INTERNATIONAL LITERACY ASSOCIATION

ILA E-SSENTIALS

LITERACY PRACTICES THAT ADOLESCENTS DESERVE

Disciplinary Literacy Strategies in Content Area Classes

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Dear Educator,

The 21st century has brought with it a tremendous evolution in how adolescents engage with text. As adolescents prepare to become productive citizens, they must be able to comprehend and construct information using print and nonprint materials in fixed and virtual platforms across disciplines. In 2012, the International Reading Association published a revised adolescent literacy position statement as a guide for supporting adolescents' ongoing literacy development.

*The goal of the authors of the statement was to create a living document that brings educators' classrooms to life and makes the eight recommendations of the position statement achievable. This series, **Literacy Practices That Adolescents Deserve**, brings readers inside real classrooms with practical, research-based strategies to implement in classrooms and schools.*

We invite you to read the text, follow the links, and consider how this may become a part of your work and the work of colleagues.

Fondly,

Heather Casey, Rider University
Susan Lenski, Portland State University
Carol Hryniuk-Adamov, Child Guidance Clinic Winnipeg School Division
Series Editors

The downloadable PDF of the full revised position statement and additional adolescent literacy resources from IRA can be accessed online at www.reading.org/Resources/ResourcesbyTopic/Adolescent/Overview.aspx.

The International Reading Association's Adolescent Literacy Position Statement (International Reading Association, 2012), calls for content area teachers who provide instruction in the multiple literacy strategies needed to meet the demands of specific disciplines. This is a call for disciplinary literacy.

In 1925 and 1937, two reading reports were published in the Yearbook of the National Society for the Study of Education. Each of these reports called for subject matter teachers to teach the reading in their content area classes, and the slogan "every teacher a teacher of reading" became popular at some point during that time (Whipple, 1925, 1937). In 1970, Hal Herber repopularized the idea that all teachers should teach reading. Herber initiated an interest in teaching reading strategies that could be applied to any number of texts across content areas.

Disciplinary literacy is not just the hip new name for content area reading. Rather than focusing on the similarities of literacy in the content areas, disciplinary literacy focuses on the differences. And literacy in the various content area subjects is, indeed, different. This difference stems from the way these disciplines create, communicate, and evaluate information (T. Shanahan & Shanahan, 2008; C. Shanahan, Shanahan, & Misischia, 2011).

For example, historians create knowledge using the historical record, scientists use experimentation and systematic observation, mathematicians use principles of logic, and literacy critics use philosophical stances. These different ways of creating new knowledge afford varying levels of confidence. On a continuum, think of mathematics being at far left (very confident) and literary criticism at far right (not at all confident), with science and history from left to right in the middle.

Mathematicians believe that mathematics without error produces correct answers, or *truths*. Scientists do not believe they are creating truth, but count on the *probability* that, given similar circumstances, similar findings will occur. Historians believe that careful reading of the historical record can help them make *plausible* interpretations of the past. Plausibility counts in literary criticism (claims should have evidence), but literary critics know that there will be little consensus about meaning. They even argue about the importance of determining what an author meant a text to say.

These different stances toward knowledge lead disciplinary experts to read differently. Mathematicians read every word carefully. They know that a misinterpretation of one word can change the meaning of what they read. Any mistake will result in an incorrect answer. Scientists have at least two different approaches to reading. If they are reading about corroborated scientific principles (like those in science textbooks), they read to understand and learn. If scientists are reading about a new, uncorroborated finding, or are reading an application of information, they read with a critical eye, looking for errors and departures from scientific methods.

Because historians interpret the past on the basis of incomplete and often conflicting documents, they read critically, thinking about the author and his or her perspective, the time period in which a text was created, its purpose and audience, the completeness and coherence of the argument or account, and what others corroborate. Literary critics look for literary tropes, conflict, and other features of literature to interpret the text. Further, they often read using a particular lens (e.g., a feminist or Freudian lens).

Thus experts in various disciplines take into account the unique aspects of their fields when reading. Experts' reading is different from the kind we teach students. We teach students generic strategies such as summarization that can be applied to all texts. Although research suggests these one-size-fits-all strategies are helpful, mostly with struggling readers (see, for example, the report of the National Reading Panel [National Institute of Child Health and Human Development, 2000]), they take students only so far—students cannot think critically about a disciplinary text if they do not know what counts as quality.

Moreover, students cannot know what is important in a text if they do not know what matters to a discipline. That is, knowing how a discipline creates, communicates, and evaluates knowledge, and how experts read and write, can help students' comprehension and writing. There is a growing research base providing evidence that this is so (De La Paz, 2005; Greenleaf et al., 2009; Hynd-Shanahan, Holschuh, & Hubbard, 2004; Monte-Sano, 2011; Monte-Sano & De La Paz, 2012; vanSledright & Kelly, 1998). The Table shows the areas in which disciplinary literacy differs from content area reading.

Strategies

Teachers in the disciplines of mathematics, science, history, and English, then, should use different kinds of instruction to teach literacy. Other subject areas also have unique features, but these four disciplines have been the focus of research and curriculum and make up the bulk of coursework that students take to graduate. In the following sections, I talk about instruction in these four disciplines, focusing on three aspects of disciplinary reading and writing: (1) texts, (2) claims and evidence, and (3) disciplinary practices.

Mathematics

Pure mathematics is different from mathematics for students. Mathematicians think in the *abstract* rather than the particular. $2 + 3 = 5$ is only an instance of $a + b = c$. In school, students often learn particular examples rather than abstract principles, and they have a difficult time thinking abstractly (J.S. Fulda, personal communication, January, 2012; Mitchelmore & White, 2004). Difficulty in thinking abstractly may lead to difficulty with word problems. Students cannot see that a problem is just another example of an abstract principle. I have

Table. Comparing Content Area Reading With Disciplinary Literacy

	Content Area Reading	Disciplinary Literacy
Source	Reading experts since 1920s	Wider range of experts since 1990s
Nature of skills	Generalizable	Specialized
Focus	Use of reading and writing to study/learn information	How literacy is used to make meaning within a discipline
Students	Remedial	Whole distribution
Texts	Often encourages use of literary text	Only focuses on disciplinary text
Role of graphics	Ignored or taught generally	Specific to the discipline

found very few math reading strategies that were not already well-known general strategies and none that lead to abstract learning.

Texts

Teachers sometimes say that mathematics is *not* reading, and so texts are unimportant. This belief flies in the face of the practice of mathematicians, who read and write nearly all of the time. They read and write journal articles, books, proofs, mathematical applications, and so forth. Mathematicians also read and write symbols. Mathematical equations *are* language—they have a particular organization, symbols have particular meanings, and ideas have a logical precedure.

Mathematicians probably rely less on *multiple texts* and variations in genre than the other three disciplines—perhaps because they read each text so carefully, weighing each word or symbol. However, teachers may improve students' understanding of mathematics by using more than one text. Students could compare two different solutions to the same kind of problem or read about an application of a mathematical principle in a popular magazine.

Claims and Evidence

In mathematics, claims and evidence are not presented in the same way as in other disciplines. In proofs, for example, the claim is the answer and comes last; the evidence is how that answer was derived. The evidence supports the claim if it is logical and there are no errors. Students should be able to explain how they derived their answers to problems, either in writing or orally. Students may help one another if someone gets stuck or makes errors. Some students are great at doing the calculations but require much modeling and scaffolding to explain how they arrived at the answer.

Disciplinary Practices

Mathematicians read carefully, evaluating the meaning of each word or symbol, and they apply logic to their reading. (For an in-depth look at how mathematicians think, read "Mathematics for Literacy" by Jan de Lange) The following are a few practices of mathematicians that can be used by mathematics students.

Reread. Mathematicians discuss rereading as a major strategy. For example, a mathematician told me that it sometimes took years to finally

understand a complicated proof. Although students do not have years to understand a problem, it can be helpful to know that rereading is an appropriate practice in mathematics.

Learn the Names of Variables Before Reading A Formula. In the equation, $n(a + b) = na + nb$, ***n*** represents any number. To read this equation with meaning, it is helpful to remember what the variable ***n*** symbolizes.

Read Equations With Appropriate Directionality. Mathematical equations, unlike prose, do not necessarily proceed from left to right; symbols and numbers within a parenthesis are read before symbols and numbers outside, and it might help to read them that way. Therefore, $n(3 + 5)$ would be read as the sum of three plus five times n. Saying it this way instills the order of operations.

Learn Accurate Definitions. Because every word counts, vocabulary has precise definitions. Mathematicians have told me students should memorize precise definitions rather than put them in their own words; they do not want students to make errors. A common problem is that students use the general rather than the mathematics-specific definition of a word.

For example, *prime* has both general ("the best" or "main") and math-specific (a number that is evenly divisible only by itself and 1) meanings. However, memorizing definitions can also lead to surface-level understandings only. Vocabulary learning, then, should be the focus of study and reflection. Students should know the definition and examples. Further, they might compare and contrast general and specific meanings. A vocabulary notebook with the categories of "mathematics definition," "general definition," and "examples of mathematics definition" could be a useful tool.

Detect Errors. As one mathematician said to me, "There is error in everything." To help students read for errors, teachers might purposefully introduce error into a problem, equation, or explanation and have students find it. Remember that a change in one word (e.g., *a* to *the*) can change the meaning of the text, and so the error that is introduced could become increasingly smaller over time.

Recognize Distracting Information. Some mathematicians complain about extraneous information in textbooks, saying it is hard to know what is mathematics and what is merely motivational or superfluous. A teacher can help students see the organization of a textbook, thus cueing them to the important information. One rudimentary math strategy that helps students focus on appropriate information in word problems is RIDGES (Snyder, 1988; see Figure 1).

Science

Texts

Scientists read proposals, lab reports, journal articles about experiments, and other documents. In these, information is depicted in different forms—transformed from prose to figures or diagrams, mathematical equations, photographs, and other representations. Particular text features are characteristic of science text (Fang & Schleppegrell, 2008, 2011). Four are as follows:

1. Purposeful use of passive voice (The cell membrane was damaged when...)
2. Long noun phrases (e.g., gene replacement therapy, primate genome sequence, the polymerase chain reaction)
3. Nominalization of verbs (e.g., *evolve* becomes *evolution*, *distill* becomes *distillation*)
4. Hedging ("If the circumstances change, we cannot guarantee the same results"; "It may be...,"), or using language signaling the level of confidence scientists have in the information

All of these features contribute to making students' reading difficult!

What about multiple texts? The Textual Tools study group from Michigan (Textual Tools Study Group, 2006) describes attempts to infuse literacy into science secondary classrooms. One aspect of the study that seemed interesting was the pairing of two texts on each topic—such as a textbook and a popular science article.

Figure 1. Using RIDGES to Solve Word Problems

1. **Read** *the problem*—If the problem is not understood, read it again.
2. **Identify** *all of the information given in the word problem*—List the information separately. After listing all of the information, circle the information that is needed to solve the problem.
3. **Draw** *a picture*—Draw a picture of the information in the problem. This may help a student pick out the relevant information.
4. **Goal** *statements*—The student should express, in his or her own words, the question the problem is asking.
5. **Equation** *development*—The student will write an equation to the problem. (e.g., length + width + length + width = distance around the field)
6. **Solve** *the equation*—The given information is plugged into the equation (e.g., 10 + 6 + 10 + 6 = distance around the field)

Source: Snyder, K. (1988). RIDGES: A problem-solving math strategy. *Academic Therapy*, *23*(3), 261–263.

Claims and Evidence

In experimental studies, the main claims are the findings, and the experiment is the evidence. Science textbooks may consist mostly of science explanations, however, and the evidence in these may be unstated. That is, the information is the corroborated evidence from multiple experiments or observations, but these experiments may not be described. The unstated claim is that the information is accurate. Explanations and arguments are both common means of communication in science, and students should practice recognizing and writing both.

Disciplinary Practices

When scientists read to understand scientific information, they look for more than just surface understandings. To scientists, they have not learned the information unless they can explain it using several representations. When scientists read with a critical eye, the way they read descriptions of experiments or applications of science, they evaluate that information with scientific methods and accuracy in mind (e.g., see Figure 2). At times,

Figure 2. Guide for Evaluating Science in the News

Savvy Reader (continued)

TABLE 1.2 **A guide for evaluating science in the news.** *For each question, check the appropriate box.*

Question	Possible answers: Preferred answer		Raises a red flag	
1. What is the basis for the story?	Hypothesis test	○	Untested assertion *No data to support claims in the article.*	○
2. What is the affiliation of the scientist?	Independent (university or government agency)	○	Employed by an industry or advocacy group *Data and conclusions could be biased.*	○
3. What is the funding source for the study?	Government or nonpartisan foundation (without bias)	○	Industry group or other partisan source (with bias) *Data and conclusions could be biased.*	○
4. If the hypothesis test is a correlation: Did the researchers attempt to eliminate reasonable alternative hypotheses?	Yes	○	No *Correlation does not equal causation. One hypothesis test provides poor support if alternatives are not examined.*	○
If the hypothesis test is an experiment: Is the experimental treatment the only difference between the control group and the experimental group?	Yes	○	No *An experiment provides poor support if alternatives are not examined.*	○
5. Was the sample of individuals in the experiment a good cross section of the population?	Yes	○	No *Results may not be applicable to the entire population.*	○
6. Was the data collected from a relatively large number of people?	Yes	○	No *Study is prone to sampling error.*	○
7. Were participants blind to the group they belonged to and/or to the "expected outcome" of the study?	Yes	○	No *Subject expectation can influence results.*	○
8. Were data collectors and/or analysts blinded to the group membership of participants in the study?	Yes	○	No *Observer bias can influence results.*	○
9. Did the news reporter put the study in the context of other research on the same subject?	Yes	○	No *Cannot determine if these results are unusual or fit into a broader pattern of results.*	○
10. Did the news story contain commentary from other independent scientists?	Yes	○	No *Cannot determine if these results are unusual or if the study is considered questionable by others in the field.*	○
11. Did the reporter list the limitations of the study or studies on which he or she is reporting ?	Yes	○	No *Reporter may not be reading study critically and could be overstating the applicability of the results.*	○

Source: Belk, C., & Maier, V. (2012). *Biology: Science for Life* (4th Ed.). San Francisco, CA: Benjamin Cummings.

they look for errors the way mathematicians do, and they expect information to be accurately and precisely described. For example, a scientist I interviewed told me that he always made sure that the correct unit of measurement was used. The following practices can be taught.

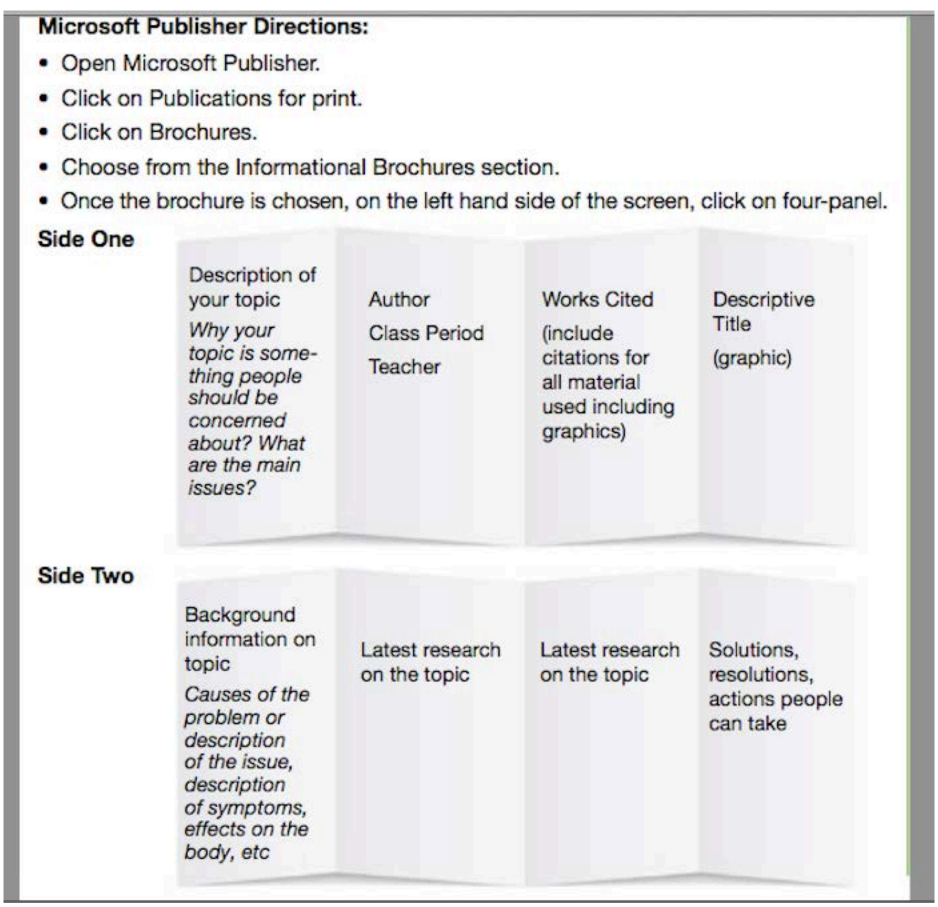
Transform. Students can be taught to transform prose to diagrams to equations and vice versa, using both words and models or other visual representations. Building a model after reading about a process helps students to check their understanding of the concept being described and helps the teacher learn what the student has understood. Teachers can ask students to construct diagrams and then let other students explain the diagrams in words. This kind of activity helps students develop clearer, more accurate representations.

Write for Different Audiences and Purposes. Scientists write for both lay and scientific audiences (see Figure 3 for an example assignment on writing for a lay audience). They write arguments, explanations, and precise observations, such as in lab reports. Teachers can provide students with models of these kinds of writing, especially when they are just learning the genre. For example, students could write about the results of a class-based experiment to a more scientific audience, or write a proposal for funding to an informed, nonscientific audience, such as a funding board. (Read "Science Writer and Universal Design for Learning" by Stacey Reed and Peggy Coyne)

Learn Science Vocabulary. Concepts are represented by the technical terms. For example, the term *eutrophication* represents the entire process of water stagnation. Concepts build over time, so that if students do not understand an earlier concept, learning a later concept will be difficult. Learning vocabulary, then, is an important aspect of science learning. Technical terms are packed into texts, often defined the first time they appear in textbooks or if their meanings change in different contexts. Also, technical terms in science are built from Greek and Latin roots and affixes. So scientific names reveal not only what words mean, but also what their relationship to other words is (e.g., annual, biannual, perennial).

Scientists use such words because it helps scientists anywhere in the world to figure out their meanings and relationships. Students should learn the Greek and Latin roots and affixes that underlay scientific terminology and use these to make connections to related concepts. In addition, as in mathematics, science vocabulary may have general *and* discipline-specific meanings. *Distill* can mean "get the meaning of" or "purify by vaporizing, then condensing and collecting

Figure 3. Lay Instructions for Making a Science Brochure


Microsoft Publisher Directions:

- Open Microsoft Publisher.
- Click on Publications for print.
- Click on Brochures.
- Choose from the Informational Brochures section.
- Once the brochure is chosen, on the left hand side of the screen, click on four-panel.

Side One

Description of your topic *Why your topic is something people should be concerned about? What are the main issues?*	Author Class Period Teacher	Works Cited (include citations for all material used including graphics)	Descriptive Title (graphic)

Side Two

Background information on topic *Causes of the problem or description of the issue, description of symptoms, effects on the body, etc*	Latest research on the topic	Latest research on the topic	Solutions, resolutions, actions people can take

the resulting liquid." Finally, students need to pull together technical vocabulary to explain scientific processes and phenomena. A vocabulary notebook in science could contain the categories "scientific definition," "general definition," "Greek or Latin roots, word parts," "examples/explanations," and "relation to other scientific terms."

Take Notes. A structured note-taking activity for a subject in science takes into account what is important to learn. For example, chemists study the properties of chemicals and their combinations. A note-taking activity could have the names of chemical substances in the left column and "properties," "processes," "interactions," and "atomic expression" in subsequent columns. As students read, they keep track of chemicals by using a chemistry note-taking sheet (see Figure 4).

Understand the Language of Science. Students do not often get instruction in interpreting sentences or small pieces of text in science class, yet doing so may help them understand science texts. The teacher can choose sentences from the text students are reading, and then let students locate words they think are most important and have them explain their choices. This practice affords an opportunity to point out the way sentences work, illustrating the way scientists hedge their findings by expressing the limits of generalizability, nominalize verbs (turning them into nouns), use long noun phrases, and so forth.

Figure 4. Chemistry Note-Taking Sheet

Substances	Properties	Processes	Interactions	Atomic Expression

History

Texts

Students must read multiple texts in history; history comprises multiple perspectives and interpretations. Texts can be documentaries, trade books, cartoons, photographs, paintings, artifacts, primary documents (e.g., the U.S. Constitution), maps, memoirs, audio and video recordings, newspaper articles, textbooks, songs, transcriptions of interviews, census data, and just about anything else that comes from the past or is an interpretation of the past. A history textbook should not be the only text. Students need to see the way in which history interpretations are created.

Claims and Evidence

Historians write primarily historical accounts and historical arguments. Historical accounts represent chronologically their interpretations of the *what* and *why* of past events. In historical accounts, a series of claims can be made about what took place and why it happened, but the *claims* remain implicit—they are stated as fact (e.g., "There were three causes of World War II" or, "The turning point of the war was when..."), and the evidence to support the interpretation may be absent.

As with science explanations, historical claims can be difficult to recognize. Unlike science explanations, historical claims are more open to dispute; it is important not to think of them as truths. One way to make that point is to compare and contrast two or more accounts of the same event, especially if the two accounts disagree. Johanna Heppler, a high school history teacher I work with in Project READI, tells students that Columbus's travel to the New World resulted in "conflict" or "communication," depending on what you read.

Comparing one historian's account of conflict with another historian's account of the Columbian Exchange makes the point that all historians do not have the same interpretations. There are numerous examples of historical accounts that disagree (see Reading Like a Historian); reading these can lead students to refer to historians' interpretations as claims based on evidence. In the Columbus example, both historians relied on De Las Casas's description of the cruelty of the Spanish, but in different ways, with one historian depicting it as the Columbian Exchange using other sources of information and the other historian who depicted it as conflict using it as his main source of information.

Disciplinary Practices

Historians have sophisticated ways of reading text, and these can be taught to students. (For an example of how "reading like a historian" can be taught, see the Stanford History Education Group's website)

Source and Contextualize. Even before historians begin to read the body of a text, they think about perspective. That is, they consider who the author was (the source), where it was written (the source), when it was written (the context), what was happening at the time (the context), what the purpose was, and for whom it was written (Wineburg, 1991). An acronym to remind students to source and contextualize in history is SOAPSTone (see Figure 5).

The acronym stands for Speaker (author), Occasion, Audience, Purpose, Subject, and Tone. Students can consider the first five before they read. Teachers should not teach SOAPSTone to trigger a mere identification process. Students need to consider the author and his or her influences on text interpretation. For example, an author who was a known racist during the Civil War probably would have a negative perspective of President Abraham Lincoln, and whatever he said in the text should be interpreted in light of it.

Corroborate. Historians trust information that has been corroborated by others. Say that a historian had interviewed someone in the room the night John F. Kennedy asked Lyndon Baines Johnson to be his running mate. How would the historian know the person was telling the truth? He or she might be less skeptical of the account if *another* person in the room had the same story, but if they both had the same political viewpoint, the historian might still wonder. He or she might be more likely to trust corroborated information from two people with different opinions.

Figure 5. SOAPSTone Description

Speaker—Who is the author (speaker) of this piece? Do you know anything about the person's background? For example, is the person a public figure with a known agenda or title? A speech from a president would have different implications from that of a minister or onlooker.

Occasion—What is the time and place of the document? What was going on at the time that prompted the person to write this piece?

Audience—To whom is this piece directed? What kind of document is this—newspaper article, speech, diary entry, letter? Was it an editorial piece in a local newspaper? Can any assumptions be made about the audience? Do you know why the document was created? What kind of language does the document contain?

Purpose—What was the purpose or meaning behind the text? Is the speaker trying to provoke some reaction from the audience? How does he or she try to accomplish this?

Subject—What is the subject of the document? What is the general topic or idea of the piece?

Tone—What is the attitude of the speaker based on the content of the piece? Does he or she use humor, sarcasm, irony, fear, or an objective tone? Is there any bias to what he or she is saying?

Teachers can teach students to use comparison-contrast charts (see Figure 6 for an example) to find out if information agrees or disagrees across texts. For example, the texts being compared can be placed in the left column, and the issue on which they are being compared can be placed in subsequent columns (Did the Johnson Administration deliberately provoke the North Vietnamese in the Tonkin Gulf? Was the Johnson Administration honest with Congress about the need for the Tonkin Gulf Resolution? These two issues are subject to disagreement among historians, and the historical record is murky.) A student would study the information on the charts while considering the source and context of the information in framing his or her answers to the questions.

Analyze Relationships Among Events. When any individual is in the middle of history, the causes and effects of an event and its importance can be impossible to judge. Historians, however, take a

Figure 6. Comparison-Contrast Chart for Multiple Texts in History

Texts	Question/Topic 1 Were U.S. ships attacked on August 4, 1962?	Question/Topic 2 Did the Johnson Administration deliberately provoke N. Vietnam?	Question /Topic 3 Did the Johnson Administration deliberately mislead Congress?
Text 1	Yes No Maybe Evidence:	Yes No Maybe Evidence:	Yes No Maybe Evidence:
Text 2	Yes No Maybe Evidence:	Yes No Maybe Evidence:	Yes No Maybe Evidence:
Text 3	Yes No Maybe Evidence:	Yes No Maybe Evidence:	Yes No Maybe Evidence:
Text 4	Yes No Maybe Evidence:	Yes No Maybe Evidence:	Yes No Maybe Evidence:
My answer	Yes No Maybe Evidence:	Yes No Maybe Evidence:	Yes No Maybe Evidence:

retrospective, big picture look, given the historical record. Studying the chronological sequence of events, they may decide that some events merely follow others, with no clear relationship, but that other events are causative. It could be that a constellation of events causes one big event, and that one event, in turn, has many consequences, making it significant. These are the *interpretations* of historians.

To help students recognize these relationships when they read, teachers can help students make cause-effect diagrams. One such diagram is called the herringbone (see Figure 7), because it looks like a fish. Another is called an episode pattern organizer (see Figure 8). These both can depict interpretations of events. To help students make their own interpretations, teachers might have them hypothesize which relationships on a timeline are causative, then find evidence that backs up their hypothesis. Students could also use the history event chart (see Figure 9). In this chart, students read and take notes on different events, then determine the relationships between them.

Use Interpretive Frameworks. Historians look at history through different lenses. One might interpret events in terms of the social structures that interact—those that are economic, political, religious, artistic. Another might look at systems that are operating, such as feudalism or colonialism. Some make sense of history by studying patterns that recur across space (in different parts of

Figure 7. Herringbone Diagram

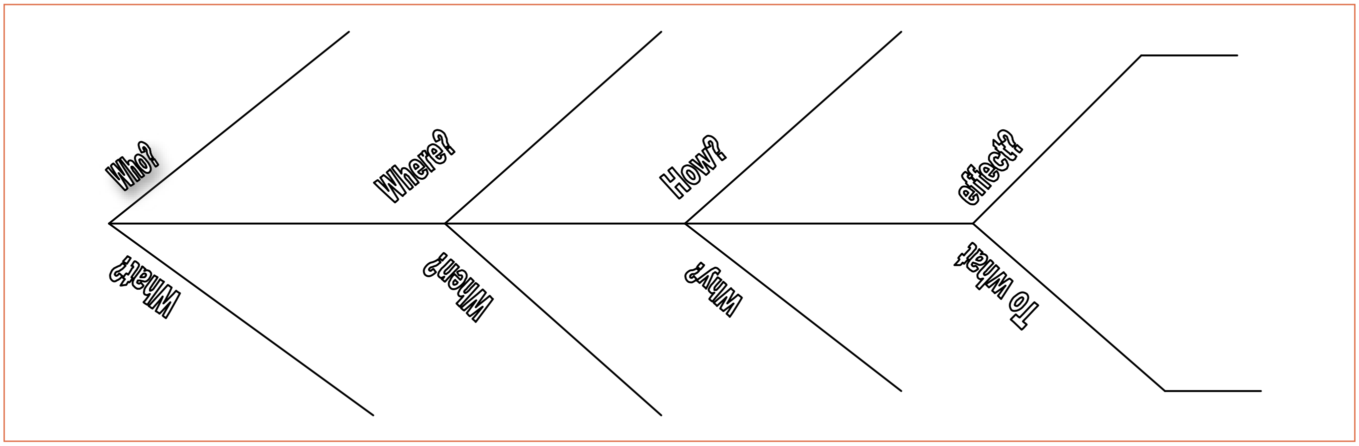
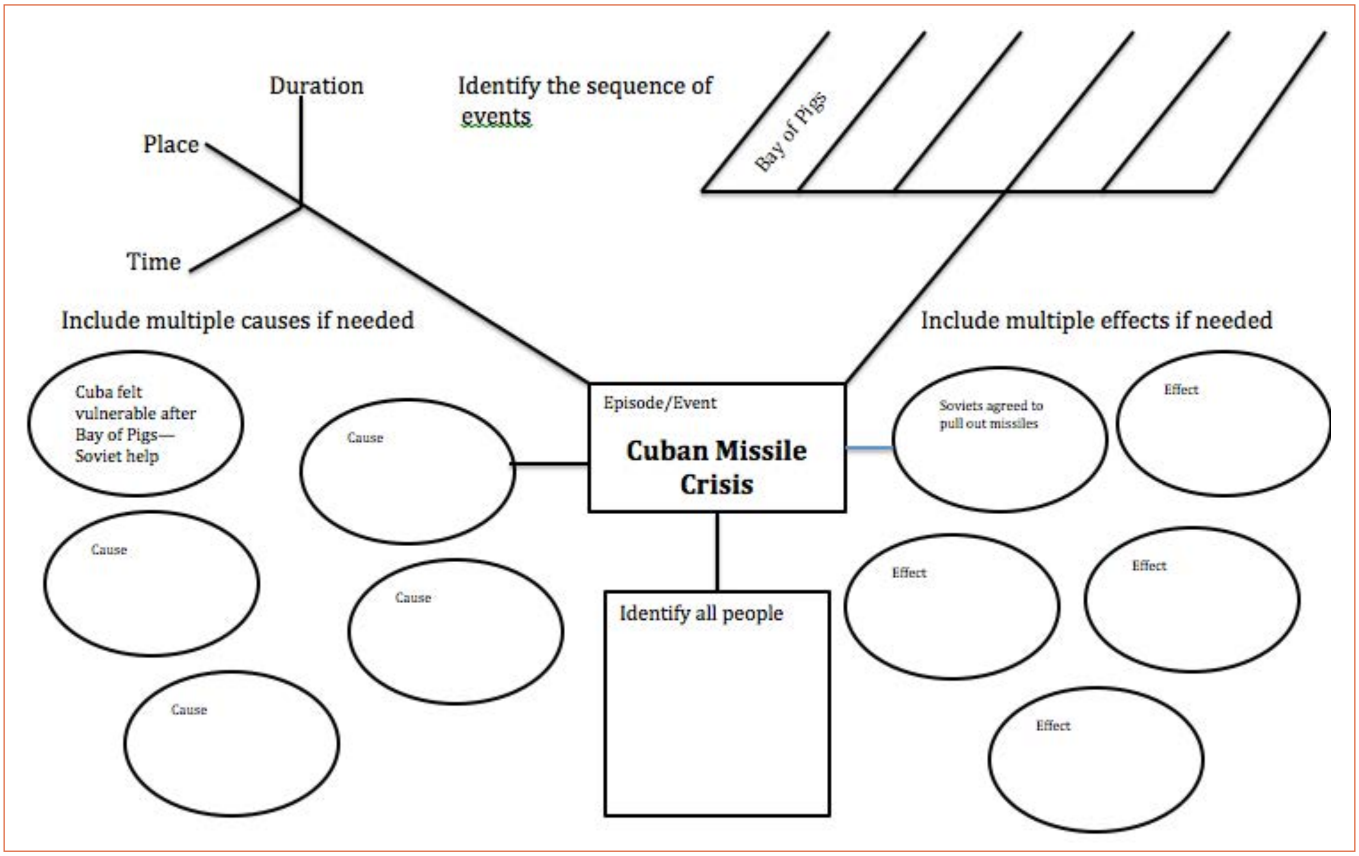


Figure 8. Episode Pattern Organizer



the world) and time (in different ages) such as immigration, industrialization, or the agency of individuals versus the masses. Historians might use various schools of thought either consciously or unconsciously, such as material determinism or idealism. These ways at looking at the past give historians a more nuanced sense of a particular event—a "big picture" view—and an opportunity to build theory about why events unfold as they do.

For example, after an analysis of the economic, political, and artistic aspects of events across a time, historians might hypothesize that political instability is accompanied by shifts in art. One tool teachers can use to help students recognize aspects of history is called G-SPRITE (see Figure 10). This acronym stands for Geography, Social, Political, Religious, Intellectual, Technological, and Economic.

Figure 9. History Event Chart

TEXT	WHO?	WHAT?	WHERE?	WHEN?	WHY?
1					
Relation:					
2					
Relation:					
3					
Relation:					
4					
Main Point:					

Figure 10. G-SPRITE Description

Geography *(human interactions with the environment)* – Includes the physical location of civilizations, how geographical features influence people, how people adapted to the geographical features, demography and disease, migration, patterns of settlement

Social – Includes living conditions, gender roles and relations, leisure time, family and kinship, morals, racial and ethnic constructions, social and economic classes – and ways these are changing or being challenged

Political – Includes political structures and forms of governance, laws, tax policies, revolts and revolutions, military issues, nationalism

Religious – Includes belief systems, religious scriptures, the church/religious body, religious leaders, the role of religion in this society, impact of any religious divisions/sects within the society

Intellectual – Includes thinkers, philosophies and ideologies, scientific concepts, education, literature, music, art and architecture, drama/plays, clothing styles, – and how these products reflect the surrounding events

Technological *(anything that makes life easier)* – Includes inventions, machines, tools, weapons, communication tools, infrastructure (e.g. roads, irrigation systems) – and how these advances changed the social and economic patterns

Economic – Includes agricultural and pastoral production, money, taxes, trade and commerce, labor systems, guilds, capitalism, industrialization – and how the economic decisions of leaders affected the society

Students who use this tool place causes and consequences of events into these categories on a chart or use the acronym to guide their annotation of the text. But students should do more than categorize. They should think deeply about the interaction of elements and how these play out in previous or subsequent events. Students can also be taught to recognize the various stances that historians take. Historians try to identify "the Great Person in History" or a "grass roots" perspective, and they watch out for those who have a view that either the world keeps getting better and better or that it keeps getting worse and worse.

Read Multiple Genres. Reading more than one text is a necessity in history, as is reading different genres. Several sources provide strategies for reading political cartoons (It's no laughing matter; Cartoon Analysis Guide) and photographs (National Archives Photograph Analysis Worksheet). The National Archives website also has text sets on numerous topics. Reisman (2012) showed in her research the benefits to students of reading historical documents.

Understand the Language of History. Historians' sentences are often about actors with goals who use tactics or particular ways of meeting those goals, with consequences. Their sentences use the language of causality signaled by important transition words and phrases (e.g., *because*, *a result of*) and chronology (e.g., *after that*, *later*) or signaled by their placement next to each other. Students can practice identifying these aspects of language by focusing on sentences. Rich discussions about meaning can occur, and sentence analysis can also help students read unwieldy and difficult sentences in text.

Write History. Both historical accounts and historical arguments are based on careful analysis of multiple perspectives from trustworthy and corroborated evidence. In an account, writers tell their interpretation about what happened and why. In a historical argument, they make a case for their particular interpretation, making an explicit claim and citing evidence and perhaps discussing counterclaims. Models of both are available through Internet searches, and teachers can use these models to help students to recognize and use the characteristics of each. Sample essays written in response to document-based questions on the history AP tests might be helpful. (See the DBQ Project website.)

English

The teaching of reading in English in the United States is going through a subtle transformation because of the Common Core State Standards (CCSS) and its emphasis on *close reading* (National Governors Association Center for Best Practices & Council of Chief State School Officers, 2010). Close reading is a practice (not a strategy or a lesson) in which readers pay attention to what the text says, how the text works, and how unified and connected a text is. The idea behind close reading is that anybody can make an interpretation by focusing solely on the text.

The creators of the CCSS are uncomfortable with well-thought-out techniques such as building background knowledge, connecting to self and world, studying the life of the author, or making comparisons across texts until one has read and appreciated an individual text on its own merits. The three categories of reading comprehension standards in the Common Core reflect this emphasis: (1) Key Ideas and Details (what the text says), (2) Craft and Structure (how the text works), and (3) Integration of Knowledge and Ideas (unifying and connecting).

The practice of staying close to the text is a practice of literary experts, but not the only one. Experts use particular lenses to interpret texts (e.g., feminism), make comparisons across texts (e.g., texts with the same theme, texts by the same author), interpret topics/themes (e.g., "Obsession" or "Coming of Age"), analyze the author's use of literary devices, and so on. For a sense of how close reading can be used, see David Coleman's renderings of *The Gettysburg Address* and *Letter From a Birmingham Jail*.

Texts

In the study of literature, texts usually consist of novels, short stories, and poetry. These three genres have particular characteristics that distinguish them from one another, and within each of these genres there are subtypes. For example, a novel can be historical, mystery, or science fiction, and poetry can be epic, an ode, a sonnet, and so on. These subtypes of literature also have unique characteristics that students study, and one subtype can be compared with another.

Comparisons across multiple texts are not as prevalent in literature classes as you might expect. Perhaps because novels take so long to read, or perhaps because the meanings of even one text are so complex, teachers may not want to overwhelm students with more than one text at a time. However, having students read multiple texts has the potential to deepen students' understanding of a particular piece of literature. Reading a shorter text from the same time period or with the same theme, reading a nonfiction text that explains an aspect of the piece of literature, or reading literary criticism can enrich the way students experience what they read.

Claims and Evidence

Some claims can be what we might call themes in literature, and these are almost always implicit. Determining themes may be even more difficult than determining claims in other disciplines; students might have to read the entire book before deciding a theme is plausible. Themes reveal themselves in the way a main character experiences change or from the symbols that recur. Determining a theme often requires metaphorical thinking and an understanding of human experience.

A discussion of claims and evidence in English literature can be less constrained than a discussion of claims and evidence in science, math, or history; an interpretation can always be contested. Claims about the characters, the significance of particular events, themes, the function of symbols, and other aspects of literature should, however, be text dependent.

Disciplinary Practices

The study of literature requires learning the language of literary interpretation, an ability to see patterns within and across texts, and an understanding of human experience.

Read Different Interpretations of the Same Text. I recently came across a beautifully illustrated copy of Robert Frost's poem "Stopping by Woods on a Snowy Evening." The illustrations explained that Frost stopped to bring food to the animals that were enduring a cold winter. Frost showed how happy he felt by making a snow angel. This is an interpretation different from others, who say that Frost had bouts of depression, and the woods were a metaphor for his death wish. Frost reluctantly turned away because "he had promises to keep." Pairing two interpretations of literature can help students see that different interpretations can be valid. The interpretation in the illustrated edition of "Stopping by Woods on a Snowy Evening" is based on a close reading of the text only, whereas the second interpretation uses information about Frost. The text supports either interpretation.

Learn the Structure of Argument. Without being taught how to write differently, students will write a narrative account of the plot when they are told to write an argument or an interpretation of the text. Argument or interpretive structures can be modeled and, when students are first learning to write such structures, teachers might use sentence starters. One caveat: These should be faded so that students' language does not become stilted. For examples, see *They Say/I Say: The Moves That Matter in Academic Writing* by Gerald Graff, or use heuristics such as STOP (Suspend judgment, Take a stand, Organize ideas, Plan more as you write) and DARE (Develop a stance, Add evidence, Rebut arguments, End by restating your stance) (De La Paz, 2001).

Learn the Language of Literary Criticism. The meanings of general academic words are important in literature (and especially in poetry) because they represent authors' choices that can provide interpretive insight. Equally important, though, is the language of criticism—understanding words that signify literary elements such as symbolism (e.g., metaphor, simile) or the role of the narrator (e.g., first person, unreliable) can help students focus as they try to interpret a text.

Learn How to Recognize Themes. My husband, Timothy Shanahan, took a fiction writing course and learned how to build a theme into his writing. The instructor taught him to make the main character go through some kind of change in response to unfolding events. How the character changed would reflect what he wanted to say about the human condition—the theme. So when he wanted to help his daughter learn how to recognize the theme, he taught her to look at the change in the main character. A character change chart came out of that thinking (Figure 11).

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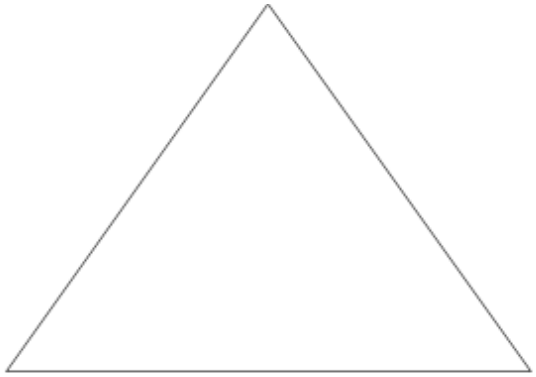
Professional Development

Professional development is critical if disciplinary literacy practices are going to deepen what it means to read in each academic subject area. A basic problem is that secondary teachers may not fully understand the literate practices of their own disciplines. For example, a mathematics teacher may not be aware of the reading and writing he or she does intuitively, thinking that these are not important. That lack of awareness is not surprising considering that reading and writing may not have been emphasized in his or her general education or teacher preparation course work.

Figure 11. Character Change Chart

What is main character like at the beginning of the story?	What is the main character like at the end of the story? How has he or she changed?



Crisis

Given this character change, what do you think the author wanted you to learn? ________

____

____

Like tying shoelaces, the process of reading and writing may have become so automatic and connected that he or she may not be able to reconstruct what was done to learn them. Alternately, he or she may have achieved only incomplete mastery of those disciplinary processes. But who will do the professional development? It is just as likely that reading professionals have little knowledge of the way various academic disciplines use literacy. Reading specialists are not usually taught how mathematicians, historians, scientists, or literature experts create, communicate, and evaluate knowledge. They are taught, instead, a toolbox of generic strategies applied to all disciplines. So when reading specialists offer guidance to a history teacher, they may not be offering specific help that makes sense.

Given that both disciplinary teachers and reading specialists may be at a disadvantage, the process of professional development needs collaboration. History teachers and reading specialists, for example, might read and discuss articles about history literacy, review curriculum, and, together, design lessons and units that provide students with the support they need. They need common planning time to collaborate (Friedland, McMillen, & del Prado Hill, 2011; Schoenbach, Greenleaf, & Murphy, 2012).

Conclusion

Although general content area reading strategies still have utility, students are much more likely to increase their ability to read in different disciplines if they know something about the literacy strategies and practices particularly suited to that discipline. Knowing what is important to learn in science versus history, for example, can help students be more selective in the notes they take, ask valid questions about scientific information, and write scientific explanations and arguments.

Thus, reading specialists need to understand more clearly disciplinary contexts in which students read and write, and they need more time to plan and collaborate with subject area specialists. This understanding comes from listening to discipline experts explain the strategies they use to understand their subject matter, using the various resources that are available, and engaging in true collaborative partnerships with discipline faculty. Together they may develop approaches to enable students to become independent learners who can learn about their discipline from reading, write in discipline-appropriate ways, and think deeply about what they learn.

Questions for Reflection

- If you are a subject matter teacher, how were you taught the reading and writing conventions of your discipline?
- If you are a subject matter teacher, think about and discuss your processing as you read a text in your discipline. How are you making sense of what you read?
- If you are a reading specialist, read texts in two different disciplines. How are they structured? What kinds of vocabulary words seem important? What other features do you notice?

Additional Resources

English, Science, and Literacy

Literacy Ready

This is a free, downloadable yearlong course for junior or senior high school students. The course consists of two units in English, two units in biology, and two units in history, developed by literacy experts; high school English, science, and history teachers; and college English, science, and history teachers. The course was designed to prepare students for the reading and writing demands they will need to meet in college, and the instruction in each of the subject areas is based on the insights gained from disciplinary literacy. Each lesson is also aligned to the Common Core State Standards. Several of the examples used in this article came from that source.

Reading for Understanding

This book offers good advice for setting up classrooms in content area classes that are focused on literacy as well as subject matter. A new edition was published in 2012.

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Notes

Many of the ideas espoused in this paper come from the rich conversations and research done in Project READI. Project READI is a multi-institution collaboration to improve complex comprehension of multiple forms of text in literature, history, and science. It is supported by the Institute of Education Sciences, U.S. Department of Education, through Grant R305F100007 to University of Illinois at Chicago. The opinions expressed are those of the authors and do not represent views of the Institute or the U.S. Department of Education. The entire team of Project READI and especially the history team have been influential to this article. Members of the History Team are Michael Bolz, Gayle Cribb, Susan Goldman, MariAnne George, Gina Hale, Johanna Heppler, Jodi Hoard Michael Manderino, Jackie Popp, Diane Puklin, and myself.

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