

chapter 1

Language and Reading in Secondary Content Areas

Not only is language at the centre of all transmission of educational knowledge, whether arts, social science, natural science or technology, but...as one moves across from one subject area to another language is likely to be functioning in rather different ways.

—Halliday, 2007a, p. 295

Secondary school teachers today are challenged to engage an increasingly diverse student body in learning specialized and complex subject matter. At the same time, students are often poorly prepared to read the texts that present disciplinary knowledge. This book offers middle and high school teachers new language-based strategies for helping students read advanced texts with greater understanding and engagement. It introduces **functional language analysis**, an approach that enables students to read closely and critically and develop an understanding of how language works in different subjects. It describes the particular features of texts in science, history, mathematics, and language arts and offers strategies for talking about these features in ways that connect with the curricular goals in those subjects.

CHALLENGES FOR SECONDARY TEACHERS

Many adolescents are unable to read the often dense and complex texts of secondary school subjects and are not prepared for the challenges they will face in college and workplace reading. More than eight million students in Grades 4–12 are struggling readers, and 26 percent of eighth

graders and 23 percent of twelfth graders are unable to demonstrate an overall understanding of what they read, with fewer than one-third of eighth and twelfth graders reading at levels necessary for school success (Perie, Grigg, & Donahue, 2005). In some secondary schools, as much as 75–80 percent of the students struggle with academic texts (Carnine & Carnine, 2004). Poor and ethnic minority students, as well as those for whom English is not the primary language, are heavily and disproportionately represented among struggling adolescent readers. For example, only 4 percent of eighth grade English language learners are reading at grade level or higher, compared to 31 percent of all eighth graders (Short & Fitzsimmons, 2007).

Few secondary teachers have the expertise needed to help their students develop “advanced literacy” (Schleppegrell & Colombi, 2002) in curriculum content areas. In a recent report, Berman and Biancarosa (2005, p. 8) note:

Often middle and high school teachers view themselves as content specialists. They sometimes ignore the problems of their struggling readers or compensate for them by giving students notes from a reading assignment or reading a text aloud instead of helping students learn to extract information from a text themselves. These teachers do not have the training or knowledge to do more, and they are often frustrated that remediation services are less available and less effective for their struggling adolescent students than they are for struggling younger readers.

This and other reports (e.g., Alvermann, 2001; Biancarosa & Snow, 2004; Heller & Greenleaf, 2007; IRA & NMSA, 2001; Moore, Bean, Birdyshaw, & Rycik, 1999; NCTE, 2004, 2006) underscore the need to continue reading instruction in the secondary school. They also suggest that secondary reading instruction should go beyond basic skills and strategies—such as phonological awareness, phonics, and fluency—that are typically emphasized in the elementary school. Recognizing that every content area has its own characteristic literacy practices, these reports call for the development of subject-specific reading skills among adolescents, urging secondary teachers to incorporate literacy strategies into subject matter teaching.

Biancarosa and Snow (2004), for example, suggest that teachers emphasize “the reading and writing practices that are specific to their subjects, so students are encouraged to read and write like historians, scientists, mathematicians, and other subject-area experts” (p. 15). Simi-

larly, the National Council of Teachers of English (NCTE) recognizes that

the academic discourses and disciplinary concepts in such fields as science, mathematics, and the social studies entail new forms, purposes, and processing demands that pose difficulties for some adolescents. They need teachers to show them how literacy operates within academic disciplines. In particular, adolescents need instruction that integrates literacy skills into each school discipline so they can learn from the texts they read. (2006, p. 5)

The NCTE (2004) further suggests that teachers of adolescents receive support and professional development that enable them to “teach literacy in their disciplines as an essential way of learning in their disciplines” and “create environments that allow students to engage in critical examinations of texts as they dissect, deconstruct, and re-construct in an effort to engage in meaning making and comprehension processes” (p. 3). Standards for middle and high school literacy coaches, charged with the responsibility of helping secondary teachers understand the demands of literary, mathematics, science, and social studies texts, also emphasize discipline-specific reading strategies (IRA, 2006). Recommendations for English language learners suggest that these students need to engage in instructional practices that simultaneously support academic literacy development and content area learning, including interacting with text, asking and answering text-based questions, and focusing on text structures and discourse features of different types of texts (Meltzer & Hamann, 2004, 2005).

The key to developing discipline-specific reading skills and strategies is in understanding how knowledge is presented in characteristic patterns of language in each subject. This book prepares teachers for this important work by offering an approach to secondary content area reading that engages students in analyzing the ways language constructs knowledge in science, history, mathematics, and language arts. The approach, called **functional language analysis**, provides a way of talking about language that enables readers to better understand the texts they read and to engage with the purposes and values of the disciplines they are being apprenticed into.

SPECIALIZED LANGUAGE IN THE SECONDARY SCHOOL

Students do not learn to read once and for all in the elementary years. Elementary school reading cannot fully prepare readers for the literary

works, historical documents, scientific explanations, and mathematical problems that challenge secondary school students (Fang, 2008). We learn to read the kinds of texts we practice and engage with, and each of the subject areas of secondary schooling confronts students with texts constructed in patterns of language they are unlikely to have encountered in the texts they read in the early grades. As they move into secondary school, students engage in new contexts of learning that are further removed from their personal lives and everyday contexts. The texts they are expected to read regularly often deal with specialized topics that are different from the typical subject matter of reading materials in the elementary grades. As the knowledge students engage with becomes more formalized and complex, so too do the patterns of language that construct that knowledge (Christie, 1998; Halliday, 1993; Schleppegrell, 2004). These patterns are not just complexities that construct barriers to privilege “insiders.” Instead, they are functional and necessary for enabling the accumulation of knowledge and advancement of a field.

Advanced disciplinary knowledge requires specialized language, as complex meanings cannot be conveyed with precision in everyday language. Secondary-level science, social studies, language arts, and mathematics use patterns of language that enable these disciplines to develop theories, to engage in interpretation, and to create specialized texts. These patterns of language, or **grammar**, are the focus of this book. We use the term *grammar* not to refer to a set of rules for correctness, but instead to focus on the systems of the English language that are resources for meaning making.

Let’s take a look at the kind of reading this book addresses. This passage from a tenth grade history textbook (Beck, Black, Krieger, Naylor, & Shabakam, 2003, p. 423), for example, comes from a section analyzing the causes of the Great Depression:

By 1929, American factories were turning out nearly half of the world’s industrial goods. The rising productivity led to enormous profits. However, this new wealth was not evenly distributed.

This passage has technical words that situate it in economic history (e.g., *productivity*, *profits*). But the challenge for students is not just in the vocabulary. Students also need to recognize the way the authors have packaged the information to build from sentence to sentence. *The rising productivity* refers back to the point in the previous sentence that *by 1929*,

American factories were turning out nearly half of the world's industrial goods. Enormous profits are recast in the following sentence as *this new wealth*. Sentences in history texts are typically constructed to present and then repackage new information, and students can learn to recognize this common pattern of information flow.

A focus on language can also help students recognize the point of view being presented, an aspect of critical reading. The sentence *However, this new wealth was not evenly distributed* suggests that the historian may be raising concerns about the growth in productivity and profits. The conjunction *However* signals this change in focus, and in fact the next paragraphs of the text develop the problems that arose from the uneven distribution of wealth. Another aspect of historical interpretation is the attribution of agency and cause. As even this brief passage shows, the language of history texts at the secondary level often attributes agency to abstractions such as *this rising productivity* or to non-human actors such as *factories*. Understanding that there are real historical actors behind these abstract or institutional agents and considering the perspective that the abstraction offers help students recognize how implicit or explicit interpretation is always present in history texts.

In science, the language patterns that construct reports, explanations, and expositions are also distinct from those that construct everyday knowledge and from those that construct other subjects, as this excerpt from a sixth grade science textbook (*Science Voyages*, 2000a, p. 558) illustrates:

The cells that line the nasal cavities have cilia, tiny hairlike extensions that can move together like whips. The whiplike motion of these cilia sweeps the mucus into the throat, where you swallow it.

This short excerpt contains technical vocabulary (e.g., *cells*, *nasal cavities*, *cilia*, *mucus*) that constructs specialized content. Two long noun groups, *the cells that line the nasal cavities* and *tiny hairlike extensions that can move together like whips*, allow the author to pack a large load of information into the first sentence. *The whiplike motion of these cilia* in the second sentence is a rewording of *cilia...can move together like whips* in the first sentence. This grammatical repackaging turns a verb, *move*, into an abstract noun, *motion*, which is then further modified with *whiplike*, an adjective that is itself repackaged from the noun *whips*. By restating what is presented in the first sentence and making it the point of departure for

discussion in the second sentence, the author is able to elaborate on the function of the cells that line the nasal cavities. This way of structuring text creates a discursive flow that facilitates scientific reasoning, but it also challenges students to understand densely organized information. Learning how to work with students to reveal the meanings in these complex language patterns can help teachers achieve their curricular goals more effectively.

In mathematics, the language patterns that construct word problems are also distinctive, as illustrated in this example from a high school calculus textbook (Anton, 1992, p. 509):

At time $t = 0$, a tank contains 4 lb. of salt dissolved in 100 gal. of water. Suppose that brine containing 2 lb. of salt per gallon of water is allowed to enter the tank at a rate of 5 gal./min. and that the mixed solution is drained from the tank at the same rate. Find the amount of salt in the tank after 10 min.

An obvious feature of this word problem is that it uses language, mathematics symbolism (e.g., numbers, the equation), and mathematical expressions (e.g., *rate* expressed as *gal/min*). Mathematics texts typically draw on meaningful configurations of language, mathematics symbolism, and visual display (e.g., graphs, diagrams), and students must be able to make sense of the ways these different systems interact. They also need to recognize the language features that indicate what a mathematical text is asking them to do. This calculus text, for example, directs the students to *suppose* and to *find* in solving the problem. It contains both specialist language (e.g., *at a rate of, brine, per gallon*) and everyday words that assume specialized meanings (e.g., *at, suppose, solution, find*). Long, complex noun groups, such as *4 lb of salt dissolved in 100 gal of water* and *brine containing 2 lb of salt per gallon of water*, have to be recognized as constructing entities that need to be manipulated in some way to solve the problem. Everyday meanings such as “salt and water are mixed together” and “how much salt” are constructed here in abstract noun groups as the *mixed solution* and *the amount of salt*, respectively. This repackaging of meanings is a common means of creating mathematical concepts to be manipulated and transformed in problem solving. Finally, passive voice constructions such as *is allowed to enter* and *is drained* enable the writer to maintain a focus on the flow of water rather than on the person who performs the acts, but this representation can be alienating and difficult for students to understand. These features of mathematical language make mathematics word problems challenging,

but teachers can address these challenges through explicit discussion of the language features and how they can be analyzed in solving the problems.

In literary texts, language is a creative and artistic resource. Language patterns of all kinds are made use of by writers to entertain, divert, challenge, and educate readers through literary texts. Secondary school students read poetry, drama, essays, and fiction and engage with authors from different time periods, cultures, and literary styles. The patterns of language they are expected to read expand dramatically as they explore literary themes. When students study more complex literary texts in secondary school, there are many opportunities to explore the use of language patterns for aesthetic ends. Take, for example, this excerpt from Chapter 3 of Jane Austen's (1818/1998, pp. 22–23) *Persuasion*:

“Then I take it for granted,” observed Sir Walter, “that his face is about as orange as the cuffs and capes of my livery.”

Mr. Shepherd hastened to assure him, that Admiral Croft was a very hale, hearty, well-looking man, a little weather-beaten, to be sure, but not much, and quite the gentleman in all his notions and behaviour; not likely to make the smallest difficulty about terms, only wanted a comfortable home, and to get into it as soon as possible; knew he must pay for his convenience; knew what rent a ready-furnished house of that consequence might fetch; should not have been surprised if Sir Walter had asked more; had inquired about the manor; would be glad of the deputation, certainly, but made no great point of it; said he sometimes took out a gun, but never killed; quite the gentleman.

As Leech and Short (1981, pp. 325–326) explore in their discussion of the representation of speech and thought in literary texts, the speech of Sir Walter is given in the full direct speech form, which establishes him as a man confident of his place in the world. By contrast, Mr. Shepherd's speech is of an indirect kind; that is, it is reported and not quoted by the narrator. In addition, it is truncated, creating the sense of a man falling over himself to get everything said. While the passage is a third person narration, the narrator is channeling the character by adopting his style of speech—indeed, by virtually quoting directly the words of Mr. Shepherd—and in so doing, brings the reader into a more intimate relationship with the character. Thus, Mr. Shepard is depicted as a deferential, inexhaustible man—a man trying to persuade himself rather than Sir Walter.

This passage from Austen is one small illustration of linguistic patterning for literary effect. When students can explore patterns of this kind in literature, they can go beyond impressionistic or intuitive evaluations of a literary text. At the same time, they are engaged in learning about what language is like and how it is structured.

The language patterns that construct these academic texts draw on the grammatical systems of English in different ways from those used in everyday informal interactions. They also vary from one subject to another. The history and science textbooks we have quoted represent knowledge that has been recontextualized for educational purposes, drawn from professional (or disciplinary) discourses. The text of the mathematics word problem attempts to contextualize mathematical knowledge in a situation that students can visualize or relate to, but at the same time embeds mathematics content that has to be understood in abstraction from any particular context of situation. The language of a literary text recreates life's experiences, but it does so in ways that allow artistry, allusion, and the embedding of universal human themes. Each discipline, then, confronts students with texts that draw on different sets of language features to construct content knowledge in distinctive ways. It is for this reason that Unsworth (2001, p. 11) has argued that "it is no longer appropriate to talk about 'literacy across the curriculum.' Instead there is a need to delineate 'curriculum literacies,' specifying the interface between a specific curriculum and its literacies rather than imagining there is a singular literacy that could be spread homogeneously across the curriculum." This notion of multiliteracies motivates the work in this book as we illustrate what is characteristic of different school subjects through analysis of how the English language is used in the texts students read. We provide strategies for talking about language and text that respond to the goals and purposes of each subject and offer teachers and students new ways of engaging with text.

This focus on language offers a complementary approach to activities that enable teachers to create effective contexts for learning and to engage with students' backgrounds and prior knowledge. Current approaches to content area reading typically recommend teaching students to predict, clarify, visualize, and summarize; make connections and inferences; ask questions; do think-alouds; look for key ideas in the text; use graphic organizers; take notes; or skim and scan (e.g., Deshler, Ellis, & Lenz, 1996; Fisher, Brozo, Frey, & Ivey, 2007; Vacca & Vacca, 2005). These strategies are valuable, but many of them assume students can already make sense of the dense, complex language in academic texts. Functional language

analysis goes beyond—and adds to—these strategies by providing tools for deconstructing texts, sentence by sentence, to help students process unfamiliar discourse patterns and talk about how meaning is constructed through language choices. This gives students the language analysis skills needed to effectively utilize other reading strategies, enabling them to engage with content more deeply and critically.

CONTENT AREA TEACHERS AND READING INSTRUCTION

To succeed in secondary schooling and beyond, students need to develop specialized literacies relevant to each content area as well as a critical literacy that they can use across content areas to engage with, reflect on, and evaluate specialized and advanced knowledge. Teachers play an important role in apprenticing their students into disciplinary knowledge and practices. To do this, they need to develop expertise for helping students engage with the texts of their discipline. Text is the primary medium through which disciplinary knowledge is produced, stored, communicated, and critiqued; as a result, text reading constitutes an integral part of disciplinary practices in our society. This makes an emphasis on reading and text in content learning appropriate and necessary. Scientists, mathematicians, historians, novelists, and other specialists regularly read the professional literatures in their fields, and they do so with care, critical-mindedness, and healthy skepticism. Without text and without reading, it is practically impossible for them to engage in the social practices that constitute their disciplines. Likewise, to learn the content of different subject areas and to engage in disciplinary practices, students need to develop the ability to read (and write) the texts of these subjects.

Engaging all students as readers and writers across subject areas is also a matter of social justice. For their own personal development and for effective participation in a democratic society, students need to be able to read with comprehension and critically evaluate the texts they encounter. They need to read and reason with texts of varying types and complexities and to engage with knowledge that in today's world transcends national and cultural borders.

Reading proficiency develops when students are able to see how language works in text, and learning to see this comes through interaction with experienced readers who can make the meaning and structure available to the novice. Content area teachers—teachers of science, social studies, mathematics, and language arts—are subject matter experts

and rightly focus their attention on the subject matter knowledge to be developed by their students. But while knowledge about the content to be taught is a prerequisite for good teaching, being an expert in the discipline is not enough. Teachers also need knowledge about how to make the content available to students, and teachers who can talk with students about both the structures and the meanings of the texts can better engage students and help them learn content more effectively.

As content specialists, secondary teachers are also typically “good readers” in their subject areas, familiar with the patterns of language that construct the texts they read and teach. They understand the meaning without even being aware of the linguistic challenges. For secondary school students, on the other hand, the patterns may not be familiar. The knowledge they are struggling to learn is presented to them in texts they often perceive as dense and abstract, with technical language and complex structure that can be alienating and challenging. Attention to this language and how it works in different subjects can help students develop content knowledge at the same time they develop more advanced reading skills. Explicitly showing students how to read advanced texts can be a part of teaching every middle and high school subject and at the same time can enhance disciplinary learning. As teachers of specialized subject matter, secondary school teachers are best positioned to help students recognize the specialized ways language works. The functional language analysis approach presented in this book provides a meaning-based metalanguage teachers can use to talk with students about the texts they read and offers concrete strategies that enable teachers to be explicit about how language works to present complex, technical, and abstract knowledge in their content areas. The approach supports content learning at the same time it helps students develop advanced literacy skills.

FUNCTIONAL LANGUAGE ANALYSIS

Functional language analysis is based in systemic functional linguistics (SFL), a theory of language that provides a framework for demonstrating how meaning is constructed in particular language choices (see, for example, Eggins, 2004; Lock, 1996; Schleppegrell, 2004; and Thompson, 2004 for accessible introductions to the theory). SFL sees language as a resource for making meaning in the same way that color is a resource for painters to create artwork. We make different kinds of meaning for different purposes and contexts by drawing on the different options that language affords, just as painters use different combinations of colors

from their palette to create different effects with their paintings. Developed by linguist Michael Halliday in the past 40 years (e.g., Halliday, 1978; Halliday & Matthiessen, 2004) and used by educators and researchers around the world, SFL provides the foundation for the pedagogical principles and ideas in this book and enables us to describe the linguistic features of texts in different subject areas by showing how those features enable the text to mean what it does.

The meaning that we are concerned with is of three kinds: the **experiential meaning** (what a text is about), the **interpersonal meaning** (the interaction, interpretation, attitudes, and judgments embedded in a text), and the **textual meaning** (how a text is organized as a coherent message). Every use of language, whether spoken or written, involves saying something about the world (the experiential meaning), enacting a social relationship of some kind (the interpersonal meaning), and presenting a message in a coherent way (the textual meaning). In fact, each **clause** constructs meanings of all three kinds, contributing to the overall meaning constructed in a text.

The clause is the basic element of a text, and this book helps students recognize how these three kinds of meaning are simultaneously constructed in the grammar of each clause. From the point of view of experiential meaning, students will learn to recognize **processes**, constructed in verb groups, **participants**, constructed in noun groups, **circumstances**, constructed in prepositional phrases and adverbs, and **conjunctions** that link clauses. From the point of view of interpersonal meaning, students will learn to recognize that each clause constructs a relationship between the author and the reader or among the characters in the text through the **mood system**, which allows us to make statements, ask questions, and issue commands, as well as through the **modality system**, which enables us to express evaluative meanings related to possibility, usability, obligation, and inclination. And students will learn to recognize how each clause constructs textual meaning as it begins from a particular point of departure and moves to present something new, using the system of **Theme/Rheme** structuring.

This three-dimensional focus on language—on how experiential, interpersonal, and textual meanings are constructed in the language—draws attention to the knowledge and values of a discipline and so helps us focus on subject-specific ways of making meaning and the patterns of language that are typical of the texts in each subject area. The functional linguistics terms are a meaning-based metalanguage that is developed in the following chapters as we illustrate how meanings of all these three kinds are relevant to text comprehension and composi-

tion in all content areas. Throughout, we show how readers can apply functional language analysis as they use the metalanguage to explore texts in meaningful ways.

Functional language analysis offers practical strategies for supporting students' engagement with text through detailed analysis of language and accompanying discussion about the meanings of the language patterns. The approach provides a way of talking about language that enables teachers and students to recognize language patterns that are typical and functional in the texts of different content areas. Using functional language analysis, students simultaneously learn **through** language and **about** language, better understanding content at the same time they gain a better understanding of the language used to construct that content. By helping students see how meaning is presented through language in their disciplines, teachers enable students to become independent readers who can reflect in critical ways on what they read. Functional language analysis also offers teachers strategies for evaluating the difficulty of reading materials and the quality of students' writing (Fang, 2005a, 2005b, 2006; McKenna, 1997; Schleppegrell, 1998). It has helped secondary teachers support students' reading development (Hammond, 2006; Schleppegrell & de Oliveira, 2006) and expository writing development (Schleppegrell, 2005; Schleppegrell, Greer, & Taylor, 2008), evaluate what makes a text more effective (Macken-Horarik, 2006; Mohan & Slater, 2004), and improve students' academic language performance (Boscardin & Aguirre-Muñoz, 2006).

OVERVIEW OF THIS BOOK

This book presents concrete strategies for reading and analyzing texts in four core secondary school subject areas—science, history, mathematics, and language arts. Each chapter illustrates new ways of engaging students with texts to enable their participation in learning, and each chapter offers linguistic strategies for helping students recognize how different language choices present specialized, abstract, and multilayered meanings. As a whole, the book presents a comprehensive approach to analyzing and interpreting texts that addresses the key linguistic challenges associated with the development of advanced literacy in curriculum content areas.

We begin with science in Chapter 2 by analyzing the three kinds of meaning through a focus on the noun group in science texts. The noun group is a key structure in all uses of language (Fang, Schleppegrell, &

Cox, 2006), but in science it takes on particular functional loads. Noun groups of varying complexities enable scientists to create technical taxonomies, construct scientific theories, transcategorize processes and qualities, distill everyday experiences, expand information, combine pieces of argument for logical reasoning, embed perspectives and ideologies, and provide cohesive linkages within a text. We illustrate how the technicality and abstraction of science texts are revealed in the way that noun groups are typically used to put the focus on experiential meaning. We introduce functional metalanguage terms for talking about the elements of the clause as processes, participants, and circumstances. We show that sometimes processes or qualities are realized in noun groups as nominalizations and describe the role of nominalization in the formation of a cohesive text as it enables information to flow and reasoning to develop. We also demonstrate how abstract and depersonalized nouns enable scientists to embed ideology and scientific values in their writing, part of the interpersonal meaning in science texts. We then show that it is the complex noun group that accounts for the density of information in science texts. We introduce the strategy of analyzing Theme/Rheme structure to focus on textual meaning and show how scientists often use movement from Rheme to Theme to present scientific information and develop arguments. These functional language analysis strategies enable teachers and students to explore how the technicality of science interacts with other features of science discourse—abstraction, density, and tightly knit structure—to develop sequences of logical reasoning and scientific worldviews.

In history, two key challenges for students are recognizing the interpretation that is always present in history texts and recognizing how time and cause interact as the historian presents a reconstruction of events. Students are often asked to identify causes and effects in history or to recognize how particular events and actors influenced other events and actors. Having tools for recognizing how authors construct these time-cause relationships gives students power in adopting similar tools themselves or in critiquing the choices authors have made. In Chapter 3, we introduce the notion of four kinds of processes (**doing, saying, sensing, being**) to enable discussion of experiential meaning—that is, discussion about what is happening in the text. This is linked to interpersonal meaning as we discuss how the perspective of the author is presented in participants in the clause and in the way reasoning is made explicit or left implicit. These features are part of the interpretation an author infuses into any text about history. We also focus, from a textual

perspective, on how the text is organized, analyzing how time and cause are constructed by looking at clause Themes and recognizing sequencing through time, construction of moments in time, and rhetorical structuring that explicitly explains historical events through thesis-driven arguments. We describe the changing patterns in textbook passages as events are chronicled, historical debates are reconstructed, and explanations that interpret history are provided, identifying the language features that can be analyzed to explore these patterns.

Mathematics teachers sometimes think that language is less relevant to them and may dismiss the notion that attention to language would be important. In Chapter 4, Jingzi Huang, a language educator, and Bruce Normandia, a mathematics educator, collaborate in bringing linguistics and mathematics together to show the importance of language in comprehending and solving word problems in algebra and geometry. They illustrate how attention to patterns of language can help students identify what a problem is asking them to do, what key information is provided, and what mathematical concepts and operations are relevant. They show how solving word problems requires simultaneous engagement with language, mathematics symbolism, and visual display, focusing on the key role that language comprehension plays in this engagement.

Chapter 4 illustrates the analysis of experiential meaning in showing how recognizing processes, participants, and circumstances can help students identify key information provided in a word problem and the mathematical entities to be manipulated in solving it. The analysis of clause mood is introduced to offer tools to identify what the reader is directed to do in a word problem, an aspect of interpersonal meaning, as the author of a word problem questions or commands the reader. The chapter also highlights some textual meanings in word problems through analysis of references, ellipsis, and conjunctions that reveals what needs to be recovered by the reader for full understanding. These analyses help identify some of the linguistic challenges involved in reading word problems, and an approach to unpacking the language of algebra and geometry word problems is presented that can also be applied to other mathematics texts.

Language arts teachers are aware of the importance of language in their discipline, but few of them have been introduced to a meaning-based grammar for talking about language itself in systematic ways that can help students engage in principled interpretation of literary texts. Chapter 5, by Annabelle Lukin, presents linguistic tools for exploring meaning in literary texts. Lukin, who is a linguist based in Australia (where the functional language analysis approach was first developed),

suggests that grounding the interpretation of literature in concrete analysis of language helps “overcome the purely private nature of literature as a school subject, where the pupil is left guessing as to what reaction to a particular work the teacher expects of him” (Halliday, 1982, p. 12). She illustrates how the key themes in a literary work can be brought to the foreground through systematic analysis of language at different levels—graphology, word, grammar, and rhetorical organization.

Chapter 5 presents a comprehensive language analysis of experiential, interpersonal, and textual meaning and also introduces analyses of graphological and sound patterns to reveal important features of a poem’s structure and rhetorical organization. Experiential meanings are illuminated through the analysis of the processes, participants, and circumstances to show who is engaged in doing, sensing, saying, and being; key motifs in a literary text are revealed through analysis of lexical and referential chains. The notion of interpersonal meaning is developed through an analysis of mood that focuses on speech functions, showing how two characters in a poem interact with each other. In addition, the role of modality in presenting meanings about possibility, certainty, obligation, and other features of interpersonal meaning is introduced. From the point of view of textual meaning, the chapter shows how analyzing Theme helps us see what the author takes as the point of departure for each clause and which characters’ voices are foregrounded.

Language arts is rich with texts and text types, but the analysis of a poem in Chapter 5 illustrates the depth of insight that can be gained through systematic exploration of language from a functional perspective. While some literary genres such as novels or plays may not lend themselves to comprehensive analysis of a whole text, students can use the functional approach to analyze language at key moments in a text, to analyze the kinds of processes different characters engage in throughout a work, to look at how an author represents different characters in language, and to explore how the author colors the text with language choices of various kinds.

In Chapter 6, we review the metalanguage that we have developed throughout the book and show how it relates to more traditional ways of talking about grammar. We then offer suggestions for incorporating functional language analysis into regular instructional activities. Literacy development and content learning are intrinsically linked, so students’ reading ability can develop along with their content knowledge if teachers have strategies for enabling students to learn grade-level content through a functional focus on language. Chapter 6 describes how developing students’ understanding about the ways grammatical resources

are used to construct meanings in different school subjects can be an integral part of secondary reading pedagogy as teachers focus explicitly on how language works in their respective fields. Through this work, teachers can make visible the knowledge and values of their discipline and engage students in examining texts critically. The activities we suggest also enable students to interact with text in collaborative ways as they engage in discussion about how language constructs knowledge and ideology. In addition, we suggest how this functional approach can be applied to other key areas of literacy instruction in support of content learning, as it gives teachers tools for conducting reliable assessments of text difficulty and quality, guiding student writing development, and supporting cross-disciplinary and schoolwide curricular collaboration.

As we explain how meaning is built in language by looking at particular texts, we see how language works in different subjects. The kinds of meanings that are in focus are relevant to that subject, but the language analysis strategies can also be used across subjects in exploring different kinds of texts. Teachers can benefit from reading all chapters and not just the one related to their particular subject, as each chapter offers something different that can be applicable and valuable to other content areas as well. While each discipline has its own set of textual practices and ways of using language, and while each chapter highlights those practices and the particular ways that language constructs knowledge, teachers may see connections across subjects as they read about the texts of other disciplines. Discussion as to why a particular subject uses language in ways that are similar to or different from other subjects can engender deeper understanding and stimulate further inquiry. Teachers may also recognize that there are some kinds of texts in their field that are similar to those presented from other subjects. We invite teachers to find connections across disciplines and engage with the worlds of other subjects to find that their own subject area is illuminated in this process. Toward this end, we also provide a study guide in the Appendix to facilitate discussion and exploration of the chapters in the book.

Reading secondary school texts is hard, and it takes time to develop reading proficiency in a range of subjects. Many students get little experience with academic ways of using language outside of school, so they need explicit focus in the classroom on the ways language varies and makes meaning in the texts of secondary school subjects. The content area teacher is best placed to develop this explicit focus. This book offers teachers a new and powerful way of teaching secondary reading that

supports the development of discipline-specific literacies in content area classrooms. As teachers help students see how language is used in the particular texts and contexts of their subject areas, students simultaneously learn the content presented in these challenging texts and become proficient in using language to read and write in the ways expected in the disciplines. By embedding language analysis in content area reading instruction, teachers support deeper learning of content at the same time they provide their students with tools for advanced learning.