

TEACHING READING IN THE CONTENT AREAS

If not me, then who?

3rd Edition

Acknowledgments	v
Introduction	vii
Part I	
01 The Knowledge Gear	1
02 The Strategies Gear	10
03 The Goals & Dispositions Gear	32
04 Creating Literacy-Rich Environments	48
Part II	
Reading Strategies	66
Appendixes	
Appendix A: Metacognitive Reading Awareness Inventory	219
Appendix B: Ten-Point Planning Checklist	221
Appendix C: Classroom Instruction That Works Strategies Matrix	223
References	227
Index	235
About the Authors	241

01

The Knowledge Gear

“We are evolving from being cultivators of personal knowledge to being hunters and gatherers in the electronic data forest.”

—Nicholas Carr, *The Shallows: What the Internet is Doing to Our Brains*

Twenty-first century science offers a new way of looking at and understanding the workings of the human brain. We now know, for example, which areas of the brain activate when we decipher a written word, that a genetic variation might be at the root of dyslexia, and that the recycling of neural networks in our brains may be what allows us the uniquely human abilities of reading and writing. Neuroscientist Stanislas Dehaene (2009) refers to this new way of looking at reading and learning as the “neurocultural approach.” Although these theories and understandings are just now materializing, there have long been five basic principles with implications not only for the learner but also for the content-area teacher who wants to plan instruction that helps students improve both their reading comprehension and their content learning.

Revisiting the Five Basic Premises of Teaching Reading

As columnist, author, and cultural observer David Brooks observes, we experienced a scientific revolution during the last 30 years that revealed more about the human brain than had had been discovered in the previous 3,000 years. He asserts, “Brain research rarely creates new philosophies, but it does validate some old ones” (2011, p. xiii), and we agree. Using today’s lens of brain-based research to look at the five premises that cognitive science previously identified as basic to teaching content-area reading skills, we find they still hold true.

Premise 1: The reader constructs the meaning of a text

A reader actively constructs meaning by making seemingly logical, sensible connections between new information and existing knowledge about a topic (Duke & Pearson, 2002). Researchers believe that what we know from prior knowledge and past experience is stored in knowledge “frameworks” called schemata. One way to think of schemata is to visualize mental maps that provide a structure or guide for understanding new material. Schemata are not distinct from one another; rather, they are highly interrelated and significantly impact comprehension. Learners draw on these schemata to make inferences and predictions, to organize and reflect on new information, and to elaborate on that content (Vacca & Vacca, 1993).

The brain is a dynamic organ, shaped to a great extent by our experiences. When learners are confronted with new information, they try to make sense of it by seeing how it fits with what they already know. For example, we use the schema of “driving a car” the first time we try to operate a boat, jet ski, or snowmobile. Alternatively, we might use the familiar schema of our local neighborhood’s grid of streets to get our bearings in a new city. To further illustrate the power of these schemata, try reading the following passage:

I cdnuolt blveiee that I cluod aulacly uesdnatnrd what I was rdanieg. The pha-
onmneal pweor of the hmuan mnid, aoccdrnig to a rscheearch at Cmabrigde
Uinervtisy, it dseno’t mtaetr in what oerdr the ltteres in a word are, the olny
iproamtnt tihng is that the frsrit and last ltteer be in the rghit pclae.

How did you do? This simple exercise illustrates the fact that deriving meaning is not just a matter of reading words on a page. In order to comprehend, the reader selects a schema that seems appropriate and connects it with the new information, filling in gaps so the text makes sense. “Teachers have a critical role in assisting learners to engage their understanding, building on learners’ understandings, correcting misconceptions, and observing and engaging with learners during the processes of learning” (Bransford, Brown, & Cocking, 2004).

An interesting display of this phenomenon is in the experiments of Dutch clinical psychologist Christof van Nimwegen. In 2003, while studying computer-aided learning, he found that participants using “helpful” software programs with features that provided lots of clues designed to more easily solve a puzzle did not do as well as participants who struggled to solve the puzzle with a “bare-bones” program. After eight months of repeated experiments, van Nimwegen concluded that participants who did not rely on their computers to handle cognitive tasks built knowledge structures, or schemata, in their brains to apply to new situations (van Nimwegen, 2008). In the long run, the home-grown schemata beat out the fancy manmade technology. There isn’t always a “winner” in technology versus human brain competitions. In February 2011, IBM’s supercomputer Watson handily beat

two former *Jeopardy!* champions on the nightly quiz show, providing not only entertainment but also further encouragement to learn more about the brain's machinations.

Premise 2: Prior knowledge plays an important role in learning

Prior knowledge includes the content knowledge and personal experiences that readers bring to any learning task. According to Vacca and Vacca, “the single most important variable in learning with texts is a reader’s prior knowledge” (1993, p.13). By activating prior knowledge and generating interest, a teacher creates a context for students to approach reading with purpose and anticipation (Vacca & Vacca, 2005). Strategies that help readers “take out and dust off” prior knowledge before reading enable them to make more connections and learn more while they read. Those readers whose prior knowledge is accessible and well developed remember more from their reading than do readers whose prior knowledge of the topic is limited. Research and common sense tell us that the more a reader brings to a text in terms of knowledge and skills, the more he or she will learn and remember from it (Anthony & Raphael, 1989; Dole, Valencia, Greer, & Wardrop, 1991).

Nevertheless, accessing prior knowledge is not always easy. If information in the text is unclear, disorganized, or does not make sense to students, they may struggle to call up relevant prior knowledge. In addition, their purpose for reading will influence how they use their prior knowledge to make connections to the new information; this, in turn, affects comprehension. In one study, students who were told to read a description of a house as if they were home buyers were able to recall its location and number of bathrooms, whereas students who were told to read the selection from the perspective of a burglar remembered information about security systems and the number and location of windows (Jones, Palincsar, Ogle, & Carr, 1987).

Students may also have difficulty activating prior knowledge if that knowledge is what some researchers refer to as “inert knowledge”—knowledge students have but can’t access because they lack the appropriate strategies that help learners retrieve what they know (Bransford, Sherwood, Vye, & Rieser; 1986). As classrooms grow more diverse, it’s important to remember that no two students bring the same backgrounds and experiences to class, and no two students will comprehend a text passage in the same way. The same classroom may include students whose families are highly educated and encourage reading of all kinds from an early age, students whose experience of the world is limited to what they see on television, and students for whom English is a second—or even a third—language. You can help all students prepare for reading by incorporating prereading strategies, such as brainstorming, providing analogies, or using advance organizers, all of which serve to activate and assess learners’ prior knowledge. Eliciting this knowledge gives readers a structure on which to attach new knowledge. Building and activating prior knowledge, particularly in a content-area classroom, is a powerful predictor of comprehension.

Premise 3: Reader comprehension depends heavily on metacognition

Metacognition is the ability to think about and control the thinking process before, during, and after reading. Students who have learned metacognitive skills can plan and monitor their comprehension, adapting and modifying their reading accordingly. Depending on the type of written material, the delivery medium (electronic or print), and their reasons for reading, students will decide whether to skip, skim, and flip or to read carefully. Throughout this process, students monitor the meaning they are constructing, and when the text (e.g., an editorial in an online news magazine) does not meet their purposes—such as reading for evidence to support their own opinion or argument—they may switch to another text that fits their needs and allows them to complete their assignment.

Ineffective readers, on the other hand, often don't realize they should be doing something while reading except moving their eyes across the page. They are unaware of the complexities of reading and have never been taught to think about what they are reading, create mental pictures, or ask questions (e.g., *Do I understand this? What should I do if I don't understand? Do I get the author's point? How does it fit with what I already know? What do I think the author will discuss next?*).

A student who hasn't been taught how to think about what he or she is learning might say something such as, "No, I didn't finish reading the homework. It was way too hard. I mean, I have no clue about chromosomes, or whatever the chapter was about. How can you expect me to read the chapter if it doesn't make any sense?" Alternatively, you might hear something such as, "What did we read yesterday? Well . . . uh . . . I think it was something about . . . Bosnia, no, wait . . . um . . . maybe it was Botswana? I don't know . . . it was about some foreign country that started with a B." Of course, there is always this all-too-familiar comment: "But I *did* read the assignment. I just don't remember it. I never do. I can read something three times and still not remember what I read."

Students who struggle while reading often give up and lose confidence. To them, reading comprehension is something of a mystery. Unaware that they have an active role to play in their learning, these students think comprehension simply happens, and when they aren't successful at understanding what they read, they tend to blame the text or themselves. The key to helping students take control of their own processes while reading involves deliberate attention to text content. McKeown and Beck (2009) suggest that teachers deliberately ask questions, use prompts, and encourage students to elaborate on what they read. Low-achieving students, in particular, need to be taught appropriate methods to monitor their understanding and how to select and use appropriate "fix-up" strategies when needed (Caverly, Mandeville, & Nicholson, 1995; Pogrow, 1993). Fix-up strategies include the think aloud, wherein students practice verbalizing their thoughts, and text coding, whereby students use symbols to mark up materials while reading (see Strategy 35 in Part II). The former helps students recognize their reading and thought processes; the latter helps them track their thinking.

One of the most important things a teacher can do to increase student readiness to learn is plan prereading activities. A particularly apt term for this method of prereading instruction is *frontloading*. By practicing frontloading techniques (e.g., building background knowledge of the topic, preteaching critical vocabulary concepts, setting a purpose for reading, focusing students' attention on the topic, cueing students about relevant reading strategies), we not only help increase readiness to learn but also foster strategic reading behavior.

Premise 4: Reading and writing are integrally related

Despite a decades-long debate about the specific connections between reading and writing processes, researchers agree they are inherently connected. Laflamme (1997) describes the reading and writing processes as being analogous and complementary because each involves generating ideas, logically organizing them, revisiting them several times until they make sense, and then revising or rethinking them as needed. Given this connection, it's easier to understand why avid readers tend to be good writers, and vice versa.

Teachers should know about this connection because they will, without question, have students who don't like to do either one—read or write. This situation presents the perfect teachable moment. When students resist reading and writing, you have an opportunity to share your knowledge and show them how to think like readers. Demonstrate how effective readers use a repertoire of strategies, such as reading aloud, rereading, and asking questions, to clarify ideas and make sure they understand what they read.

Of course, writers also contribute to how well readers are able to read and understand a text. Describing the relationship between reading and writing, Harvey and Goudvis simply say, "The reader *is* part writer" (2000, p. 5). They therefore advise teachers to have students read with a pencil or pen in hand in order to take notes, create individualized symbols and codes, and write down questions that arise as part of the process. By interacting with a text in these ways, students begin to grasp that reading and writing are active processes that require them to be engaged with the text if they are to comprehend, remember, and apply their learning. Harvey and Goudvis (2007) also, somewhat radically, recommend that students throw out their highlighters, which can fool them into thinking they are reading actively when they, in fact, are not.

Several researchers have found that improving students' writing skills, in addition to their reading skills, improves their capacity to learn (e.g., Buerger, 1997; National Survey of Student Engagement, 2008; Report of the National Commission on Writing, 2006; Tierney & Shanahan, 1991; Tynjala, Mason, & Lonka, 2001). A writer's language choices and knowledge of the topic, as well as his or her skill in using written language for a particular purpose, influence the reader's ability to construct meaning.

The degree to which readers and writers share the same understanding of the language and the topic of the text influences how well they communicate

with each other. . . . For example, through reading readers learn the power of a strong introduction and eventually use such knowledge as they write their own pieces. Conversely, writing develops awareness of the structures of language, the organization of text, and spelling patterns which in turn contributes to reading proficiency. (Commission on Reading of the National Council of Teachers of English, n.d., para. 6, 14)

Graham and Hebert call writing an “often-overlooked tool for improving students’ reading, as well as their learning from text” (2010, p. 4). They recommend that students write about the texts they read, teachers teach the skills and processes that go into creating text, and schools increase the amount of time students write. The results of their studies suggest that writing has the potential to enhance reading in at least three ways:

1. As functional activities, when reading and writing are combined, they facilitate learning (e.g., writing about information in a science text requires a student to record, connect, analyze, personalize, and manipulate key ideas in the text).
2. They each draw upon common knowledge and cognitive processes; therefore, improving students’ writing skills should lead to improved reading skills.
3. They both are communication activities and vehicles for better comprehension (i.e., writers gain insight about reading by creating their own texts, which leads to better comprehension of other texts).

Indeed, teachers who integrate reading and writing in content-area instruction often view it as a natural fit:

- They are reciprocal processes, where writers learn from reading, and vice versa.
- They are parallel processes—both are purposeful and dependent on background knowledge, and both focus on the construction of meaning.
- They naturally intersect in the process of learning.
- Both are social activities driven by a need for communication.

Further underscoring this connection is research that shows students who are taught how to write and edit different forms of expository text demonstrate improved comprehension of content-area textbooks (Pressley, Mohan, Raphael, & Fingeret, 2007; Raphael, Kirschner, & Englert, 1988). Research also has shown that when students have opportunities to write in conjunction with reading, such as when they write summaries of material they just read, they are better able to think critically about what they read (Marzano, 2010).

Similarly, many related writing skills, such as grammar and spelling, reinforce reading skills. However, research also indicates grammar instruction is not effective and may actually be harmful to writing development. Grammar, when taught in isolation, tends to

stay in isolation; students fail to integrate the rules of grammar into their writing. When they view grammar as a tool for writing, however, they are more apt to find the rules useful and will more readily apply them to achieve their writing purpose. Alternatively, teaching students sentence structure, summarizing techniques, and writing strategies (e.g., brainstorming, outlining) significantly improves their writing (Kolln & Hancock, 2005). Many teachers have success teaching students the multistep learning process (i.e., discovering, drafting, revising, editing, proofreading), and Biancarosa and Snow (2006) concur that learning the writing process is helpful, as long as the practice writing tasks are similar to those students will encounter and be expected to perform in high school, college, and future careers.

Donna Alvermann (2002), an expert in adolescent literacy, urges all teachers, regardless of their content-area expertise, to encourage students to read and write in different ways. Doing so, she believes, challenges students to solve problems and think critically, thus raising the so-called cognitive bar. There are many creative ways teachers can connect reading, writing, and content. The best part, of course, is that you are limited only by your imagination. Here are a few examples of assignments that help students make reading-writing-content connections:

- Students read about, analyze, and write about one of their favorite athlete's abilities and achievements.
- Students read biographies of historians, scientists, and artists to understand the genre, and then each student interviews a family member and writes a biography about that person.
- Students read primary source documents about a specific historical event from the National Archives website, and then each student writes a story as if he or she were present at and part of that event.
- Students read the scientific explanation for how planets form, identify and read a myth (from any number of various cultures) that explains how Earth was formed, and then write their own myths about the birth of a planet.
- Students research and read about a famous painting, sculpture, or building and then write about the feelings it evokes in themselves and others.

Researchers agree that improving students' reading and writing skills improves their capacity to learn (National Institute for Literacy, 2007). Therefore, effective adolescent literacy programs must include an element that helps students improve their writing skills, but it is not enough simply to ask students to do more writing. Students must receive intensive writing instruction that has clear objectives and expectations and consistently challenges them, regardless of their ability, to engage with academic content at high levels of reasoning (Biancarosa & Snow, 2006). Harvey and Goudvis recommend that teachers

should encourage students to jot down their thinking in logs or notebooks (or e-logs or e-notebooks) as they read. Their point is that “writing about reading should enhance engagement and understanding, not interrupt it and bring it to a halt” (2007, p. 59).

A final thought—and perhaps the most concisely stated one about the reading-writing-learning connection—comes from Vacca and Vacca (2005), who observe that when students write, they explore, clarify, and think deeply about the ideas they read. This, ultimately, is the essence of the reading-writing connection.

Premise 5: Learning increases when students collaborate

Students learn by interacting with others in the classroom, by generating and asking questions, and by discussing their ideas freely with the teacher or one another. Conversation not only sparks new ideas but also provides an opportunity for the speaker to deepen his or her understanding of an idea or topic. Well-known literacy expert Judith Langer (2000) notes that in schools where students outperform expectations, learning English (both content and skills) is a social activity with a depth and complexity of understanding that results from skillful conversations and interactions with others.

Class discussions—large group, small group, or online group—are chances for students to compare their thinking with others’. Teachers can provide support during group discussion by moving from group to group, modeling questions and comments that deepen the analysis, and encouraging the use of challenging questions that cause students to think deeply (Langer, 2000). As students begin to teach one another, they assume more responsibility for their own learning and for the learning of others in the class.

Over the years, specific structures and elements have been developed to foster the positive effects of social learning while avoiding the negative effects, such as uneven student participation. These structures are realized as cooperative learning, a subset of collaboration. A new research synthesis further supports the same positive effects found within many previous studies that looked at both academic and emotional outcomes of cooperative learning. Specifically, researchers who conducted a meta-analysis of 20 studies found the average effect size was 0.44 (Dean, Hubbell, Pitler, & Stone, 2012).

Of course, simply putting students into cooperative learning groups is not enough to improve learning. Understanding the following three implementation principles is key to making cooperative learning work:

1. **Teach group processing and interpersonal skills.** Skills that effective teachers model for students include making eye contact, asking probing or clarifying questions, using wait time effectively, and using summary statements as comprehension checks. How teachers and students respond to one another is also vitally important. Giving and receiving constructive criticism is a skill students can learn by focusing on the quality of the work, rather than on the individual, and by identifying in equal measure the strengths and weaknesses of another student’s work.

2. **Establish cooperative goal structures within groups.** One way teachers can establish cooperative goal structures in their classrooms is by linking outcomes among group members. Grades should not be considered outcomes; instead, an outcome can be as simple as the successful completion of an experiment.
3. **Provide mechanisms for individual accountability.** There are several ways to establish individual accountability. One technique is to keep groups small (i.e., three to five students). Small groups often police themselves since loafing by any single member puts larger burdens on the others. Another technique is to have groups determine nonredundant roles and responsibilities upfront. Each group member might learn a particular aspect of the lesson and teach it to teammates, or each may take on a particular role within the group, such as materials manager or timekeeper.

Intriguingly, brain imaging studies have shown that the amygdala, a portion of the brain associated with memory and emotions, is active and engaged when we learn new material. For example, students who struggle to solve a problem or deduce an answer independently will experience heightened anxiety and a reduction in the flow of new information. When working with others, however, the anxiety level is much lower and allows for free flow of information (Willis, 2007).

Lessened anxiety is one of the reasons cooperative learning groups are beneficial for ELLs. In addition, such groups “allow for the repetition of key words and phrases; require functional, context-relevant speech; and are ‘feedback-rich’” (Hill & Flynn, 2006, p. 56). Working in small groups not only provides ELLs with opportunities to speak but also requires them to adjust their meaning as they speak, so other members of the group comprehend what they are saying.

A Final Thought on the Knowledge Gear

Couple what we are now learning with what we have long known about reading, and the power of reading grows exponentially. Take, for instance, the results of a recent study in which researchers, who wanted to know what really happens inside people’s brains when they read fiction, examined brain scans and discovered that as readers encountered new situations, their brains captured the text and integrated it with their personal knowledge and past experiences (Speer, Reynolds, Swallow, & Zacks, 2009). Furthermore, the activated regions of the brain mirrored those involved when people see, perform, or imagine real-world activities. Such findings confirm that reading is anything but a passive process. Indeed, writer Nicholas Carr seems to agree; he describes a particular point many people experience when they become fully immersed in the reading matter and “the reader becomes the book” (2010, p. 74). That idea, in itself, is fascinating.