

## Adolescent Literacy: More Than Remediation

Gina Biancarosa

**To be successful learners, adolescent readers must master complex texts, understand the diverse literacy demands of the different content areas, and navigate digital reading.**

Despite nearly a decade of attention to adolescent literacy among education policymakers, researchers, and practitioners, most people still believe that the major problem for struggling adolescent readers is their failure to master basic reading skills. However, advocates for adolescent literacy recognize that the issue is broader than simply providing remediation for students who cannot read at basic levels. The heart of adolescent literacy reform must be ensuring that students leave high school with the reading and writing skills they need to thrive in the 21st century career and college landscape.

Even excellent basic reading instruction in the primary grades does not guarantee that a student will successfully make the shift to these higher-level literacy demands. Researchers have long recognized that academic reading changes after 3rd grade. Chall (1983) first described this transition as a shift from *learning to read* to *reading to learn*. To make this transition, she wrote, students must learn how to organize and apply their background knowledge as a context for their reading, get information efficiently from text, and monitor and adjust their reading as needed.

Research suggests that schools should attend to three major challenges students face in making the transition from basic literacy to higher-level literacy: mastering increasingly difficult texts, understanding the distinctions among reading in different content areas, and reading digital content.

### Increasingly Challenging Texts

As older elementary students learn to read for academic purposes, they face new challenges in the texts they are asked to read. The length of the text is perhaps the most obvious change, but the words and sentences students read also typically become longer and more difficult (Carnegie Council on Advancing Adolescent Literacy [CCAAL], 2010; Snow, 2010).

As students progress through the grades, their textbooks use more complex words to cover the same content. For example, consider the excerpts from elementary, middle, and high school textbooks in Figure 1 on page 25. All three texts introduce the concept of plant reproduction through spores, but they do so with increasingly complex academic vocabulary. In terms of vocabulary complexity alone, the most advanced words a 4th grade student might encounter are *reproduce* and *examples*, but a 7th grade student must also cope with words like *ancestors* and *characteristics*, and a 10th grade student must handle *psilophytes*.

**Figure 1. Elementary-, Middle-, and High School–Level Textbook Excerpts on Seedless Reproduction in Plants**

Elementary School <sup>1</sup>	Middle School <sup>2</sup>	High School <sup>3</sup>
<b>Plants Without Seeds</b>	<b>Characteristics of Seedless Vascular Plants</b>	<b>Non-seed Plants</b>
You have read that some simple plants don't have roots, stems, or leaves. These simple plants don't have seeds either. They reproduce by spores.	The odd-looking plants in the ancient forests were the ancestors of three groups of plants that are alive today—ferns, club mosses, and horsetails. Ferns and their relatives share two characteristics. They have vascular tissue and use spores to reproduce.	The divisions of non-seed plants are shown in Figure 21.6. These plants produce hard-walled reproductive cells called spores. Non-seed plants include vascular and nonvascular organisms.
...		... <b>Psilophyta</b> Psilophytes, known as whisk

like simpler plants,  
reproduce by spores.

ferns, consist of thin, green stems.  
The psilophytes are unique  
vascular plants because they have  
neither roots nor leaves.

<sup>1</sup>Bell, M. J. (2005). *Harcourt Science, Science: Grade 3*. New York: Harcourt School.

<sup>2</sup>Padilla, M., Miaoulis, I., & Cyr, M. (2004). *Science explorer: Discoveries in life, earth and physical science*. Upper Saddle River, NJ: Pearson Prentice Hall.

<sup>3</sup>Biggs, A. (2004). *Biology: The dynamics of life*. New York: Glencoe.

The words students must read to learn not only get longer, but also refer to more complicated, specific concepts. All three textbooks in Figure 1 introduce the topic of reproduction via spores, but the middle and high school textbooks also introduce the topic of vascular tissue. Similarly, the elementary textbook refers to types of plants, but the middle and high school textbooks use the idea of relationships among categories of plants.

At the same time, sentences grow longer and syntactically more complex across the grade levels as structural devices designed to support comprehension become fewer (van den Broek, 2010). The simple, declarative sentences in the elementary textbook are replaced by complex compound sentences in the more advanced textbooks. Similarly, the elementary text invokes and repeats terms as it adds to the conceptual load, building in redundancies that help establish coherence for the reader; the middle and high school texts employ fewer of these structural niceties.

Increasing word, sentence, and concept complexity are just a few aspects of how texts become more demanding. The need to synthesize information across multiple texts and formats (such as tables, graphs, pictures, and figures) also increases sharply from elementary through high school. Even the way that texts incorporate and use graphical representations changes (Lee & Spratley, 2010).

And these changes are not specific to textbooks (CCAAL, 2010; Heller & Greenleaf, 2007; Lee & Spratley, 2010). The same can be said for the novels that students read in language arts classes, the historical documents they read in history classes, the lab instructions they read in science classes, and the word problems they solve in mathematics classes.

Unfortunately, experience with texts in earlier grades does little to prepare students for the increasing demands of the texts they must learn from in middle and high school. Without explicit instruction in how to cope with the evolving complexity of these texts, too many adolescents fall behind in their reading development, and their ability to learn from text suffers.

## Different Reading for Different Disciplines

As students move up through the grades, the texts they read in different content-area classes become progressively more distinct from one another (CCAAL, 2010; Heller & Greenleaf, 2007; Lee & Spratley, 2010). The novels, poems, essays, and plays students read in language arts classes bear little resemblance to the textbooks, historical documents, and speeches in history classes or the textbooks, laboratory notes, and graphical displays in science classes. At the same time, the expectations for reading comprehension also become more specialized (Greenleaf, Schoenbach, Cziko, & Mueller, 2001; Lee & Spratley, 2010; Shanahan & Shanahan, 2008).

Too often, schools do not explicitly teach students how the reasoning processes, strategies, and rules for achieving comprehension vary across the content areas (Lee & Spratley, 2010; Moje, 2008). Lacking instruction, many students struggle to navigate the escalating discipline-specific diversity of texts.

For example, consider the different ways in which students are expected to respond to the term *characteristic* in various disciplines. Characteristics that are valued in making arguments in science classes include physical properties but do not include psychological properties; in contrast, social science and language arts value both physical and psychological properties. Thus, when asked about the characteristics that help a species evolve and adapt, a science student is not expected to cite intelligence and conviviality, but rather physical characteristics of the species and its environment.

Similarly, a history student who uses numerical odds alone to explain Napoleon's victories and defeats would not be evaluated highly; but the mathematics student who uses Napoleon's courage, charisma, and stubbornness to calculate his odds would also not fare well. Thus, reading a subject-area text with comprehension requires understanding what "counts" within a discipline. As a result, it should come as no surprise that early reading success does not inoculate students against later reading struggles in the content areas (Greenleaf et al., 2001; Pearson, Moje, & Greenleaf, 2010).

Like the idea of developmental change in reading, the idea that reading becomes (or rather, should become) increasingly disciplinary is not new. As early as the turn of the 20th century, Huey (1908/1968) advocated that reading instruction be absorbed into content-area instruction. In addition, methods textbooks for preservice teachers have long acknowledged the importance of disciplinary reading in the intermediate and middle grades (Anders & Guzzetti, 1996;

Dupuis, Lee, Badiali, & Askov, 1989).

In the last decade, however, a flurry of reports have called for increased professional and policy attention to the need for literacy instruction beyond 3rd grade, specifically regarding the key role of literacy across the content areas (Berman & Biancarosa, 2005; CCAAL, 2010; Heller & Greenleaf, 2007; Kamil, 2003; Lee & Spratley, 2010; RAND Reading Study Group, 2002). This idea has also recently gained a foothold in education standards. Most visibly, the new common core state standards integrate English language arts with two major content areas (history and social sciences and science and technical subjects) and also provide sample relevant texts for each of the content areas. This remarkable development is stimulating increased attention to the need for professional development and curriculum to acknowledge the central role that reading, writing, and oral language play in content-area learning.

## Digital Reading

Adding to the complexity of the literacy landscape after 3rd grade, the last decade has seen an explosion in the range of devices and mechanisms available for interacting with texts (Digital Trends, 2011; Patel, 2007). Digital technology is becoming the default tool for both communication and task completion on the job, as well as in the marketplace, higher education, and the political process (Organisation for Economic Co-operation and Development, 2007). Digital reading has also radically increased the amount of text to which adolescents have access and heightened the need for critical reading.

Debate still rages about the extent to which reading in digital contexts is really new or different. But common themes have emerged that characterize such reading as more multifaceted, with constantly changing mediums and modalities (Leu, O'Byrne, Zawilinski, McVerry, & Everett-Cacopardo, 2009).

For example, reading in digital environments introduces nonlinear options for proceeding through texts. This nonlinearity can be a boon or a barrier to struggling readers. On one hand, it gives readers access to background knowledge, definitions of unfamiliar terms, efficient location of relevant information through the use of search tools, and motivating choices for personal inquiry. On the other hand, gaining proficiency in digital reading is by no means automatic (Leu, Kinzer, Coiro, & Cammack, 2004; Leu et al., 2009). The rapid rise in the use of digital devices for reading and the increasing expectation that adults can use them facily, flexibly, and critically brings new urgency to calls for increased attention to advanced and critical reading skills, and specifically to reading in digital contexts (Duke, Schmar-Dobler, & Zhang, 2006; Lemke, 2006).

As a result, reading instruction after 3rd grade should target skills, strategies, and behaviors that research has identified as central to reading in digital environments. For example, in a digital context, instead of preteaching background knowledge, teachers have the option of teaching search strategies and text structures of informational websites so that students can fill in missing background knowledge themselves (Coiro & Dobler, 2007). Readers conducting research on the Internet must master the ability to glean pertinent information through targeted reading (Coiro & Dobler, 2007). Research has found that, at the same time, students take longer to read the same texts in digital formats than in printed formats, suggesting that readers must also learn to cope with a loss of reading efficiency when reading digitally (Reinking, 1988).

Some argue that the Internet will soon become the default medium for reading (Leu et al., 2007). Regardless of whether and when such predictions prove true, the literacy and technology skills students must master to participate in all facets of society are becoming more interwoven. Thus, teaching reading, especially beyond 3rd grade, necessarily includes teaching students to navigate the specific demands of digital texts (Duke et al., 2006).

## How to Support Adolescent Literacy

No matter how successful early instruction in reading is, it cannot fully prepare students for the literacy demands that evolve after 3rd grade. Supporting adolescent literacy requires simultaneous attention to the needs of students who have not mastered basic reading skills and to the common need of all students to master ever-more-challenging texts in ever-changing contexts for increasingly divergent goals.

Remediation for struggling readers often squeezes out content-area reading and learning, thus giving these students fewer opportunities to learn advanced literacy skills in other academic subjects (Greenleaf et al., 2011; Haycock, 2001). If our adolescents are to meet 21st century expectations for reading, all students must have opportunities to learn specialized reading habits and skills. In short, struggling readers who need basic skills instruction should receive it *plus* instruction in adolescent literacy.

Improvement of adolescent literacy also requires that we move away from outmoded 20th century approaches to invent and implement 21st century policies and practices. For example, funding and accountability policies must anticipate the incorporation of disciplinary and digital literacy into reading instruction and practice. Otherwise, reform efforts are likely to miss those they are intended to aid.

Content-area teaching materials and professional development also must change dramatically. As long as curriculums do not include explicit teaching of disciplinary norms for reading, it will be difficult for teachers to include this crucial aspect of content-area learning. In addition, schools should provide teachers with ongoing, systematic professional development opportunities that build on problems of practice and help them use a disciplinary lens

when teaching reading. This professional development should *not* be yet another attempt to get all teachers teaching the same strategies regardless of relevance to their content areas. Rather, it should enable teachers to realize the role literacy plays in their content areas and make that role explicit and manageable for the full range of learners in their classrooms.

As teachers get up to speed with their role in teaching disciplinary reading, they will also need guidance in how to deal with digital reading. They need help building an understanding of the distinct demands digital reading places on their students. Learning standards also must continue to evolve to help teachers and students navigate this burgeoning new medium for reading. Just as is true for adolescent literacy more broadly, digital reading should be positioned not as an appendage to already-overwhelming teaching duties, but as integral to learning across all domains.

Finally, a challenging piece of the adolescent literacy puzzle is devising assessments that reflect the reality of reading after 3rd grade. Currently, good formative and summative assessments of disciplinary literacy and digital literacy do not exist. Policymakers must redress this lack if the changes we seek are to take hold. Given the current climate in education, evidence of effectiveness and data to inform decisions must become priorities if we are to make true progress in adolescent literacy.

## References

- Anders, P. L., & Guzzetti, B. J. (1996). *Literacy instruction in the content areas*. New York: Harcourt Brace.
- Berman, I., & Biancarosa, G. (2005). *Reading to achieve: A governor's guide to adolescent literacy*. Washington, DC: National Governors Association Center for Best Practices.
- Carnegie Council on Advancing Adolescent Literacy. (2010). *Time to act: An agenda for advancing adolescent literacy for college and career success*. New York: Carnegie Corporation of New York.
- Chall, J. S. (1983). *Stages of reading development*. New York: McGraw-Hill.
- Coiro, J., & Dobler, E. (2007). Exploring the comprehension strategies used by 6th grade skilled readers as they search for and locate information on the Internet. *Reading Research Quarterly*, 42, 214–257.
- Digital Trends. (2011, March 24). Tablet adoption drives ereader sales by 400% [blog post]. Retrieved from *Online Marketing Trends* at [www.onlinemarketing-trends.com/2011/03/tablet-adoption-drives-ereader-sales-by.html](http://www.onlinemarketing-trends.com/2011/03/tablet-adoption-drives-ereader-sales-by.html)
- Duke, N. K., Schmar-Dobler, E., & Zhang, S. (2006). Comprehension and technology. In M. C. McKenna, L. D. Labbo, R. D. Kieffer, & D. Reinking (Eds.), *International handbook of literacy and technology* (Vol. 2, pp. 317–326). Mahwah, NJ: Erlbaum.
- Dupuis, M. M., Lee, J. W., Badiali, B. J., & Askov, E. N. (1989). *Teaching reading and writing in the content areas*. Glenview, IL: Scott, Foresman.
- Greenleaf, C. L., Litman, C., Hanson, T. L., Rosen, R., Boscardin, C. K., Herman, J., et al. (2011). Integrating literacy and science in biology: Teaching and learning impacts of reading apprenticeship professional development. *American Educational Research Journal*, 48(3), 647–717.
- Greenleaf, C., Schoenbach, R., Cziko, C., & Mueller, F. (2001). Apprenticing adolescents to academic literacy. *Harvard Educational Review*, 71(1), 79–129.
- Haycock, K. (2001). Closing the achievement gap. *Educational Leadership*, 58(6), 6–11.
- Heller, R., & Greenleaf, C. (2007). *Literacy instruction in the content areas: Getting to the core of middle and high school improvement*. Washington, DC: Alliance for Excellent Education.
- Huey, E. B. (1908/1968). *The psychology and pedagogy of reading*. Cambridge, MA: MIT Press. (Original work published 1908)
- Kamil, M. L. (2003). *Adolescents and literacy: Reading for the 21st century*. Washington, DC: Alliance for Excellent Education.
- Lee, C. D., & Spratley, A. (2010). *Reading in the disciplines: The challenges of adolescent literacy*. New York: Carnegie Corporation of New York.
- Lemke, J. L. (2006). Towards critical multimedia literacy: Technology, research, and politics. In M. G. McKenna, L. D. Labbo, R. D. Keiffer, & D. Reinking (Eds.), *International handbook of literacy and technology* (Vol. 2, pp. 3–14). Hillsdale, NJ: Erlbaum.
- Leu, D. J., Kinzer, C. K., Coiro, J., & Cammack, D. (2004). Toward a theory of new literacies emerging from the Internet and other information and communication technologies. In R. B. Ruddell & N. Unrau (Eds.), *Theoretical models and processes of reading* (5th ed., pp. 1568–1611). Newark, DE: International Reading Association.
- Leu, D. J., O'Byrne, W. I., Zawilinski, L., McVerry, J. G., & Everett-Cacopardo, H. (2009). Comments on Greenhow, Robelia, and Hughes: Expanding the new literacies conversation. *Educational Researcher*, 38(4), 264–269.
- Leu, D. J., Reinking, D., Carter, A., Castek, J., Coiro, J., Henry, L. A., et al. (2007, April). *Defining online reading comprehension: Using think aloud verbal protocols to refine a preliminary model of Internet reading comprehension processes*. Paper presented at the annual meeting of the American Educational Research Association, Chicago.

Retrieved November 13, 2011, from [http://docs.google.com/Doc?id=dcbjhrta\\_10djqrhz](http://docs.google.com/Doc?id=dcbjhrta_10djqrhz)

Moje, E. B. (2008). Foregrounding the disciplines in secondary literacy teaching and learning: A call for change. *Journal of Adolescent and Adult Literacy*, 52(2), 96–107.

Organisation for Economic Co-operation and Development. (2007). *PISA 2006: Science competencies for tomorrow's world* (Vol. 1). Paris, France: Author.

Patel, N. (2007, November 21). Kindle sells out in 5.5 hours [blog post]. Retrieved from *Engadget* at [www.engadget.com/2007/11/21/kindle-sells-out-in-two-days](http://www.engadget.com/2007/11/21/kindle-sells-out-in-two-days)

Pearson, P. D., Moje, E. B., & Greenleaf, C. (2010). Literacy and science: Each in the service of the other. *Science*, 328, 459–463.

RAND Reading Study Group. (2002). *Reading for understanding: Toward an R&D program in reading comprehension*. Santa Monica, CA: RAND.

Reinking, D. (1988). Computer-mediated text and comprehension differences: The role of reading time, reader preference, and estimation of learning. *Reading Research Quarterly*, 23(4), 484–498.

Shanahan, T., & Shanahan, C. (2008). Teaching disciplinary literacy to adolescents: Rethinking content area literacy. *Harvard Educational Review*, 78(1), 40–59.

Snow, C. E. (2010). Academic language and the challenge of reading for learning about science. *Science*, 328, 450–452.

van den Broek, P. (2010). Using texts in science education: Cognitive processes and knowledge representation. *Science*, 328, 453–456.

[Gina Biancarosa](#) is assistant professor in the College of Education, University of Oregon, Eugene.

Copyright © 2012 by ASCD