

Educational Leadership

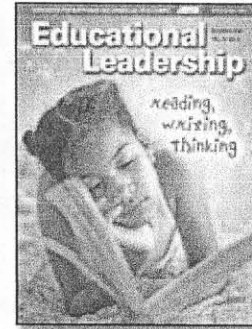
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Task, Text, and Talk: Literacy for All Subjects

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Disciplinary literacy builds secondary students' academic content knowledge and their reading, writing, and thinking skills at the same time.



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An important and difficult challenge facing education today is raising the literacy achievement of secondary school students. Some schools tackle this challenge by training whole faculties in generic reading and writing strategies to implement across the curriculum. But many content-area teachers quite reasonably resist this solution because they are already expected to teach more biology, history, or algebra content than time permits. And they have a point: Setting literacy instruction and content instruction side by side in competition for time and attention may dilute disciplinary rigor.

Bucking the trend of using generic approaches across all content areas to improve students' literacy, some teacher leaders¹ working in mathematics, science, history, and English language arts have studied and implemented a new approach to middle and high school literacy instruction. *Disciplinary literacy* is based on the premise that students can develop deep conceptual knowledge in a discipline only by using the habits of reading, writing, talking, and thinking which that discipline values and uses.

The disciplinary literacy framework, introduced in 2002 by the Institute for Learning at the University of Pittsburgh, is grounded in five principles for designing rigorous, inquiry-based instruction that integrates academic content and discipline-appropriate habits of thinking. The following stories show how teachers are bringing disciplinary literacy principles to life.

Principle 1: Knowledge and thinking must go hand in hand.

To develop complex knowledge in any discipline, students need opportunities to read, reason, investigate, speak, and write about the overarching concepts within that discipline. Because of time constraints and coverage concerns, many teachers understandably choose to teach either content or process instead of marrying the two. But to build students' literacy in a specific discipline, instruction must do both at once.

Ed Abbott's 10th grade U.S. history class at Central High School in Providence, Rhode Island, is beginning a new unit on immigration that a group of Providence teachers adapted from an Institute for Learning model unit (Ravi, Leinhardt, Stainton, & Mohr, 2005). For the first lesson, Becky Coustan, a fellow teacher who helped to develop the unit, begins by introducing two overarching questions that the students will be addressing:

- What are some of the forces pushing people away from their homelands and pulling people to immigrate to the United States?
- What were the attitudes toward immigration in different historical periods?

For the next few weeks, these questions will drive the class's intellectual work. Unlike old-fashioned drill questions that students can answer by memorizing isolated bits of information, these overarching questions push students to go beyond lecture and textbook toward using multiple sources to construct their own explanations—practices mirroring those of the history community.

To fully explore these essential questions in the classroom, Ms. Coustan explains, the class will study immigration to the United States during four different eras—the 1890s, 1920s, 1960s, and 1990s. To answer the first question, students will explore the conditions and historical context of the home country of each group of immigrants, as well as the political and social context of the United States during each era. To answer the second, students will analyze the public debate over immigration during each period, looking for evidence of how the United States responded to each wave of immigration. They will be working in the same way historians do: reading and analyzing a variety of primary and secondary source documents, including key pieces of immigration legislation; artifacts of public discourse, such as newspaper reports and political cartoons; and oral histories from immigrants coming to the country in each period.

Ms. Coustan knows that the students can decode text and understand generic reading processes. Still, she does not assume that they know how to work with these materials in ways that help them respond to the overarching questions. She and Mr. Abbott will support students' initial forays into this kind of genuine historical inquiry by modeling and making explicit the ways they want students to read, interpret, and talk about the documentary evidence before them.

Ms. Coustan also knows that more than half of Mr. Abbott's students are first- or second-generation immigrants and are thus likely to have some prior knowledge and beliefs about immigration issues. She spends the first 10 minutes of the 50-minute period tapping into what the students bring to the classroom from their personal lives.

"Let's look at the first question and talk about what you already know about immigration. See if we can come up with some pushes—reasons why people leave their country—and pulls—reasons why people come to the United States."

As the class generates a list of pushes (such as war, poor living conditions, and lack of food) and pulls (such as job opportunities, freedom, and the desire to join family), Ms. Coustan listens carefully. She is assessing what each student knows and believes so that she can determine what supports to provide later in the unit, when she will ask the class to read and analyze a primary source depicting one immigrant's experience.

Next, Ms. Coustan models how to read source materials for specific push and pull factors before letting students practice this kind of reading in their groups. At the end of the unit, students will be expected to produce a written response to the two overarching questions for the unit using evidence from their analysis of primary and secondary source materials.

Principle 2: Learning is apprenticeship.

In disciplinary literacy classrooms, students act as historians, mathematicians, scientists, readers, and writers as they engage with subject-matter tasks, texts, and talk that apprentice them into each discipline's ways of working.

Sarah Weaver's 7th grade science class at Washington Middle School in St. Paul, Minnesota, has been investigating interactions between living and nonliving things in ecosystems. For today's lesson, Ms. Weaver has designed a task using mealworms to give students a concrete experience that mirrors work in the field of ecology.

"How do you think we're going to be working with these mealworms today?" she opens.

"Checking out their properties," one girl volunteers.

"And why would we do that?" Ms. Weaver presses.

"Because we're doing ecology and that's how ecologists find out what things are," the girl replies.

"And then we can change something in the environment," adds a boy across the table, "and see if the worms act differently."

The boy gestures toward the over-arching questions for the unit, which are posted on the wall: How do changes in the environment affect the behaviors of organisms living in that environment? How do changes in an organism's behaviors affect its ability to obtain and use resources, to grow, to reproduce, and to maintain stable internal conditions? How can we investigate these questions?

With a quick scan of the room, Ms. Weaver confirms that everyone has understood the boy's shorthand reference to the now-familiar questions.

"Where should we start?" she prompts.

"We need to think up an experiment question."

"OK, who wants to remind us what makes a good experiment question? Javier?"

The student nearest the classroom's flip chart begins turning pages until he reaches one that reads,

1. Start with "what" or "how"; don't start with "why."
2. Include something to compare.
3. Include something to measure.

These criteria, which Ms. Weaver helped the students generate at the beginning of the unit, are based on the characteristics of scientifically oriented questions described in the National Research Council's *Inquiry and the National Science Education Standards* (2002). Ms. Weaver's challenge is to sustain students' natural curiosity and enthusiasm as she helps them understand what a scientifically oriented question is and how it functions, judge how well the questions they generate will support a well-designed investigation, and refine their questions as needed. Ms. Weaver knows that the vocabulary and norms for academic discourse in science are new to all of her students, even the native English speakers. To limit the language challenge, Ms. Weaver uses the term the students came up with, *experiment questions*, interchangeably with the term that the science community uses for the same concept, *scientifically oriented questions*.

"OK," says Ms. Weaver, "we're looking for scientifically oriented questions that meet these three criteria. To get started, let's say everything we're curious about."

In groups of two and three, the students observe their mealworms and generate ideas about what to investigate. Ms. Weaver circulates, listening closely, occasionally asking a question to assess what students understand or to advance a group's thinking. She wants to help students decide what is most important without taking the intellectual work away from them. She also makes sure that everyone is participating and that language issues are not interfering with any student's ability to fully engage in the task.

Following some spirited discussion, the students reach consensus on a question they want to investigate: How fast do mealworms move if you put them on something really hot? "All right," Ms. Weaver says, "I like the way you're starting to design your study. Do we have our scientifically oriented experiment question, then?"

Consulting their criteria list, the students determine that the question meets two of the criteria—

It starts with "how" and it includes something to measure—but is missing something to compare. With a bit more discussion, the students refine the question to be more scientific: How does the speed of the mealworms change with changing temperature?

After devising a safe way to conduct their investigation using sheets of paper that Ms. Weaver warms and cools, the students begin to quantify their observations, measuring the surface temperature of each sheet and the distance and total time that each mealworm moves, calculating the average speed of each mealworm, and developing explanations that they will share with their classmates about how different surface temperatures affect mealworm behavior.

This lesson serves as a bridge between students' prior knowledge about how living and nonliving things interact with the environment and the overarching questions posed at the beginning of the unit. Together with similar experiences in recent days and in days to come, the lesson will help Ms. Weaver's students communicate as scientists do by developing and defending explanations that address these overarching questions.

Principle 3: Teachers mentor students.

In disciplinary literacy classrooms, teachers design lessons that make explicit the discipline-centered literacy habits that scaffold students' collective content learning and enable them to function independently in the wider disciplinary community.

Back in Central High School, as the U.S. history unit on immigration continues, Ms. Coustan's students are reading a text about a Cuban immigrant named Augustin who arrived in the United States in 1980 (Morrison & Zabusky, 1980). She has asked students to locate information in the text that helps them identify forces pushing people away from their homelands and pulling people to immigrate to the United States. As the students work through the text in pairs, Ms. Coustan listens in and helps them shape their language as they discuss push and pull factors. Toward the end of the period, she calls the class back together.

"I'd like one person from each of the teams to write their idea on the board—something that pushed or pulled Augustin to the United States."

When all of the teams' ideas are posted, Ms. Coustan launches the discussion:

"Eva, what was your idea for a push? What pushed him out?"

Eva refers to the idea she wrote: "The Cuban government, because it was too controlling."

"Was there an example of that?" Ms. Coustan presses.

"I'm not sure," Eva demurs.

Ms. Coustan turns her question to the group. "Did anyone read an example of the government being controlling? Dela, you said you found an example."

Dela reads from her notes: "There was no way for young people to enjoy life in Cuba because there was no dancing or good times."

"So the government was *really* controlling," Ms. Coustan responds, linking Dela's example to the chart entry. "If people can't even dance, who knows what the government is like with other parts of life, right?"

By asking students to provide specific examples from the text to support their arguments, Ms. Coustan is modeling and making explicit the process of gathering evidence to support an argument in the study of history.

Principle 4: Instruction and assessment drive each other.

To make disciplinary literacy work, teachers must conduct ongoing formative assessment of each student's understanding, skills, and interests using multiple sources of data (such as

conferences, discussions, quick-writes, and quizzes) to inform instruction and guide students to deeper levels of understanding. In Tara Brash's 7th grade math class at Washington Middle School in St. Paul, students are working in small groups. Their task is posted on the board:

To celebrate your election to the student council, your grandparents take you shopping. You have a 20-percent-off coupon. The cashier takes 20 percent off the \$68.79 bill. Your grandmother remembers that she has an additional coupon for 10 percent off. The cashier takes the 10 percent off what the cash register shows. Does this result in the same amount as 30 percent off the original bill? Explain why or why not.²

In recent days, Ms. Brash and her teaching coach, John Benda, have used a protocol furnished by the Institute for Learning (Hughes & Smith, 2004; Smith & Bill, 2004) to help them think through this lesson. They have identified all the ways the problem can be solved and anticipated misconceptions that students might have. They have also discussed the characteristics of questions that assess and advance students' understanding without reducing the cognitive demand of the task. As a result, Ms. Brash has a plan for supporting students' learning as she circulates from group to group. She asks at one table, "Which is a better deal: 30 percent off all at once, or 20 percent and then an additional 10 percent off?"

"Thirty percent," replies Keisha, "because when you figure out 20 percent and then 10 percent, you do two subtractions. So that makes it less."

Ms. Brash uses the students' conjectures to assess what students do and don't understand so she can continually adjust her instructional plan for the whole class and differentiate the support she provides to individual students. Ms. Brash is concerned about the conjecture she has just heard because, although two subtractions did occur, that is not the reason the discount is less. She decides to assess other group members' understanding.

"Who can add to what Keisha said?"

One boy replies, "We took 20 percent off \$68.79, and then we took 10 percent off what was left."ⁱ

Ms. Brash sees that this student knows that 10 percent is subtracted from the new, smaller base amount.

"It's 10 percent of \$55.03," adds another student. "We took 30 percent of the whole amount, the \$68.79."

Ms. Brash's coach, John Benda, has been observing and offering occasional comments. He is not convinced that the group understands that the real reason the two separate deductions amount to a smaller total discount is because the second coupon is deducted from a smaller base amount. Some students still appear to attribute the difference to the number of times subtraction occurs, and Mr. Benda wants to be sure this faulty idea is dispelled. Drawing from questions that he, Ms. Brash, and other project teachers have worked with extensively, Mr. Benda selects an appropriate mathematical challenge to help the students make sense of the concept. On a blank sheet of paper, he writes,

- Subtract 20% of \$68.79 and then subtract 10% of \$68.79.
- Subtract 20% of \$68.79 and then subtract 10% of (\$68.79 minus 20%).

"Try this," he challenges.

Working independently, the students solve both problems correctly.

"What did you notice?" Mr. Benda asks.

"The price for the first problem is \$48.15," states one student.

"That's lower!" adds another. "It's \$50.40 the second way."

"Oh, so it's different? But why? They both have two subtractions—first 20 percent and then 10 percent. So what's causing the difference?"

"Oooh, I know!!" Keisha cries.

"Talk as a team, then," says Ms. Brash, satisfied that everyone in the group is on the way to understanding. "Write your explanation on your chart paper and be ready to explain your reasoning to the rest of the class."

The dynamic relationship among task, text, and talk enables the teacher and coach to formatively assess how much students understand as the lesson progresses. They will use their assessments to drive instructional decisions.

Principle 5: Classroom culture socializes intelligence.

In classrooms striving for disciplinary literacy, teachers treat students as capable thinkers, readers, and writers who expect to take risks, solve problems, and reflect on their learning (Resnick & Nelson-LeGall, 1996). Heather Rhodes's 7th grade English classroom, at Washington Irving Middle School in District 4 of the Los Angeles Unified School District, is a hive of activity. The walls are plastered with handwritten charts and diagrams. Most appear to be records of ideas students have generated in discussion. As students talk and write, they refer to the displays. A couple of students sit at computers, doing research online. Others work independently or in pairs at desks piled high with books and papers.

The class is coming to the end of a disciplinary literacy unit, "Read and Write Like a Reporter" (Mihalakis & McConachie, 2006). During the past six weeks, they have been reading, writing, talking, and thinking in specific patterned ways about a sequence of texts that serve as both sources of information and models of good report writing (Bartholomae & Petrosky, 1986/2002). Now they're working on their final research papers. Instead of writing about topics that the teacher selected, students were asked to interview someone about a historical event and use that information to come up with their own research question. To learn how to generate good research questions, students analyzed an exemplary student article that modeled good expository writing. Ms. Rhodes instructed them, "You're a reporter. Here are the lenses you're going to use." The research questions that students chose included "Why is the Race for the Cure a significant event to my mother and certain other people?" and "How do Cinco de Mayo celebrations in Mexico compare to my neighborhood's celebration?"

Ms. Rhodes explains, "It was a more authentic way of generating a topic, and students liked that control. They chose good topics, too. Most kids interviewed a family member or someone else they know. It was a great way for them to see that their home and community cultures are a source of information that's valuable in school."

A pair of students approaches Ms. Rhodes.

"When are we going to the library again?" asks one girl. "I found out online about a report I need to read."

"And can we work on our articles in class again tomorrow?" asks the other.

Ms. Rhodes suppresses a grin. "Yes, this will be the newsroom again tomorrow," she replies.

"And of course, reporters who want to gather additional source material will have library access."

"Thank you," sing the girls as they return to their work.

Ms. Rhodes reflects, "Those two girls used to be really shy, but now they participate more. They're getting more skilled at accessing information, and they want to show what they know."

Bringing Disciplinary Literacy to Life

The stories recounted here show that content knowledge and literacy development can go hand

in hand. The teachers and coaches in these examples are working hard to learn and implement an apprenticeship approach to rigorous, assessment-driven instruction. Through their efforts, they are creating classroom cultures that build secondary students' disciplinary literacy from the academic ground up.

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Endnotes

- ¹ The following teachers and administrators contributed information for this article: Ed Abbott, Richard Alonzo, Elaine Amagno, John Benda, Tara Brash, Becky Coustan, Donnie Evans, Barbara Halzel, Patricia Harvey, Mike McCollor, Kimberly Beaver Noble, Heather Rhodes, Ursula Rosin, Roy Romer, and Sarah Weaver.
- ² This is an adaptation of a widely used task. It most closely resembles the version in G. Lappan, J. T. Fey, W. M. Fitzgerald, S. N. Friel, & E. D. Phillips, *Connected Mathematics: Bits and Pieces I* (Pearson/Prentice-Hall, 2004).

[Respond to this Article](#)

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