TEXAS COMPREHENSIVE CENTER
Briefing Paper

Secondary Content-Area Literacy: Time for Crisis or Opportunity for Reform?

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Summary

Often, literacy instruction is not implemented at the secondary level in part because of discipline-specific frameworks and characteristics. Educators must recognize that it is because of these factors that they must incorporate instruction around content-area literacy into courses for secondary students. This will enable the students to develop deep knowledge and high-level thinking skills that will help them become critical readers and life-long learners.

Key Points

- Developing content-area literacy in students is critical to the nation's social and economic health.
- Content-area teachers have the responsibility for developing reading skills specific to their respective content areas.
- Literacy within a discipline must involve understanding how the discipline's practitioners read, write, and think.

The education field must go beyond calling attention to an adolescent literacy crisis and the need for additional resources—a critical need—to treating adolescent literacy as the foundation for more ambitious efforts to improve middle and high schools in their entirety (Heller & Greenleaf, 2007; Jacob, 2008). Instruction around adolescent literacy, or content-area literacy, is fundamental to building the kind of secondary schools that are necessary to support the nation's social and economic health. The challenge is to connect the teaching of literacy to the rest of the secondary education improvement agenda.

Procedures

To locate information pertaining to this issue, staff from the Southeast Comprehensive Center (SECC) and the Texas Comprehensive Center (TXCC) conducted searches of two bibliographic databases of the education literature (EBSCO's Academic Search Elite and ERIC) and online search engines (i.e., Google, Google Scholar, Bing, and Yahoo) and retrieved studies on secondary content-area literacy. The staff used combinations of a variety of terms, including *literacy, vocabulary, text complexity, comprehension, disciplinary, academic, content area, language of mathematics, linguistic representations*, and *numeracy*. Qualifiers included *secondary level, grades 6–12*, and *middle and high school.*

Additional information was obtained from national centers and organizations (Center on Instruction, International Reading Association, National Council of Teachers of English, the Institute of Education Sciences). Names of experts identified in the initial search were also used as search terms: D. Buehl, Z. Fang, M. Kamil, E. Moje, M. Schleppegrell, T. Shanahan, C. Shanahan, and J. Torgesen.

The literature searches focused on research published within the last 10 years. However, when reference lists were reviewed, staff found that some older research provided key information on the topic. Therefore, these seminal publications were included in the resources used to develop this paper.

Limitations

In developing and writing this report, the authors faced two key challenges in examining content-area literacy: 1) the complexity of the topic and 2) the lack (until recently) of discipline-specific frameworks that can be evaluated by research. The complexity arises from the variety of outcomes, which range from basic literacy skills, such as decoding, to intermediate generic comprehension strategies to specialized disciplinary literacy (Shanahan & Shanahan, 2008). This range of outcomes results in

a web of variables that are diverse and interdependent. Defining the relationships among variables and isolating the most important ones is a formidable research task. The complexity inherent in content-area literacy instruction is further complicated by a variety of factors that include teacher preparation and the effects of teacher beliefs and attitudes, as well as the experiences and backgrounds of adolescents in different educational contexts (Wilson, 2011).

Although the critical role of literacy has long been recognized, the approach at the secondary level has consisted primarily of generic recommendations. It is only recently that attention and research has shifted to identifying discipline-specific frameworks and characteristics for reading and writing in secondary content areas. This initial stage of the identification and description of the problem has yet to shift to the next phase that focuses on studying the effects of strategies and solutions. As noted by Sheridan-Thomas (2007), "little has been written about how (or whether) teacher educators communicate the concept of multiple literacies and the ways it can be used to engage students in content area classrooms" (p. 121). The authors anticipate that there will be an increase in the amount of methodologically sound research on the effect of content literacy at the secondary level in the coming years.

While the authors identified and addressed some key variables, they acknowledge that other aspects of the topic could also be examined. Due to the abbreviated nature of a briefing paper, this report reflects what could be compiled within limited time, space, and resource availability. Programs and processes discussed within this paper are intended to serve as examples only, and their inclusion does not in any way imply endorsement by SEDL or its comprehensive centers.

Introduction

Biancarosa and Snow (2006) asserted that literacy development in the middle and high school years is more of a challenge than in the primary grades for two reasons:

- Literacy skills at the secondary level are more complex and connected to content-area material.
- Students at that age are generally not as interested in reading as those at the elementary level.

Furthermore, research indicates that students who are behind in reading when they enter middle school are likely never to catch up unless instruction in the academic content areas—the heart of the secondary school curriculum—focuses on reading and writing instruction in the areas of mathematics, science, English, and history (Heller & Greenleaf, 2007).

Unfortunately, by the time middle and high school students are being challenged by disciplinary texts, literacy instruction often has stopped altogether or has become a reiteration of general reading or study skills, lacking the specificity needed by disciplinary texts and complex learning tasks. Secondary level curriculum is comprised of many different genres and disciplines, and students are compelled to adapt their comprehension skills to assimilate content in the context of each subject area (Buehl, 2011). Educators must recognize the contextually dependent nature of reading and writing at this level—a given student may excel in a literature class but may flounder when reading and writing in a science class.

Adolescent literacy levels have been maintained but not improved since the early 1970s; at the same time, an increased need for advanced literacy skills has developed in the United States' economic, social, and civil lives (Shanahan & Shanahan, 2008). According to Brozo et al. (2012), 15-year-old students in the U.S. have exhibited a flat trend line in achievement on the Program for International Student Assessment (PISA) assessment. An underlying cause of this trend could be that, historically, efforts have focused on general skills and abilities (e.g., decoding, fluency, basic comprehension strategies) that can be used across disciplines. "Although most students manage to master basic and even intermediate literacy skills, many never gain proficiency with the more advanced skills that would enable them to read challenging texts in science, history, literature, mathematics, or technology" (Shanahan & Shanahan, 2008, p. 45). The notion that "all teachers are teachers of reading" has disturbed many middle and high school teachers who view themselves as content-area experts, not as teachers of phonics, which secondary teachers often view as "teaching reading." However, asking a content-area teacher to become a reading teacher is distinctly different from asking a teacher to help students access and comprehend the variety of texts used in his/her specific content area (Buehl, 2011).

According to Torgesen (2006), the National Research Council has identified the following urgent issues regarding adolescent literacy:

- Rapidly increasing demands for high levels of literacy
- Need for vocabulary expansion to include thousands of new words
- Need for increasingly detailed knowledge of text structures and genres
- Expansion of content knowledge in many domains
- Increasing need for thinking and reasoning skills
- More complex reading comprehension strategies

Because secondary students spend most of the school day with content-area teachers, these teachers have the main responsibility for improving proficiency in reading. Torgesen (2006) maintains that adolescent literacy must include broad and deep knowledge and high-level thinking skills—literacy strategies specific to content and style in science, mathematics, history, and technical areas.

> Adolescents entering the adult world in the 21st century will read and write more than at any other time in human history. They will need advanced levels of literacy to perform their jobs, run their households, act as citizens, and conduct their personal lives. They will need literacy to cope with the flood of information they will find everywhere they turn. They will need literacy to feed their imaginations so they can create the world of the future. In a complex and sometimes even dangerous world, their ability to read will be crucial. Continual instruction beyond the early grades is needed. (Moore, Bean, Birdyshaw, & Rycik, 1999, p. 99)

While the ideas behind adolescent literacy are not new, implementation of programs that integrate reading and writing into all subjects has been slow and/or unsuccessful (NCTE, 2011). The field needs to be reframed to incorporate low-stakes writing assignments, provide multiple forms of feedback, employ a variety of texts and their presentations, and employ a variety of levels of reading difficulty. Because many teachers and instructional leaders are redesigning curriculum to meet the needs of students of the 21st century, they have an opportunity now to reconceptualize reading and writing across the content areas. However, creating such a focus has not been a top priority and will now require significant transformation in most schools (NCTE). The transformation must extend beyond the recent trend that has only emphasized helping struggling readers to catch up in reading fluency, vocabulary, and comprehension (Heller & Greenleaf, 2007).

Reconceptualizing Literacy: The Definitions

One of the major issues in secondary literacy is determining how to define the field itself. In the past, literacy, or simply reading, was thought to be decoding or having the skills to interpret print. However, changes have occurred in how the education field views literacy and its requisite skills. Patricia Edwards (2010), president of the International Reading Association, argued that one way to address the needs of the increasingly diverse student populations and today's society is by expanding or reconceptualizing the field's definitions of literacy. She referred to the wide range of terms and definitions currently being used (e.g., 21st century literacies, digital literacies, new media literacies, multiple literacies, information literacy, etc.).

"Literacy is often broadly defined as the ability to read, write, speak, listen, and think critically. Research shows that being literate is closely linked to one's ability to access power and negotiate the world around them" (Alliance for Excellent Education, 2004, p. 1). Therefore, building literacy covers much more than simply improving a student's ability to read and write—it addresses issues of access and equity. According to Vygotsky (1978), literacy is a tool for both developing and representing knowledge and a highly particular aspect of disciplinary practice rather than only a set of tools or strategies to improve reading and writing of content texts (Moje, Overby, Tysvaer, & Morris, 2010).

Another term often used in the field is content-area literacy. This reflects Vygotsky's perception of literacy, being defined as "the ability to use reading and writing to learn subject matter in a given discipline" (Vacca & Vacca, 1996, p. 8) or as "[t]he level of reading and writing skill necessary to read, comprehend, and react to appropriate instructional materials in a given subject area" (Readance, Bean, & Baldwin, 1998, p. 4).

Adding further to the confusion in this field, the National Council of Teachers of English (NCTE, 2011), in a briefing paper, uses "reading and writing across the curriculum" (or RAWAC) interchangeably with "reading and writing across disciplines." The brief states that there is refocused attention on RAWAC, making reading and writing "a shared responsibility" of teachers across multiple disciplines who will be charged with literacy development. The NCTE paper asserts there are several benefits of RAWAC:

- It is essential to learning and enhances student achievement in all subjects.
- It helps students master concepts more thoroughly (citing Allington, 2002, and Emig, 1977).
- Teachers can improve outcomes by helping students develop literacy strategies within their respective disciplines or content areas.

Shanahan and Shanahan (2008) push for the education field to move away from the current generalist notion of literacy and focus on teaching high-level literacies in all disciplines. They define disciplinary literacy as the reading and writing that is embedded within the specific context of a discipline. They further maintain that students must possess knowledge specific to the discipline in order to read successfully within its context. This knowledge includes the way the information is created, communicated, and evaluated; various genres used within the discipline as well as their audiences and purposes; and knowledge of what is considered high-quality.

The definition that seems most closely aligned with A Blueprint for Reform (U.S. Department of Education, 2010) is the one developed by Torgesen et al. (2007), which focuses on academic literacy:

> The kind of reading proficiency required to construct the meaning of content-area texts and literature encountered in school. It also encompasses the kind of reading proficiencies typically assessed on state-level accountability measures, such as the ability to make inferences from text, to learn new vocabulary from context, to link ideas across texts, and to identify and summarize the most important ideas or content within a text. . . . academic literacy also includes the ability to learn from text, in the sense that full comprehension of text meaning usually results in new understandings or new learning. (p. 3)

Not only do definitions vary, but the range of grade levels associated with adolescent literacy also differs. The range used for the national view of adolescent literacy is grades 4–12; however, some states, including Texas, identify secondary as grades 6–12. For the purposes of this paper, "secondary" will be interpreted as grades 6 through 12.

Recent policy initiatives (e.g., Striving Readers) are renewing attention to secondary students' school-based literacy skills. Therefore, the concept of integrating literacy and disciplines is particularly relevant. Moje (2008) maintains that secondary content literacy has focused too much on literacy and not enough on the disciplines or content areas. Thus, she emphasizes the need to reconceptualize disciplinary learning and literacy instruction.

Shanahan and Shanahan (2008) view literacy development and the associated skills in the image of a pyramid. At the bottom is basic literacy (decoding and the knowledge of high-frequency words)—skills common to all reading tasks. Above that is intermediate literacy (generic comprehension strategies, common word meanings, and basic fluency)—skills necessary for many tasks. At the top is disciplinary literacy—skills specific to the disciplines (i.e., literature, mathematics, science, social studies). The first principle of the disciplinary literacy framework developed by the Institute for Learning at the University of Pittsburgh is "Knowledge and thinking go hand in hand" (McConachie et al., 2006, p. 8). In other words, in order to develop a deep understanding of a discipline, students must be able to "read, reason, investigate, speak, and write about the overarching concepts within that discipline" (McConachie et al., p. 8).

A number of empirical studies have suggested that readers approach texts in different ways, depending on each reader's connection to the discipline and his/her purpose or goal for reading a particular text; the nature of the text (e.g., its structure, organization, genre, features, etc.); and the context in which the text was created. Bain (2006) and Lee (2007) view disciplinary literacy as a form of evaluative literacy, one which builds an understanding of how knowledge is produced within each discipline rather than just building knowledge in the discipline.

Regardless of the language or terminology used to define secondary-level literacy (e.g., adolescent literacy, reading and writing across the curriculum, content-area literacy, disciplinary literacy), changes must be implemented in the way schools view, teach, and talk about content in the disciplines.

Reconceptualizing Literacy: Language Use

One of the forms of language used in literacy is academic language, which is used in schools for the purposes of learning. It is the language of interacting in classroom discussions and writing on academic topics, as well as the language of texts students read. Textbook language requires some interpretation because it includes specialized features that make it different from the language used in everyday life (e.g., abstractions, nominalizations or noun phrases that condense complex information, language of an authoritative voice infused with judgment and attitude, density of information, more complex sentences, more elaborate

vocabulary, implicit points of view, grammatical metaphors, long pronoun reference chains). Snow, Burns, and Griffin (1998) found that children whose home language experiences did not include language used in the ways expected at school faced challenges in learning school language. Teachers may find it difficult to follow the reasonings of such students or may fail to recognize the logic in their writing (Schleppegrell, 2009). Language is sometimes called the "hidden curriculum" of schooling (Christie, 1985), and a student's success in school may depend upon how well he/she learns to "manipulate the patterns of discourse characteristic of the knowledge, information, and ideas that schools value" (Schleppegrell, p. 5). All of this indicates that attention to language in schools must go far beyond vocabulary development and knowledge of word meanings.

Teachers must help students understand what they are reading as well as how language resources work and are different based on content or discipline. Additionally, teachers need to help students develop their capacity to read critically, reflect on what they read, and recognize how they are being influenced by the author toward a particular point of view. Teachers also need to help students develop strategies to highlight and talk explicitly about meanings in what they read as a way to help support their comprehension and to provide models for speaking and writing (Schleppegrell, 2009). "Students encounter the linguistic patterns of academic language in the contexts, tasks, talk, texts and tests of school subjects. Academic language draws on discourses of mathematics, science, history, language arts, and other subjects, recontextualized for purposes of schooling and becoming more challenging at every level" (Schleppegrell, p. 3).

> Every content-area teacher believes—knows—that his or her subject is different from any other and requires particular kinds of literacy skills. . . . Content-area teachers use reading and writing as tools and in ways peculiar to their subject matter. Their goals are content achievement and student success. We attack their identity and value when we tell them who we think they should be. They know who they are." (Stein, 2002, p. 85)

Explicitly discussing language in the classroom can help students understand that they need to adopt new levels of usage for academic tasks and contexts. This kind of explicit instruction that includes the what, the how, the why, and the when of literacy integration with content could help students move from "everyday" ways of talking about what they are learning by "bridging" their conversations (Gibbons, 2006) into more technical, discipline-specific usage of the language (Schleppegrell, 2009).

Even though disciplines share commonalities in their use of academic language, they also exhibit discipline-specific, unique elements, for example, "how the disciplines create, disseminate, and evaluate knowledge, and these differences are instantiated in their use of language" (Shanahan & Shanahan, 2008, p. 48). Fisher and Frey (2012) contend that educators might "find it helpful to think of all of our students as language learners; that is, learners of the language of the discipline" (n.p.).

Reconceptualizing Literacy: The Research

One of the key shifts in literacy instruction occurred as a result of the Proficient Reader Research, which moved the education field from trying to "fix" struggling readers to teaching what proficient readers do while in the process of comprehending text. Keene and Zimmerman (1997) identified the following processes as aids in comprehension:

- Activate and connect background knowledge to the text
- Ask questions throughout the reading process, including before and after
- Be aware of the purpose in reading the text, as well as the text's forms and features
- Create mental images and emotions
- Confirm or modify predictions based on the text and knowledge about the author
- Read selectively and fluently; decode rapidly
- Monitor comprehension and adjust strategies when struggling to comprehend
- Identify important parts of the text, draw inferences from reading, and synthesize information
- Interpret text on different levels (e.g., literal, interpretive, etc.)
- Read and write a variety of text forms

Unfortunately, many adolescent students are not proficient, and the statistics are startling. One in four students in grades 4 through 12 was a struggling reader in 2005, and fewer than one-third of public school 8th graders read at or above grade level (Perie, Grigg, & Donahue, 2005). Additionally, 69% of 8th-grade students fall below the proficient level in their ability to

comprehend the meaning of text at grade level (Lee, Grigg, & Donahue, 2007). Kamil et al. (2008) indicated that 25% of students read below the basic level, which means they do not have sufficient reading ability to understand and learn from text at their grade level. For many adolescent students, difficulties with reading and writing lead to dropping out of school (Ehren, Lenz, & Deshler, 2004). These indicators suggest that literacy instruction should continue beyond the elementary years and should be tailored to the more complex forms of literacy that are required of students in grades 6 through 12. However, that has not yet happened. Research indicates that approximately 8.7 million adolescent learners struggle with the reading and writing required of them in school (Kamil, 2003).

Catherine Snow (2002) identified the following factors as the most pressing issues in adolescent literacy:

- Reading comprehension has not improved even though it is recognized that all high school graduates must be able to comprehend complex texts.
- Students in the U.S. continue to perform poorly in comparison with other countries when curriculum centers on discipline-specific content and subject matter.
- Children in various demographic groups continue to perform below grade level in reading.
- Teachers are not being taught the skills they need to support secondary students in reading comprehension.

Kosanovich, Reed, and Miller (2010) summarized the five areas of instructional focus and improvement that were recommended in *Academic Literacy Instruction for Adolescents: A Guidance Document from the Center on Instruction* (Torgesen et al., 2007). These recommendations map out an instructional focus that, if implemented effectively, would likely lead to significant and long-term improvement in literacy skills and abilities of adolescent learners:

- Provide explicit instruction and support for comprehension in all classes.
- Engage in sustained high-quality discussions of reading content.
- Maintain high standards for text, conversation, questions, and vocabulary.
- Use strategies that increase student motivation and engagement with reading.
- Teach essential content knowledge so that all students master critical concepts.

The researchers argue that these five recommendations should be implemented thoughtfully and systematically, not as fragmented approaches. In order to achieve this, teachers need support through ongoing, high-quality, job-embedded, professional learning (Kosanovich et al., 2010; Torgesen, 2006; Torgesen et al., 2007).

Kamil et al. (2008) identified similar recommendations to support reading comprehension:

- Provide explicit vocabulary instruction.
- Provide explicit instruction on strategies for comprehension.
- Promote extended discussions of text interpretations.
- Implement strategies that increase student motivation in literacy learning.
- Engage trained specialists to provide intensive and individualized intervention for struggling readers.

With struggling readers and writers experiencing so many different sources of difficulty as well as rapidly accelerating literacy demands, it is no wonder that teachers and schools are unable to meet the needs of all students. To help address this problem, in 2004 a panel of five nationally recognized educational researchers—Donald Deshler, David Francis, John Guthrie, Michael Kamil, and James McPartland—met with representatives of Carnegie Corporation of New York and the Alliance for Excellent Education. The researchers were asked to envision what kinds of changes would improve student outcomes, based on their collective knowledge of the field. At the same time, they were asked to envision how to advance the field by building a more comprehensive knowledge base. The researchers agreed that much is already known about the problems faced by struggling adolescent readers and the types of interventions that can address their needs (Biancarosa & Snow, 2006). They also agreed that while educators work to implement strategies that have been shown to be successful, they should also continue to build the knowledge base, particularly in understanding the "value-added" contributions of each of the specific aspects of adolescent literacy programs (Biancarosa & Snow, 2006).

Just as Reading First identified the "Big Five" of K–3 reading, so, too, have researchers identified the "Big Five" of adolescent literacy:

- Word study (which encompasses phonological awareness, structural analysis, and spelling)
- Vocabulary
- Comprehension
- Fluency
- Motivation
  (Murray et al., 2008)

Reconceptualizing Literacy: Comprehension, Vocabulary, and Text Complexity

Two of adolescent literacy's "Big Five"—comprehension and vocabulary—along with text complexity, are creating significant interest in the field.

Comprehension

Comprehension is a metacognitive, nonlinear, multi-strategy process that is specific to the task, reader, text, and context. It involves active engagement with text in order to acquire knowledge and understanding and to determine meaning (OSPI, 2002). Furthermore, it is a requisite if a reader hopes to enjoy a reading experience. Murray and her colleagues (2008) identified the following as reasons for comprehension difficulties:

- Insufficient prior knowledge
- Inability to connect prior knowledge to the content
- Over-reliance on background knowledge
- Inability to read text fluently
- Difficulty decoding words
- Inability to focus on meaning while reading
- Inability to apply comprehension strategies
- Difficulty understanding word meanings

Several strategies have been identified as successful in improving reading comprehension:

- Comprehension monitoring
- Cooperative learning
- Graphic organizers
- Story structure
- Question answering
- Question generating
- Summarization
- Multiple strategy approach
  (National Reading Panel, 2000, pp. 4–6)

Armbruster, Lehr, and Osborn (2001) reinforced the need for explicit instruction on effective comprehension strategies. They stated that explicit comprehension strategy instruction includes the following steps: an explanation of the strategy, teacher modeling (often using think alouds), guided practice, and application. While classroom teachers no longer need to guess what should be taught, serious questions may arise when instruction goes beyond grade 5 and/or English/language arts classes and fiction texts. Torgesen (2006) is encouraging educators to ensure that students who are on grade level in third grade remain on grade level as they reach tenth grade and to accelerate the development of students who are below grade level toward grade level standards. Researchers suggest that a potential means of accomplishing this is with disciplinary literacy that moves beyond general literacy strategy instruction (Buehl, 2011; Moje, 2008; Shanahan & Shanahan, 2008).

Vocabulary

According to the Alliance for Excellent Education (2004), research has shown that both direct, explicit instruction and learning from context while reading are significant for increasing vocabulary and perhaps closing the achievement gap. Adolescent

learners must hear words used and pronounced and use the words themselves in context before being able to read words without conscious thought. Content-area or disciplinary terms, however, require intentional or explicit instruction that includes active engagement in literacy-rich contexts; restructuring tasks, procedures, processes, and materials; repeated/multiple exposures; and instructional strategic practices (OSPI, 2002).

The National Reading Panel (2000) recommended the following:

- Repetition
- Adapting materials or instruction for learners' needs
- Active engagement in learning (e.g., visualization, dramatization, writing tasks, contextual clues to infer meanings)

Torgesen (2006) found that the skills and knowledge required to meet standards increases yearly. Thus, adolescent learners must expand their vocabularies by many words and recognize them with automaticity so that brain power is not used solely for decoding. Hyland and Tse (2007) conducted a study of 3.3 million words from a range of academic disciplines and showed that words in the "academic" word lists (Coxhead, 2000) occur with different frequency and mean different things from discipline to discipline—and sometimes even within the same discipline. Therefore, vocabulary development requires that students experience repeated exposure to new words in meaningful and relevant contexts (NICHD, 2000). "The contexts of learning vocabulary are both interactional and textual, and engagement with new words in different but related registers provides opportunities for deeper understanding" (Schleppegrell, 2009, p. 12).

Murray et al. (2008) found that syllable training enhanced readers' decoding ability on transfer tasks as well as their ability to remember spellings. They also found that whole word training did not help struggling readers on any of the decoding or spelling transfer tasks. The researchers identified the following implications for the classroom:

- Matching syllables to pronunciations can aid adolescent readers struggling to read multisyllabic words.
- The weakest readers need instruction in both word study and comprehension strategies.
- Teaching students about root words, syllable types, and other elements of words can strengthen interventions.

They concluded that good readers use vocabulary to foster comprehension and that teachers can help students build vocabulary by promoting word consciousness, using additive and generative vocabulary instruction, and teaching academic vocabulary. Furthermore, they recommended that teachers examine the goals of their lessons when choosing the type of vocabulary instruction to provide (Murray et al., 2008).

Text Complexity

Educators have dipped in and out of the issue of text complexity for years, each time informed by related fields such as linguistics (see also social semiotics by Halliday, 1978, and Wilson, 2011), psychology, and cognition (Graesser, McNamara, & Louwerse, 2011). Hess and Biggam (2004) reported that National Assessment of Educational Progress (NEAP) research has shown difficulty of text passages—along with familiarity with content and type of question—to be the major factors affecting reading comprehension among 4th-, 8th-, and 12th-grade students.

In the past, changes in text complexity were based on length of passages (Torgesen, 2006). Shanahan, Fisher, and Frey (2012) discuss a variety of elements that are now considered determinants of text complexity:

- Vocabulary (e.g., word length, number of syllables, challenging words, domain-specific terms, new general academic terms)
- Sentence structure and length (e.g., complex sentences with multiple clauses, layered phrases, greater density of ideas, more embedding of concepts, etc.)
- Coherence (e.g., connections and relationships among words, ideas, and sentences)
- Organization (e.g., temporal arrangement of texts, comparing/contrasting, problem/solution, text features specific to content areas)
- Background knowledge (e.g., the reader's prior knowledge—including developmental, experiential, and cognitive factors—that impacts his/her interaction with the text)

Hess and Biggam (2004) provide tables of text-complexity descriptors for individual grade levels or grade bands. They state that text complexity results from combinations and interactions among several factors: word difficulty; structure, genre, and format of the text; reader's background knowledge; and the ability of the reader to reason at an appropriate level. Teachers must consider all of these factors when determining the appropriateness of text for a given grade and/or content area.

To improve reading skills, students must read challenging or complex text. This reasoning differs from earlier theories, which held that overly complex text impeded learning. Such a shift will require reconceptualizing literacy in all content areas. What is needed to do this is knowledge of text complexity and three important components of literacy instruction: building skills, establishing purpose, and fostering motivation and persistence (Shanahan, Fisher & Frey, 2012).

Reconceptualizing Literacy: Looking Deeply at the Disciplines

English/Language Arts

"…it is probably most easy to make the case for reading in literature classrooms….[however,] there is also insufficient attention in literature classrooms to the nuts and bolts of how to read a range of literary texts" (Lee & Spratley, 2010, p. 9). Like other content-area teachers, English/language arts teachers do not view themselves as teachers of reading; rather, they view themselves as teachers of the content of literature. Thus, they are more likely to ask students about symbolism in literary texts than to model how to detect the symbolic from the literal and how to reconstruct inferences about symbols in text.

It may seem that the study of English literature employs everyday language and literacy processes, but in reality, it requires its own set of reading skills. Reading literature normally involves interpreting figurative language, recognizing symbols, irony, and satire in texts that are set in a variety of historical, social, cultural, and political contexts. Students must also identify literary devices that suggest emotions, motives, or goals, as well as understand how the author creates "a world that the reader simultaneously enters and stands apart from through various narrative devices" (Moje, 2010, pp. 65–66).

One of the challenges to the literature curriculum is how to help all students—especially struggling readers—develop conceptual understanding of the knowledge sources (e.g., text structures and genres, literary devices, figurative language, intertextual links, character types, dialects and language functions, ethical reasoning) that will lead them to read complex literature throughout their lives (Lee & Spratley, 2010).

Table 1 gives an overview of the types of texts/genres, text characteristics, and tasks involved in accessing and comprehending English/language arts texts.

Table 1: English/Language Arts

Texts/Genres & Characteristics	Learners' Tasks	Writers' Tasks
Presented almost entirely through language Narratives Exposition Poetry Drama Informational Literary Grammar (stand-alone sentences)	Engage with a variety of text types, including multimedia and digital Identify main theme of a literary work Provide evidence Synthesize across texts Critique literature Attend to text forms, features, and literary techniques while considering content Focus on comprehension strategies and writing processes Correct errors in writing Parse sentences Identify parts of speech and functions of words in sentences Read for enjoyment Sometimes considered to be more personal than other disciplines	Recounts Narratives Personal responses Reviews Character analyses Thematic interpretations

(Buehl, 2011; Buehl & Buehl, 2012; Fang & Schleppegrell, 2010; Fisher & Frey, 2012; Schleppegrell, 2009; Shanahan & Shanahan, 2008; Wilson, 2011)

History/Social Studies

"The ability to read historical documents, including contemporary explications about societal, economic and political issues, provides perhaps the most direct link to literacy as preparation for citizenship, which presupposes an ability to conduct informed debate" (Lee & Spratley, 2010, p. 6). One of the main goals in teaching history is to raise students' awareness that there are different interpretive possibilities in judging evidence and developing arguments.

> By making the interpretive perspective of an author a point of discussion in reading all history texts, and exploring the language resources authors use to infuse particular points of view into the texts they write, students can learn to question and challenge interpretations even when they are presented in authoritative language. (Schleppegrell, 2009, p. 15)

From a disciplinary literacy point of view, history educators may argue that to acquire deep understanding in historical studies, a student must analyze the context in which a text or idea was conceived. Readers must examine primary and secondary texts by asking who wrote the text as well as what the writer's background and perspective were. In addition, they must ask what other sources corroborate or challenge the statements made within the text (Moje et al., 2010).

Most secondary students learn history by reading history textbooks, which are often called "inconsiderate texts" and make comprehension challenging. Some of the "inconsiderate" issues are the following:

- Failure to clarify logical connections between propositions
- Use of ambiguous, distant, or indirect references
- Inclusion of information not relevant to the main ideas
  Compacting too many ideas within individual sentences
  (Lee & Spratley, 2010)

Adolescent students must be taught how to integrate text features, prior knowledge, vocabulary, and comprehension monitoring; these processes can become routine practices in classrooms where students are expected to read and comprehend texts in order to learn (Lee & Spratley, 2010).

Table 2 gives an overview of the types of texts/genres, text characteristics, and tasks involved with accessing and comprehending history/social studies texts.

Table 2: History/Social Studies

Texts/Genres & Characteristics	Learners' Tasks	Writers' Tasks
Presented almost entirely through language Often textbook based Arcane spellings Narratives Exposition Primary and secondary source documents Photographs Maps Charts or diagrams Videos Monuments Artifacts Time-specific and context-specific events and texts Observable events and/or phenomena Metaphorical terms Terms with political points of view Close attention to author and source	Study human life in the past and the present Develop a shared sense of national identity Read interpretations of historical events Prepare for citizenship Analyze documents Make interpretations of artifacts and documents Identify cause and effect Make arguments Sequence and make connections between historical events Recognize how events and actors influence other events and actors Recognize points of view Recognize the presence of evaluative judgments Locate and evaluate a variety of primary and secondary sources Provide evidence across sources to support interpretations Recognize that single texts offer no corroboration Read empathetically and critically Take into consideration sourcing and contextualization Question the historical context of texts written Question the author's credibility and potential biases Evaluate sources Understand text forms and features Recognize issues and trends in context	Recounts Autobiographies Biographies Historical accounts Site studies Period studies Site interpretations Factorial explanations Consequential explanations Exposition Discussion

(Buehl, 2011; Buehl & Buehl, 2012; Fang & Schleppegrell, 2010; Fisher & Frey, 2012; Schleppegrell, 2009; Shanahan & Shanahan, 2008; Wilson, 2011)

Mathematics

Of all the academic disciplines taught in middle and high schools, the subject least expected to entail literacy and extensive reading is mathematics (Lee & Spratley, 2010). Examine the following problem: *Find the nilkot of a pumten if the yrbadgol is 34.* Although the sentence entails whimsical terminology, it serves as a simple example of the critical role of language in mathematics. Without knowledge of the terms, students would be at an impasse and unable to solve the problem.

There are a number of factors that together make the intersection of language and mathematics complex. Difficulties are encountered even by those students who have developed skills for reading to learn. According to studies by Shanahan &

Shanahan (2008), students cannot read mathematics texts just for the "gist" or general idea, because "math reading requires a precision of meaning, and each word must be understood specifically in service to that particular meaning" (p. 49).

In essence, teachers often need to serve as translators—using spoken language to help construct math understanding by explaining mathematical expressions. However, students may find it a challenge to understand a teacher's oral explanations of the mathematics and the symbolic language (Schleppegrell, 2009). According to Fang & Schleppegrell (2010), "mathematical discourse is simultaneously technical, dense, and multi-semiotic, drawing on natural language, symbolic language, and visual display, which interact in discipline-specific, synergistic ways" (p. 591).

Another challenge derives from the multiple meanings of terms, which results in conflicts between mathematics and standard English. These include homonyms—words such as *table, right, function*, and *degree* have the same spelling and pronunciation but different meanings in mathematics than in standard English or other disciplines. Adding to the confusion are homophones (same pronunciation but different spelling and meaning), such as *two/to, add/ad, pi/pie, chord/cord*, and *plane/plain*. Homographs (same spelling but different pronunciation and meaning) also challenge students to understand the meanings of terms such as *coordinate, combine*, and *convert*.

In addition to those issues, even simple terms, such as conjunctions, pose challenges because their meanings and relationships in mathematics are different from their everyday uses (Schleppegrell, 2009). The conjunctions *and* and *or* pose problems in set theory. As an example, let set A = {1, 2, 3, 4} and set B = {3, 4, 5, 6}. The expression A ∩ B is read as "A and B," which in mathematics is where the sets intersect, or what elements are common to both set A and set B. Thus, A ∩ B = {3, 4}. Examine the statement "George and his 3 friends arrived late." In this instance, the conjunction *and* results in a set consisting of 4 individuals, which mathematically results from the union of the two sets. Confusion would arise because in mathematics the union of two sets is expressed using *or*, rather than *and*.

Written communication in mathematics is replete with numbers and symbols that "hold a privileged and central position because they are a principal, if not exclusive, means through which mathematicians solve many of their problems" (Wilson, 2011, p. 438). Students face the additional burden of understanding the meaning and nuances of the multitude of signs and symbols in mathematics. For example, the expression 1 + 4 + 7 + 10 would be child's play for secondary students to compute. However, the expression below is equivalent to the previous one, but it poses a serious challenge because of the symbolism used to convey the same expression.

$$\sum_{n=1}^{4} 3n - 2$$

Mathematics is often associated with accuracy and precision. This is especially true in reading and writing numeric and symbolic problems because students "must attend to each mark, letter, and number as well as to their spatial placement and order" (Wilson, 2011, p. 439). Wilson adds that one unseen effect of common representations in mathematics is the compliant role imposed upon students in that they must respond to implicit commands in expressions such as 10 + 38. Hidden in that expression is a command from an anonymous source to perform an operation.

In addition to the more generic strategies, teachers must be attentive to the challenges just described. In mathematics, there is a need to advocate strategies that mirror the kinds of thinking and analytical practices common to the discipline (Shanahan & Shanahan, 2008). One of the keys in helping students to attain mathematical literacy is the identification and utilization of students' prior knowledge and experience. According to Barton, Heidema, and Jordan (2002), "activating students' prior knowledge prepares them to make logical connections, draw conclusions, and assimilate new ideas" (p. 25). In addition to helping students activate prior content knowledge, teachers can also incorporate reading and learning strategies that can assist students in mastering vocabulary and making sense of unfamiliar text styles (Barton et al.).

One effective strategy in mathematics is for teachers to provide students with graphic organizers, chapter outlines, and structured overviews before having them attempt to read text (Barton et al., 2002). To help secondary students with accessing and comprehending mathematics texts, Table 3 gives an overview of the types of texts/genres, text characteristics, and tasks involved.

Table 3: Mathematics		
Texts/Genres & Characteristics	**Learners' Tasks**	**Writers' Tasks**
Mathematics symbolic language Visual display of diagrams and equations Theorems, proofs, and explanations Crucial for oral language and spoken interactions Extraneous information Observable referents Significant spatial placement and order of operations Even "function" words are important (e.g., a, the) Requires a precision of meaning	Learn highly technical language Memorize definitions Switch between both natural language and symbols Make shifts in the grammars of both natural language and symbols Collect and analyze data to answer questions Display data Explain spatial relationships Detect and encode patterns Apply strategies to solve problems Develop proofs Arrive at the "truth" Reread Detect errors Understand the essential content	Proofs Word problems Graphs and visual displays Equations Sketches and physical objects Journal entries

(Buehl, 2011; Buehl & Buehl, 2012; Fang & Schleppegrell, 2010; Fisher & Frey, 2012; Schleppegrell, 2009; Shanahan & Shanahan, 2008; Wilson, 2011)

Science

Just as in mathematics, the conceptual density of science materials is one of the major reasons for students' difficulties (Barton et al., 2002). As an example, Barton et al. note that a high school chemistry textbook can include as many as 3,000 vocabulary terms that are unfamiliar to the reader. Lee and Spratley (2010) add that the technical vocabulary of science can be even more challenging because the terms often have Latin or Greek roots. They further maintain that scientific texts, like those in mathematics, require the ability to understand tables and figures, but they also require visual literacy that involves comprehension of diagrams, drawings, photographs, and maps used to convey meanings. Science is particularly dependent on the use of a variety of visual displays; this is because the relative spatial arrangement and physical characteristics of the physical universe—central to the discipline—are often vital to understanding them (Wilson, 2011).

An understanding of the literacy problems in science requires that teachers understand the nature of the discipline itself. According to Wilson (2011), the common thread of the branches of science is that they all focus on the physical universe and teach scientific habits of mind, regardless of the phenomenon of interest. "Learning science means developing new ways of thinking about the world through investigations that describe, model, predict, and control natural phenomena" (Schleppegrell, 2009, p. 27). Although scientists have confidence in the utility of knowledge that is created via experimentation, they must still visualize it, manipulate it in formulae and equations, and present or express it in a format that can be understood by their audience (Shanahan & Shanahan, 2008).

Because scientific study often centers on objects or processes, rather than people or the author, that focus often "leads to the misconception that writing in science is simply the recording of facts" (Wilson, 2011, p. 439). Teachers and students must realize that "what we recognize as scientific is typically construed in language patterns that enable the development of chains of reasoning that are technical and dense" (Fang & Schleppegrell, 2010, p. 591). Reading science is not a static activity focused on retaining details and terminology, but it does present challenges to secondary students in that the dense, technical language of secondary science "contrasts sharply with the more commonsensical, dynamic language that is typical of elementary storybook texts" (Fang & Schleppegrell, 2010, p. 589). In addition, just as is the case in mathematics, reading science entails comprehending text passages as well as decoding and understanding scientific signs, symbols, and graphics (Barton et al., 2002).

There are additional factors that contribute to the complexity of reading scientific texts. Science texts contain terms that have both general and specific meanings, similar to the homonyms, homophones, and homographs mentioned for mathematics (Shanahan & Shanahan, 2008). According to Barton et al. (2002), the authors of science texts are content experts who, because of their expertise, sometimes inadvertently fail to include in their explanations some of the background information or details that students need for a full understanding of the content. Reading science texts requires not only understanding the scientific terminology, but also the multiple and nested relationships not explicitly stated—ones that must be inferred from the text (Lee & Spratley, 2010). A parallel challenge is summarized by Shanahan and Shanahan (2008):

> Science texts have a high degree of lexical density, higher than that of either mathematics or history. Content words are technical terms, which must deeply be learned in order to learn the science behind them. For example, biology students must not only know that digestion is the assimilation of food in the body, but also understand the process by which digestion occurs. (p. 53)

Fang and Schleppegrell (2010) assert that although the language used in science, history, and mathematics content at the secondary level "shares some common features, (e.g., technical, dense, abstract) that render it recognizable as academic, these features are patterned grammatically in different ways across academic subjects because of disciplinary differences in epistemologies and social practices" (p. 591). Moje et al. (2008) suggest that new types of classroom texts should be engineered to situate reading and writing within social networks as a means for readers to grasp the essence of the discipline.

To attain conceptual understanding, students cannot simply parrot back words, but rather, must construct and express the essential meanings in their own words (Schleppegrell, 2009). A strategy to enable this would be for students to bridge between colloquial and scientific language by talking science through group work and oral discussion, followed by writing with explicit attention to the linguistic patterns of science knowledge at the sentence and text levels (Schleppegrell). This control of science discourse is dependent on the leadership of teachers, who, in addition to having content expertise, must "master the grammatical features of the language that construes science knowledge" (Schleppegrell, p. 27).

There are recommended strategies for addressing content literacy in science. Studies have found that science writing among adolescents shows improvement "when teachers show students how to write for different purposes (e.g., to describe, to persuade) and how to use different structures (e.g., research articles, lay explanations, patent applications, lab notes) for scientific writing" (Hand, Prain, & Wallace, 2002, as noted in Shanahan & Shanahan, 2008, p. 51). Lee and Spratley (2010) suggest that "the demands of comprehending scientific text are discipline specific and are best learned by supporting students in learning how to read a wide range of scientific genres" (p. 5). In addition, teachers can assist students through such strategies as identifying text structures that emphasize cause and effect, sequencing and extending definitions, and attending to scientific registers (Lee & Spratley).

Table 4 gives an overview of the types of texts/genres, text characteristics, and tasks involved with accessing and comprehending science texts.

Table 4: Science

Texts/Genres & Characteristics	Learners' Tasks	Writers' Tasks
Expository	Pay attention to the physical universe	Procedural recounts
Analytical	Emphasize objects of study rather than people studying the objects	Demonstrations
Lexical density	Theorize, model, and report on experiments	Research articles
Abstract	Conduct investigations	Field studies
Sign systems or iconic representations	Develop habits of mind	Formal scientific reports
Filled with symbols and formulas	Learn technical vocabulary at macro and micro levels	Explanations
Videos	Create knowledge through experimentation	Discussion
Gestures	Report on experiments	Running investigation logs or journals
Models and diagrams	Develop hypotheses	Opinion or perspective journals
Specialized equipment	Describe, explain, and predict natural phenomena	Generalizable findings
Technical vocabulary	Observe, record, and explain natural processes	
Greek and Latin roots	Draw on multiple concepts simultaneously	
Significance of different or alternative representations	Evaluate others' arguments or generate their own arguments to effect change in their environments	
	Use specialized equipment	
	Recognize the close connection among prose, graphs, charts, formulas	
	Understand the "bigger picture"	
	Make predictions based on similar events	
	Determine the relative importance of information	
	Record data systematically and in multiple forms (e.g., prose, tables, drawings, graphs, charts)	
	Use data to support claims along with a clear rationale for the claims	

(Buehl, 2011; Buehl & Buehl, 2012; Fang & Schleppegrell, 2010; Fisher & Frey, 2012; Schleppegrell, 2009; Shanahan & Shanahan, 2008; Wilson, 2011)

Conclusion

Disciplines are "organized ways of thinking about the world, and learning within a discipline involves more than becoming merely knowledgeable. Learning must also encompass how scientists, mathematicians, historians, and others read, write, and think" (Buehl, 2011, p. 30). Wilson (2011) suggests that a major reason literacy instruction has failed to become a part of many secondary classrooms is that it often does not take into consideration the "discipline-specific frameworks for reading and writing texts with discipline-specific characteristics" (p. 435).

Moje (2008) cautions, "Without careful attention to what it means to learn in the subject areas and what counts as knowledge in the disciplines that undergird those subjects, educators will continue to struggle to integrate literacy instruction and those areas" (p. 99). She believes that integrating literacy teaching would be more likely if learning in the content areas were reconceptualized to encompass the thinking and communicating conventions inherent in the various disciplines. She further suggests that educators build disciplinary literacy instructional programs to support the implementation of literacy strategies at the secondary level.

By understanding how text is created, structured, and used across varied disciplines, teachers can enhance their own literacy instruction and support students in developing broad frameworks for interpreting and using content from multiple academic areas (Wilson, 2011). Teachers can employ many different forms of representation (e.g., text genres, semiotic tools, etc.) that are available through digital media. This kind of integration could empower secondary students to read analytically across various complex texts and various disciplines, helping them to become critical readers and thinkers (Moje, 2008).

State Highlights

The states served by the Texas and Southeast Comprehensive Centers were invited to contribute information on their efforts to improve literacy instruction at the secondary level. The following highlights were provided by state education agencies.

Alabama

Like most states, Alabama chose to adopt the Common Core State Standards (CCSS). After carefully matching the CCSS to current state standards, and making the allowed additions, Alabama crafted a set of college and career ready standards (CCRS) that aim to provide the instruction necessary for all students to be prepared for higher education and rewarding careers. Alabama has had a targeted emphasis on content area literacy for years and has seen the benefits reflected in recent National Assessment for Educational Progress (NAEP) scores.

By looking to the new standards as a guide to a heightened instructional focus on content-area vocabulary, comprehension, and text complexity, Alabama educators are becoming better equipped to make the instructional decisions that will improve the quality of life for all of our students. At the heart of content literacy is content-area vocabulary. As Alabama leaders studied the new standards and began the work with teachers, the following concepts surfaced and are recommended for laying a firm content-area vocabulary foundation across grade levels:

- Teach content vocabulary before reading to connect to or build background knowledge.
- Model for students how to think about words and talk about words as they relate to the content they are learning.
- Pronounce words for students and let them practice pronouncing them.
- Help students transfer definitions into their own words.
- Provide examples and non-examples and allow student to do the same.
- Focus on content-specific concepts and terminology. For example, how is a *variable* different in math than in science?
- Commit to a schoolwide focus on academic vocabulary. It is impossible for students to do well on assignments if they do not understand the nature of the task the assignment requires. For example, explicitly define terms such as *analyze* and *summarize*, model the process, and provide exemplars.

The aforementioned vocabulary recommendations are keys to text comprehension. As is true for vocabulary, comprehension must be taught for the duration of the K–12 experience. Alabama leaders view the new standards as providing potential for emphasizing this concept, as well. In the introductory phases of the CCRS professional development, educators learn to trace the

standards in order to see the literacy connections among grade levels, the increasing rigor, and the scaffolding necessary to bring students to grade-level comprehension. Alabama's professional development sessions emphasize these practices:

- Require students to engage with text daily.
- Provide daily opportunities for student conversations around text.
- Explicitly teach comprehension strategies.
- Allow students to choose the strategies they apply to text.
- Focus on text features—interpreting charts, graphs, etc.
- Require students to write daily about what they are reading. Many content teachers are hesitant to assign writing because grammar and mechanics are not in their comfort zones. However, this should not be a deterrent. Content-area writing is intended to illustrate understanding of the subject matter. Content-area teachers are well equipped to help students focus on writing complete sentences that show content knowledge. Talking with language arts colleagues about helping students with other conventions enhances collaboration among grade-level teachers and is always a plus for students.

The Common Core State Standards place substantial emphasis on text complexity as a factor for helping students become college and career ready. Text complexity refers to the difficulty of a particular text. Though intentions were pure, for many years teachers focused on lower-level texts in an effort to help struggling readers comprehend content. This element also requires a shift in mindsets. Alabama encourages teachers to put the following practices into place immediately to strengthen their students' reading power:

- Require students to read content text daily in every class. For math this does not mean students should read "about" math. They should read math as the language that it is. For example, teachers should model how to read numerical math problems. Reading daily also improves reading stamina.
- Carefully select text for students, considering the qualitative and quantitative factors as well as reader and task considerations defined by the CCSS.
- Balance informational and literary texts. We typically think of literary texts in language arts and informational texts in history, science, and technical subjects. However, both are important for thorough understanding of different contents. This practice will provide an opportunity for teachers to enhance their understanding of varying levels of text and assist students in attending to varying reading tasks.
- Allow students to read at their frustration level with teacher support. At times we all struggle with text that are too difficult, unfamiliar, or not interesting to us. It is important that students learn to apply strategies that enable them to extract meaning from text. This may be difficult for teachers and students at first, but it is a survival skill that will result in more skillful, confident readers.

Alabama sees the present time in education as a time of opportunity. Our students deserve our very best at every grade level across the curriculum. There is hard work ahead of us. However, we have a clear roadmap to help students become college and career ready, and we, as a state, are committed to sharing the responsibility.

Georgia

The Common Core Literacy Standards afford teachers the opportunity to engage students in literacy practices that enhance content-area learning. Teachers of history/social studies, science, and technical subjects will not change the content they teach (e.g., the Civil War) so much as *how* they teach and *how* students demonstrate understanding. The Georgia Department of Education (GaDOE) has undertaken a number of initiatives to introduce teachers to the new literacy standards and show them how to implement the standards. Our goal has been to make coherent and useful resources and training widely available to Georgia teachers and instructional leaders as they prepare for and transition to the new standards.

Beginning in fall 2011, GaDOE staff provided a series of webinars for teachers and instructional leaders focused on the Common Core Literacy Standards, as a precursor to more in-depth professional learning sessions via live video broadcasts on Georgia Public Broadcasting (GPB). In May 2012, Georgia produced a series of two-hour live productions featuring GaDOE specialists working with Georgia teachers and curriculum directors to showcase the new standards and demonstrate effective practices for embedding the standards into content-area instruction. Each broadcast targeted a specific content-area group, such as middle-school science teachers or high-school social studies teachers. The webinars and videos are available at www.Georgiastandards.org under the Common Core Georgia Performance Standards (GPS) tab. The strategies presented in these sessions include anticipation guides, opinionnaires, cause/effect maps, and RAFT (Role, Author, Format, Topic) writing. These strategies illustrate how literacy can be seamlessly and effectively embedded into disciplinary instruction.

Under a Bill and Melinda Gates Grant, 39 teachers and 6 system content specialists from 5 Georgia school districts piloted the use of Literacy Design Collaborative (LDC) tools in a series of training sessions. In LDC training, teachers learned to embed the Common Core Literacy Standards into literacy-rich content-area instruction. LDC templates guide teachers to write Teaching Tasks that demand high levels of relevance and rigor while requiring students to engage in evidence-based reading and writing. LDC tools further support teachers by suggesting instruction that logically scaffolds a reading and writing process that guides students to successful completion of the Teaching Task. However, teachers are free to adopt or adapt the suggested instruction based on their expertise regarding their content and their students' needs.

LDC training will expand and become more accessible to all Georgia teachers during the 2012–2013 school year. Social studies, science, and CTAE teachers from 58 Georgia school districts will participate in LDC training hosted by 9 of Georgia's 16 Regional Education Service Agencies (RESAs) between August 2012 and February 2013. By March 2013, we anticipate that each RESA will have at least one certified trainer who can offer ongoing LDC training to teachers in the local RESA's districts and schools. By incorporating RESA specialists in this process, we anticipate them taking the lead in making these strategies and tools pervasive in Georgia.

The GaDOE is also developing a web page that offers information about LDC and provides access to exemplary LDC instructional units that align with Georgia content standards in social studies, science, and technical subjects. Posted units have been designed, field-tested, and revised by Georgia teachers trained to use LDC tools. Additional units will be available as they are developed and field-tested by the new cohort of teachers in training.

Aside from hosting LDC training, RESA staff members, in partnership with GaDOE literacy specialists, are hosting summer and fall English language arts and literacy workshops. These workshops are designed to empower content-area teachers to infuse reading and writing instruction into their content. The GaDOE workshops demonstrate strategies and approaches that not only teach literacy skills but also make the content more accessible to students. Participants will learn to use research-based strategies such as read-aloud/think-aloud, double-entry notes, annotating texts, and SPAWN writing (Special powers, Problem solving, Alternative viewpoints, What if? Next) to support students as they read, comprehend, and respond thoughtfully to complex texts.

Another feature of the literacy training is taking a close look at the existing frameworks already available on the GaDOE website. These content-specific frameworks provide sample tasks and instructional sequences that provide students with opportunities to demonstrate mastery of content standards. After breaking down the literacy standards, teachers are able to determine which standards are addressed in the frameworks. For example, an 8th-grade Georgia History task might ask students to write a letter from a Georgia colonist to England arguing why his kinsmen should move to the New World. By incorporating primary and secondary sources into this letter, students address the key elements of the literacy standards. Indeed, rather than focusing on how to incorporate each individual standard, teachers come to understand and incorporate the three critical Common Core shifts identified by Student Achievement Partners:

1) Building knowledge through content-rich nonfiction
2) Reading, writing, and speaking that focuses on evidence from text
3) Regular practice with complex text and its academic language

A primary goal of both LDC training and the literacy sessions is to provide content teachers pathways to make the above shifts in instruction and student learning.

For the Literacy Standards to have a significant impact in all content areas, English language arts teachers will play a central role both as teachers of reading and writing and as local experts of best practices in literacy. Thus, the GaDOE English Language Arts Department is conducting a series of summer and fall academies with the RESAs to help teachers understand and make the transition from Georgia Performance Standards to Common Core Georgia Performance Standards. The academies build on and expand previous work and professional learning opportunities, including four nine-week literacy-focused units for grades 3–12, text complexity rubrics, webinars, and GPB live video-streaming sessions. The summer academy sessions focus on topics such as text-complexity, close-reading, backwards design, and how the shifts of Common Core will affect teaching practices.

The Georgia Department of Education has embraced the challenge of successfully implementing the Common Core Literacy Standards across all content areas. This challenge presents a rich opportunity for collaboration among GaDOE content area specialists, RESAs, school district instructional leaders, teachers, and other state and national education stakeholders to share expertise and design training that will enhance learning and make education work for all Georgia students.

Mississippi

In light of the push for a more rigorous and relevant curriculum, Mississippi is working hard to improve teaching and learning in the secondary grades. The Mississippi State Board of Education's vision is "to create a world-class education system that gives students the knowledge and skills that will allow them to be successful in college and the workforce and flourish as parents and citizens." By adopting the CCSS, Mississippi is committed to transforming the lives of secondary students and their academic achievement.

The Office of Curriculum and Instruction within the Mississippi Department of Education (MDE) has taken a proactive stance in disseminating information about the CCSS to secondary teachers throughout the state. Since adopting the standards in 2010, the MDE has worked with the six Regional Educational Service Agencies (RESAs) to coordinate grade-band appropriate professional development for teachers in northern, central, and southern Mississippi. During the spring of 2012, teachers and teacher leaders in grades 6–8 participated in a training-of-trainers (TOT) session that focused on determining text complexity of individual texts. The participants had the opportunity to discuss why text complexity matters and how the demand for choosing more complex texts affects instructional decisions. Participants were also introduced to the three dimensions of defining text complexity—quantitative measures, qualitative measures, and reader and task considerations—and spent time analyzing a text based on all three dimensions of text complexity. TOT sessions for grades 9–12 were conducted during July 2012. For each TOT session, school districts could send up to three participants who will be responsible for delivering the training at the local level.

The MDE, through the Office of Career and Technical Education (CTE), is collaborating with SEDL's Southeast Comprehensive Center to offer job-embedded professional development training in content-area literacy for student services coordinators and CTE instructional staff. The training provides classroom strategies supported by research and designed to increase engagement/motivation, vocabulary, comprehension, and expressive skills in CTE content areas. This training emphasizes a coaching/teaming approach in each content area and enhances supports for students. The over arching goal is to provide instructional support through literacy strategies that will improve test scores for the Mississippi Career Planning Assessment System (MS CPAS2) and the Mississippi Subject Area Testing Program (SATP). This effort will also better equip secondary teachers to prepare students for the assessments that will be aligned to the Common Core State Standards.

South Carolina

The Office of Teacher Effectiveness, in the Division of School Effectiveness, at the South Carolina Department of Education (SCDE) is working to provide educators with an array of multifaceted professional learning opportunities on content-area literacy in secondary grades that integrate theory and best practice. Through various technologies, job-embedded learning, and customized services, content-area teachers will advance their current practice in an effort to bolster student learning in South Carolina.

The Literacy Across the Content Areas initiative was originally developed and implemented during the 2009–11 academic years as a 2-year pilot focused on content area literacy in secondary grades to promote teaching the reading process through scaffolded support of students in all content areas, to promote the use of writing as a tool to deepen understanding of complex text, to build capacity in schools using a train-the-trainer model, and to build additional capacity across schools through vertical planning. As part of the pilot, participating schools and individuals were expected to implement effective, appropriate literacy strategies in classrooms; participate in collegial and reflective vertical planning conversations; and develop a schoolwide professional development plan for sharing effective literacy strategies. Professional learning support included seminars with national and state speakers, on-site literacy specialists' visits to participating schools, and funding to support implementation efforts. Participants were also granted opportunities to participate in graduate-level courses designed to deepen understanding of the reading process and to explore strategic teaching across content areas.

In light of South Carolina's adoption of the Common Core State Standards (CCSS), professional learning opportunities in year 3 of implementation have been refined to include statewide support to all districts and the development of strategically defined plans for future support. In spring of 2012, the Office of Teacher Effectiveness offered an English language arts (ELA) seminar series focused on the instructional shifts required for successful implementation of the Common Core State Standards. The seminar series included professional learning opportunities for district implementation team (DIT) members on the following topics: using high-quality literature and informational texts in a range of genres and subgenres, promoting vocabulary development and higher levels of comprehension in the content areas, and writing informational/expository texts. All of the offerings were streamed

live, recorded and archived on the South Carolina Common Core Support Site in an effort to accommodate those unable to attend the face-to-face session. In addition to the ELA seminar series, the Office of Teacher Effectiveness facilitated content-literacy sessions, specifically for teachers of history/social studies. These sessions allowed participants to explore, in depth, the Common Core State Standards for Literacy in History/Social Studies, Science, and Technical Subjects and determine appropriate instructional practices to meet the grade-level expectations. In an effort to bridge the gap between ELA and the other content areas, the Office of Teacher Effectiveness facilitated conversations between English language arts and social studies leaders across the state. The conversations highlighted the major shifts that need to take place across the content areas to ensure that students become literate in all disciplines. Similar conversations are planned for the state science leaders and leaders of technical subject courses.

Throughout the summer, the Office of Teacher Effectiveness hosted a number of ELA summer institutes. These three-day professional learning opportunities were designed specifically to help DITs understand the implications of the CCSS and devise practical plans for aligning reading and writing instruction to the CCSS. These sessions were to assist DITs in understanding the big picture of the CCSS while focusing on practical classroom application. As with the spring seminar series, the summer offerings were streamed live, recorded, and archived on the South Carolina Common Core Support Site.

Throughout the 2012–13 school year, the Office of Teacher Effectiveness will continue its efforts to provide professional learning opportunities for teachers of ELA, history/social studies, science, and technical subjects. A series of best practice seminars highlighting best practices in literacy will be offered to literacy educators. Follow-up sessions conducted by literacy specialists will be provided between each session to provide an on-going learning opportunity. The Office of Teacher Effectiveness will offer a similar series specifically designed to support best practices in content literacy.

Research has revealed unique reading and writing demands in the various disciplines. The CCSS requires an emphasis on reading and writing in history/social studies, science and technical subjects to prepare students for such demands. To this point, content-area teachers will need to emphasize aspects of literacy they may not have in the past to help students develop the knowledge, strategies, and dispositions they need to become more engaged, powerful readers in all content areas. As SCDE prepares for full implementation of CCSS by 2013–14, we recognize that for all content-area teachers, understanding the behaviors or strategies of proficient readers of academic texts is only the first step for observing and assessing students' use, or non-use, of specific reading strategies. Through continued participation in focused professional learning opportunities, SCDE will strive with renewed effort to increase students' learning and achievement by improving content-area teaching and learning, which will support students' independent use of metacognitive reading strategies.

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