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# Writing to learn across the curriculum: Tools for comprehension in content area classes

*Here are a range of writing strategies that can be used to help students better comprehend content area texts.*

**M**ost upper elementary school teachers would agree that a central purpose of their instruction is to help students understand significant science and social studies concepts. Even though science and social studies teachers may not be language arts teachers, reading specialists, or librarians, every content teacher knows that his or her subject is different from any other and requires particular kinds of literacy skills. Content area teachers must carefully consider how to use reading and writing to teach their subject area because understanding subject matter involves more than “doing” or “knowing” something. Mastery of content is demonstrated not only through reading but also through writing. Integrating writing with reading enhances comprehension (Brandenburg, 2002) because the two are reciprocal processes. Writing to learn engages students, extends thinking, deepens understanding, and energizes the meaning-making process. According to Fordham, Wellman, and Sandman, “Considering a topic under study and then writing about it requires deeper processing than reading alone entails” (2002, p. 151). Therefore, upper elementary content teachers need a repertoire of writing-to-learn instructional strategies in order to strengthen students’ comprehension of the content.

## Writing to learn differs from learning to write

Before examining the research evidence and instructional strategies used in writing to learn, some clarifications are in order. Writing to learn differs from learning to write in several important ways. Students need to learn to write throughout their lives (Fisher & Frey, 2004). For example, when students begin elementary school, they learn to encode words, spell, construct sentences, figure out the mechanics of paragraphs, and develop understandings of grammar. As they get older, students refine and expand these skills. Instruction tends to focus on the processes of writing: prewriting, writing, reviewing, revising, editing, and preparing the final draft. These are the stages writers typically go through to arrive at a finished product.

Writing to learn differs from learning to write because the writing produced is not a process piece that will undergo multiple changes resulting in a published document. Instead, the purpose for writing to learn is meant to be a catalyst for further learning and meaning making. Writing is often left out of content classrooms because of an overemphasis on process writing and the confusion between learning to write and writing to learn (Fisher & Frey, 2004). Writing to learn is an opportunity for students to recall, clarify, and question what they know about a subject and what they still wonder about with regard to that subject matter. Students also discover what they know about their content focus, their

language, themselves, and their ability to communicate all of that to a variety of audiences.

Without doubt, writing can optimize student learning of content subjects. Being able to express thinking in writing is a skill students take with them beyond the elementary social studies and science classrooms. High school teachers and college instructors continue to build on what students have learned and help them persist in refining their writing skills. Likewise, in today's job market, written communication skills are extremely important for success.

Good content writing is the result of quality instruction. In writing to learn students need to be guided through a series of steps requiring good teaching and modeling. Students learn to write when teachers surround them with examples and models, give them expectations, let them make decisions and mistakes, provide feedback, and allow them time to practice in realistic ways (Boyles, 2003; Bromley, 2003; Gahn, 1989; Sinatra, 2000). Modeling means that teachers provide students with both good and bad examples of the completed writing artifact. The focus should be on students' active involvement in connecting and integrating ideas gleaned from the text (Johnson, Holcombe, Simms, & Wilson, 1993). After students see the modeling, they need guided practice with emphasis on enhanced thinking. Step-by-step guidance and instruction brings students to successful completion of the writing-to-learn endeavor. "Authentic engagement accompanied by immersion and demonstration result in learning" (Bromley, 2003, p. 144). Throughout the guided practice and participation, students need frequent feedback from either peers or

teachers or from both. Because peer reactions are important for students' self-image, small-group conferences are valuable (Gahn, 1989).

## The role of assessment in writing to learn

Teacher feedback is not only important in the stages of writing to learn but also imperative in the final evaluation of the writing piece. Sometimes, though, the prospect of grading an avalanche of papers prevents teachers from encouraging extensive student writing (Gahn, 1989). This obstacle can be avoided by using rubrics and checklists to give feedback. For example, a fifth-grade science teacher could use the rubric in Table 1 for assessing writing that compares and contrasts two insects studied in class.

Careful use of rubrics can help teachers with limited background in writing by giving them a better sense of qualitative differences in students' writing. A rubric reveals the scoring rules and explains to the students the criteria by which their work will be judged. Thus, well-conceived rubrics can be put to good use as tools for student self-monitoring and assessment, which enhances the students' writing while writing to learn. As such, rubrics function as a scoring guide so that the assessor can differentiate between below-average, average, and superior performance. As mentioned earlier, when different examples of students' work are provided, content understanding can be enhanced by using the criteria and descriptions stated

**TABLE 1**  
**Rubric for grade 5 science: Comparison and contrast of two insects**

Great work—Exemplary	Satisfactory	Unsatisfactory—Not yet
Introduction clearly captures reader's attention and states the purpose of the paper	Introduction somewhat captures reader's attention and states the purpose of the paper	Little or no introduction
Clearly explains three or more ways the insects are alike	Explains fewer than three ways the insects are alike	Minimally explains how the insects are alike
Clearly explains three or more ways the insects are different	Explains fewer than three ways the insects are different	Minimally explains the differences in the insects
Conclusion is clearly written and compelling	Contains a conclusion	Lacks a conclusion

**TABLE 2**  
**Writing assignment checklist**

	Strong	Average	Weak
<b>Content</b>			
Clear and interesting topic or main idea			
Topic appropriate to the assignment			
Ideas and details support and develop the topic			
Ideas stated clearly and developed fully			
Good use of language			
<b>Form</b>			
Introduction, body, and conclusion			
Details arranged logically, appropriate to the topic			
Coherent, paragraphs constructed well			
<b>Mechanics</b>			
Grammar and usage			
Spelling, capitalization, and punctuation			
<b>Comments</b>			

in the rubric. The rubric “makes public the key criteria that students use in developing, revising, and judging their own work” (Huba & Freed, 2000, p. 155). To be effective, the rubric must be referred to consistently in class. This fosters dialogue between teachers and students so that students have a clear sense of the content to be learned and the conditions needed for quality work. The genuine feedback given by the rubrics redirects students’ efforts toward obtaining knowledge and content mastery. Teachers have a common set of criteria for judging the depth of student understanding.

Creating checklists can also have a dramatic effect on writing to learn. As the name indicates, a checklist is a set of concrete, observable behaviors or task dimensions that are organized in a logical sequence. So a checklist gives students goals for writing as well as the characteristics of a good finished product. This practice can take the mystery out of writing for the students and improve the quality of writing to learn (Bromley, 2003). A well-developed checklist can guide student writers toward successful completion of a specific writing task (Hodgson & Bohning, 1997). Hodgson and Bohning also pointed out that the use of a checklist encourages writers to be more self-directed in their mastery of content learning.

A sample of a generic writing assignment checklist appears in Table 2. Such writing checklists can be used by the whole class, individual writers, peer partners, or teachers. With the whole class, the checklist is displayed through an overhead or computer projector and elicits discussion about content. Individual writers clearly know the goals when using these checklists, which can become the basis for conversation between peer partners. Teachers can use them for conferences with the students and evaluation of written artifacts. Good writing does not just happen; it can be directed through the use of checklists (Hodgson & Bohning, 1997).

## **Incorporating writing to learn in the instructional framework**

Writing to construct meaning across the curriculum is a powerful strategy for learning subject matter and can be incorporated into the instructional framework in three basic but very important ways. Writing helps students prepare for reading assignments and class lectures, review and summarize key ideas, and think critically and creatively (Brozo & Simpson, 2003; Johnson et al., 1993).

**TABLE 3**  
**Sample of a learning log**

<b>Predictions</b> What will I learn from this material?
<b>Concepts</b> What have I learned from reading this material?
<b>Questions</b> What don't I yet understand about this material?
<b>Personal opinion</b> What do I think about this material?

What follows are specific strategies that grade 4–8 science and social studies teachers can use throughout various stages of instruction.

### **Strategies to help students prepare for reading assignments**

**Guided writing procedure.** Students make connections before reading the text when they engage in the guided writing procedure (GWP; Brozo & Simpson, 2003; Readence, Bean, & Baldwin, 2001). This is a research-validated instructional strategy that involves students in discussing, listening, reading, and writing about content area concepts. First, the students' prior knowledge of the topic is activated through brainstorming. Ideas are listed via overhead projection, on a chalkboard, or on newsprint, and small groups of students are asked to organize and label the ideas. Students then write individually on the topic using this information. Next, the students read the text and revise their explanatory writing. By using the GWP, students significantly improve the depth of their content understanding through writing.

**Learning logs.** Another prereading strategy is the use of learning logs (Brozo & Simpson, 2003; Cwilka & Martinez-Cruz, 2003; Fisher & Frey, 2004; Readence et al., 2001). Through a well-structured prompt that encourages writing in a learning log (see Table 3), students can make predictions, activate prior knowledge, and develop a prereading orientation to an assignment. Well-

planned prompts help students focus on the upcoming content topic of a lesson and give direction for their acquisition of knowledge. Students in grades 4–8 can use this learning log with a chapter reading assignment in science or social studies.

**Quick writes.** These are another informal means of engaging students in thinking about an upcoming topic for a lesson. Typically, quick-write prompts are teacher-directed questions and are fairly easy to work into a full curriculum. Sometimes the students' responses can be recorded on notecards for teacher reference or sharing with other students (Readence et al., 2001). In some cases, quick writes are also referred to as 1-minute papers or admit/exit slips (Brozo & Simpson, 2003). In fifth-grade science, a quick write can be as simple as "What do you know about photosynthesis, the topic we will study today?" or as complex as "Describe three important components found in the photosynthesis process."

**Structured note-taking.** To prepare for class lectures, students may use a form of structured note-taking (see Table 4; Fisher & Frey, 2004; Fisher, Frey, & Williams, 2002). Here the students draw a vertical line about 2 inches from the left side of the paper, log main ideas and keywords to the left of the line and details to the right. At the end of the lecture, the students write a brief summary at the bottom of the page.

**TABLE 4**  
**Structured note-taking**

Main ideas and keywords	Details
Summary	

**Listen-stop-and-write.** This note-taking technique was described by Topping and McManus (2002). The teacher's lecture is broken into 3-minute segments interspersed with 2-minute writing periods. This strategy "helps students focus their listening and notetaking" skills (p. 32) and gives them a chance to write about what they heard stated by their teacher.

### **Reviewing and summarizing strategies**

**Microthemes.** Writing to learn can be incorporated during the lesson so that students can review and summarize key ideas. One such strategy is the use of microthemes in which students are asked to draw together key ideas in their own words from a reading assignment, demonstration, experiment, or lecture (Brozo & Simpson, 2003). The microthemes, or summaries, are often written on a single index card and are easy for teachers to handle and assess. Teachers are usually able to give students feedback quickly. Kneeshaw (1992) pointed out that this type of writing to learn gives students confidence. Not only do students come to the next class period with a summary of the previous lesson, but they also have review cards from which to study for tests (Kneeshaw, 1992).

A variety of approaches can be used to develop microthemes. In one approach, the topic, or the microtheme, can be an assignment to compare, con-

trast, and analyze. Students can also be encouraged to analyze a topic from a preselected list or respond to an open-ended question. When dealing with value-laden content, the teacher can make a thought-provoking comment with the request for students to write about their points of view on the topic. Microthemes can work at just about any level and in any discipline. For example, students in a seventh-grade social studies class might use the microtheme strategy to describe how and why cultures and cultural landscapes have changed in the past 20 years in the United States.

Students prefer writing microthemes as an alternative to traditional writing assignments and as a means of helping them better understand themes and topics covered in content classes (Kneeshaw, 1992). When asked about microthemes, one student said, "Putting pen to paper ensures...that I have a grasp on the material in a concise way." Another student commented, "Microthemes help me to think more in depth in a specific area" (Kneeshaw, p. 178). While writing microthemes, students must persevere to find just the right word and cut out unnecessary words. "Good writing is not about length, but about careful thought and precise word selection" (Kneeshaw, p. 178).

**Framed paragraphs.** For those students who are intimidated by writing summaries, framed

**FIGURE 1**  
**Paragraph frame**

One word that really describes \_\_\_\_\_ is \_\_\_\_\_. One time s/he showed this was when \_\_\_\_\_.

Another time s/he showed this was when \_\_\_\_\_.

A third time when s/he showed this was when \_\_\_\_\_.

The author proves this character was \_\_\_\_\_ when she or he wrote: " \_\_\_\_\_."

paragraphs provide guidance and structure so they can overcome their paralysis (Boyles, 2003). Brozo and Simpson (2003) defined framed paragraphs as “skeletal paragraphs with strategically placed transitions or cue words that signal to students a particular way to think about and write about a concept” (p. 272). After reading an assignment, students complete the framed paragraphs (see Figure 1) by writing in the missing words and by creating their own sentences.

Many teachers like to use framed paragraphs at the beginning of the school year in order to ease students into the process of writing about content area concepts. Boyles (2003) wrote that the paragraph frame offers the “most substantial level of concrete assistance and makes success attainable for even the lowest performing students” (p. 20). Even though it is important to scaffold students when they are in the initial stages of learning to write, it is equally important to know when to begin to remove some of that support. As students’ confidence and fluency in writing develop, teachers can slowly eliminate the cues in framed paragraphs so that students write using alternative formats. This moves students to “writing quality answers independently” (Boyles, 2003, p. 20).

**Text boxes.** A similar technique, text boxes, was described by Topping and McManus (2002). Here the boxes of a reading guide correspond with the paragraphs, diagrams, and photos on a particular page of the text. Each box has two columns; students take notes about important facts and ideas in the first column, and they reflect and question the

text in the second column. Use of text boxes not only “helps students slow down their reading and monitor their comprehension when reading difficult texts about unfamiliar topics” (Topping & McManus, p. 32), but it also calls students’ attention to key facts, ideas, and organizational patterns in the text.

**Sentence synthesis.** Like quick writes, mentioned earlier, sentence synthesis is another writing-to-learn strategy to enhance student understanding (Yell, 2002). In this strategy, students use three or four keywords the teacher selects from the lesson to construct a meaningful sentence that summarizes the main idea of the lesson. The sentences are then shared with classmates. Discussion of one another’s ideas further supports the synthesis of key concepts and learning. Teachers can “use students’ sentences to prepare them for upcoming lessons that continue to build on the same key words and concepts” (p. 64).

### **Critical and creative writing-to-learn strategies**

**Biopoems.** Writing to learn across the curriculum helps students to think critically and creatively. An excellent strategy to achieve a deeper understanding of a historical figure is a biopoem. A biopoem “requires students to think carefully about the content of the text and make inferences about what a [historical figure’s] actions and statements imply” (Fordham et al., 2002, p. 157). Students can create their first biopoem working as a class, with the

**FIGURE 2**  
**Grade 8 history class biopoem**  
**of Frederick Douglass**

Frederick  
Insistent, hard-working,  
intelligent, emotional  
Slave of Master Auld  
Lover of Anna Murray, his wife  
Who feels passionately about—  
Learning to read  
Speaking out about rights  
Fighting for freedom  
Who needs—  
Freedom  
Independence  
Recognition  
Who fears—  
Being recognized by his slave owners  
The Underground Railroad being discovered  
Leaving the south to escape  
Who gives—  
Speeches  
Speeches  
And more speeches  
Who would like to see—  
Women having the right to vote  
Loyal, patriotic, and honorable Americans  
A solution to the “Negro question”  
Resident of New York  
Douglass

teacher guiding them through the process. Multiple “right” answers exist, and students must choose the most significant features of the person being studied, thus practicing their critical thinking skills. The 11 line prompts in a biopoem are as follows:

1. First name
2. Four traits that describe character
3. Relative (e.g., brother, sister, mother) of
4. Lover of...(three things or people)
5. Who feels...(three items)
6. Who needs...(three items)
7. Who fears...(three items)
8. Who gives...(three items)

9. Who would like to see...(three items)
10. Resident of...
11. Last name

The biopoem in Figure 2 was created in an eighth-grade history class and describes Frederick Douglass, a leader in the abolition movement in the United States.

**Word maps.** Another effective strategy for critical and creative thinking is the use of a word map (Fordham et al., 2002; Readence et al., 2001). The students use three main questions to investigate the new concept or terms: What is it? What is it like? What are some examples? (See Table 5.) The process of answering the questions helps students link the new concept to their previous knowledge. This strategy is particularly good for use with small groups because of the depth of discussion involved in answering the three questions (Fordham et al.). Ownership of understanding is enhanced with the design of a visual representation (i.e., graphic organizer) of the concepts or terms discussed.

**ABC list.** Critical and creative thinking are the foundations for the creation of an ABC list. With the ABC strategy, students conceptualize their new understanding by creating an alphabet list on a particular topic (Fordham et al., 2002). After reading the text lesson, students choose significant words or phrases for each letter of the alphabet. This selection process “strengthens their ability to find significant details and refine their critical thinking skills” (Fordham et al., p. 157). Upper elementary students enjoy options for expressing their learning via writing, and “using these alternatives gives students both a sense of choice and of control, which are important motivational factors” (Brozo & Simpson, 2003, p. 279). The ABC list in Figure 3 was created by a group of students in an eighth-grade history class to describe Frederick Douglass.

## Valuable tools

Writing-to-learn strategies are useful tools to help upper elementary students understand and master science and social studies content area concepts and knowledge. The process of writing, like reading, stimulates passive learners to become

**TABLE 5**  
**Word map—Amphibian**

Amphibian	<p>What is it? Animal</p> <p>What is it like? Cold-blooded, lays eggs, breathes air</p> <p>What are some examples? Salamanders, frogs, toads</p>
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active learners as they grapple with putting their thinking and knowledge onto paper. Writing demands participation by every student, not just those who volunteer. More important, writing shows teachers what students understand about their content reading. Teachers must be ready to incorporate an eclectic repertoire of writing-to-learn strategies in their content area classes.

Writing-to-learn strategies invite students to think about and interact with texts, encouraging more thoughtful reading while creating more conscientious learners. The development of reading and writing skills cannot be left to the language arts teacher. All upper elementary content teachers must help their students learn how to read the specialized texts of their disciplines. If truth be told, content teachers are in a very strategic position to encourage students to use the reading and writing strategies needed to acquire and enhance content knowledge. Indeed, writing to learn in all content areas is necessary because considering a topic under study and then writing “requires deeper processing than reading alone entails” (Fordham et al., 2002, p. 151). Writing to learn helps students think about content and find the words to explain what they comprehend, reflect on how they understand the content, and consider what their own processes of learning involve. Without doubt, the development of writing processes and skills is valuable throughout the entire school experience and beyond.

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**FIGURE 3**  
**ABC list for Frederick Douglass**

- Abolitionists, Anna Murray, Anti-Slavery Society
- Bailey, Baltimore, Boston
- Civil War
- Documents for freedom
- Emancipated
- Farms, fugitive, freedom fighter
- Garrison (William Lloyd)
- Hugh Auld, hiding
- Independence
- Jailed, John Brown
- Knowledgeable
- Liberator
- Maryland
- New York, North Star
- Opinionated
- Published author
- Quotable
- Reading, Republican Party
- Sailor, slave owner
- Thomas Auld, Tuckahoe Creek, Talbot County
- Underground Railroad
- Valiant
- Washington, DC; white father
- X
- Youth
- Zeal

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