

Content Area Literacy and Learning: Selected Sources for the 21st Century An Annotated Bibliography

In 1927 William Gray, then president of the International Reading Association, called for “every teacher to be a teacher of reading” based on the idea that reading was a single activity that all teachers should help students to master.

In the 1980s, Gray’s call was reinforced and echoed by the “psycholinguistic” work and influence of Frank Smith and Yetta and Kenneth Goodman. Their claim was clear—reading is one and only one thing: independent of context or subject matter, cognitive reading processes are consistent within themselves and across all readers. This interest in cognitive processes led to important research on what “good readers do” and the strategies they employ to read. Ultimately this led to increased emphasis on teachers, all teachers, helping students to acquire these cognitive processes.

However, beginning in the 1990s, the field of reading began to look at the particularities of context and situation. Do we employ the same processes or strategies across different situations, content areas, tasks? Or do we, in some senses, read differently for different contents? Research in writing had been looking closely at context for many years, noting that writing is profoundly affected by context factors like audience, purpose, genre expectations, and social situation. Reading theorists began asking similar questions, questions such as *How is reading in a biology class different from reading in a literature class?*, or *How do historians approach a text in contrast to the general reader?*

Readers looking for materials to examine content area literacy will soon see that reading theorist are working on at least three fronts at once, and published materials and research will fall into three general categories:

1. Research and practice texts that focus on generalized reading strategies (implying that all reading is the same)
2. Research and practice texts that look at how generalized reading strategies are adapted or applied to specific content area texts
3. Research and practice texts that explore content area–specific approaches that focus on the genres, discourses, and identities implicit in the ways of knowing in subject areas and disciplines.

Luckily, these latter two categories help establish a rich base for considering content area literacy at writing project sites. Sources drawn from the third category are particularly useful for speaking directly to the interests of content area teachers. The sources listed below, primarily

drawn from these latter categories, were recommended by NWP leaders as having been useful in their professional development and classroom work.

Books on General Reading Strategies Applied to Content Areas

Daniels, Harvey, and Steven Zemelman. 2004. *Subjects Matter: Every Teacher's Guide to Content-Area Reading*. Portsmouth, NH: Heinemann.

The authors spell out general principles for content area literacy/learning and then provide examples from math, science, and social studies. Included are principles for selecting texts (other than textbooks); strategies for before, during, and after reading; and advice on reading workshops, student book clubs, and inquiry units. Lists of suggested texts are provided for math, science, and social studies.

Fisher, Douglas B., and Nancy Frey. 2004. *Improving Adolescent Literacy: Strategies at Work*. Upper Saddle River, NJ: Pearson.

This book explains learning/literacy strategies across content areas: reader's theater, KWL charts, anticipation guides, rubrics, Directed Reading-Thinking, and so forth. The authors provide examples of how to apply these in mathematics, science, social studies, and English.

Lapp, Diane, James Flood, and Nancy Farnan, eds. 2008. *Content Area Reading and Learning: Instructional Strategies*, 3rd edition. Mahwah, N.J.: Lawrence Erlbaum.

This book contains a wide variety of articles on specific content areas (from math and history to PE) and issues such as engagement, assessment, and vocabulary instruction. The emphasis is less on disciplinary ways of practicing literacy and making knowledge, and more on strategies "before, during, and after" reading—such as developing questions, working with concept maps, and taking notes.

Disciplinary Literacy

Draper, Roni Jo. 2008. "Redefining Content-Area Literacy Teacher Education: Finding My Voice through Collaboration." *Harvard Educational Review* 78 (1): 60–83.

Draper describes how she came to collaborate with several content area teachers and to understand that she needed to explore how literacy was used in each discipline if she were to guide content area teachers in working with literacy in their classes. She advocates teachers' using texts (both print and nonprint) from their own disciplines and communities of practice. Her self-study is especially useful for its account of her growth and coming to terms with her own limitations as a content area literacy educator.

Shanahan, Timothy, and Cynthia Shanahan. 2008. "Teaching Disciplinary Literacy to Adolescents: Rethinking Content-Area Literacy." *Harvard Educational Review* 78 (1): 40–59.

Timothy and Cynthia Shanahan dispute the notion that reading is a singular activity—the same in all academic contexts—and maintain that reading in the content areas should be taught within the framework of “disciplinary literacy.” They describe how experts in science, math, and history read texts in their fields, suggesting that “experts from math, chemistry, and history read their respective texts quite differently,” and they draw out the implications of this research for secondary content area teachers and literacy researchers.

Education Blogs by Discipline

<http://movingforward.wikispaces.com/Education+Blogs+by+Discipline>

This website, sponsored by Moving Forward, links to subject/content area blogs maintained by P–12 teachers in a great variety of disciplines. The blogs discuss materials, activities, assessment, and issues such as Common Core Standards and high-stakes testing.

History

Bain, Robert B. 2000. “Into the Breach: Using Research and Theory to Shape History Instruction.” In *Knowing, Teaching & Learning History: National and International Perspectives*, edited by Peter N. Stearns, Peter C. Seixas, and Samuel S. Wineburg, 331–53. New York: New York University Press.

Bain asserts that while teaching secondary students to “do history,” we have to help them grasp the underlying epistemology of history or their actions will be mechanical and ritualistic. Relying on theorists of situated learning (from Vygotsky to Michael Cole and Jean Lave), Bain has developed ways of using informal writing, class artifacts such as posters, and structured interactions in which students take on roles, to help students to grasp what it is that historians do and think.

Barton, Keith C., and Linda S. Levstik. 2004. “Why Don’t More History Teachers Engage Students in Interpretation?” *Social Education* 67 (6): 358–361.

The authors argue that the role of the secondary school history class is not to introduce its students to the academic discipline of history. Nonetheless, they urge teachers to engage students in analyzing and interpreting information rather than accepting accounts of the past without

question. Being able to question and interpret historical evidence is important, they maintain, for democratic citizenship.

Stahl, Steven A., and Cynthia Shanahan. 2004. "Learning to Think Like a Historian: Disciplinary Knowledge through Critical Analysis of Multiple Documents." In *Adolescent Literacy Research and Practice*, edited by Tamara L. Jetton and Janice A. Dole. New York: Guilford Press.

The authors use the work of Sam Wineburg to show that students need to learn to do historiography—that is, to understand that texts are written by particular people for particular purposes and that texts often conflict with each other in their interpretation of past events. The authors suggest that all student reading of history texts involve group processes, procedural facilitators (such as guiding questions), and students' writing essays, and provide examples of and rationales for these activities.

Wineburg, Sam. 2001. *Historical Thinking and Other Unnatural Acts*. Philadelphia: Temple University Press.

Wineburg studied how historians read historical texts and then how students read them, and pointed out the differences. He argues that if we study "people who read for a living we end up with a different image of comprehension" than the picture of the generalized "good reader" in the literature about comprehension. He details the intellectual moves that historians make as they read and suggests that teachers need to work with students as apprentices in these ways of reading.

Science

Dillon, Deborah R., David G. O'Brien, and Mark Volkman. 2001. "Reading, Writing, and Talking to Get Work Done in Biology." In *Constructions of Literacy*, edited by Elizabeth Birr Moje and David G. O'Brien, 51–76. Mahwah, NJ: Lawrence Erlbaum.

The authors discuss how the social and academic positions students assumed or were given influenced their reading, along with the students' interpretation of their teachers' actions and demands. Students' histories with textbooks as their primary source of information deeply influenced their ways reading. Also, students' experiences of group processes—their status in the group—determined what reading was in this course.

Greenleaf, Cynthia, Willard Brown, and Cindy Litman. 2004. "Apprenticing Urban Youth to Science Literacy." In *Bridging the Literacy Achievement Gap, Grades 4–12*, edited by Dorothy S. Strickland and Donna E. Alvermann, 200–226. New York: Teachers College Press.

This article describes how a reading apprenticeship model was used in a chemistry class at an urban high school. Modeling his own reading and thinking processes, Will, the chemistry teacher, shows students how chemists work and enables them to become apprentices in scientific inquiry. The article describes specific approaches that build student identity as readers and writers of science: “Team-Read,” reading logs, and inquiry activities.

Lemke, Jay L. 1990. *Talking Science: Language, Learning, and Values*. Westport: CT: Ablex.

Lemke analyzes the ways in which teachers and students misunderstand each other through the ways they talk about science. Teachers, he claims, can make science unnecessarily difficult both through their talk and through the social arrangements of the class (student groupings, for example). Of particular interest is the chapter “Changing the Way We Teach.” In this chapter, Lemke suggests that students need more practice talking about science, translating between colloquial and scientific language, understanding that science is a fallible human activity, and connecting their science knowledge to policy issues that are important to their lives.

Moje, Elizabeth Birr, Deborah Peek-Brown, LeeAnn M. Sutherland, Ronald W. Marx, Phyllis Blumenfeld, and Joseph Krajcik. 2004. “Explaining Explanations: Developing Scientific Literacy in Middle School Project-Based Science Reforms.” In *Bridging the Literacy Achievement Gap, Grades 4–12*, edited by Dorothy S. Strickland and Donna E. Alvermann, 227–251. New York: Teachers College Press.

The authors report on their work in an urban school setting with project-based science in which students investigate “real-world” questions. Realizing how project-based science presents challenges for students in reading, the authors constructed a curriculum focused on helping students to understand scientific explanations and to collect, represent, and analyze data. Students were asked to analyze and write scientific explanations and to recognize the differences between scientific and everyday explanations. The article includes examples of lessons and student work.

Roth, Wolff-Michael, and Kenneth Tobin, eds. 2007. *Science, Learning, Identity: Sociocultural and Cultural-Historical Perspectives*. Rotterdam: Sense Publishers.

This book collects articles based on research in science classrooms, focusing on the conditions of urban classrooms, issues of gender, and issues of language and literacy. While the articles are dense, they are also compelling, with examples of student work and transcripts of teacher and student dialogue. For example, “Identity in Activities: Young Children and Science” describes how activities—students’ writing and reading of informational texts—enable third- to sixth-graders to appropriate science ideas and genres and consider their audiences, all of which help the students to see themselves as members of communities of writers, scientists, and artists. In “Science Learning, Status, and Identity Formation in an Urban Middle School,” Stacy Olitsky looks at student discussions after science demonstrations. Students who apply science content and language do so because these increase their solidarity, status, and emotional energy.

Saul, E. Wendy, ed. 2004. *Crossing Borders in Literacy and Science Instruction*. Arlington, VA: IRA/NSTA Press.

This book offers a wide array of articles and perspectives on students' learning to do science and includes theory about the differences and similarities between everyday language (and knowledge) and that of science. Articles connect science to the ways of our everyday-life world, to nonscientific texts, and to the media. Discussions of ways to use trade texts, textbooks, and inquiry-based curricula are included. The authors advocate explicit teaching of text structures, heuristics for writing, and science notebooks.

Shanahan, Cynthia. 2004. "Teaching Science Through Literacy." In *Adolescent Literacy Research and Practice*, edited by Tamara L. Jetton and Janice A. Dole, 75–93. New York: Guilford.

Reading and writing about science are important aspects of being a "contributing member of society," Shanahan asserts. She argues that students need to understand the social, contextual processes through which scientific knowledge is created. Teachers can promote scientific epistemology by carefully selecting textbooks (she provides criteria); using research and issue articles; and working with refutational texts, which present and then refute commonsense notions of scientific processes. She also suggests that teachers model reading practices, explain text organization, provide graphic organizers, and assign reaction and collaborative explanatory essays.

Stewart, Roger A. 2001. "Looking Back at Mr. Weller: A Personal Retrospective." In *Constructions of Literacy*, edited by Elizabeth Birr Moje and David. G. O'Brien, 147–170. Mahwah, NJ: Lawrence Erlbaum.

Stewart looks back at his study of a teacher, "Mr. Weller," and the teacher's use of language and literacy in his earth science class. Important is Stewart's insight that although Weller valued reading, reading (particularly texts other than the textbook) did not play a large part in his class. The culture of the school and of Weller's classroom did not support extended reading. Weller's need to be center stage and to control information, the poor textbook, and the school's lack of resources, including monies for copying, became overwhelming obstacles. In other words, the realities of the workplace, time, space, and material conditions precluded the possibility of a focus on reading.

Yore, Larry D., Brian M. Hand, and Vaughan Prain. 2000. "The Desired Image of a Science Writer." Paper given at National Association for Research in Science Teaching, New Orleans. Available at www.eric.ed.gov/ERICDocs/data/ericdocs2sql/content_storage_01/0000019b/80/16/33/21.pdf

The authors studied scientists' processes and purposes for writing. Few scientists claimed that they wrote to make knowledge. Rather, they wrote to communicate (inform and persuade) the knowledge that they had already constructed. The scientists were used to working in large teams and felt that they revised their knowledge through team discussions.

Math

Borasi, Raffaella, and Marjorie Gail Siegel. 2000. *Reading Counts: Expanding the Role of Reading in Mathematics Classrooms*. New York: Teachers College Press.

The authors argue for “inquiry-oriented” math lessons as they describe the uses for reading within this type of mathematics instruction. Readings can provide students with math history and models for the types of thinking that is done by professional mathematicians. This use of reading in inquiry, in turn, results in students' becoming increasingly aware of the nature of mathematics (its ambiguity, for example) and confident about their abilities to participate in mathematics.

Burton, Leone, and Candia Morgan. 2000. “Mathematicians Writing.” *Journal for Research in Mathematics Education* 31 (4): 429–453.

Burton and Morgan explore the identities and relationships that mathematicians present to the world in their writing and the ways in which they represent the nature of mathematical activity. Pronouns and modals (will, can, etc.), for example, help to establish the writer's relationship to communities of professional mathematicians, and their authority over mathematical knowledge. The authors discuss how to help students, even at the elementary level, write about their mathematical activity and understand conventions of the discipline.

Siegel, Marjorie, Raffaella Borasi, and Judith Fonzi. (1998). “Supporting Students' Mathematical Inquiries Through Reading.” *Journal for Research in Mathematical Education* 29 (4): 378–413.

The authors describe their work as “collaborative action research” based in Judith Fonzi's high school math class, which aims to “socialize students into a community that does math.” They describe a “mathematics inquiry cycle” using an example of taxi-geometry. The instructional goals are not for students to master techniques but rather for them to develop notions of definition, proof, and truth in math. The article carefully lays out the texts, processes, and functions of reading used throughout the inquiry cycle. Taxi-geometry is but an example; it is easy to extrapolate from this example to other concepts in mathematics. While the article is detailed and quite long, it is highly readable. (Siegel and Fonzi have a similar article, titled “The Practice of Reading in an Inquiry-Oriented Mathematics Class,” in *Reading Research Quarterly* 30 [4], 632–673 [1995], which is aimed at reading researchers, whereas this one is written for math teachers.)

Identity Matters

Dillon, Deborah R., and Elizabeth Birr Moje. 1998. "Listening to the Talk of Adolescent Girls: Lessons about Literacy, School, and Life." In *Reconceptualizing the Literacies in Adolescents' Lives*, edited by Donna E. Alvermann, Kathleen A. Hinchman, David W. Moore, Stephen W. Phelps, and Diane R. Waff, 193–224. Mahwah, NJ: Lawrence Erlbaum. [NOTE: This article does not appear in the 2006 2nd edition.]

Students adopt varying fluctuating and conflicting "subjectivities" or performed selves in school. This is a study of two girls trying to learn in science classes, one struggling with gender expectations in groups with boys and the other alternating between identities of resistance/struggle and complacency/success in chemistry. The authors conclude that teachers could work to better understand adolescents' lived experiences, recognize their interests, and help them "seize a voice and claim a position."

Sutherland, LeeAnn M., Stergios Botzakis, Elizabeth Birr Moje, and Donna E. Alvermann, 2007. "Drawing on Youth Cultures in Content Learning and Literacy." In *Content Area Reading and Learning: Instructional Strategies*, 3rd edition, edited by Diane Lapp, James Flood, and Nancy Farnan, 133–156. Mahwah, NJ: Lawrence Erlbaum.

The authors advocate knowledge of and respect for students' cultural texts and practices (dress, lyrics, uses of technology, out-of-school reading and writing). They suggest that making links from youth practices and texts to those texts adults value is necessary for youth to learn in the content areas. The authors provide valuable examples from science, math, English language arts, and social studies classes.