

Multiple Texts and Text Support

Cynthia R. Shanahan

University of Illinois at Chicago

The Case for Multiple Texts

In this chapter, I make a case for multiple text use in middle and high school classrooms, discuss the theory and research behind multiple text use, and describe the issues that teachers will face in bringing multiple texts into the classroom. Before I begin, I want to say something about my use of the term “text.” When I refer to “texts” in this chapter, I am referring to a rather broad conception of that word, in that I refer to graphical or pictorial representations of ideas and spoken discourse as “texts.” Often, these representations may seem more accessible than written discourse but are deceptively abstruse. Yet, even as I refer to these other kinds of texts, the main treatment of them in this chapter is as items in sets of documents that always include written text, recognizing their primacy in schools and the importance of understanding them.

Worldwide, the easy availability of text information on the Internet and in other media sources makes learning from text increasingly complex and often contradictory. Consider, for example, the number of “texts” encountered as we decide for whom we will vote. We read newspaper accounts from any number of newspapers on the web, editorials, website “biographies,” and tweets. We can tune in to countless talk shows where the host and his or her guests engage in endless speculation and commentary, we see campaign ads and so on, and we can do this anywhere and anytime using devices such as smartphones and iPads. Across and within each of these venues, we get different perspectives, depending on the political viewpoints of the author and the audience the author is addressing. At times, various issues are even misrepresented. Yet, when election day comes, we are expected to make a decision, based upon our “reading” of these texts—texts that are incomplete, biased, contradictory, and confusing—

about which we know there is no Truth. Such is the nature of much of the reading tasks that we encounter in our daily lives.

But what about reading in school? Although individuals have always read more than one text about topics that capture their interest, today texts are far more easily accessed. If I wanted to read about *The Little Rock Nine*, the nine adolescent African American students who integrated Central High School in Little Rock, Arkansas, a Google search immediately finds thousands of resource materials including documentaries, memoirs, photographs, transcripts of interviews, newspaper reports, high school publications, court records, legislation, letters, telegrams, and textbook-like summaries. There are over 300 YouTube videos on the topic! Choosing which sites to visit, determining how credible they are, and making sense of both corroborated and contradictory information is daunting.

Multiple versions of information, however, do provide an educational opportunity. Using the topic of *The Little Rock Nine*, for example, I can help my students understand the nature of historical understanding—that there isn't a story of history, but, *many*, depending upon the perspective of the story teller; that what happened in the past can never be fully reconstructed, so that versions of history are never the whole Truth; that paying attention to who wrote something is an important tool in determining the trustworthiness of information, and so on.

Multiple texts are not just fodder for history learning, however. Whether we are learning about a time in history or a process in science, what we learn is dependent upon the time period in which it was written, who wrote it for what audience, and many other factors. For example, an article from a newspaper about a topic in science will have a different level of detail and different vocabulary in it than the article in the science journal from which it was derived, and a scientific finding in 1953 could be contradicted by a science finding in 2011. Smoking was once considered to offer health benefits, but we now understand that it puts one's health at significant risk. A

pronouncement about the environment by an activist group such as Greenpeace risks being more biased than a scientist's report of environmental data over a period of time. Readers are required to make sense *across a number of texts*, weighing evidence and trustworthiness and confronting contradictions, if they are to know how to vote, what to buy, how to stay healthy, or what the most up-to-date scientific explanation is.

Students get a sense of what it means to engage the ideas in a particular discipline when they read from multiple sources. They often have naïve ideas about the way in which knowledge is created, shared, and evaluated within a discipline. To use an historical example again, they may never have considered that what they are reading in their history textbook is not the incontrovertible Truth, but a *creation* of history by an author based upon that author's interpretation of primary (e.g. artifacts), secondary (e.g. trade books by historians), and tertiary (e.g. textbooks) documents. There may be nothing in that textbook that even hints at that notion because of its narrative style. It is only when students are confronted with two or more conflicting accounts of the same event and asked to reflect on the similarities and differences of those accounts that they begin to realize what the study of history really is—an exercise in the interpretation of multiple texts. Similarly, students who read their science texts may never have considered that what they are reading is based upon a large compendium of corroborated data, and that even these data may be subject to reinterpretation as scientists develop more precise observation and measurement tools, as new theories are developed and tested, and as ways of reimagining the structure of nature are created. It is only when students are confronted with multiple texts that show scientists' differing interpretations of data or changes in scientific thinking across time that they begin to understand the nature of scientific inquiry, and the importance of corroboration of data across studies.

Prior to the past decade, reading comprehension research and practice was focused on the reading of single texts. Students were asked to read for details, to make inferences and draw conclusions, and perhaps to apply what they learned. In some cases, they were taught to master the elements of Bloom's taxonomy (knowledge, comprehension, application, analysis, synthesis, evaluation), but with only one text at a time. Students learned strategies such as KWL (thinking about what you know, what you want to learn and what you learned) or feature analysis (e.g., comparing the features of characters in a piece of literature), but with only one text. Students were still unskilled in the use of multiple sources of information by the time they got to high school. Any instruction in high school was usually truncated into instruction focused on the writing of term papers, but this instruction was inadequate—high school teachers often assuming that students knew how to read and write across texts and only needed help on the structure of a term paper and the way to properly cite sources. This chapter focuses, then, on the concept of teaching from multiple texts, considering the need for and paucity of this kind of instruction in the past.

Multiple Texts and the Common Core Standards

Especially relevant to the current state of reading education and multiple texts are the Common Core State Standards (National governors Association Center for Best Practices & Council of Chief State School Officers, 2010) that are, at this writing, adopted in all but five states. The English Language Arts Standards, including the English Language Arts Standards for History/Social Studies and Science and Technical Subjects, call for students to be able to read across a number of texts and text types, to engage in comparison/contrast, and to think critically about the information they read from multiple sources. A review of these standards reveals that multiple texts are referred to more than 85 times across grade levels. They are evident in all

major emphases (literature, informational texts, history/social studies, science/technical subjects and writing for English and the two subject matter areas). Standards focusing on multiple texts are most prevalent in three sections of the standards—*craft and structure, integration of knowledge, and research to build and present knowledge*. There is a steady progression in expectations for reading multiple texts that moves from general comparisons of texts (e.g. comparisons of genre or style) to comparisons of structure (e.g. chronology, comparison, cause-effect, or problem-solution), to specific arguments in texts (e.g. claims, counterclaims, and evidence), to evaluations of credibility and usefulness. Also, the standards specify aspects of texts that may vary across multiple texts: genre (letter, textbook explanation, and fiction/non-fiction), modality (picture, print, graphic, numerical, auditory), authorship (reading same and different authors), and audience, (reading texts aimed at different audiences). This focus on text comparisons means that teaching students how to read multiple texts in English, history/social studies, and science/technical subjects will be a major part of instruction requiring careful attention to a movement from less to more complex tasks. To get a sense of the way in which the Common Core Standards highlight multiple text use, Table 1 presents some examples from sixth through eighth and eleventh through twelfth grades.

Insert Table 1 about here.

Theory and Research with Multiple Texts

While comprehending a single text is vitally important, many reading educators and researchers no longer think this is enough. Studies on expert readers provided one impetus for the shift. In 1991, Sam Wineburg did a study comparing the reading practices of expert historians with that of high school students as they read multiple texts about a single event in history. He

found dramatic differences. The high school students, who had already studied the event, read each text as if it were to stand on its own. They focused on learning the facts. The historians, who had little knowledge of the event, learned the facts but also engaged in what Wineburg referred to as sourcing, contextualization, and corroboration. That is, they paid attention to who wrote the text (to determine their perspective, knowledge, purpose), during what time and under what circumstances the text was written (contextualization), and how well the information in the text was substantiated by other texts (corroboration). Their purpose was to come up with an integrated and nuanced interpretation of the event as a whole that spanned all of the texts they read. In addition, they approached these texts as arguments (even though they were written in narrative form), and not as a compendium of facts. Since Wineburg's study, other studies have confirmed that, without instruction, most students approach multiple texts as if they were a group of unconnected single texts, rarely comparing and contrasting information across texts, and rarely developing the kind of nuanced understanding of events that experts see as beneficial (Schwartz, 2003; Stahl, Hynd, Britain, McNish, and Bosquet, 1996, Perfetti, Britt, Rouet, Georgi, and Mason, 1994). For example, Stahl, Hynd, Britain, McNish, and Bosquet (1996) found that students stopped adding to their knowledge of the Tonkin Gulf Incident after reading a second text, and failed to notice that subsequent texts contradicted each other. Researchers have also confirmed that expert readers in various fields (particularly studying those in history and science) seek and critique knowledge that is quite purposefully integrated across sources (e.g. Bazerman, 1985; Shanahan and Shanahan, 2008). Bazerman (1985), for instance, studied the way in which physicists explicitly made connections among sources of relevant knowledge both when they read to learn information and when they were engaging in critique. Even the mathematicians studied by Shanahan and Shanahan (2008) talked about integrating what they were reading with the knowledge they already knew.

It is within the past decade or so that theory and research regarding multiple text use has blossomed, and this is mostly within the discipline of history (e.g., Britt & Aglinskas, 2002; Nokes, Dole, & Hacker, 2007; Rouet, Britt, Mason, & Perfetti, 1996; Stahl, Hynd, Britton, McNish, & Bosquet, 1996; Wiley & Voss, 1999; Wolfe & Goldman, 2005), perhaps in part due to the widely shared Wineburg study cited above.

Theories of Multiple Text Use

There are several theoretical frames with which to view multiple text reading. Cognitive flexibility theory (Spiro and Jehng, 1990), for example, posits that, especially in ill-structured domains, (domains in which information is highly variable, such as in history), individuals understand complex information better if they are confronted with multiple representations of that information. Each new representation of the information adds to the mental scaffolding necessary to develop complex understandings and to think in novel ways about it. With multiple representations, learners compare and contrast information across perspectives and think about different aspects of the problem space. Regarding the topic, The Little Rock Nine, for example, this theory would suggest that students arrive at a much more nuanced understanding about the integration of Central High School during an era of segregation if they read different perspectives, analyze the political, social, and legal aspects of the event, and read the memoirs of those who both opposed and were in favor of that integration.

Within literary theory, there is the idea of *intertextuality* (Hartmann, 1995). Intertextuality has to do with the linking of texts, whether or not those texts include words and non-word symbols; whether or not they are tangible, such as those located on a written page, or intangible, such as experiences or memories (Rowe, 1987; Worton & Still, 1990). Engaged readers negotiate textual understandings by linking information both within and outside of the texts they

are reading. Hartmann (1995) studied eight advanced-level high school students as they read five historical passages that provided a rich intertextual environment. To create meaning, these students, when asked to do so, were capable of making links to their personal experiences or knowledge, links to related information in the same text, and links to related information across multiple texts. However, even though the students were prompted to create links across the text, the data showed that they made fewer of these links than they did links to their prior knowledge and experience and links within a single text. This body of research adds to idea that students need explicit teaching if they are to benefit from multiple text reading.

Another theory of multiple text use from cognitive psychology is the documents model. The documents model, derived from Kintsch (1998; 2007), posits that interpretation of text depends on a number of elements: (1) the surface level features of text (words and sentences), (2) the internal meaning of the text (the *textbase*), (3) the interpretation of that meaning by the reader (*situations model*), and (4) the genre of the text (e.g. Newspaper article, or memoir). Others (Britt, Perfetti, Sandak, & Rouet, 1999; Britt & Rouet, 2012; Perfetti et al., 1999) have added an additional layer when multiple texts are involved—an intertext model. Readers use an intertext model in understanding the relations among sources and the integration of information across sources. An individual reads each document for information about the (a) date, (b) publisher, (c) author, author’s intent, perspective, and intended audience, and (d) the document’s characteristics and content. These understandings are compared and contrasted with those in other documents to develop a coherent mental interpretation about the information of focus. In this model, each source contributes to “global representation of the situation” (Rouet, 2006, p. 68).

When students read multiple texts on topics using a particular disciplinary lens, the intertext model becomes even more complicated. As noted in the Wineburg study and in studies of discipline experts in other fields of study (e.g. mathematics, physics, and chemistry) expert

readers bring to the task a discipline-specific set of understandings that include beliefs about the discipline itself (epistemologies), knowledge of the different interpretive frameworks used within the discipline and of the scope and breadth of study, knowledge of the different kinds of documents that are used in the discipline to answer particular disciplinary questions, and a knowledge of an array of linguistic moves that are typically used to communicate knowledge. In other words, they have disciplinary knowledge. In a recent study of expertise in reading in the disciplines (Shanahan, Shanahan, and Misischia, 2011), the experts we studied informed us about the practices of their discipline that impinged upon the way they approached texts. For example, the historians we worked with explained that, because they use selections of documents and artifacts from the past, historians are limited in the extent to which they are able to accurately portray that past. Maybe their choices of documents left out key pieces of evidence, or the documents were biased in a particular direction. Maybe the documents could not be corroborated. Thus, they knew that historical knowledge is always interpretive and contestable. That belief represented a core epistemological stance. These historians also had a sense of the depth and breadth of historical study and the different frameworks used to study it, even though they were only interested in a part of it. One historian was interested in the social history of South Africa, for example, but he was certainly aware that there were Civil War historians and that some of those might be interested in studying the great men of the civil war or be particularly interested in its economic, political, or religious causes and effects. They knew that history focused on change over time, thus involving chronology, and that they must interpret the way events were related—whether they are causative or coincidental, significant or unimportant. Central to historical inquiry was these experts' reliance on multiple sources, including not only documents and artifacts (primary sources), but also secondary and possibly even tertiary sources (accounts that use primary sources as evidence and accounts that use secondary sources as evidence,

respectively). They knew, too, that, when they wrote an historical account, even though they were writing a *narrative*, they were making an implicit argument for their interpretation. Further, they knew they must be wary of any interpretation that casts history simplistically—as an unexamined story of progression and improvement or a story of decline. These aspects of *disciplinary knowledge* guided the ways in which they approached reading and *created* historical accounts (Shanahan & Shanahan, 2008).

The scientists we studied explained that scientists build understandings of the physical world through experimentation and systematic observation. These understandings are constructed incrementally over time, subject to changes in technology and theory building, and are steered somewhat by cultural norms and expectations. One chemist, for example, said that he paid special attention to the date of the articles he read. A scientific finding from a journal in 1980 had the potential to be contradicted by later findings, and he knew he would have to corroborate the information he read with newer information. However, these scientists had more confidence in their findings from research than did the historians. Historians said that they tried to construct cohesive and plausible accounts of the past based on evidence from the documents and artifacts that they selected through research. However, they could not predict what would happen in the future based upon what happened in the past, and they regarded as a fallacy the commonly held belief that those who do not know history's mistakes are doomed to repeat them.

Scientists can test their interpretations of the physical world through experimentation, and the scientists we talked to had more confidence in their findings because of their predictive power. That is, the scientists could determine a level of probability that a certain phenomena would occur in the future under similar conditions—a level of confidence that the historians could not claim. This belief in the power of sound empirical data represented a key epistemological stance. Objectivity was important to them, and was controlled through strict adherence to systematic

methods. They explained, for example, that scientists ask scientific questions, then design experiments that limit the extent to which extraneous factors will influence the results, including their own biases. The conditions for a significant outcome are determined ahead of time, and the results, whether they are expected or are a disappointment, are interpreted in light of that a priori determination. Further, like the historians, even though they were interested in a very limited set of phenomena, these scientists understood that there were different branches of science and that, even within their own branch, there were different foci and methods of inquiry. Their texts consisted of lab reports, journal articles, research proposals, trade journals, tradebooks, chapters, etc., but key to all of these was that, in them, science concepts were represented in multiple ways—through prose, diagrams, models, equations, tables, etc.—and they explained that a full understanding of a scientific concept wasn't possible unless these multiple representations were understood. They communicated scientific knowledge primarily through explanation and argument, and within this communication, they always tried to signal the degree of precision, certainty, and generalizability of statements of that knowledge—they frowned on overgeneralization. Accuracy mattered. When looking at students' textbooks and other reading materials, they noted that technical language was highly prevalent. According to functional linguists, science texts have more technical words than in any other field (Schleppegrell & Fang, 2008; Fang & Schleppegrell, 2010), and sentences often include nominalization. Nominalization is the turning of a verb into a noun, ("distill" to "distillation"). This move essentially changes a particular instance of an action into a generalized concept. Both nominalization and passive voice allow the scientist to portray a sense of objectivity. Thus, the scientists' use of language illustrates how a field's epistemologies are instantiated in the way they communicate. The scientists we studied used their disciplinary knowledge as a lens that guided how they read.

Taking into account these aspects of disciplinary knowledge, perhaps a caveat concerning the intertext model is necessary. This caveat is that knowledge across documents is not merely assimilated into an integrated model of an event in an individual's mind, but that a reader's level of disciplinary knowledge in many ways *determines* the way each document is approached and *whether or not* particular aspects of a document will become part of that intertext model. Because of that, experts in a discipline will be more likely to construct a nuanced intertext model than non-experts because they look for particular kinds of information to integrate such as the author's perspective in history or the sophistication of measurement tools in science.

There is some research evidence that factors in disciplinary knowledge such as epistemology are important. Bråten and Strømsø (2006), for example, found that, without instruction, only college students who had sophisticated epistemological beliefs were able to adequately understand multiple, partly conflicting texts. Jacobson and Spiro (1995) found that only students who preferred working with complex knowledge in multiple ways and valued active learner construction of knowledge were able to profit from the reading of multiple texts. In that study, personal epistemology was found to moderate the effect of multiple-text reading on deeper understanding but not memory for facts. Rukavina and Daneman (1996) found that students holding more sophisticated beliefs about the complexity of knowledge were better equipped to integrate across two texts presenting conflicting information about a scientific topic. More recently, Bråten, Strømsø, and Samuelstuen (2008) examined the effect of dimensions of topic-specific personal epistemology on the understanding of multiple texts about a scientific issue, finding that viewing knowledge as complex positively affected multiple-text understanding.

These theories—cognitive flexibility, intertextuality, and the intertext model—help explain an individual's processes in reading multiple texts. Of course, individuals never act in a vacuum, and socio-cognitive and sociocultural theories consider the role of more knowledgeable others

(e.g. Vygotsky, 1986, Wertsch, 1991, 1998) and the role of discussion and interaction with peers in order to come to more nuanced understandings of information. Taken holistically, these theories suggest that students who struggle with text meaning together and with scaffolds are more likely to be motivated and develop deeper understandings than students who struggle with text meaning devoid of the models and scaffolds that others provide. Of course, there are nuances to these theories that aren't captured in this short statement. In addition, it isn't a given that group work will automatically be beneficial to learning. For example, Hynd, McWhorter, Phares, and Suttles (1994) found that high school students with misconceptions about projectile motion who saw a physics demonstration, talked in a group about it, and then read an explanation, did less well on a knowledge test than students who did not engage in group talk. Analysis of the talk within the groups revealed that the talk served to reify the misconception rather than the scientific principle. Thus, it is unclear whether peer collaboration is helpful for creating an integrated understanding across texts. In the physics study, the goal was for students to adopt a scientific rather than intuitive understanding of projectile motion. It may be that collaboration to build cross-text understandings better serves activities in which the goal is more open-ended, such as learning about multiple solutions to a problem; or it could be that collaborations when misconceptions are involved need to be more carefully scaffolded when they occur.

Research with Multiple Texts in History

There is a growing body of research in history supporting the idea that instruction with multiple texts facilitates students' ability to learn information, think critically about it, and communicate thinking to others. For example, research suggests that readers can be taught to attend to sourcing, corroboration, and contextualization while reading historical accounts, and, they can learn to read across sources to achieve more complex views of the an event (Hynd-Shanahan, Holschuh & Hubbard, 2004). Even students as young as eight years-old can be taught to

recognize similarities and differences across texts (Shanahan, Robinson, & Schneider, 1993; VanSledright, 2002a, 2002b; Wolf & Goldman, 2005), or to coordinate multiple mental representations to achieve a coherent, but complex conception of the ideas expressed in multiple texts.

In one study, college students enrolled in a reading/studying improvement course were asked to read multiple, sometimes conflicting texts about the controversial Tonkin Gulf Incident as they studied the Vietnam conflict (Hynd-Shanahan, Holschuh, and Hubbard, 2004). Students were taught how to read history (i.e. to source, contextualize, and corroborate) and they completed a comparison/contrast chart on a set of partially conflicting, key documents regarding text evidence about three questions: What happened? Did the U.S. intentionally provoke the North Vietnamese? Did President Johnson manipulate Congress to get the Tonkin Gulf Resolution passed? The document authors' perspectives and positions varied regarding the answers to these questions, making it necessary for readers to evaluate the credibility of the various documents.

The researchers interviewed the 13 students before and after they had read the documents, asking them what historians did, how they determined credibility, and what their strategies were for understanding the texts. Over the course of the unit, 12 of the 13 students changed their ideas about what historians did, altered their notions of textual representations of "truth," and changed their approach to strategy use. During the first round of interviews, students portrayed historians as (1) documenters, who wrote down what happened; (2) synthesizers, who used multiple sources of evidence to determine what happened; and rarely, as (3) arbiters, who sifted through conflicting evidence to decide truth. By the end of the unit, those who had initially stated that historians were documenters described them as synthesizers or arbiters, and students who had initially described historians as synthesizers and arbiters described them as either arbiters or affected by their own biases. Students who mentioned bias said that even historians

were not completely objective, and that their own biases could affect their selection and interpretation of documents.

I guess it is a tough task for historians to do. I think historians, even though they try to be as neutral as possible, there's some bias that is there as a human being. I guess you could try [to remain unbiased], but it's hard. When historians research a topic, that topic interests historians to begin with, and that interest comes from their parents, maybe. They're unaware of it.... Not even having good solid reason, you automatically have some stance. And I guess that influences partially what they research on and the stance they take. I don't think there's 100% neutrality. That's impossible."

Although these students did not initially engage in the complex thinking required to understand multiple documents in history, the shifts that took place in their thinking divulged their ultimate ability to do so. These shifts occurred within instruction using multiple, conflicting texts in which students were (1) given the responsibility for making decisions about their own interpretations; (2) taught how historians read; (3) provided with instructional tools or strategies for evaluating the texts; and (4) required to explain their thinking.

Other studies have also found that teaching history students to use multiple texts is beneficial. Nokes, Dole, and Hacker (2007) taught students in eight high school history classrooms history content in several ways. They found that, after three weeks, students who read multiple texts scored higher on tests of history content and used sourcing and corroboration more than students who used a traditional textbook only. They concluded that multiple text reading is necessary if high school students are to engage in reading like historians.

Most recently, Reisman studied the effect of history reading instruction on 236 11th grade students in five San Francisco high schools. The six-month intervention involved a number of document lessons that required students to "interrogate, then reconcile" historical accounts from

multiple texts (Reisman, 2012). Analysis revealed that students who received the instruction in history reading did significantly better on measures of historical thinking, were significantly more likely to transfer historical thinking strategies to contemporary issues, did significantly better on tests of factual knowledge, and even scored higher on tests of general reading comprehension.

These and other studies provide evidence that even young students and poor readers can be taught to interpret textual evidence approximating the way that historians engage in interpretation. They also provide evidence that students who discuss the activities of historians and engage in the interpretation of multiple texts can develop more mature epistemological stances about historical evidence, adopt more sophisticated reading strategies, and enjoy greater engagement in learning about historical events.

Research in multiple texts in science

There has not been as much research on multiple text use in science as there has been in history, so we have much less evidence that instruction in the use of multiple texts in science classes yields the same benefits as it does in history, even though theory suggests that it may.

Without instruction, the way multiple texts are processed by science students varies as a function of background knowledge and epistemology. Students who know more about the topic (Bråten, Strømsø, & Salmeron, 2011) or strategies (e.g. know how to source a document) (Strømsø, Bråten, & Britt, 2009) or students who have more sophisticated epistemological ideas about knowledge (Gil, Bråten, Vidal-Abarca, & Strømsø, 2010) are better able to make judgments about the trustworthiness of various texts than students who don't know much about the topic (Bråten, Strømsø, & Salmeron, 2011; Strømsø, Bråten, & Britt, 2009) In addition, Strømsø, Bråten and Samuelsten (2003) found that the mere use of multiple sources of information helped

students to understand the intertextual nature of the task of developing a rich understanding of the phenomenon about which they were reading.

Researchers have also studied the role of task. Wiley and Voss (1999) and Le Bigot and Rouet (2007) found that giving students the task of writing an argument after reading multiple texts fostered deeper and more integrated understandings of multiple texts in science. These researchers concluded that the argument task helped students to integrate and elaborate information rather than to focus on specific pieces of information in a single text. Gil, Bråten, Videl-Abarca and Strømsø (2010) found that summary writing fostered better understanding of multiple texts about global warming than did argument writing, and it fostered students' ability to integrate information across texts.

Thus, it seems reasonable that teaching students to use multiple texts in science will foster deeper understandings of science content. Yet, whereas there is some evidence that using multiple texts in science (without instruction) and assigning students tasks that foster integration of those multiple texts does, indeed, help students to create deeper understandings of science, we are only cautiously optimistic that this is so in a generalizable way.

One problem with the research mentioned above is that most of the topics studied straddled science and social science. An understanding of global warming and climate change, the topics of the science multiple-text research, rests on not only an understanding of the scientific processes involved, but also on an understanding of the political milieu in which arguments about these topics are taking place. Being able to sort out the positions of various scientists and other sources forming arguments about the causes and solutions of global warming is crucial. Would the same benefit be found if students read multiple texts about mitochondria or the process of distillation? In our study of discipline experts (Shanahan, Shanahan, and Misischia, 2011), the chemists differentiated their reading depending upon their level of knowledge. Bazerman (1985)

found the same kind of differentiated reading in physicists. If the chemists didn't know much about a topic, their reading proceeded in a fairly uncritical way for the purpose of understanding. If they knew a lot about a topic, their reading proceeded in a more critical way—that is, they paid attention to the source of information and its time frame, they critiqued the methods used, they compared the information to other sources, and so on. When asked how students should be reading in middle and high school, they found a place for students to do the same, explaining that understanding the science that is already corroborated is hard enough without interjecting the need to critique everything that is read.

Fortunately, educational researchers are currently studying what it means to read multiple texts in science. Project READi, for example, an IES-funded project, is focusing on what it means to teach argument to science students in middle and high school who read multiple texts. But these studies are ongoing, and results are still forthcoming.

One hurdle is that science teachers often eschew the use of any text at all. Because students have difficulty reading science texts, teachers find other ways to convey information to them, such as through overhead and PowerPoint notes and lectures, film, and hands-on-activities. Project READi researchers are faced with helping teachers understand the importance of reading to science inquiry as well helping them to teach students to use multiple texts in their classrooms.

At the present time, however, we know less about multiple text reading in science than we do in history. Thus, until we learn more, reading educators may be helped by the research already presented in this chapter and by the ongoing work in Project READI.

In Project READI, those of us on the history team are following middle and high school teachers as they teach argumentation using multiple texts. This year, the teachers are focusing instruction with multiple texts on six elements. These elements are:

- (1) Epistemology—the beliefs and principles of historians that guide reading;

(2) Close reading—the dispositions and expectations for digging into texts to carefully consider and reflect on meaning;

(3) Sourcing/contextualization—thinking about the time period and other contextual factors and their relationship with an author’s perspective, motivations, audience, word choices, etc.,

(4) Understanding the relationship among events—determining chronology and interpreting causality, coincidence, change over time and the various factors that determine change (political, social, economic, etc.),

(5) Understanding claim and evidence relationships—recognizing and using documentary evidence to support historical claims or conjectures, and

(6) Making sense across texts—comparison, contrast, synthesis, and analysis.

These elements are the focus of explicit instruction, and the idea is that, over time, and with repeated instruction, students will be able to understand and make nuanced, complex arguments—both implicit (in historical accounts) and explicit (in historical arguments) after reading multiple texts about particular events. We came to these elements after spending time working with teachers in middle and high schools in modules of instruction in history—one module on the Black Hills of South Dakota and the conflict between the Lakota Tribe and the U.S., another module on The Little Rock Nine. Our preliminary analysis of data suggests that focusing on multiple texts and reading like a historian, was motivating and that historical thinking was fostered, but students, especially those in middle school, were not used to really digging into a reading passage or comparing one passage with another and needed a great deal of scaffolding. Issues of text complexity loomed large—the middle grades students struggled with reading even a portion of a treaty, for example. And they sometimes lacked the necessary contextual knowledge to make sense of the topic. Some middle grades students, even after the third day of instruction in

the Black Hills module, had not sorted out who the Lakota were. The teachers essentially stopped their regular instruction to teach the modules, and found that the three weeks we had allotted turned into four and five weeks of instruction. Like Reisman (2011), we are now looking for ways to incorporate multiple text reading into teacher's existing units—and so the focus on instructional activities within lessons rather than complete modules. As these lessons are carried out with the central teachers in our project, we plan to work with a second group of teachers in a teacher network as they infuse the most successful aspects of instruction into their own units. We expect that this model will provide the necessary scaffolding for teachers needed to ensure that instruction is of high quality.

Project READI expects that their project, when complete, will extend the findings of studies described in in previous sections, in that they will know more about the effect of instruction in multiple text reading in science, history, and the study of literature, they will have models of teaching that support learning in the disciplines through multiple texts, they will have a clearer notion of the way argumentation differs across disciplines, and they will know more about the ways in which students develop arguments after reading multiple texts.

I can only say that because of projects like these and the emphasis of multiple texts in the Common Core Standards, teaching and learning are positioned for immense change. Teachers across the nation are rethinking the ways they are covering content—they are becoming more conscious of the discourse practices of their discipline, and they are much more likely to be providing time for reading and grappling with multiple texts within the school day.

Multiple Texts in other subject areas

I would be remiss if I did not mention myriad opportunities for students in English, the Arts, mathematics, and other subject areas to encounter multiple texts. Teachers in these subject

areas may already incorporate multiple texts into instruction. For example, it isn't a rare event that students in an English class read two novels in succession with the same themes and engage in comparisons and contrasts across the two books. English students can be asked to read history texts that provide a context for a particular piece of historical fiction, or they can be asked to read critiques of literature or a series of informational texts on topics that will be the fodder for their persuasive essays. Mathematics students can read several texts that provide somewhat different ways of solving a problem or several explanations of a mathematical concept. They can read the way in which mathematics is applied to various societal problems in journals and newspapers (e.g. statistical analyses of political polls or population growth and decline) and relate that to the explanations of those same kinds of analyses in their textbooks.

The issue in each of these instances of multiple text use is the role of explicit instruction, however. We know from research in history and science reading that, except for those with the most background knowledge or the most mature epistemologies, students aren't likely to gain much from reading multiple texts on their own. Students need tools. In history, these tools are the strategies that historians use (such as sourcing, contextualization, and corroboration), scaffolds (such as comparison/contrast or evidence charts), and tasks that foster reading *across* texts as well as *within* texts (synthesis tasks, argument tasks). Students need to have guiding questions that lead them to think about topics from alternate perspectives. Furthermore, students need to understand the purposes for reading within their disciplines—the kinds of questions that are asked, the norms for communicating information, the ways in which knowledge is created, shared and evaluated. Understanding what the discipline does and how it determines quality will help students understand what they need to be doing when they read from multiple sources.

In teaching students to read multiple texts, teachers will grapple with text and task selections. One of the most difficult aspects of teaching students to read multiple texts is selecting

the right materials to read. Rather than teachers relying on single texts to help students learn or think about ideas in a discipline, teachers must now choose text *sets* that, taken together, provide a complex yet cohesive learning experience. Does each text in the set have a unique voice? Does each text include essential information that, when put together with information in other texts, affords a complete understanding of the topic? Is each text representative of a disciplinary genre? Does each text have enough information about it to help the reader determine perspective, audience, tone, and trustworthiness? Does the set, taken together, represent an appropriate range of difficulty? Are there some texts that should be read first, so that they can act as scaffolds for later, more difficult texts? Do the texts, taken together, offer sufficient opportunity for teaching vocabulary and discipline-specific reading and writing strategies? These and other questions need to be asked by teachers as they construct multiple-text instruction, and such questions are quite challenging to answer.

Furthermore, how teachers frame the task is important. For example, asking students to take a stand on an issue in which author's disagree is quite different from asking students to synthesize important information across texts and to write an explanation or an account that integrates the various sources. In addition, helping students to understand that an *evidence-based argument* is not a mere opinion piece is important, so that when students are asked to write an argument they know what the task is.

Finally, students need scaffolding to help them make sense of multiple texts. For example, in the current work of Project READI, students are taught to annotate their texts, are provided with various notetaking charts that require comparison and contrast of various texts, and are provided with modeling, practice, and feedback in discipline-based reading and writing strategies. They are encouraged to dig into text and to grapple with meaning. They have explicit discussions

about a discipline's norms, and they use these scaffolds to approximate the reading of historians, scientists, and literary scholars.

A final word

We live in a complex world, a world that requires us to make connections across multiple perspectives to fully understand and act in it. Yet, in school, we teach students to live in a simplistic world, where questions are answered in a single text and complexity is eschewed. Whereas I can understand the need to dig into a single text to understand it, as a teacher I want students, especially by the time they leave high school, to be able to do that *and* develop richer, more nuanced mental models that come from dealing with multiple texts. Success in doing that will depend upon the extent to which we can equip students with the necessary understanding of disciplinary approaches to multiple texts, provide them with appropriate models and tools, and structure tasks with increasing complexity. Teachers using multiple texts will surely struggle with issues of text difficulty and the time-consuming task of selecting appropriate texts to illustrate the instructional points they wish to make. They will be constantly straddling the line between teaching students to understand what is inside a text and what is outside a text. Students will struggle with the lack of certainty that is part and parcel of studying a topic from more than one perspective. But, in the end, research suggests that students engaging with multiple texts will be better at reading about, understanding, and communicating complex issues, which, in turn, will better equip them for the living successfully in the world.

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- ▶ Members of the READI history design team: Chicago—Cynthia Shanahan, Susan Goldman, MariAnne George, Anne Britt, Julia Emig, Johanna Heppeler, Jodi Hoard, Kim Lawless, Michael Manderino, Jackie Popp, Diane Puklin, Josh Radinsky; California—Gayle Cribb, Cynthia Greenleaf

References

- Bazerman, C. (1985). Physicists reading physics: Schema-laden purposes and purpose laden schema. *Written Communication, 2*(1), 3-23.
- Bazerman, C. (1997). Discursively structured activities, *Mind, Culture, and Activity, 4*(4), 296-308.
- Bråten, I., & Strømsø, H. I. (2006). Effects of personal epistemology on the understanding of multiple texts. *Reading Psychology, 27*, 457-484.
- Braten, I., Strømsø, H. I., & Samuelstuen, M. S. (2008). Are sophisticated ° students always better? The role of topic-specific personal epistemology in the understanding of multiple expository texts. *Contemporary Educational Psychology, 33*, 814–840.
- Braten, I., Strømsø, H. I., & Salmerón, L. (2011). Trust and mistrust when ´ students read multiple information sources about climate change. *Learning and Instruction, 21*, 180–192.
- Britt, M. A., & Aglinskias, C. (2002). Improving students' ability to identify and use source information. *Cognition and Instruction, 20*, 485–522.
- Britt, M.A., Perfetti, C.A., Sandak, R. & Rouet, J.F. (1999). Content integration and source separation in learning from multiple texts. In S.R. Goldman, A.C. Graesser & P. van den Broek (Eds.), *Narrative comprehension, causality, and coherence*. Mahwah, NJ: Erlbaum.
- Britt, M.A. & Rouet, J.F. (2012). Learning with multiple documents: Component skills and their acquisition. In J.R. Kirby & M.J. Lawson(Eds.), *Enhancing the quality of learning: Dispositions, instruction, and learning processes*. (pp. 276–314). New York: Cambridge University Press.

- Fang, Z., & Schleppegrell, M. J. (2010). Disciplinary literacies across content areas: Supporting reading through functional language analysis: *Journal of Adolescent and Adult Literacy*, 53(7), 587-597.
- Gil, L., Braten, I., Vidal-Abarca, E., & Strømsø, H. I. (2010). Summary versus argument tasks when working with multiple documents: Which is better for whom? *Contemporary Educational Psychology*, 35, 157–173.
- Hartman, D. (1995). Eight readers reading: The intertextual links of proficient readers reading multiple passages, *Reading Research Quarterly*, 30(3), 520-561.
- Hynd, C. R., McWhorter, J. Y., Phares, V. L. & Suttles, C. W. (1994). The role of instructional variables in conceptual change in high school physics topics, *Journal of Research in Science Teaching*, 31, 933-946.
- Hynd-Shanahan, C., Holschuh, J., & Hubbard, B. (2004). Thinking like a historian: College students' reading of multiple historical documents. *Journal of Literacy Research* 36, 141–176. Jacobson & Spiro, 1995
- Kintsch, W. (1998). *Comprehension: A paradigm for cognition*. New York: Cambridge University Press.
- Kintsch, W. (2007). *Meaning in context*. In T. K. Landauer, D. McNamara, S. Dennis & W. Kintsch (Eds.), *Latent Semantic Analysis*. Mahwah, NJ: Erlbaum. Pp. 89-105.
- Le Bigot, L. and Rouet, J. F. (2007). The Impact of Presentation Format, Task Assignment, and Prior Knowledge on Students' Comprehension of Multiple Online Documents, *Journal of Literacy Research*. 39(4) 445-470.
- National Governors Association Center for Best Practices & Council of Chief State School Officers. (2010). *Common Core State Standards for English language arts and literacy in history/social studies, science, and technical subjects*. Washington, DC: Authors.

- Nokes, J. D., Dole, J. A., & Hacker, D. J. (2007) Teaching high school students to use heuristics while reading historical texts. *Journal of Educational Psychology*, 99, 492-504.
- Perfetti, C. A., Britt, M. A., Rouet, J. F., Georgi, M. C., & Mason, R. A. (1994). How students use texts to learn and reason about historical uncertainty. In M. Carretero & J. F. Voss (Eds.) *Cognitive and Instructional Processes in History and the Social Sciences*. Hillsdale, NJ: Lawrence Erlbaum Associates.
- Reisman, A. (2012). Reading like a historian: Document-based History Curriculum Intervention in Urban High Schools, *Cognition and Instruction*, 30(1)86-112.
- Rouet, J. F. (2006). *The skills of document use: From Text Comprehension to Web-based learning*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Rouet, J. F., Britt M. A., Mason, R.A. & Perfetti, C. A. (1996). Using multiple sources of evidence to reason about history. *Journal of Educational Psychology*, 88(3) 478-493.
- Rowe, D. W. (1987). Literacy learning as an intertextual process. In J. E. Readence & R. S. Baldwin (Eds.) *Research in literacy: Merging perspectives*. Thirty-sixth Yearbook of the National Reading Conference (pp. 101-112). Rochester, NY: National Reading Conference.
- Rukavina, I. & Daneman, M. (1996). Integration and its effect on acquiring knowledge about competing scientific theories for text. *Journal of Educational Psychology*, 88(2) 272-287.
- Schwartz, B. (2003). Collective reading of multiple texts in argumentative activities. *International Journal of Educational Research* 39(1-2), 133-151.
- Schleppegrell, M. J., & Fang, Z. (2008). *Reading in secondary content areas: A language-based pedagogy*. Ann Arbor, MI: University of Michigan Press.
- Shanahan, T., & Shanahan, C. (2008). Teaching disciplinary literacy to adolescents: Rethinking content-area literacy, *Harvard Educational Review*, 78(1) 40-59.

- Shanahan, T., Robinson, B. & Schneider, M. (1993). Integration of curriculum or interaction of people? *Reading Teacher*, 47, 158-161.
- Shanahan, C., Shanahan, T., & Misischia, C. (2011). Analysis of expert readers in three disciplines: History, mathematics, and chemistry, *Journal of Literacy Research*, 43(4), 393-429.
- Spiro, R.J. & Jehng, J. (1990). Cognitive flexibility and hypertext: Theory and technology for the non-linear and multidimensional traversal of complex subject matter. D. Nix & R. Spiro (eds.), *Cognition, education, and multimedia*. Hillsdale, NJ: Erlbaum.
- Stahl, S., Hynd, C., Britton, B., McNish, M., & Bosquet, D. (1996). What happens when students read multiple source documents in history? *Reading Research Quarterly*, 31, 430-457.
- Stromso, H. I., Braten, I., & Britt, A. (2009). Reading multiple texts about climate change, *Learning and Instruction*, (20), 1-13.
- Strømsø, Bråten and Samuelsten (2003). Students' strategic use of multiple sources during expository text reading: A longitudinal think-aloud study. *Cognition and Instruction*, (21)2, 113-147.
- VanSledright, B. (2002a). *In search of America's past: Learning to read history in elementary school*. New York, NY: Teachers College Press.
- VanSledright, B. (2002b). Confronting history's interpretive paradox while teaching fifth graders to investigate the past. *American Educational Research Journal*, 39, 1089-1115.
- Vygotsky, L.S. (1986). *Thought and Language*. Cambridge, MA: MIT Press
- Wertsch, J. (1991), *Voices of the Mind: Sociocultural approach to mediated action*. Boston, MA Harvard University Press.
- Wertsch, J. (1998). *Mind as action*. New York: Oxford University Press, USA

- Wiley, J., & Voss, J. F. (1999). Constructing arguments from multiple sources: Tasks that promote understanding and not just memory for text. *Journal of Educational Psychology, 91*, 301–331.
- Wineburg, S. S. (1991). On the reading of historical texts: Notes on the breach between school and academy. *American Educational Research Journal, 28*, 495–519.
- Wolfe, M. B. W., & Goldman, S. R. (2005). Relations between adolescents' text processing and reasoning. *Cognition & Instruction, 23*, 467–502.
- Worton, M., & Still, J. (Eds.) (1990) *Intertextuality: Theory and Practices*. Manchester: Manchester University Press.

Table 1. The Common Core and multiple texts.

Literature		
	Grades 6-8	Grades 11-12
Craft and Structure	Compare and contrast the structure of two or more texts and analyze how the differing structure of each text contributes to its meaning and style.	
Integration of Knowledge	Compare and contrast a written story, drama, or poem to its audio, filmed, staged, or multimedia version, analyzing the effects of techniques unique to each medium (e.g., lighting, sound, color, or camera focus and angles in a film).	Analyze multiple interpretations of a story, drama, or poem (e.g., recorded or live production of a play or recorded novel or poetry), evaluating how each version interprets the source text. (Include at least one play by Shakespeare and one play by an American dramatist.)
Listening and Speaking: Comprehension and Collaboration	Analyze the purpose of information presented in diverse media and formats (e.g., visually, quantitatively, orally) and evaluate the motives (e.g., social, commercial, political) behind its presentation.	Integrate multiple sources of information presented in diverse formats and media (e.g., visually, quantitatively, orally) in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.
Informational Texts		
Integration of Knowledge	Analyze how two or more authors writing about the same topic shape their presentations of key information by emphasizing different evidence or advancing different interpretations of facts.	Delineate and evaluate the reasoning in seminal U.S. texts, including the application of constitutional principles and use of legal reasoning (e.g., in U.S. Supreme Court majority opinions and dissents) and the premises, purposes, and arguments in works of public advocacy (e.g., The Federalist, presidential addresses).
Writing		
Writing: Research to Build and Present Knowledge	Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.
History/Social Studies		
Craft and Structure	Compare the point of view of two or more authors for how they treat the same or similar topics, including which details they include and	Evaluate authors' differing points of view on the same historical event or issue by assessing the authors' claims, reasoning, and evidence.

	emphasize in their respective accounts.	
Integration of Knowledge	Analyze the relationship between a primary and secondary source on the same topic.	Integrate information from diverse sources, both primary and secondary, into a coherent understanding of an idea or event, noting discrepancies among sources.
Science/Technical Subjects		
Integration of knowledge and Ideas	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic	Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
Writing in History/Social Studies and Science/Technical Subjects		
Writing: Research to Build and Present Knowledge	Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.	Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation.