Guthrie and Klaudia (2014) found that seventh-grade students' perceptions of motivation support autonomy of choice, values for reading, and collaboration in literacy activities. When combined with strategy instruction, students' motivation and reading value increased. It is important for instructors to not only consider their students' reading ability but also their students' reading interests, reading attitudes, and reading behaviors. In addition, providing students a choice in reading material and instructional practices

have also been shown to increase reading motivation (Guthrie, Wigfield, & You, 2012; Ivey & Johnston, 2013). Therefore, when working with a student population that is typically disengaged and apathetic about reading, it is extremely important to examine the outcomes of a developmental reading program designed to increase first-year college students' reading comprehension and motivation (Farkas, 2015). Specifically, educators should examine the relationships among students' reading comprehension scores, reading strategy applications, summary synthesis and rhetorical analysis writing abilities, and reading attitudes.

According to Allington (2002), students' reading comprehension and motivation increase when exposed to diverse texts, i.e. fiction, nonfiction, and various modes of texts. Farkas (2015) claims the following:

Finding and making relevant literature available to students is important, yet research shows that the texts students typically enjoy are not valued in schools (Moje, 2002), which leads to passive, disengaged readers (Smith & Wilhelm, 2002) who cannot interact and connect with the text as a whole (Rosenblatt, 1978). (p. 46)

Thus, it is of the utmost importance, especially within developmental courses, for students to be exposed to a variety of texts, while maintaining awareness of the role text complexity plays in students' reading comprehension (Ivey & Broaddus, 2000). In addition, Guthrie's (1996) research shows a connection between students' ability to flexibly apply reading strategies and their engagement, motivation, and comprehension lessons. Bandura (1991; 1993) emphasized the importance of making students aware that they are in control of their own learning and reading comprehension growth. Each person

brings a different perspective and has something to contribute, thus building a community and setting the stage for self-directed learning. Helping students see the connection between their reading strategies and writing strategies has the potential to increase their overall reading comprehension (Shanahan, 2016).

Reading-Writing Connection

Teaching students various writing strategies not only improves their abilities as writers but also their abilities as readers (De La Paz & Graham, 2002; Graham & Perin, 2007a; 2007b; Shanahan, 2016). Emphasis on purpose and audience in writing helps readers understand these elements when reading. In a meta-analysis, summary writing was found to be “quite powerful in stimulating learning” but this decreases with age unless students are taught to synthesize information in their summary writing (Graham & Perin, 2007a; 2007b). Summary writing skills are important because they require “students to think through the ideas more thoroughly” (Shanahan, 2016, p. 201), and when combined with synthesizing information, it forces students to connect ideas among each paragraph and draw an overarching conclusion (Graham & Perin, 2007a; 2007b). Composing summaries increases reading comprehension by forcing the student to focus on the overall message of the text.

By combining summary and synthesis writing with a rhetorical analysis, reading comprehension has been shown to improve (Applebee et al., 2013; D’Angelo, 1983; Jencke, 1935; Salisbury, 1934; Woodworth, 1988). Rhetorical analysis requires students to determine who the target audience is, how the author targets the reader, what form the text takes, and what the author’s purpose is. Lamb (2010) discussed the importance of teaching rhetorical reading and how it forces reader to analyze the text as they read.

Lamb also argued that response writing and structured summary writing, like *précis*, are an important component to rhetorical reading. The writing responses require students to “create claims and build textual cases...[and] can be compared, discussed, and revised in class” (Lamb, 2010, p. 48). The written summaries require students to understand what they read and practice identifying various types of nonfiction texts. Instructors also use these written summaries as assessment tools and allow them to determine where additional instruction or practice is needed.

Outside of Lamb (2010), there has been little research conducted on reading comprehension outcomes after integrating rhetorical analysis writing into developmental reading courses at the college level. The current study attempts to fill that gap by requiring participants to write a summary/synthesis and rhetorical analysis for nonfiction and fiction texts that they read throughout the study.

Researching literacy instruction that focuses on the writing and reading connection is important to all disciplines, especially when teaching developmental literacy courses. This is because there are “distinct ways different academic disciplines use language to make their own meanings” (Jetton & Shanahan, 2012, p. 35). However, the foundational reading and writing strategies taught to first-year students in introductory and developmental courses are fundamental to reading comprehension and writing ability and should transfer to all disciplines. When students can determine the mode and style of a text, they can adapt their reading strategies to that specific text, which will then change how they write about the text because they will be more open to picking up the discipline-specific language embedded in the text (Jetton & Shanahan, 2012).

There have not been any studies at the college level that examined the reading-writing connection through sociocognitive and combined-use theoretical frameworks. Examining the connection through this theoretical framework might influence how future introductory and developmental courses are taught to increase the academic success of first-year college students.

Summary

In summary, sociocognitive and combined use theories may prove to be effective in increasing various aspects of probationary students' reading and writing abilities. Specifically, disciplinary literacy may increase students' reading comprehension, writing, and critical thinking. Foundational reading strategies should be taught with explicit modeling and metacognitive think-alouds in combination with evidence-based instructional practices to scaffold students' success in reading more difficult texts. Students' reading comprehension and motivation increased when exposed to diverse texts and when students are provided with a choice of reading material and instructional practices. It has also been shown to be beneficial when students are taught reading and writing skills together. For example, by emphasizing purpose and audience in writing, students will be able to understand these elements when reading a variety of texts. The theories and research discussed were used to inform the principle investigator's (PI) pedagogical decisions in teaching a developmental reading course. The following research questions guided the inquiry.

Research Questions

There are two main research questions in this study:

1. When embedding literacy instruction within a sociocognitive and combined-use theoretical framework, do the a) reading comprehension, b) summary and synthesis abilities, c) reading attitudes, and d) reading strategy application skills of first-year college students enrolled in a developmental reading course change?
2. Do English instructors (disciplinary experts), English graduate students (apprenticing experts), and first-year college students (novices) enrolled in developmental reading courses approach fiction and nonfiction texts differently?

Methods

A mixed-methods case study was conducted over a 16-week semester, using Creswell and Plano Clark's (2011) mixed-methods research design. This design was chosen because both qualitative and quantitative methods were needed to answer the research questions. For research question one, quantitative data was needed to track changes in participants' (novices') reading comprehension, reading attitudes, summary synthesis writing, rhetorical analysis abilities, and reading strategy application. For research question two, participants' (novices') metacognitive think-alouds were analyzed and quantified to compare how participants, apprentice participants, and expert participants approached texts.

The following sections delineate participants, consent, and setting before describing measures and data collection. Next, procedures and data analysis were explained, followed by a breakdown of how quantitative and qualitative data were mixed.

Participants

Participants include six first-year students (novices) enrolled in a developmental reading course entitled *Approaches to Academic Literacy and Study*. Participants were selected based on their reading comprehension outcomes on a cloze reading assessment, Degrees of Reading Power (DRP®; Nelson et al., 2011). Two participants scoring in the lower, middle, and high range of low comprehension were selected to ensure a representative sampling of reading comprehension levels. In addition, three English graduate students (apprentices) and three English professors (experts) were recruited to

examine varying approaches to reading academic texts. For clarity of understanding, when referring to participants, they will be referenced in the following way:

- participants represent students enrolled in the developmental reading course;
- apprentice participants represent graduate students in the English Department; and,
- expert participants represent PhDs within the fields of English and literacy.

A convenience sampling (Gall, Gall, & Borg, 2007) was used to select the participants at the site of the PI's place of employment. Participants were placed in the developmental reading class of the PI through a university-driven orientation process.

Consent. On the first day of the semester, the PI handed out a copy of the IRB approval consent form (see Appendix B). The entire form was read aloud. The PI explained the study while answering all participants' questions. Consent was gained from all participants. Apprentices' and experts' consent was attained individually. To protect all participants' personal identities, pseudonyms were created and used during the entire analysis of data and when referenced in this study.

Setting

Data were generated at a predominately white, rural, public university located in a Midwestern state. Approximately 120 incoming freshmen were assessed and placed in developmental reading courses. Twenty students were placed in the PI's class, six of which were selected for this study. Participants were in their first semester of college. The developmental reading courses are part of a larger literacy program that aims to close the reading comprehension gap between probationary and non-probationary students. A convenience sampling (Gall, Gall, & Borg, 2007) was used to select the site, which is the

PI's place of employment. Apprentices and experts were selected based on their field of study within the English Department.

Measures and Data Collection

The quantitative measures for this study include the Degrees of Reading Power (DRP®; Nelson et al., 2011) assessment, Isakson Survey of Academic Reading Attitudes (ISARA; Isakson & Isakson, 2016), summary and synthesis writing rubric (Farkas & Jang, personal communication, August 29, 2016), and reading strategy application rubric (Farkas & Jang, personal communication, August 29, 2016). Participants' metacognitive think-aloud videos were collected during pre- and post-implementation of instruction.

Reading comprehension assessment. The DRP® (Nelson et al., 2011) is a cloze reading assessment consisting of 63 multiple-choice questions. The Kuder Richardson Coefficient (1937) of reliability (K-R 20=.95) was used to test reliability. The criterion related validity of readability of prose passages correlated with difficulty of items ($r=.95$) (Morsy, Kieffer, & Snow, 2010). The assessment is comprised of a long nonfiction passage that increases in text complexity, with periodic missing words. Participants had to choose the correct word from a corresponding multiple-choice question to accurately complete the sentence. Pre- and post-scores were collected during the first and last week of the semester. Form 10A was used for the pre-assessment and form 10B was used for the post-assessment.

Reading attitude survey. The Isakson Survey of Academic Reading Attitudes (ISara; Isakson & Isakson, 2016) consists of an overall reading attitude scale and three subscales: (a) global value of reading, (b) student self-efficacy for reading, and (c) reading behavior, see Appendix C. Internal consistency for the 20-item reading attitude

scale was good (alpha of .85) and the subscales were adequate (Farkas & Jang, personal communication, August 29, 2016). Pre- and post-scores were collected during the first and last weeks of the semester.

Summary and synthesis writing. Farkas and Jang (personal communication, August 29, 2016) developed an assessment protocol to measure how well students are able to summarize and synthesize fiction and nonfiction texts (see Table 1). When college students are able to pick out main ideas and draw over-arching conclusions from college level texts, their reading comprehension improves (Graham & Perin, 2007a). Pre- and post-assessments were collected during the first and last weeks of the semester; students actively read, synthesized, and summarized a college-level fiction and non-fiction text, which were collected pre- and post-implementation of the curriculum.

Reading strategy application. Farkas and Jang (personal communication, August 29, 2016) developed an assessment protocol to measure how well participants used reading strategies by assessing their annotations (see Table 1). While many researchers have found reading strategy application beneficial, Farkas and Jang explored “relationships between flexible and meaningful reading strategy application to participants’ reading comprehension, reading motivation, and summary and synthesis writing” (Reading strategy application, paragraph 1). Assessments were then collected during the first and last weeks of the semester.

Metacognitive think-aloud videos. Metacognitive think-alouds required readers to vocalize their thoughts while reading—to think out loud. The purpose of recording think-alouds was to reveal the readers’ metacognitive processes. Barnett (1998) effectively used recorded metacognitive think-alouds to evaluate college students’ study

skills and self-regulation practices. Barnett analyzed the videos to find common patterns, which were then used to improve college and university study techniques.

The purpose of metacognitive think-alouds in the present study was to quantify and code qualitative data of participants' metacognitive processes. Pre- and post-videos were examined to determine changes in participants' reading strategy use, as well as to determine the effectiveness of the instructional intervention grounded in sociocognitive and combined-use theoretical frameworks. In addition, after analysis of participants' metacognitive think aloud data, participants' results were compared to apprentices' and experts' results.

Table 1
Protocols for Assessment (Farkas & Jang, personal communication, August 29, 2016).

Nonfiction Summary Synthesis Checklist	Fiction Summary Synthesis Checklist	Annotation Checklist
___ Provides main idea	___ Who—states main character(s) with description	<u>10</u> applies 10 strategies effectively
___ Draws overarching conclusion	___ Wants	<u>9</u> applies 9 or more strategies effectively
___ Offers key supporting evidence	___ But	<u>8</u> applies 8 strategies effectively
___ States effect or makes inference	___ So	<u>7</u> applies 7 strategies effectively
___ States why important	___ Then	<u>6</u> applies 6 strategies effectively
Rhetorical Analysis	Rhetorical Analysis	<u>5</u> applies 5 strategy effectively
___ Explains mode	___ Explains mode	<u>4</u> applies 4 strategy effectively
___ Explains audience	___ Explains audience	<u>3</u> applies 3 strategy effectively
___ Explains purpose	___ Explains purpose	<u>2</u> applies 2 strategy effectively
___ Whose story and/or why important	___ Explains why important	<u>1</u> applies 1 strategy effectively
___ Provides rhetorical evidence	___ Provides rhetorical evidence	<u>0</u> applies zero strategies effectively
Total _____/10	Total _____/10	Total _____/10

Procedures

Instructors of *Approaches to Academic Literacy and Study* courses, including the PI of this study, participated in professional development on program requirements and how to administer the assessments, which was led by the literacy program director. Participants were administered the DRP® (Nelson et al., 2011) and the *ISARA* (Isakson & Isakson, 2016) on the first and last day of the semester. These measures were used to determine participants' current reading comprehension levels and reading attitudes towards academic reading, which are crucial for participants' college academic success. The PI used these measures to discover how she would approach each text with her students and facilitate text-based discussions throughout the semester. The surveys also helped the PI to provide a variety of strategies to increase student motivation and help students determine their own interests.

The PI recorded participants, apprenticing participants, and expert participants in a metacognitive think-aloud to determine how each approached fiction and nonfiction texts, as well as assess how each applied reading strategies and composed summary synthesis paragraphs and rhetorical analysis writing with fiction and nonfiction texts. Video data were collected during the first and last week of the participants' semester. For a complete breakdown of quantitative data, see Table 2.

After gathering the pre-assessment data and metacognitive think-aloud videos, the PI led a discussion on the importance of literacy in all aspects of life, which was revisited throughout the semester. An explanation of Lexile scores and the potential for comprehension growth when students use the reading strategies to make meaning was explained.

Table 2
Timeline for Data Collection

Data Collected	Date
Mandated pre DRP® (Nelson et al., 2011) and <i>ISARA</i> (Isakson & Isakson, 2016). Pre summary and synthesis writing, rhetorical analysis writing, and participant videos.	Summer 2016 First-year Student Orientation August 22, 2016
Apprentice Participants' Videos	September 2016
Expert Participants' Videos	October 2016
Post DRP® (Nelson et al., 2011), <i>ISARA</i> (Isakson & Isakson, 2016), Summary and synthesis writing, rhetorical analysis writing, and participant videos.	December 2016

Specifically, participants were given explicit instruction on when and how to apply reading strategies, how to rhetorically analyze fiction and nonfiction texts, and how to compose summary synthesis paragraphs, and why these skills are imperative to reading comprehension, writing ability, and academic success at the college level. In addition, explanations for how these same skills relate to self-empowerment and agency was continually integrated into discussion, so participants could see the necessity of developing literacy skills to critically read the world and fight oppression. The literacy instruction was practiced throughout the semester in class and during participants' weekly tutor meetings. Participants were also given some choice in texts used for various assignments; most sessions included text-based collaborative discussions. For a more comprehensive overview of key components for implementation of evidence-based practices, see Table 3.

After the administration of initial assessments, the PI taught a wide range of pre-, during-, and after-reading strategies over two class periods. Metacognitive, evidence-based think-aloud practices were implemented to model for novices when and how to

Table 3
Process for Instructional Implementation

Key Components of Implementation	Evidence-Based Literacy Practices
Explicit Strategy Application	Metacognitive modeling of pre-, during-, and after-reading strategies; summary and synthesis writing; rhetorical analysis (Bandura, 2002). The gradual release of responsibility was implemented throughout the semester (Fisher & Frey, 2014).
Embedded Reader's Choice	Students were given choice in literature circle books. Students also had choice in reading material for various instructor and tutor assignments (Guthrie, Wigfield, & You, 2012; Ivey & Johnston, 2013).
Student Assessment	Textual annotations, summary synthesis paragraphs, and rhetorical analysis compositions were used to formatively assess participants, to determine where additional instruction and guided practice were needed (Farkas, 2015). Tutors' anecdotal session notes were also used to formatively assess students' literacy skills and guide instruction. Pre- and post-DRP® (Nelson et al., 2011) scores, ISARA (Isakson & Isakson, 2016) scores, Summary Synthesis (Graham & Perin, 2007a; 2007b), and Rhetorical Analysis (Lamb, 2010) assessment scores were used to measure changes.
Text-Based Collaboration	Text-based collaborative discussions and assignments were implemented weekly, including literature circles, Socratic circles, and literacy circles (Farkas, 2015).

apply reading strategies, followed by an explanation of why they are needed. The PI modeled strategies for both fiction and nonfiction texts, while also emphasizing which techniques each disciplinary expert used. While the PI modeled strategies, participants were expected to take Cornell notes on the strategies, which they were to referred to while actively reading throughout the semester. After modeling a few strategies at a time, the PI required participants to practice reading strategy application and then discuss their strategy application with a partner. Once participants finished reading a text, the PI modeled how to (using metacognitive think-aloud to model the writing process)

synthesize, summarize, and analyze the text and then compose a summary and rhetorical analysis. Successfully, students practiced these strategies while reading and writing; students were assessed via annotations and metacognitive think-alouds throughout the semester: during class, tutoring, and outside of class. Participants' work was formatively and summatively assessed (see Appendix A and Table 1 for assessment rubrics).

Participants were exposed to a variety of texts: modes, topics, and complexity levels. The participants were given some choice of material related to the various themes taught. For example, participants picked their first class novel and were then placed in groups based on their text selection. In addition to the novels, participants were provided supplemental material to help them make thematic connections.

Example of weekly instruction. Participants in the study received 200 minutes of instructor-led instruction per week and 30 minutes of one-on-one tutor direct instruction per week. On Monday, participants chose their novels and were provided a brief review of the reading strategies, which would be assessed in their tutoring session. Participants then broke into groups to create a reading schedule and choose literature circle roles. After final approval from the PI, participants began reading, either individually, in pairs, or as a whole group. Participants were expected to apply reading strategies evidenced by their annotations, which the PI checked and discussed individually with students while the whole class read. The PI and tutor provided additional instruction and guided practice on strategy use based on participants' annotations. Before the end of the class period, participants composed individual summary synthesis paragraphs and rhetorical analyses. This process helped the PI measure continuous reading comprehension, writing quality, and reading attitude changes, as well as how to tailor instruction for the next class period.

On Wednesday, participants held text-based collaborations—literature circles. Participants discussed their novels, literature roles, questions, comments, and written summary synthesis paragraphs and rhetorical analyses. During discussion, the PI visited with each group and provided feedback and instruction for guided practice. After the group discussions, participants shared their ideas about themes of their novels with the entire class for comparison and discussion of unit themes. Each participant then paired up with another student from a different group and read a supplemental text. When finished, as a class they wrote a summary synthesis and rhetorical analysis of the paired reading. Depending on how much instructional time remained, participants had the opportunity to begin actively reading the next section of their novels or their supplemental texts for their tutoring session.

During tutorial sessions, the tutor graded participants' reading strategy application of their novels and used that formative assessment to tailor explicit reading instruction and to provide guided practice on the supplemental text. At the end of the week, the PI reviewed the tutors' anecdotal session notes to create lessons and choose supplemental readings for the next week. Before class the next Monday, the PI and tutor met to review lesson plans for the following week. In the next section, data analysis methods are described.

Data Analysis

First, videos were transcribed. Secondly, the PI scored the summary synthesis, rhetorical analysis, and reading strategy application for each participant, apprentice participant, and expert participant (see Table 1 for scoring rubric).

After scoring, the PI began coding over time (Saldaña, 2013). First-cycle coding of the data consists of multiple steps. The first step focused solely on the participants' pre-videos and included reading each transcription and summarizing what the PI thought about the metacognitive processes of the participants. The next step involved rereading the transcripts and coding. The third and fourth read-throughs involved looking at preconceived codes (see Table 4). The next step involved going through the same process, only with the participants' post-videos. Each transcription went through the same process as the participants' pre-videos. After analysis of participants' pre- and post-videos was completed, the PI analyzed apprentice and expert videos. The final step of analysis consisted of conducting a meta-level analysis to make inferences about what changes have occurred over time and to compare how novices approach reading compared to apprentices and experts. Figure 1 illustrates the coding process. The PI was trained to score the rubrics by the program director for a previous study, with 90% inter-rater reliability agreement (Farkas & Jang, personal communication, August 29, 2016).

Table 4
Process Codes

Code	Description	Kara's Example
Verbalizing Number	The number of comments made.	Doubled
Verbalizing Length	The length of comments made.	Varied between one to three lines
Applying Reading Strategies Number	The number of RSs were used (see Appendix A).	Tripled
Applying Reading Strategies Type	The type of RSs used (see Appendix A).	Increased from 3 to 9
Dead Space Number	The number of pauses	Increased due to increased verbalization
Dead Space Length	The amount of time between each comment.	Averaged around 30 seconds with a few lasting over a minute

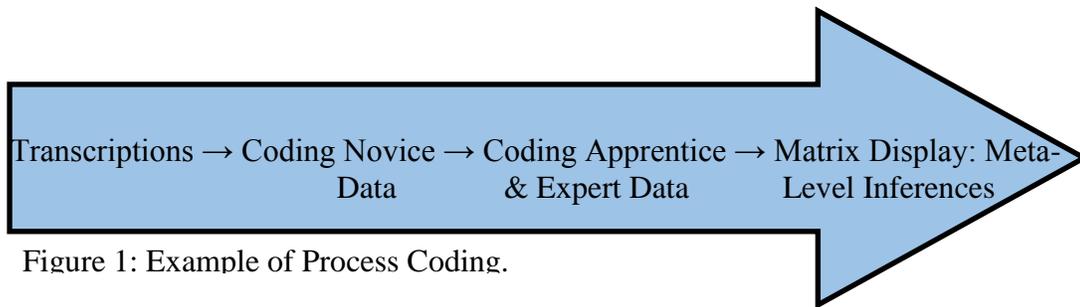


Figure 1: Example of Process Coding.

Mixing of Quantitative and Qualitative Data

Using Miles, Huberman, and Saldaña’s (2014) grounded theory methods, qualitative analysis of participants’ transcribed video data were analyzed. First, the PI scored all participants’ summary synthesis writing, rhetorical analysis writing, and reading strategy application. Miles, Huberman, Saldaña (2014) recommend using matrices to analyze mixed-methods data sets (see Table 5). On the left side, the matrix includes pseudonyms for each participant and all changes in participants’ quantitative data. For a more comprehensive breakdown of the quantitative data, see Appendix D. The second column displays direct outcomes/first-cycle coding (see Table 5), which Miles, Huberman, and Saldaña’s (2014) process coding was used. For participants, the codes emerged from the differences between their pre- and post-transcriptions. The codes were categorized as positive or negative based on relationship to program objectives. The third column illustrates meta-level outcomes/second-level coding where the PI compared qualitative and quantitative data sets, drawing inferences about phenomena based on the direct outcomes/first-cycle coding of data. The meta-level data were also categorized positive or negative based on program objectives and process codes, which were then used to compare participants’, apprenticing participants’, and expert participants’ outcomes (see Appendix E).

Table 5
Example of Matrix Used for Meta-level Analysis

Roles	Pseudonyms RC, RA, S/S, R/A, and RSA Change (+ or - or =)	Emergent Codes	Direct Outcomes/First-Cycle Codes		Meta-Level Outcomes/Second-Level Codes	
			Positive	Negative	Positive	Negative
Student	Kara +7RC +1.7 RA +1F S/S +2N +1F R/A =N +7F RSA +7N	Verbalizations Reading Strategy Application Dead Space	↑ in # and length variety ↑ # of and types Overall ↓, mostly shorter pauses		↑ Metacognitive awareness & worked through confusion, read for deeper understanding ↑ RSA knowledge ↑ SE	
Apprentice	Mrs. <u>Cait</u>					
Expert	Mrs. Lynn					

Note: RC = Reading Comprehension, RA = Reading Attitude, S/S = Summary/Synthesis, R/A = Rhetorical Analysis, RSA = Reading Strategy Application, F = Fiction, and N = Nonfiction

Institutional Review Board Approval

The PI received Institutional Review Board approval on August 9, 2016 (see Appendix F).

Summary

Data collected to answer the research questions included pre- and post-measurements: the DRP® reading comprehension measure (Nelson et al., 2011), the *ISARA* reading attitude measure (Isakson & Isakson, 2016), the summary synthesis rubric, the rhetorical analysis rubric, and the reading strategy application rubric. Participants' metacognitive think-aloud videos, pre- and post-implementation, along with apprentices' and experts' metacognitive think-aloud videos were also collected.

Mixed-methods data analysis was conducted for this case study (Miles, Huberman, & Saldaña, 2014). Quantitative scores were entered into a matrix along with qualitative codes and data. The matrix was used to analyze quantitative data and qualitative data through first-cycle and second-cycle direct coding. First-cycle outcomes emerged from the video transcription analysis, which were process coded and quantified. Meta-analysis was conducted to draw inferences about changes that occurred, as well as to compare how participants, apprentice participants, and expert participants approached texts.

Results

To answer research question one, pre- and post-quantitative data were collected to determine any difference in participants' reading comprehension, reading attitudes, summary synthesis abilities, and reading strategy application. An improvement in participants' (n = 4) scores were revealed. There were incomplete participant data sets (n = 2) due to withdrawal from the course and technical difficulties. Incomplete participant data were not analyzed for this study.

To answer research question two, participants' video transcriptions were compared to apprentice participants' and expert participants' video transcriptions, which went through multiple levels of coding (Miles, Huberman, and Saldaña, 2014). Inferences emerged from meta-level coding of participants' data, apprentices' data, and experts' data, which showed the differences and similarities between how each group approached texts.

The following sections outline each individual's quantitative and qualitative outcomes and common outcome themes for each group followed by an overall comparison of group outcomes. A discussion of research reliability and validity follows, along with a brief summary. See Appendix D for a visual comparison of raw quantitative data among all participants.

Novice Outcomes

Kara. A review of Kara's quantitative data showed large gains in her reading comprehension and reading attitude. Kara's reading strategy application increased dramatically, which was reflected in her improved summary synthesis and rhetorical

analysis abilities. Her post scores were higher in all categories except for rhetorical analysis of nonfiction texts, which remained the same. Kara's qualitative data revealed a higher metacognitive awareness. Through increased length of her comments, Kara showed how she worked through confusion to form deeper meanings of the texts. Her verbalizations in both number and amount increased, and she had shorter dead spaces.

Jenny. Jenny's quantitative data showed a small decrease in reading comprehension with a slight increase in reading attitude. While minor improvements were seen in her summary synthesis abilities, there was a significant increase in her rhetorical analysis abilities. Jenny's reading strategy application decreased by a point in fiction and remained the same for nonfiction. Jenny's qualitative data revealed that she focused mainly on monitoring comprehension and debated with herself on a deeper meaning of the text. Despite reading aloud less frequently, her dead space decreased due to the increased amount of verbalization.

Adam. Adam had the largest improvement in reading comprehension, with a small increase in reading attitude. He also made large gains in his summary synthesis and rhetorical analysis abilities, as well as his reading strategy application. Adam's qualitative data revealed that his self-efficacy may be improving; his transcriptions showed no frustration, and he was less distracted than in his pre-metacognitive think-aloud. In his post-video, Adam mentioned that he used to have tests read to him in high school; however, in his post-video, he felt he no longer needed material read to him. He showed an increased metacognitive awareness by monitoring his comprehension and working out answers to his questions. His verbalizations increased in both number and length while his overall dead space decreased.

Dawn. Dawn had small advances in reading comprehension and reading attitude. She had large gains with her summary synthesis abilities. Her rhetorical analysis abilities also improved while her reading strategy application remained the same. Dawn's qualitative data revealed an increased metacognitive awareness through the length and amount of verbalizations. She worked through her thoughts and had significantly shorter dead spaces.

In the case of participants Brad and Lasey, pre- and post-data were unable to be collected and analyzed due to either technical issues or withdrawal from the course. Remaining participants (n = 4) showed increased self-efficacy and metacognitive awareness. They also doubled their verbalizations pre- to post-implementation, although the length still varied between simply naming their strategies and actually explaining how their thoughts connected to their strategy application. On average, participants' pre-implementation summary synthesis, rhetorical analysis, and reading strategy scores were less than 1 point and post-implementation scores ranged from 2 to 3.8 for both fiction and nonfiction texts (see Appendix D). Participants' verbalization length also increased to a word count from 300 to 800.

Apprentice Outcomes

Due to only one video recorded for each apprenticing participant (n = 3), scores are scaled in comparison of where they fall on the rubric (see Table 1). For example, a score of 2 or 3 out of 5 on summary synthesis writing would be considered middle range, while anything less than three would be considered low and anything above would be considered high.

Cait. Cait's quantified data showed middle to high scores of summary synthesis and rhetorical analysis abilities. Although her score for reading strategy application was zero, qualitative analysis of her metacognitive think-aloud revealed a variety of reading strategies used, just verbalized and not written. She had a high number of verbalizations, varied in length with short dead spaces in between.

George. George's quantitative data were in the middle measurements for summary synthesis and rhetorical analysis abilities as well as for reading strategy application. However, his qualitative data showed a higher amount of reading strategies verbalized than annotated. His metacognitive process was revealed through his numerous verbalizations, which varied in length.

Wanda. Wanda's quantitative data was mixed. She had a low fiction summary synthesis score but a high nonfiction score. The opposite occurred for her rhetorical analysis abilities. Wanda received a middle level score for her annotated reading strategy application, but her transcription showed a wider variety of reading strategies being applied. Qualitatively, she had a high amount of verbalizations, which were the longest and most thoughtful. However, out of all the apprentices she did have short verbalizations dispersed throughout. For example, she would make short statements in between longer comments. She also had short dead spaces.

Apprentices had an average of 900 words in their verbalizations, which varied in length, and had a moderate amount of reading strategy application. On average, apprentices scored between 2 points and 4 points on their summary synthesis and rhetorical analysis, while their annotated reading strategies averaged less than 2. They spent a lot of time rereading the text and writing their paragraphs. All of their

metacognitive processes were named and explored their thoughts as well as revealed the intertwining of literary analysis while reading.

Expert Outcomes

As a reminder, expert participants (n = 3) were only recorded once, so their scores are referred to as low, medium, or high. For example, a score less than 2 points is considered low, while a score of 4 or more points is considered high. See Table 1 for a breakdown of the scoring rubric.

Lynn. Lynn's quantitative data was at the high end of the spectrum for summary synthesis and rhetorical analysis abilities and reading strategy application. Her verbalizations included a higher number of reading strategies than her written annotations. She had multiple long verbalizations that deeply explored her metacognitive process. Lynn also had extremely short dead spaces.

Kathy. Quantitatively, Kathy had high scores in summary synthesis abilities with middle scores in rhetorical analysis abilities and reading strategy application. Qualitatively, she revealed a high amount of rhetorical analysis and reading strategy application in her verbalizations. She had short dead spaces between her extensive verbalizations, all of which were elaborated on by her metacognitive process.

Wira. Wira had high quantitative scores in summary synthesis and rhetorical analysis abilities as well as the most reading strategy application. She had an extensive amount of long verbalizations. Her metacognitive process combined rhetorical analysis with reading strategy application with minimal dead space between each verbalization.

Expert outcomes revealed a high level of skills in all categories with a vast amount of verbalizations that thoroughly explored their metacognitive processes and use

of reading strategies. Experts averaged a 1.7 on fiction summary abilities but averaged a 4 or higher in all other categories. In addition, experts also averaged 2000 words in their transcriptions. See appendix D for a thorough breakdown of expert quantitative data. Each expert had particularly small dead spaces.

Comparisons Among Novices, Apprentices, and Experts

When compared to apprentices, novices focused more on their metacognitive process and noting of reading strategy application. For example, novices would distinguish between each type of connection (text-to-text/self/world) before explaining the connection. Apprentices' reading strategy application was more subconsciously applied while focused on analyzing the text as they read. For instance, instead of naming the connection, apprentices would simply state what the text made them think of while reading. Novices read for comprehension and showed less analysis during their reading. Both novices and apprentices had a variety of verbalization lengths, although apprentices had a slightly greater number of verbalizations. Novices' verbalizations averaged 800 words while apprentices' verbalizations averaged 900 words. Novices spent more time than apprentices on the initial reading than writing their summary synthesis and rhetorical analysis paragraphs, though they did refer back to the text multiple times when developing their summary synthesis and rhetorical analyses. Apprentices reread the text and referred back to the text more than novices yet still spent more time writing than their initial read through. Novices' data and apprentices' data revealed roughly the same amount of time and dead space.

Compared to experts, novices are hyper-aware of how they are using reading strategies to comprehend the text. Experts appear to have internalized their metacognitive

process, which makes them more focused on reading for a deeper meaning and allowed them to see the bigger picture as they read. For example, experts might make an inference about the meaning of text based on how the author juxtaposed certain elements. While novices used reading strategy applications, experts used them more efficiently and deeply explored them, especially in how their thoughts helped them analyze the text. Experts focused more on author's craft to draw conclusions and make inferences to analyze the text as they read. Novices used the same strategies; however, they did not connect reading strategies with discipline-specific strategies like the experts. Experts took less time with the initial read, but reread multiple times and referred back to the text more when writing their summary synthesis and rhetorical analysis paragraphs. Experts also spent extensively more time writing than novices. Novices had less than half the amount (800 words) of verbalizations than experts (2000 words), with a higher number of dead space that also lasted longer. Novices' verbalization length varied between short and long statements, whereas experts only had long verbalizations.

Apprentices and experts both analyzed the text as they read; however, experts applied reading strategies more effectively, due to high internalization. While apprentices would explore where their thoughts would take them, experts explained their thoughts and related them back to the text. Apprentices had long and short comments, in which they would explore some thoughts and simply name others. For example, an apprentice might explain a connection then shortly after simply state that they are confused but don't provide an explanation as to what they are confused about or why. Experts also related their metacognitive process back to the text, which caused longer comments. For example, if the text made the expert think of a movie, they would explain what elements

of the movie they were thinking of and how it related back to the current text they were reading. They also had double the number of verbalizations and less dead space. Experts averaged 2000 word transcripts while apprentices only averaged 900 words. Both reread and referred back to the text multiple times; experts did both more frequently and spent more time writing, often getting caught up in their writing. Apprentices spent a little more time on the initial read through than experts. For a visual breakdown of the comparisons, see Figure 2.

Reliability and Validity

Using the role-ordered matrix (Miles, Huberman, & Saldaña, 2014), the PI was able to analyze within individual data sets and across data sets. According to Miles, Huberman, and Saldaña, the matrix illustrates how “perspectives differ according to the

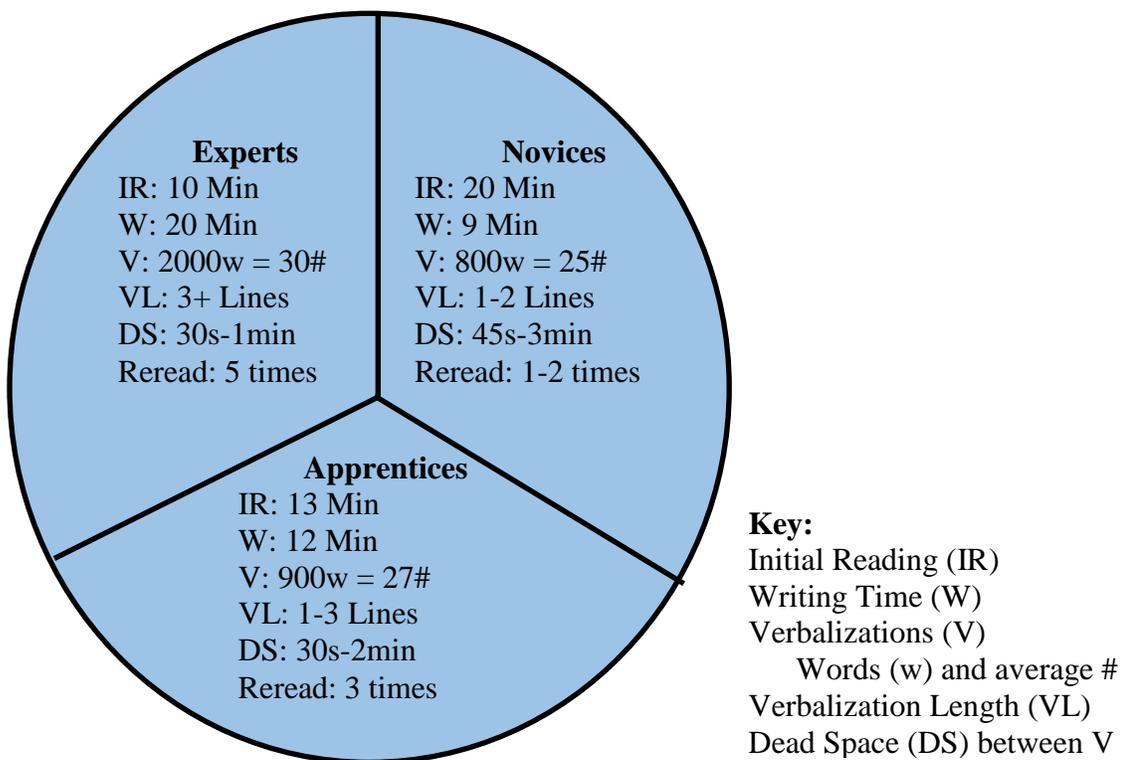


Figure 2: Comparison of Novices’, Apprentices’, and Experts’ Outcomes.

role, as well as within a role” (p. 166), which allowed the PI to look “down the columns of the matrix, both within and across roles, to see what [was] happening”, thus helping to ensure reliability of the analysis (p. 163). Data sets were analyzed to assess why changes occurred in participants’ pre- and post-measures as well as to determine similarities and differences among various roles (novices, apprentices, experts). All data sets were triangulated and compared to evidence-based practices and theoretical frameworks. The PI constantly referred back to raw data to ensure the validity of codes. The matrix allowed the PI to see how the sociocognitive and combined-use theoretical frameworks and evidence-based practices influenced participants’ outcomes, which will be discussed in the following section.

Summary

In summary, there was an overall increase in participants’ reading comprehension (n=3), reading attitudes (n=4), summary synthesis writing (n=4), rhetorical analysis skills (n=4), and reading strategy application (n=4). In addition, there were differences in how participants, apprentices, and experts approached texts, which was revealed through qualitative data analysis. Each participant’s outcomes were analyzed and discussed at each level before meta-level comparison of all roles were discussed. Data reliability and validity were also discussed.

In the following section, results are discussed, as well as the limitations.

Implications for practice and research within the field will be explored.

Discussion

“To promote the enjoyment of reading and to strengthen the curriculum goals in America’s educational environment.” --Battle of the Books

The purpose of this study was to determine how evidence-based literacy instruction grounded in a sociocognitive and combined-use theoretical framework may affect students in a developmental reading course. Examining how evidenced-based practices may serve to close the literacy gap between probationary students and their non-probationary peers by assessing how novices, apprentices, and experts approach texts was explored. College and university instructors might benefit from this research by learning how to better teach and assess literacy strategies. Figure 2 illustrates the relationships between participants and the framework of this study.

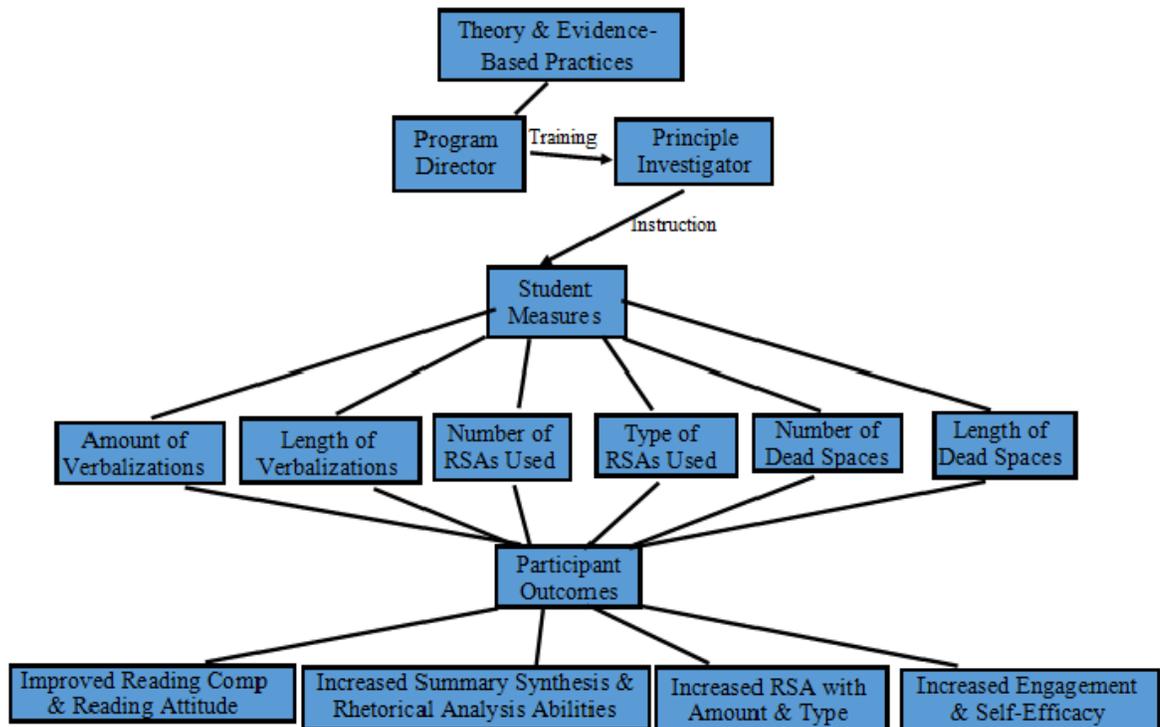


Figure 3: Conceptual Diagram of Findings.

Emergent Themes

The following section discusses the emergent themes from the meta-analysis. Verbalizations, time, and intersectionality will be explored alongside the implications for practice of each.

Verbalizations. While disciplinary literacy studies focus only on expert-novice comparisons (Hynd-Shanahan, Holschuh, & Hubbarb, 2014; Shanahan & Shanahan, 2012), this study added apprentice voices to help analyze the differences that occurred. For instance, the number of verbalizations made by novices, apprentices, and experts varied.

Novices' pre-implementation transcripts averaged 300 words, while the type of comments made were short and simply stated a brief thought. This showed that novices did not know how to actively read and did not know how to be metacognitively aware. The post-implementation transcripts averaged 800 words, while the type of comments varied between simply naming the reading strategy used and illustrating how novices started to further explore their lines of thinking. For example, some novices would state that they were making connections while others might elaborate on the connections they were making. This shows an increase in their personal metacognitive awareness and self-efficacy (Bandura, 2005; Tracey & Morrow, 2012). The data also reveals how reading strategy use and reading comprehension are linked (Flavell, 1979, 1987; Joseph 2006, 2008; Ness, 2009).

Apprentices' verbalizations included a mix of verbalization type and lengths; however, apprentices made more comments and averaged 900 words. The longer comments made by apprentices tended to be an analysis of the text or more explanation

of what their thoughts were. Apprentices did not label their reading strategy use as much as novices, and they also applied more discipline-specific strategies, such as noting diction and author's craft to analyze the texts as they read, which was reflected in their summary synthesis and rhetorical analysis paragraphs. Apprentices' writing showed substantial use of discipline-specific strategies, constantly referencing the text. This reveals a higher level of transcendence (Marsh, 2015) and self-efficacy (Bandura, 2002), reflecting how apprentices are more active members of the academic disciplinary community (Gee, 2008; Rogers, 2004; Shanahan, 2016). Therefore, it is vital that novices are also apprenticed into the discourse community by being shown how disciplinary experts use reading strategies, which increases reading and writing abilities (Shanahan, 2016).

Experts had the most verbalizations, averaging about 2000 words. This group had the longest comments and thoroughly explored their internal thought processes and how those processes connected to their analysis of the text. The discipline-specific strategies used by experts the most, such as noting author's craft and rereading, allowed experts to continuously draw conclusions and make inferences to analyze the text as they read. Experts also spent less time on the initial read through but reread multiple times and referred back to the text more frequently when writing their summary synthesis and rhetorical analysis than novices. Novices used the same strategies, but they did not connect the strategies with discipline-specific strategies like experts, nor did they refer back to the text or reread as much. Studies have shown that teaching young adults explicit reading strategies increases students' abilities to apply the reading strategies correctly, thus also increasing reading comprehension (Cantrell & Carter, 2009; Edmonds et al.,

2009; Fisher et al., 2011). This study not only revealed how reading strategy use is connected to reading comprehension, but it also showed the importance of modeling rereading as a strategy for novices to use.

The number and type of verbalizations made by novices, apprentices, and experts illustrate the level of self-efficacy each participant possesses. Bandura (1993) and Snow (2010) have shown that increased academic language and active reading increased motivation and self-efficacy. Hynd-Shanahan, Holschuh, and Hubbarb's (2004) study examined how after modeling discipline-specific techniques, the participants believed they were more capable of engaging in the same kind of thinking and strategy use as the experts and that their learning strategies moved from task completion to critical thinking. These results parallel the outcomes of this study: participants' improved post-results implied an increased self-efficacy. Additionally, participants' outcomes in reading strategy applications speaks to how important it is to integrate novices into the disciplinary discourse through metacognitive modeling and scaffolding to increase students' development and achievement in developmental reading contexts, thus also increasing reading motivation, reading attitude, and self-efficacy (Bandura, 2002).

Time. While studies show that teaching discipline-specific strategies to novices can increase reading and writing abilities as well as critical thinking (De La Paz & Felton, 2010; Hynd-Shanahan, Holschuh, & Hubbarb, 2004), studies do not factor in the amount of time novices and experts take to complete a task. Results from the present study show that novices spent the most time on the initial read through of texts and the least amount of time on the summary synthesis and rhetorical analysis writing; nevertheless, they still referred back to the texts multiple times. Apprentices' initial read-throughs and time

spent writing their paragraphs were almost equivalent, with the written portion taking slightly longer. However, apprentices spent more time rereading the text than novices. Apprentices also spent slightly more time on the written summary and rhetorical analysis and referred back to the texts more often than novices, showing evidence for their persistence in synthesis. Novices and apprentices also had roughly the same number of dead space pauses in their transcriptions. Experts spent the least amount of time on the initial read through and the most amount of time writing their summary synthesis and rhetorical analysis. Experts also reread and referred back to the texts when writing more than novices or apprentices, which explains the more extensive time spent writing. It may be that experts have internalized foundational reading strategies, meaning they have a lower cognitive load (Sweller, 1994) than apprentices or novices. According to Sweller, cognitive load depends on a person's schemas and ability to combine various elements to perform a task, where activities that activate previous schemas causes a lower cognitive load due to automatization of combining the various elements of a task. Novices are building their reading strategy application skills and therefore have a high cognitive load. In addition, novices have to devote more time to foundational comprehension than experts do.

For example, experts scored an average of 1.7 out of 5 on fiction summary abilities and averaged a 4 or higher in all other categories. High level of internalization of the reading strategies may be why experts are able to fully focus on discipline-specific strategies to fully analyze the text as they read. In the case of having a lower fiction summary score, experts lower cognitive load due to internalization of the strategies used is what allows experts to bypass summarizing the text and focus more on synthesizing the

information within the text. Novices are taught to focus more on summarizing to increase reading comprehension instead of synthesizing the information and are required to follow a rigid summary format, which apprentices and experts do not use at their levels. The focus on summary writing for novices is because most college students struggle with writing summaries in general (Ulper & Okuyan, 2010) and not just in a discipline-specific sense. The lack of format and focus on synthesizing the information is what allows experts to take more risks with their writing. Experts' high nonfiction scores could be due to the fact that nonfiction is less abstract and therefore the summary syntheses are more structured and easy to compare among novices, apprentices, and experts, despite cognitive load. Thus, although experts have the lowest cognitive load, their paragraphs are easy to compare to apprentices and novices because the information is more concrete and easier to interpret than fiction texts. Moreover, experts and apprentices summarize nonfiction texts more often to help them analyze and synthesize the information in the text. Experts have a better understanding of how to utilize the tenets of both reading and writing (Marsh, 2015) and take more risks with their writing than novices, which is why they do not need specific formats.

Unlike novices, apprentices have moved past the simple naming of reading strategies and straight to stating their thoughts. This shows that apprentices no longer need to spend so much attention on foundational comprehension strategies because they are more fluent readers than novices and can focus more on discipline-specific strategies to interpret text. Apprentices' application of reading strategies is instantaneous due to having internalized how to use reading strategies, causing a lower cognitive load than novices. However, apprentices may still have a higher cognitive load than experts, since

they may not have fully internalized the reading strategies and require more practice with discipline-specific strategies.

Novices' pre-data scores were lower than their post-data scores, which shows novices did learn the reading strategies and how to use them. Additionally, improvements in their writing directly connected to their use of reading strategies. Teaching writing strategies in combination with reading strategies revealed the bidirectionality of the reading-writing relationship (Marsh, 2015; Shanahan, 2016; Tierney et al., 1989). Post-implementation data revealed how novices made gains, closing the gap between novices and apprentices, by novices starting to move past just the naming of reading strategies to more of using the strategies to organize and synthesize information.

Although novices have a better understanding of reading strategies, they need to better internalize how to use them effectively, which will lower their cognitive load (Sweller, 1994). The lower cognitive load will allow novices to combine foundational strategy application and discipline-specific strategy application to reach a depth of understanding comparable to apprentices and experts, thus magnifying the importance of continued practice with the strategies while reading a diverse range of disciplinary texts and organizing and synthesizing the information in writing. Learning how to use discipline-specific strategies in both reading and writing is something that instructors need to provide through more modeling and guided practice. Novices and apprentices both need more modeling and guided practice with metacognitive awareness (Joseph, 2006; 2008), not just fully exploring their thoughts, but also using their thoughts to analyze the text as they read.

Once apprentices learn to explain their metacognitive process in relation to discipline-specific strategies, they will move closer to an expert level. For example, while reading experts connected all of their thoughts to the text, they also spent the most time rereading and referring to the text when writing than apprentices, who spent more time on the same tasks as novices. Continued practice, modeled by disciplinary experts, becomes crucial for all first-year college students, especially those in developmental reading courses. When instructors teach their content without modeling for students how, when, and where to apply reading and writing strategies, as well as explain why the strategies are important, students may never become fully part of the academic disciplinary community, thus staying on the fringe of the community (Moje, 2002) and possibly dropping out of college because of reduced self-efficacy (Bandura, 2002). Students must have continued opportunities to struggle with complex disciplinary texts while experts continually model how to approach disciplinary texts. It is only when students are able to create disciplinary texts using discipline-specific strategies that they will fully become part of that disciplinary community (Gee, 2008; Rogers, 2004).

The amount of time novices, apprentices, and experts spend on a task illustrates the importance of the reading-writing connection and the exploration of metacognitive processes. While the present study supports Lamb's (2010) claims that combining rhetorical analysis writing will increase reading comprehension, it also corroborates Shanahan's (2016) argument about the bidirectionality of the reading-writing connection. The amount of time novices, apprentices, and experts spend on certain tasks reveals a more complex relationship between reading comprehension, reading attitude, and

summary synthesis and rhetorical analysis writing. The complex relationship was evident in pre- and post-implementation measures.

Intersectionality. The PI relied on metacognitive modeling, scaffolding, and guided practice to teach participants the reading and writing skills explored in the present study. These aspects of sociocognitive theory were evident in how the PI apprenticed the participants into the literacy academic discourse. Additionally, the combined-use theoretical model helped participants see the bidirectional relationship of reading and writing emphasized by Lindgren et al. (2011) and Shanahan (2016). Shanahan's concept about how reading and writing are about communication was reflected in novices' post-data scores which were higher than their pre-data scores. The current study stressed the reading-writing connection through the use of summary synthesis and rhetorical analysis abilities, which Lamb (2010) connected to reading comprehension. Increased *ISARA* scores in the present study illustrate this connection through participants' increased self-efficacy, evidenced by their willingness to take greater risks with their analysis and writing abilities and confidence to verbalize their understanding and struggles while reading, which was absent in their pre-metacognitive video think-alouds.

Along with teaching reading strategies, participants were exposed to a variety of texts, which Allington (2002) demonstrated as beneficial for increasing reading comprehension and motivation. Once participants understood how to use the reading strategies, both for metacognitive and written understanding, their self-efficacy began to increase, and they became more engaged with the diverse reading materials, which was reflected in the overall increases in post-implementation fiction and nonfiction scores. The differences in participants pre- and post-*ISARA* scores shows that throughout the

semester, participants in the study became more aware of how their attitudes and behavior affected their learning (Bandura, 1991; 1993) and that they are in charge of their own learning. With this realization, participants became more engaged with the reading material, in both PI-selected and individually chosen reading materials. Their increased engagement led to more guided practice opportunities, which again was reflected in the literacy gains from pre- to post-curriculum implementation. Although participants often complained about not being interested in the reading materials picked by the PI and that they might not be interested in many college level reading materials, they understood how the reading strategies could be used to analyze various texts, which would allow them to better understand what they were reading.

Holistically, the participants' scores improved over the course of the semester, which supports combining several evidence-based practices to increase participants' reading comprehension, reading attitudes, summary synthesis and rhetorical analysis abilities (Graham & Perix, 2007a; 2007b; Lamb, 2010), and reading strategy application (Farkas, 2015). Evidence-based practices implemented include: student choice (Guthrie, Wigfield, & You, 2010; Ivey & Johnson, 2013), metacognitive modeling (Bandura, 2002), scaffolded learning through guided practice (Fisher & Frey, 2014), and text-based collaboration focusing on textual annotations through reading strategy application (Farkas, 2015). All four components are intertwined, and it can be inferred that no one evidence-based practice is more valuable than another. Instead, providing substantial guided practice through implementation of evidence-based practices that fully embody sociocognitive and combined-use theoretical frameworks may be the best way to close

the literacy gap between probationary students in developmental reading classes and their non-probationary peers.

Implications for Research and Practice

While the present study shed light on how disciplinary experts may bridge the literacy gap between first-year college students in developmental reading courses and their non-probationary peers, more research is needed. The current study explored how metacognitive modeling (Bandura, 2002) and guided practice (Fisher & Frey, 2014) are key components in bridging the literacy gap between first-year college students and their probationary peers. Metacognitive modeling shows novices and apprentices how experts use reading and writing strategies to deepen reading comprehension and develop organized writing based on synthesized information. Guided practice not only gives students a chance to practice what they learn, it also provides an opportunity for instructors to help students flexibly and effectively apply the strategies. While there has been little research conducted on reading comprehension and rhetorical analysis writing with first-year probationary college students in developmental reading courses, outside of Lamb (2010), the existing study shows how teaching active reading and rhetorical analysis together may change how novices approach disciplinary texts.

More research is still needed to explore the importance of teaching reading and writing strategies together and how one can enhance the other when working with students in developmental reading courses. It is important to examine how students use reading strategies, especially how their strategy application is reflected in their written summaries and rhetorical analyses, as well as how much time students spend on each task. Students' written abilities are rarely examined in connection with reading

comprehension at any grade level. Further research on the relationship between reading comprehension and writing skills is required because it would not only encourage literacy instructors to teach writing as a comprehension tool, it would also encourage students to work on developing their writing skills and critical thinking skills, which are important for academic achievement (Jetton & Shanahan, 2012).

The current study revealed that through modeling, scaffolding, and guided practice, novices were more apt to become part of the disciplinary discourse community and approach academic disciplinary texts more like apprentices, while apprentices are not yet approaching academic disciplinary texts at the expert level (Gee, 2008; Rogers, 2004). For example, experts spent the most time rereading and referencing the texts, which means instructors need to make sure to teach the importance of rereading to novices and apprentices, especially in connection to writing summary synthesis and rhetorical analysis paragraphs (Applebee et al., 2013; D'Angelo, 1983; Jencke, 1935; Salisbury, 1934; Woodworth, 1988). This is particularly important in universities where apprentices may be working with students in developmental literacy courses as teacher assistants. More research should also be conducted on how novices and experts write fiction summaries; this would help instructors better teach summary synthesis skills to novices.

The comparison of novices, apprentices, and experts also revealed that experts had more to say than the other groups. While experts focused on discipline-specific strategies, they showed how they explored their thoughts and connected those back to the texts more than novices and apprentices. Instructors should make sure to discuss how they, as experts, use reading strategies to explore their metacognitive processes and

analyze texts. Apprentices fall in the middle in that they sometimes just state their thoughts and sometimes explore their thoughts; they do not often relate them back to the text or use their thoughts to analyze the text like experts. However, apprentices do use discipline-specific strategies, such as focusing on diction and author's craft, and analyze the text as they read more than novices. Additionally, apprentices have not fully internalized the strategies like experts (Sweller, 1994). How apprentices close the gap between experts and themselves should be studied in more depth. Doing so might reveal ways to help novices move along the spectrum more quickly when apprentices are teaching literacy courses.

If the PI were to repeat this study, she would integrate graphic novels to initially teach and model the reading strategies, since graphic novels require a close reading of both visual and written elements. This would help not only create the reading strategy application schema but would also help novices internalize the processes (Sweller, 1994). She would then scaffold the use of reading strategies to diverse texts to help strengthen students' schema and reduce students' cognitive load (Sweller, 1994). The PI would implement more writing, such as reader-response journals and narrative essays, to emphasize and explore the reading-writing connection more extensively. The integration of small writing tasks, like summary synthesis and rhetorical analysis assignments, as well as bigger writing tasks, such as various essays, may be crucial in developing the reading-writing connection and should be utilized by instructors when using literacy to teach disciplinary content. Implementing more writing would also aid in examining how writing is connected to reading comprehension, which would help instructors understand

what evidence-based practices to integrate when teaching both reading and writing strategies.

Limitations

Due to a very small sampling, outcomes cannot be generalized to the whole probationary population. In addition, because of the small sampling size, causation cannot be drawn. Some participants' outcomes could not be measured as a result of unforeseen factors, such as withdrawal from the developmental reading course. Novices', apprentices', and experts' reading comprehension levels and reading attitudes could not be compared, although insightful information might have been drawn if experts and apprentices would have been administered the *DRP*® and *ISARA*.

Conclusion

The current study explored how grounding relevant evidence-based literacy practices within a sociocognitive and combined-use theoretical framework might have affected first-year college students' reading comprehension and reading attitudes who were enrolled in a developmental reading course. Specifically, the PI investigated changes in participants' reading comprehension, reading attitudes, summary synthesis and rhetorical analysis writing, and reading strategy application and how novices approached texts in comparison to apprentices and experts. The effectiveness of combined evidence-based practice when teaching reading and writing strategies are reflected in this study's outcomes. For instance, metacognitive modeling (Bandura, 2002) of reading and writing strategies combined with guided practice (Fisher & Frey, 2014) and offering students choice may prove vital in effectively scaffolding first-year college students' literacy development, especially students enrolled in developmental reading

courses. The investigation of how these components intersect is beneficial in determining what may have the greatest impact on student achievement and how to close the existing literacy gap that exists between students in developmental reading classes and their peers at the college level.

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APPENDIX A

READING STRATEGIES

Common Academic Vocabulary for Reading Instruction	
Pre-reading Strategies	<p>What do good readers do?</p> <p>Good readers activate Prior Knowledge and Set Purpose by</p> <ul style="list-style-type: none"> • Previewing (Text Structure, Mode etc.) • Surveying, Skimming and Scanning (THIEVES) • Predicting (Symbol: P) • Learning about the topic (achieve through a myriad of ways—research, discussion, interviews etc.)
During-reading Strategies	<p>Active readers interact with the text; while reading, good readers continually</p> <ul style="list-style-type: none"> • Annotate Text (while it is a strategy, it provides a window into a reader’s thinking as well—it provides us evidence of students’ strategy use) • Ask Questions (Symbol: Q) • Note Confusions (Symbol: ?) • Make Inferences (Symbol: I) • Determine Sentence Relationships (Symbol: SR) • Draw Conclusions (Symbol: DC) • Make Connections <ul style="list-style-type: none"> ✓ Text-to-Self (Symbol: T-T-S) ✓ Text-to-World (Symbol: T-T-W) ✓ Text-to-Text (Symbol: T-T-T) • Clarify (C) • Visualize the Text (Symbol: V) • Analyzing Author’s Craft (Symbol: AC) • Analyzing Author’s Tone/Diction (Symbol: TD) • Highlight Quotes • Determine Fact or Opinion (Symbols: <u>F</u> or <u>Q</u>) • Determine Tone (Symbol: T) • Determine Importance (Symbol: DI) • Comment on Surprising Information (Symbol: !) • Monitor Comprehension (Rereading and using Context Clues) (Symbol: MC)
After-reading Strategies	<p>Good readers synthesize information by</p> <ul style="list-style-type: none"> • Summarizing (Include the main idea, conclusions drawn (implied or explicit), key supporting details (explicit), and whose story is it and why is it important?) • Evaluating (E) • Synthesizing • Determining Tone (Symbol: T) • Determining Patterns of Organization (Symbol: PO) • Determining Bias (Symbol: DB) • Noting the Main Idea (Symbol: MI) • Drawing Conclusions (Symbol: DC) • Reflecting • Noting Rhetorical Strategies <ul style="list-style-type: none"> ✓ M=Mode (What are the text structures?) ✓ A=Audience (How does the author appeal to a specific audience?) ✓ P=Purpose (What is the author trying to achieve?) ✓ S=Situation (In reading, <i>Whose story is it and why does it matter—context?</i>) • Responding in writing • Discussing the Text: One-on-One, Small Group, and Teacher-led Whole Class <p style="text-align: center;">Students must provide Textual Evidence to support their conclusions.</p> <p style="text-align: center;">**The term Text is all encompassing: written text, oral speech, picture, video, interactive website, audio, multimedia etc.**</p>

APPENDIX B

PARTICIPANT CONSENT FORM



Northern Michigan University
Consent to Participate in Research

PI Name, Title: Hali Tavalsky, Graduate Assistant
Department: English
Project Title: Examining How Novices, Apprenticing Experts, and Disciplinary Experts Approach Reading Academic Texts
Proposal Number: HS16-780
Date: 8/01/16

- **Researcher Statement:** My name is Hali Tavalsky. I am currently conducting a research study about how transitional students' participation in the EN 103 course curriculum and EN 103 instructors' use of sociocognitive and combined-use approach impact students' motivation, reading comprehension, on-demand writing abilities, and student retention at the college level. Participants will be compared to how apprentices (graduate students) and experts (professors) actively read. This information could contribute to the knowledge of the effectiveness of literacy instruction at the college level.
- **Selection Criteria:** You are being asked to participate in the study because you are currently taking or teaching EN 103, or have substantial expertise in the field.
- **This is a consent form for research participation.** This form contains important information about this study and what to expect if you decide to participate. Please consider the information carefully. Feel free to discuss the study with your friends and family and to ask questions before making your decision whether or not to participate. If you decide to participate you will be asked to sign this form and will receive a copy of the form. Also, you will be provided with any new information that develops during the research that may affect your decision whether or not to continue to participate.
- **Your participation is voluntary.** You may choose not to participate in this study. If you decide to take part in the study, you may leave the study at any time. You may also refuse to answer any questions you may be asked during the study.

No matter what decision you make (whether to participate or not), there will be no penalty to you and you will not lose any of the benefits you currently have. Your decision will not affect your present or future relationship with Northern Michigan University, the researcher or the department of English. If you are a student or employee at Northern Michigan University, your decision about participation will not affect your grades or employment status.

Purpose

- **Why is this study being done?**
The study is being conducted in order to examine the effectiveness of a sociocognitive and combined-use approach within a developmental/transitional reading program at Northern Michigan University.

Procedures

- **What will happen if you take part in this study?**
You may be asked to participate in a video recording to compare how transitional students, apprentices (graduate students) and experts (professors) actively read. Hali Tavalsky may use your de-identified demographic and academic information such as: pre- and post- reading comprehension scores, pre- and post-motivation to read scores, pre- and post-on-demand writing scores, periodic written reflections, completed coursework, attendance, and anecdotal notes for research purposes.
- **What are the costs of taking part in this study?**
There is no cost to the participant.
- **Will you be paid for taking part in this study?**
No compensation or incentive will be provided to you.
- **How many people will take part in this study?**
Nine Northern Michigan University students enrolled in EN 103, two Northern Michigan University graduate students, and two Northern Michigan University faculty members.
- **How long will you be in the study?**
For the Fall 2016 Semester.

Risks/Stress/Discomforts and Benefits

- **What risks, side effects or discomforts can I expect from being in the study?**
There is no direct risk to the participants as a result of this research. The names of all participants will be kept confidential by removing identifiable information, and pseudonyms will be used. The videos will not be shared and names will not be given, but videos will have a coded label for Hali's use only.

- **What benefits can you or society expect from being in the study?**

This information could contribute to the knowledge base of the effects of student attendance, evidence-based instructional practices and curriculum content for transitional academic literacy and study courses at the college level. The benefits to participants may include improved reading comprehension, motivation to read, on-demand writing abilities, time management skills and/or college study skills.

Alternatives

- **What other choices do you have if you do not take part in the study?**

You may choose not to participate without penalty or loss of benefits to which you are otherwise entitled. In addition you can withdraw at any time without penalty and without affecting your present or future relationship with the researcher, EN 103 instructors, the English department, or Northern Michigan University.

Confidentiality

- **Will your study-related information be kept confidential?**

Efforts will be made to keep your study-related information confidential. However, there may be circumstances where this information must be released. For example, personal information regarding your participation in this study may be disclosed if required by state law.

Also, your records may be reviewed by the following groups:

- Office for Human Research Protections or other federal, state, or international regulatory agencies;
- The Northern Michigan University Institutional Review Board (IRB) or IRB administrative staff designated by the Vice Provost for Research;
- Peer researchers for the purpose of achieving sound methodology, code cross-checking to ensure accurate data analysis.

Study Contact Information and Rights of Human Subjects Research

- **Who can answer your questions about the study?**

For questions about the study you may contact Hali Tavalsky, 906-227-1024.

For questions regarding the rights of human subjects in research you may contact the IRB Chair, Northern Michigan University Institutional Review Board, 906-227-2456.

Signing the consent form

You have read (or someone has read to you) this form and you are aware that you are being asked to participate in a research study. You have had the opportunity to ask questions and have had them answered to your satisfaction. You voluntarily agree to participate in this study.

You are not giving up any legal rights by signing this form. You will be given a copy of this form.

_____	_____
Print Name of Participant	Signature of Participant
_____	_____AM/PM
IN# of Participant	Date and Time
Phone Number: _____	Cell Number: _____
Permanent Address: _____	

Investigator/Research Staff

I have explained the research to the participant or his/her representative before requesting the signature(s) above. There are no blanks in this document. A copy of this form has been given to the participant or his/her representative.

_____	_____AM/PM
Signature of person obtaining the consent	Date and Time

Print name of person obtaining the consent	

APPENDIX C

ISARA FORMS

Isakson Survey of Academic Reading Attitudes
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Administrator Instructions for the ISARA, college version

MATERIALS NEEDED: Administrator instructions, a copy of the ISARA for each student. Students need a pen or pencil.

“You will be taking a survey about your attitudes toward academic reading. Before beginning let’s go over the instructions. Please follow along as I read them aloud.” (Read the instructions aloud at the top of the survey.) **“Now, fill in the information about you—the top line AND the two lines asking for demographic information: age, gender, major, and education level.”** (Pause.) **“Let’s now look at the survey. Notice that you have six choices for each statement. ON THE WHOLE, to what extent do you AGREE with each statement about your ACADEMIC READING? Strongly Disagree, Generally Disagree, Sort of Disagree, Sort of Agree, Generally Agree, Strongly Agree.**

When you finish, please turn the survey over and score it by completing the first four steps listed there. You will not interpret the scores at this time, Step #5. What questions do you have?” (Pause to address questions.)

This survey is not timed.

You may begin.

If you administer it again at the end of a course, repeat the instructions.

We have an Analysis-of-Progress form for students to analyze their reading growth. You may obtain a copy and student sample by contacting us at read@isaksonliteracy.com.

Isakson Survey of Academic Reading Attitudes (ISARA)

©R. L. Isakson & M. B. Isakson, 2014

Instructions:

- The purpose of this survey is to better understand **the way you feel about reading academic texts**.
- There are ***NO WRONG ANSWERS*** to any of these questions. Please give your ***honest*** answer.
- Some of the questions ***may be similar***, just answer ***each questions*** based on your understanding of its meaning.
- Mark your answers with a slash / for each item.

ON THE WHOLE, to what extent do you <i>agree</i> with the following statements about your ACADEMIC READING?						
	Strongly DISAGREE	Generally DISAGREE	Sort of DISAGREE	Sort of AGREE	Generally AGREE	Strongly AGREE
1. I am motivated to complete my academic reading assignments.	1	2	3	4	5	6
2. I am a capable academic reader.	1	2	3	4	5	6
3. I read materials from the library or online to enhance what I'm learning in class.	1	2	3	4	5	6
4. I value reading as an important way of learning in college.	1	2	3	4	5	6
5. I usually get what the instructor wants me to get out of the reading.	1	2	3	4	5	6
6. During class, I can tell that I am a person who completes the reading assignments more often than other members of the class.	1	2	3	4	5	6
7. I find myself reading beyond the minimum requirement for class because I get interested in the topic.	1	2	3	4	5	6
8. I usually go to class having completed the assigned reading.	1	2	3	4	5	6
9. When I receive an academic reading assignment, I am able to accomplish the reading efficiently and on time.	1	2	3	4	5	6
10. I want to continue to learn from academic reading after I complete college.	1	2	3	4	5	6
11. I am confident in my abilities as an academic writer.	1	2	3	4	5	6
12. Even though some reading assignments take a lot of time, I go to class having completed them.	1	2	3	4	5	6
13. I can see how being an effective reader is important to success in college.	1	2	3	4	5	6
14. I find my academic reading to be relevant and rewarding.	1	2	3	4	5	6
15. I usually DON'T procrastinate my academic reading assignments.	1	2	3	4	5	6
16. As I approach a reading assignment, I am confident that I will understand the important information in the text.	1	2	3	4	5	6
17. I wish more of my classmates would complete the assigned readings.	1	2	3	4	5	6
18. I can adjust my reading speed to get what I need from the text.	1	2	3	4	5	6
19. I am good at retaining and recalling the important information from an academic reading assignment.	1	2	3	4	5	6
20. Completing reading assignments for class is a high priority for me.	1	2	3	4	5	6

End-of-Test Instructions

1. Write your response (i.e., 1, 2, 3, 4, 5, or 6) to each item in the corresponding blank below.
2. Add up the scores under each column below. Place the result on the line under the column.
3. Divide the subscale score by the number of items in each column to get the average (mean). Write this mean for each subscale.
4. Calculate the average for the whole inventory by adding up the subscale scores and dividing by 20.
5. Compare your results to the guidelines under “Interpreting Your Scores” below.

Global Value (VAL) subscale. 7 items)	Self-Efficacy (EFF) subscale. 6 items)	Behavior (BEH) subscale. 7 items)	
3. ____	2. ____	1. ____	
4. ____	5. ____	6. ____	
7. ____	11. ____	8. ____	
10. ____	16. ____	9. ____	
13. ____	18. ____	12. ____	
14. ____	19. ____	15. ____	
17. ____		20. ____	
____ VAL total score	____ EFF total score	____ BEH total score	____ Overall total score
____ VAL mean	____ EFF mean	____ BEH mean	____ Overall mean

Interpreting Your Scores:

The higher your score, the more positive your attitudes are toward academic reading.

Rough guide for interpreting the score:

5.00 to 6.00 = high score on attitude measure

3.00 to 4.99 = medium score on attitude measure

1 to 2.99 = low score on attitude measure

Meaning of the Subscales of Academic Reading Attitudes Measured by the ISARA:

Global Value for Academic Reading

This aspect of academic reading attitudes refers to the value you place on academic reading and refers to your intention to keep reading because of how worthwhile you feel reading is a way to learn. Global values also relate to how important, useful, or enjoyable you perceive reading tasks for school to be for you.

(Items 3, 4, 7, 10, 13, 14, 17)

Self-Efficacy for Academic Reading

This aspect of academic reading attitudes refers to how confident you are in your academic reading abilities and the degree to which you expect to succeed in learning from a text you need to read for school.

(Items 2, 5, 11, 16, 18, 19)

Behaviors related to Academic Reading

This aspect of academic reading attitudes refers to your reading skills and your typical behaviors in approaching and completing reading assignments for school.

(Items 1, 6, 8, 9, 12, 15, 20)

APPENDIX D

QUANTITATIVE DATA MATRIX

Raw Quantitative Data Matrix										ISARA						ISARA Breakdown					
First Name	DRP		Grade		Lexile		Lexile Lev- el		Attitude		GV		SE		BE						
	Pre	Post	Level	Post	Level	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post						
Brad	66	64	8th/9th	8th/9th	1150	1150	1125	1125	3.5	3.5	3.7	3.6	3.2	3.2							
Kara	65	72	8th/9th	11th	1100	1100	1250	1250	3.9	3.9	4.1	4	6	3.7	5.7						
Jenny	66	63	8th/9th	8th/9th	1110	1110	1100	1100	4.8	4.8	4.1	5.2	5	4.8	5.1						
Adam	55	64	4th	8th/9th	880	880	1150	1150	2.8	2.8	2.7	3.4	1.1	2.1	4.4	4.2					
Lasey*	54		3rd/4th		820	820			4	4	4.1	4		3.8							
Dawn	55	57	4th	5th/6th	880	880	920	920	4.2	4.2	4.2	4.8	4.5	5.1	5	5.7					
Averages	60	64			990	990	1109	1109	3.9	4.8	3.8	4.6	3.7	4.7	4.2	5.2					

First Name	Fiction Pre			Fiction Post			Nonfiction Pre			Nonfiction Post		
	SUM	R/A	RSA	SUM	R/A	RSA	SUM	R/A	RSA	SUM	R/A	RSA
Brad	0	0	0	0	3	1	0	0	0	0	0	3
Kara	0	0	0	1	1	7	2	2	0	4	2	7
Jenny	0	0	3	1	3	2	3	0	3	4	4	3
Adam	0	0	0	3	2	6	0	0	0	3	1	4
Lasey*	0	0	0				0	0	0			
Dawn	0	1	0	5	2	0	0	1	0	5	2	0
Averages	0	0.2	0.5	2	2.2	3.2	0.8	0.5	0.5	3.8	2	3.4

First Name	Apprentices			Experts		
	SUM	R/A	RSA	SUM	R/A	RSA
George	2	3	2	2	3	3
Cait	3	3	0	4	3	0
Wanda	1	5	1	5	0	2
Averages	2	3.7	1	4	2	1.3

First Name	Fiction			Nonfiction		
	SUM	R/A	RSA	SUM	R/A	RSA
Lynn	1	5	4	5	3	0
Kathy	4	2	3	4	3	2
Wira	0	5	8	4	4	10
Averages	1.7	4	5	4.3	3.3	4

APPENDIX E

META-LEVEL ANALYSIS MATRIX

Completed matrix used for meta-level analysis of qualitative and quantitative findings.

Roles	Pseudonyms RC, RA, S/S, R/A, and RSA Change (+ or - or =)	Emergent Codes	Direct Outcomes/First-Cycle Codes Changes (↑ or ↓)		Meta-Level Outcomes/Second- Level Codes	
			Positive	Negative	Positive	Negative
Student	Brad -2RC RA =F S/S +3N +3F R/A +1N +1F RSA +3N	Verbalizations Reading Strategy Application Dead Space	Will not have pre/post data due to lack of completion of materials			
Student	Kara +7RC +1.7 RA +1F S/S +2N +1F R/A =N +7F RSA +7N	Verbalizations Reading Strategy Application Dead Space	↑ in # and length variety ↑ # of and types Overall ↓, mostly shorter pauses		↑ Metacognitiv e awareness & worked through confusion, read for deeper understand g ↑ RSA knowledge ↑ SE	
Student	Jenny -3RC +2 RA +1F S/S +1N +3F R/A +4N -1F RSA =N	Verbalizations Reading Strategy Application Dead Space	↑ # of verbalizations ↑ # and types verb ↓ due to less reading out loud and more V	↓ # & types written	↑ SE; read for deeper understand	V length still short More focused on MC; overthinking
Student	Adam +9 RC +5 RA +3F S/S +3N +2F R/A +1N +6F RSA +4N	Verbalizations Reading Strategy Application Dead Space	↑ # and length ↑ # and types ↓ overall	Still some long pauses	↑SE, less frustration/di stractions, didn't want/need to be read to ↑ metacognitiv e awareness, knew how to MC and find answers	
Student	Dawn +2 RC +1 RA +5F S/S +5N +2F R/A +1N =F RSA =N	Verbalizations Reading Strategy Application Dead Space	Major ↑ in # and length ↑ # and type ↓ significantly (shorter pauses)		↑ SE ↑ metacognitiv e awareness Stopped reading just for events and worked through thoughts not just brief statements	
Student	Lasey RC RA	Verbalizations	Will not have pre/post information due to			

	S/S R/A RSA	Reading Strategy Application Dead Space	withdrawal from the course			
Apprentice	Mrs. Cait 3F S/S 4N 3F R/A 3N 0F RSA 0N	Verbalizations Reading Strategy Application Dead Space			Verbalization of RSA Read for chain and meaning Short	Short Verbalizations
Apprentice	Mr. George 2F S/S 3N 3F R/A 3N 2F RSA 2N	Verbalizations Reading Strategy Application Dead Space			Verbalized RSA more than wrote high # of v Short	Variety of verbalizations
Apprentice	Ms. Wanda 1F S/S 5N 5F R/A 0N 1F RSA 2N	Verbalizations Reading Strategy Application Dead Space			Verbalization of RSA Long, thoughtful comments, high # Short	Some short verbalizations
Expert	Mrs. Lynn 1F S/S 5N 5F R/A 3N 4F RSA 0N	Verbalizations Reading Strategy Application Dead Space			Verbalized RSA more but still wrote wide RSA use V High # and length short	
Expert	Mrs. Kathy 4F S/S 4N 2F R/A 3N 3F RSA 2N	Verbalizations Reading Strategy Application Dead Space			Verbalized RSA more but still wrote Wide RSA use V high # and length short	
Expert	Mrs. Wira 0F S/S 4N 5F R/A 4N 8F RSA 10N	Verbalizations Reading Strategy Application Dead Space			Verbalized RSA more but still wrote Wide RSA use V high # and length short	

Note: RC = Reading Comprehension, RA = Reading Attitude, S/S = Summary/Synthesis, R/A = Rhetorical Analysis, RSA = Reading Strategy Application, F=Fiction, and N=Nonfiction.

APPENDIX F

IRB APPROVAL LETTER



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Memorandum

TO: Hali Tavalsky
English Department

CC: Wendy Farkas
English Department

FROM: Dr. Robert Winn *RJW*
Assistant Provost/IRB Administrator

DATE: August 9, 2016

SUBJECT: "Examining How Novices, Apprenticing Experts, and Disciplinary Experts Approach Reading Academic Texts"
IRB Approval Dates: 8/9/2016 - 8/9/2017
Proposed Project Dates: 8/22/2016 - 8/9/2017

Your proposal "Examining How Novices, Apprenticing Experts, and Disciplinary Experts Approach Reading Academic Texts" has been approved under the administrative review process. Please include your proposal number (HS16-780) on all research materials and on any correspondence regarding this project.

Any changes or revisions to your approved research plan must be approved by the Institutional Review Board (IRB) prior to implementation.

If you do not complete your project within 12 months from the date of your approval notification, you must submit a Project Renewal Form for Research Involving Human Subjects. You may apply for a one-year project renewal up to four times.

All forms can be found at the NMU Grants and Research website:
<http://www.nmu.edu/grantsandresearch/node/102>