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Introduction and Overview

Adolescents may struggle with text for a number of reasons, including problems with a) vocabulary knowledge, b) general knowledge of topics and text structures, c) knowing of what to do when comprehension breaks down, or d) proficiency in monitoring their own reading comprehension. Most recent literacy initiatives target younger readers and attempt to instill basic decoding and comprehension skills. But struggling adolescent readers in our schools face more complex and pervasive challenges. Supporting these readers as they grapple with the highly specific demands of texts written for different content-areas will help prepare them for citizenship, encourage personal growth and life-satisfaction on many levels, and open up opportunities for future education and employment.

In this paper we focus on one foundational aspect of adolescent literacy that has been relatively ignored by recent reports on the problem. Our starting point is the fact that the major difference between reading in grades K-5 and reading in grades 6-12 is the transition from *learning to read* to *reading to learn*. The latter  skill brings into play numerous academic concepts  and modes of reasoning, primarily through the act of reading. Adolescents often need more sophisticated and specific kinds of literacy support for reading in content-areas, or academic disciplines. We call this more advanced form of literacy required of adolescent readers “disciplinary literacy” because each academic discipline or content-area presupposes specific kinds  of background knowledge about how to read texts in that area, and often also requires a particular type of reading.

We will discuss some of the challenges for adolescents in our schools struggling with written texts in the differing academic subject-areas of history, science, mathematics and literature, and then explore how standards, assessments, and  teacher instruction might be strengthened in order to support these readers. (Note: There exist broader conceptions of disciplinary literacy that include writing to explain ideas in ways that are consistent with  norms for rhetoric and logic within each discipline, problem solving using the logics of the disciplines, comprehending and composing digital media within the disciplines, and expanding the range of disciplines to include the arts and other areas of human endeavor, including popular culture. *We focus here on the  basic literacy problem of reading and comprehending texts that display highly specific features and styles of argument.*)

Struggling readers are typically envisioned as a minority of students who have pronounced disabilities in reading. The National Assessment of Educational Progress (NAEP) has three levels of reading proficiency: basic, proficient and advanced. NAEP scores for 17 year olds consistently show the same pattern: a majority of students achieve the basic level of reading skills, and at this basic level there  are no significant differences based on race/ethnicity or SES. *At proficient levels, the scores show stark differences aligned with race/ethnicity and SES. At the most advanced level, less than 10 percent of 17 year olds, regardless of race/ethnicity or SES, are able to comprehend complex texts.*

The NAEP data and its consistency across years suggests that the problems of adolescent literacy involve a range of readers, from those with the most basic skill needs to those who have developed general comprehension strategies, but not the specialized strategies, vocabulary and knowledge base required for understanding complex discipline specific texts. Attention to this problem of reading in the disciplines has the potential to meet the needs of a wide range of readers and thus address the problems of adolescent literacy in a comprehensive and productive way.

In this paper, we will address the following:

* define and illustrate what is entailed in  comprehending texts within and across academic  disciplines;
* examine what the empirical research base says  about reading comprehension generally and  reading in the disciplines specifically;
* briefly discuss the implications of this research  base for teaching and assessments. We conclude with some recommendations  for improving policy and practice in the area of disciplinary literacy.

 Reading Comprehension and Reading in the Content Areas: the Empirical Base

 The comprehension of written texts is an extraordinarily complex process. Earlier research on reading comprehension focused on sets of discrete skills (i.e. getting the main idea, getting the facts, making inferences) or on the products of comprehension (i.e. what readers understood after reading). This research provided useful foundations for our current understandings, but did not address the more basic questions of what readers actively did while trying to get the main idea of a text or make inferences based upon the reading. We know intuitively that meanings of written texts are pieced together in the act of reading, and that there are many sources of prior knowledge on which readers draw to form these meanings. Such prior sources of knowledge include, but are not limited to knowledge of:

* 1. words and word forms;
  2. sentence structure or syntax;
  3. text structures or genres;
  4. topics.

As readers we construct meaningful patterns from word to word, from sentence to sentence, and from paragraph to paragraph, looking for connections across these textual elements toward some understanding that we can take away from reading the text. What we focus upon is influenced both by our prior knowledge in the four areas listed above as well as our goals for reading. *One of the most important conclusions of recent research  is the foundational role of a variety of forms of prior knowledge*. Studies have demonstrated that prior knowledge of topics can influence what we comprehend, what we pay attention to, even what perspectives we take. This fact has strong implications for supporting struggling adolescent readers. *The ability to comprehend written texts is not a static or fixed ability, but rather one that involves a dynamic relationship between the demands of texts and the prior knowledge and goals of readers.* It is precisely because of these dynamic relationships that the teaching of reading in the academic disciplines is so crucial. This reality has important implications for both teaching and assessment.

We have noted that reading comprehension is a result of dynamic interactions among knowledge, strategies, goals and dispositions. There is a considerable body of research documenting the strategies that good readers use. These strategies include:

1. asking questions;  2. making predictions;  3. testing hypotheses;  4. summarizing;  5. monitoring understanding and deploying fix-it strategies as needed.  However, beyond these general strategies, disciplinary literacy also requires knowledge of topics in a particular field. Reading in content areas presents special problems because if you don’t know content you will have a difficult time understanding the texts, and if you don’t understand the texts you are unlikely to learn content (we are assuming here that text is the primary medium through which the content gets offered to students, though teachers also use video, film, displays and other approaches).

Many schools with large proportions of students entering high schools with low levels of achievement in reading are requiring freshmen level courses  aimed at struggling readers. Such courses usually focus on generic reading strategies and vocabulary development. This trend is based on unstated assumptions that reading comprehension is primarily a consequence of the deployment of generic reading strategies, and that when students learn to master such strategies they will be ready for reading in the content areas. Only a few current interventions, such as the Strategic Literacy Initiative, aim in such courses to teach not only generic reading strategies and vocabulary but also to help students develop identities as readers and to tackle some of the specialized challenges that disciplinary texts pose

Reading in History

The ability to read historical documents including contemporary explications about societal, economic and political issues provides perhaps the most direct link to literacy as preparation for citizenship, which presupposes an ability to conduct informed debate. As in the other disciplines, schools are unique sites for youth across class and ethnic boundaries to learn to read such documents and equally important to develop the necessary dispositions to continue to engage in such reading for college and career success. While we focus explicitly on reading in history, the point more broadly applies to reading across the social sciences (history, political science, sociology, and economics).

Studies of how people reason about political issues offer interesting and potentially disturbing findings (Rosenberg, Ward, & Chilton, 1989). Wineburg examined how people of particular age cohorts, including adolescents, reasoned about events from the Viet Nam War. Interestingly, he discovered that the primary sources of information used to construct representations of events and issues in the war were movies (Winenburg & Martin, 2004). Adults who actually lived through the war used representations in film as their source of data, even when their own experiences contradicted the images in the films. While the ability to deconstruct fictional narratives from films is an important and powerful skill set, film may not be the most reliable source of information for understanding historical events (Cole & Keyssar, 1985).

Historians view primary source documents about events of the past as partial, representing particular points of view and positioning, and as rhetorical constructions (Wineburg, 2001). Primary source documents in history may include political documents, legal documents, newspaper articles, letters, diaries, first and second hand documents of events such as minutes, published proceedings, etc. and other kinds of archival data including artistic representations (paintings and drawings, film, digital images, photographs, cartoons, etc.). Viewing primary source documents as rhetorical constructions (Leinhardt & Greeno, 1994; Seixas, 1993; Voss, Greene, Post, & Penner, 1996; Wineburg, 1991, 1998), historians seek to understand the internal states and goals  of agents who acted in the historical events. In examining primary source documents, historians ask themselves about the kind of document it is and, how the document came into being. They examine word choice and, what information is included and excluded. They seek corroboration across multiple sources. They assume such texts have subtexts that reflect the authors’ points of view, access to the experiences about which they write, and how the text is organized to appeal to what audience. *In contrast, schools typically socialize students into seeing history as a simple chronology of events and the explanations of social, political and economic phenomena offered in texts as a truthful and unexamined master narrative* (Bain, 2005; Wineburg & Wilson, 1988, 1991).

To illustrate some of the challenges of reading primary source documents in history, the following is an excerpt from Lincoln’s speech, “A House Divided.” This is the kind of document a 12th grader in U.S. schools should be familiar with and able to understand. The document is important, perhaps even more so than for example the often-cited “Gettysburg Address” by Lincoln because it poses political and ethical dilemmas with which we continue to wrestle today. We can easily identify current political speeches made by political candidates, in the Congress of the U.S. and  by senior members of our government’s administration that focus on similar issues as they manifest themselves today and that employ similar rhetorical techniques to persuade audiences.

The following are examples of discipline-based questions that a good reader might pose while reading “A House Divided.” (1) What kind of speech is this? What self-interests might one expect from this kind of speech? (2) Who is the audience? How is the text crafted to address this audience? (3) What words and phrases used by Lincoln would have  had a different meaning/connotation in 1858? (4) What knowledge is presumed that a reader of that era would already know (particularly a member of the audience for whom the speech was drafted)? (5) Are there any contradictions or tensions between knowledge Lincoln presumes and knowledge from other historical documents about similar topics or events? (6) What can we infer about Lincoln’s motives and biases? What inferences does he make about the motives and biases of others, such as Stephen Douglas? How might the reader evaluate Lincoln’s critique of Douglas and others, in light of the reader’s prior knowledge and the availability of other historical sources? (7) What is the overall text structure of the document? What are the notices within the text that signal its structure?

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| **BOX *No.*3.** *|****“A House Divided” Abraham Lincoln*** |
| If we could first know where we are, and whither we are tending, we could then better judge what to do, and how to do it.  We are now far into the fifth year, since a policy was initiated, with the avowed object, and confident promise, of putting an end to slavery agitation.  Under the operation of that policy, that agitation has not only, not ceased, but has constantly augmented.  In my opinion, it will not cease, until a crisis shall have been reached, and passed.  “A house divided against itself cannot stand.”  I believe this government cannot endure, permanently half slave and half free.  I do not expect the Union to be dissolved—I do not expect the house to fall—but I do expect it will cease to be divided.  It will become all one thing or all the other.  Either the opponents of slavery, will arrest the further spread of it, and place it where the public mind shall rest in the belief that it is in the course of ultimate extinction; or its advocates will push it forward, till it shall become alike lawful in all the States, old as well as new—North as well as South.  Have we no tendency to the latter condition?  Let any one who doubts, carefully contemplate that now almost complete legal combination—piece of machinery so to speak— compounded of the Nebraska doctrine, and the Dred Scott decision. Let him consider not only what work the machinery is adapted to do, and how well adapted; but also, let him study the history of its construction, and trace, if he can, or rather fail, if he can, to trace the evidence of design and concert of action, among its chief architects, from the beginning. |

Challenges of Reading Textbooks

Despite reform efforts advocated by the National Council for the Social Studies and pedagogical interventions such as the Document Based History Project, the default experience of most students is to learn history through the reading of history textbooks. While learning how to read—including how to critique—textbook representations of historical, political and economic events and issues is important for success in high school, research has documented that textbooks may actually be difficult to understand. Typically, we think of textbooks as being easier to comprehend than primary source documents. This may be true at one level if one uses readability formulas  as the measure of difficulty. However, as Beck and McKeown have shown, in the attempt to create short texts with simple sentences, textbook writers often inadvertently make it more difficult for students to understand concepts. (Beck, Mckeown, & Gromoll, 1989). Often these texts will not use relational words between clauses, sentences and paragraphs that would make explicit the logical relationships among ideas. Novice readers who do not have sufficient background knowledge to construct the unstated relationships then must infer such relationships. In addition, these texts may also not provide sufficient detail for students to build an understanding of concepts. Beck and colleagues tested these propositions by revising sections of a 5th grade social studies text book (Beck, McKeown, Sinatra, & Loxterman, 1991). In Box 4, we include an example of one of the re-writes of a passage on The Boston Tea Party.

According to Beck and colleagues (1991), “Most of the revisions for this passage thus involved explaining and providing motivations for actions and reactions, and explicitly connecting causes to events and events to consequences” (p. 261). They found that students had better recall of information in the re-written passages.

Beck’s studies of the reading difficulty presented by traditional textbooks are based on extensive research about how readers go about making sense of texts. As is evident in these studies, research on text processing indicates any of the following common patterns found in social studies and science textbooks can make comprehension challenging:

* Failure to make logical (i.e. causal) connections between propositions explicit (Black & Bern, 1981; Kintsch, Mandel & Kozminsky, 1977; Stein & Nezworski, 1978.);
* Use of references that are ambiguous, distant or indirect (Fredericksen, 1981, Cirilo, 1981; Lesgold, Roth & Curtis, 1979, Haviland & Clark, 1974; Just & Carpenter, 1978);
* The inclusion of information that is irrelevant to the main ideas (Schank, 1975; Trabasso et al., 1984);
* Density of ideas within individual sentences (Kintsch & Keenan, 1973; Kintsch, Kozminsky, Streby, McKoon, & Keenn, 1975).  The features enumerated above tend to characterize what are sometimes called “inconsiderate texts”.

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| **BOX *No.*4.** *|****Re-Write of 5th Grade Social Studies Text*** | |
| **Original** | **Re-write** |
| Boatloads of tea were sent to America. Since it was cheaper than ever, the British thought that surely the colonists would buy tea now! They were wrong. Tea was burned. Tea was left to rot. | Since it was now cheaper than ever, the British thought that surely the colonists would buy tea! So they sent boatloads of it to the colonies. But, because the tea still had the tax on it, the colonists were as angry as ever. To show their anger, the colonists burned some of the tea. They left some to rot. |
| **Source:** Beck, McKeown, Sinatra, & Loxterman (1991). | |
| Textbooks are not the only source of inconsiderate texts. Primary source documents can also be inconsiderate. The example from the opening of the Declaration of Independence (Box 5) illustrates three of the four patterns:  **BOX *No.*5.** *|****The Opening of the Declaration of Independence*** | |
| When in the Course of human events **it** becomes necessary for one people to dissolve the political bands **which** have connected **them** with another and to assume among the powers of the earth, the separate and equal station to which the Laws of Nature and of Nature’s God entitle them, a decent respect to the opinions of mankind requires that **they** should declare the causes **which** impel **them** to the separation.  We hold **these** truths to be self-evident, **that** all men are created equal, **that they** are endowed by their Creator with certain unalienable Rights, **that** among **these** are Life, Liberty, and the pursuit of Happiness. | |

Simple reference words like “it,” “which” and “them” are syntactically difficult to decipher in this public document that all citizens should ideally be able to comprehend. The entire opening paragraph is a single sentence and thus the density of propositions in this one sentence makes it difficult to unpack. The causal links between the decision to “dissolve the political bands” and to “declare the causes which impel them to the separation” are embedded in forbiddingly complex syntactical forms.

More and less competent adolescent readers will continue to struggle with both textbooks as well as primary source documents until explicit attention to text features, prior knowledge, vocabulary, comprehension monitoring and processes become routine practices in classrooms where students are expected to read in order to learn.

These potential sources of reading difficulty  and many more can be detected ahead of time by a content area teacher who is also well versed in what a reader needs to know to understand content area texts, including primary source documents. In fact, we would argue that history teachers are much better positioned to analyze these sources of difficulty we have described in these primary source documents than those typically teaching generic remedial reading courses in high schools. History teachers  are also more likely to understand the ways in which helping students to pay attention to and make sense of these kinds of text difficulties are intimately  linked to history reasoning and content. The sources of difficulty we have described are not unique to these particular documents, but are recurrent, certainly in primary source documents in history and the social studies.

While our focus has been primarily on reading  in high school, we have evidence of effective use  of primary source documents in elementary level history classes (Donovan & Bransford, 2005). Our point is that strategies for tackling these recurrent problems of reading can be taught; and that teaching them in the content of discipline specific explorations involving the analysis of multiple documents of the sort we have included can simultaneously enhance the learning of content. Learning to read in discipline specific ways does not need to interfere with learning content. Quite the reverse. We are not making a case against the growing use of general remedial reading courses in high school. We believe such courses are very important and we have growing evidence of their impact. We are simply trying to illustrate here that it is possible to integrate reading instruction in content area courses that accomplish two important ends: (1) meet the needs of students with an array of reading abilities simultaneously and (2) teach all students  to reason in the complex ways that the disciplines require.

**Teaching Content Knowledge and Reading Strategies in Tandem**

In successful content-area classrooms, teachers organize instruction in routine ways that

■ Reinforce conceptions of reading as a meaning making process;

 ■ Provide guided support for making sense while students are engaged in acts of reading;

 ■ Shift responsibility for thinking and making sense of texts to students themselves through guided supports in both small and whole group work;

■ Sequence discipline specific inquiry tasks and the reading of a range of discipline focused texts in ways that build knowledge and dispositions over time;

■ Focus classroom talk on how students make sense of texts and how they use what they learn from texts to carry out discipline specific thinking tasks, or what Resnick and colleagues call “accountable talk.” (Michaels, O’Connor, Hall, & Resnick, 2002);

■ Provide consistent supports so that students experience success and develop or reinforce their sense of efficacy as readers as well as students who value the practices of the disciplines as these are instantiated in authentic classroom tasks.

The most important key to these core practices is creating a culture of high expectations through building routines (Lee, 2001, 2007). Routines help to establish students’ expectations for what they do, how they do things, and why. The following quote, often cited by the Strategic Literacy Initiative, clearly reflects the often unstated assumption about reading in the content areas that struggling readers have learned over many years of academic failure and low-level classroom tasks. “it wasn’t like it was spread all over the place, like you had to read it. It was just like, if the “ red square question” was here, you knew it was somewhere around that area right there. And you could just look for the answer and copy it down and you got full credit for it. So you didn’t have to read. It was something that you could like slide by without them knowing. I don’t know if they cared or not, but that’s the way everybody did it. You see the “red square question” and you sort of calculate where it’s around, you find the answer, and you write it down, and that’s it.”—Rosa, a 9th grade student, describing her experiences reading history (Schoenbach & Greenleaf, 2009)

As opposed to asking students to read for homework or as a classroom assignment and then simply answer questions when they finish reading, literacy rich content area classrooms include a variety of instructional routines that provide guidance  to students before, during and after reading. These routines may include the teacher modeling how he or she makes sense of the text. This long standing routine based on Reciprocal Teaching accomplishes two important functions. First, it shows the students that even expert readers such as teachers actively work to make sense of texts and can in fact be confused by texts (Lee, 2007). Second, it demonstrates how to deploy strategies purposefully such as predicting, asking questions, and summarizing. Teachers also use a variety of thinking tools that direct students to engage in the kinds of generic reading strategies we have described and that are well documented in the research on reading comprehension (Bean & Steenwyk, 1984; Beck, McKeown, Hamilton, & Kucan, 1997; Berger, 1989; Britt & Aglinskas, 2002; Brown & Day, 1983; Bulgren, Deshler, Schumaker, & Lenz, 2000; Bulgren, Schumaker, Deshler, Lenz, & Marquis, 2002; Chi, de Leeuw, Chiu, & La Vancher, 1994; Commander & Smith, 1996; Kingery, 2000; Palincsar & Brown, 1984; Paris, 1989; Rosenshine & Meister, 1994; Rosenshine, Meister, & Chapman, 1996). These include, but are not limited to the following:

■ Double entry journals where students post questions, observations of patterns in the texts, summarize, make connections;

■ K-W-L—a graphic where students identify what they already know (K), what they want to know (W) and after reading what they have learned (L);

■ Graphic organizers that use text structures to guide what kinds of information students are reading for or that map out the kinds of semantic knowledge students need to understand vocabulary (synonyms, antonyms, examples, attributes, morphemic analysis);

■ Anticipation guides that list key ideas (including ideas that are counterintuitive or controversial) that the teacher wants students to interrogate in reading a given text and to re-visit after reading;

Annotation of texts to pose questions, mark main  ideas, make predictions, mark reactions;

* Analyzing question types;
* Support for producing self explanations.