

Educational Leadership

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Thinking Is Literacy, Literacy Thinking

In literacy cycles built around Paideia seminars, students practice thinking as a function of reading, speaking, listening, and writing.

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Several years ago, we were leading a daylong professional development session in a large school district. As the morning progressed, we noticed that one of the teachers was pointedly not participating. She sat at a table in the media center with her training materials shoved to one side, and it soon became clear that she was using the day to grade student tests and record the marks in her grade book. When we took a break, one of the session leaders walked over to her table and, in as friendly a manner as possible, asked how her students were doing.

She glanced up and without apology replied,

Terrible! I teach algebra, and this is a simple chapter test. I worked and worked to teach them a few simple concepts. Early in the week it seemed like they got it, and their homework papers were improving. Then yesterday I gave them the test, and they bombed it. They not only couldn't transfer what they had

learned from one problem to another, but a lot of them couldn't even recall what they had understood two or three days before. I don't know if it's them or me, but something has got to change because this is just an exercise in frustration.

She stood up and grabbed her empty coffee cup, apparently intending to refill it while there were a few minutes left in the break. "If you can tell me how to make my students understand and remember just a few simple formulas, then maybe I'll start paying attention to you people!"

"Understand and remember"—those were her words. What she didn't say was that perhaps her students hadn't really been asked to understand the few "simple" concepts she was trying to teach them. Apparently, they had memorized some formulas and practiced applying them to a series of numbingly similar homework problems, but because they hadn't thought deeply about how and why the

formulas worked, even their memory of them was fragile.

Thinking as Literacy

At the National Paideia Center,¹ we have struggled with how to teach thinking consistently and effectively. We have come to define thinking as the ability to successfully explain and manipulate complex systems. By system, we mean a set of interrelated ideas, often represented in a human artifact. As students learn to think, they are able to explain and manipulate increasingly complex systems containing many discrete elements and complex relationships. We can find systems in content across the curriculum, from kindergarten through high school. A folktale by the Brothers Grimm, the Preamble to the U.S. Constitution, and a word problem in algebra are all systems. The periodic table of the elements is a complex system.

Our experience with teaching thinking has taught us that learning to think requires frequent, deliberate practice. To become clear, flexible, and coherent thinkers, students need to work with both the process and the product. The only way we have found to teach the process and product of

thinking is to recognize the profound relationship between thought and language.

This is not a new idea; as far back as the 18th century, the chemist Antoine Laurent Lavoisier quoted the Abbé de Condillac in arguing that “we think only through the medium of words. . . . The art of reasoning is nothing more than a language well arranged” (Lavoisier, 1799/1984). To teach thinking consistently, therefore, we should treat it as a fundamental literacy skill, whether the language in question is algebra or English. There is no question that reading, writing, speaking, and listening are interconnected skills that develop synergistically. They are also the key to teaching thinking. The more fluent students become as readers, writers, speakers, and listeners, the clearer, more coherent, and more flexible their thinking will become.

To this end, we have developed the traditional Paideia seminar into a literacy cycle of instruction (Roberts & Billings, 1999). In preparing for a seminar, a teacher uses a wide variety of content reading strategies to help students build their comprehension of the system they are studying. The teacher also coaches individual students in speaking and listening skills in a preseminar process session. During the seminar itself, students collaboratively use their reading, speaking, and listening skills. Immediately following the discussion, the teacher leads the students through a postseminar self-assessment. Finally, the students write in response to the system. In each of these five stages, the teacher coaches students in thinking. The whole process is greater than the sum of its parts.

Skilled teachers build a series of seminar-based literacy cycles into their curriculum—ideally, at least two seminars every month. Each cycle in turn asks more from the students as they gain fluency in thinking about ideas.

Thinking About Dickinson

To illustrate how a literacy cycle works, we'd like to invite you into a middle school classroom. In spring 2005, the

“We think only through the medium of words.”

North Carolina Department of Public Instruction videotaped a seminar cycle in a heterogeneous 6th grade classroom at Guy B. Phillips Middle School in Chapel Hill, North Carolina (Crissman, 2005). The seminar, part of a language arts unit focused on poetry, was on an eight-line poem by Emily Dickinson that some scholars believe contains Dickinson's definition of poetry:

Tell all the Truth but tell it slant—
Success in Circuit lies
Too bright for our infirm Delight
The Truth's superb surprise
As Lightning to the Children eased
With explanation kind
The Truth must dazzle gradually
Or every man be blind—²

When we first discussed this text with the two teachers who were leading the project, Nealie Bourdon and Becky Campbell, they questioned our choice because they felt that the poem was too difficult for their students. We argued that we wanted to challenge the students with a poem that would require them to stretch intellectually. We reassured Nealie and Becky that, given the right kind of coaching, the students would rise to the occasion.

The eight lines in Dickinson's poem were the “system” we were asking the 6th graders to “explain and manipulate.” There were profound questions inherent to the poem that made this system increasingly complex as the students studied it: What is poetry? What is the nature of truth? How does poetry function in relation to truth? The questions involving poetry were tied directly to the standardized curriculum that Nealie and Becky were responsible for teaching their students, and the even deeper questions involving truth made the whole cycle relevant for the students.

While studying the poem, the students themselves realized that Dickinson's second line (“Success in

Circuit lies”) reflects the thinking process; successful thought often involves circling a problem multiple times, gaining understanding with each circuit.

Thinking as Reading

Teaching students how to think about a system requires that they first “read” the system by applying a variety of strategies. If the seminar text (or system) had been a math problem, we might have asked students to identify key terms, work in groups to define them, and show their relationships on a graphic organizer. If the seminar text had been an essay on the environment by Rachel Carson, we might have asked students to summarize the text by identifying the topic sentence in each paragraph, listing those topic sentences on a T-chart, and paraphrasing each in turn. If the seminar text had been a map of South America, we might have asked students to work in teams to analyze the information portrayed by the various symbols in the map legend. In each instance, we would have emphasized that reading comprehension is a form of thinking.

In the case of Dickinson's “Tell all the Truth but tell it slant,” Becky and Nealie asked the students to work in collaborative groups to analyze the poem in a variety of ways. One group worked with a copy of the poem that gave only the capitalized words—*Truth, Circuit, Delight, Truth's, Lightning, Children, Truth*—asking themselves what a poem built out of those key words might mean. Another group counted the syllables in each line and identified the rhyme scheme. A third group divided the poem into smaller units, like sentences, and paraphrased each of the units. A fourth made one long list of the words in the poem starting with *tell* and ending with *blind*, alphabetized the list and then asked themselves what a poem made out of just these words (and no more) might mean. The groups then shared their insights with the whole class while students took notes on their own copy of the poem in anticipation of the discussion to come.

Both speaking and listening are forms of thinking because they allow a nascent thought to be refined through conversation.

Thinking as Speaking and Listening

The next stage in the literacy cycle involves the teacher coaching the students, both individually and as a group, in the speaking and listening skills they will need. After a brief self-assessment, students choose both a group process goal and a personal process goal. The facilitator makes it clear that the goal of the seminar is to think collaboratively about the ideas in the text and that these process skills are what make collaborative thought possible. Both speaking and listening are forms of thinking because they allow a nascent thought to be refined through conversation. The better a student's verbal communication skills, the more quickly his or her thoughts about a complex topic gain clarity and coherence.

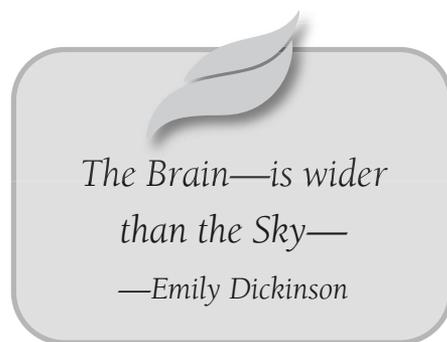
In the case of the “Tell all the Truth but tell it slant” seminar, students chose *staying focused* as their group goal because they knew that as a class they tended to stray far from the stated objective. Nealie, who was facilitating the seminar, then asked them to choose one of several individual process goals to guide their personal participation in the discussion: *I will speak at least three times, I will refer directly to the text, I will ask at least two questions, or I will think before I speak.* Students wrote their personal process goals directly on their individual copies of the text so that they would be reminded of them each time they glanced down. After the seminar, Nealie asked the students to self-assess their personal process in writing so that they could set even more appropriate and ambitious process goals in the next seminar.

Thinking as Collaboration

The actual discussion began with students responding to Nealie's opening question: *Emily Dickinson did not give her poems titles. If you were her editor, what title would you give this poem?* This question allowed all students to offer an

opening statement or rough draft of their initial thoughts about the poem. Very quickly, the students began to talk to one another rather than to Nealie: asking questions, building on other students' comments, and agreeing and disagreeing politely, as they'd been coached to do all year. Teacher Becky Campbell sat in the seminar circle as a participant, and the students challenged her assumptions and asked her questions just as if she were another 6th grader.

At several key junctures, students disagreed with one another and worked



to reconcile their different perspectives by further analyzing the text. In response to Nealie's questions about Dickinson's use of capitalization, for example, one student said that he believed every word beginning with a capital letter (except the first word in each line) was a synonym for *Truth*. Another student challenged him about whether *Children* was synonymous with *Truth*, and the discussion picked up momentum. As the seminar unfolded, students' comments became longer and more sophisticated as they took into consideration previous comments and incorporated multiple points of view.

Students were clearly “explaining and manipulating a complex system” with increasing fluency as the discussion went on. When asked after the seminar whether they understood the poem

better than before the discussion, every participant said yes, including the teacher-participant.

Thinking as Writing

Having practiced reading, speaking, and listening in relation to a complex system, students are now fully prepared to write in response to a prompt based on the text and discussion. The goal is for students to produce clear, accurate writing that reflects the maturity of their thought. We ask students to write simply about complex topics, a task that demands that they synthesize their thoughts specifically and precisely into concise sentences. This challenge is a necessary culmination of the thinking process.

Nalie gave her students two options: (1) write an eight-line poem about truth using the same structure and techniques that Dickinson did, or (2) write a personal definition of poetry and its relationship to truth. In both cases, they were dealing with the core concepts in the Dickinson poem and using writing to refine their thoughts even further. Those students who chose to mimic Dickinson's style and techniques had to demonstrate a mastery of the structure of this particular system—meter, rhyme, capitalization—a challenge that many relished. The work that emerged surprised even the students with its complexity and sophistication.

Examples from Math and History

You might wonder whether this literacy cycle could be replicated with other age groups and in other subject areas. Let's consider a common elementary math seminar in which we challenge students to explain and manipulate the system represented by M. C. Escher's artwork *Mobius Strip II*. More specifically, we challenge the students to come to grips with the concept of infinity.

The Mobius strip is a continuous, one-sided surface formed by twisting one end of a rectangular strip 180 degrees and attaching this end to the other. Partway through the seminar, the facilitator typically explains that when turned on its side, Escher's image is the same as the symbol for infinity. Starting

with simple definitions of infinity, the students offer examples of things that are infinite and eventually discuss why it is necessary to have a symbol to represent an idea like infinity. This is a striking example of how the literacy cycle can teach vocabulary in a math or science setting—vocabulary that in turn enables more complex thought. After the seminar, students construct Mobius strips of their own using construction paper and tape. They write on the continuous surfaces of their Mobius strips a string of words or images that they think should be rendered infinitely. Their writing is obviously the result of highly personal, highly relevant thinking.

At the other end of the age spectrum, let's consider a literacy cycle in a high school U.S. history class. Embedded in a unit on the creation of the Constitution and the Bill of Rights is a literacy cycle centered on the First Amendment, which guarantees five personal freedoms to individual Americans: religion, speech, press, assembly, and petition. In the preseminar content sessions, students break into five teams, and each team investigates why one of the five freedoms was included in the First Amendment.

After each team presents its background information, all the students discuss how they will actually be practicing their freedom of speech during the seminar and the importance of speaking and listening skills in a democracy. During the discussion itself, the focus slowly shifts from the five freedoms and their interrelationships to the dynamic tension in a democracy between individual rights and social cohesion. Students offer increasingly sophisticated comments about the importance of both. By the end of the seminar, they begin to articulate how each depends on the other.

After the discussion, the students work on a Student Bill of Rights, which they hope to take to the school governance council for approval. Later in the school year, students will be asked to address complicated First Amendment Supreme Court rulings in the same way, thereby “explaining and manipulating increasingly complex systems.”

As the seminar unfolded, students' comments became longer and more sophisticated.

Growing Lifelong Thinkers

As Francis Bacon wrote more than 400 years ago, “Reading maketh a full man; conference a ready man; and writing an exact man.” Each stage in the literacy cycle involves thinking about a system in a different way, and all the stages are joined in synergy; it's not enough just to read about an interesting idea, or to discuss it informally, or to write about it without preparation. Rather, to teach students to think in a consistent and deliberate way, we have to practice thinking in concert with the full range of literacy skills—probably in the order that Bacon himself prescribed.

There remains, of course, the challenge of assessing student thought so that we can measure it as it matures. In teaching thinking as a function of literacy, we assess the process as well as the product, collaborating with students to identify

their strengths and weaknesses as readers, writers, speakers, and listeners so that we can continue coaching those skills through successive cycles. In addition, we assess the product of thought in a way that teaches thinking, meaning that we evaluate student writing at the end of the cycle through rubrics that define what clarity, flexibility, and coherence look like in written form. Finally, we take into account the increasing complexity of the systems that students are asked to think about, so that we can show them how to address larger and more intellectually demanding concepts over time.

Our experience has convinced us that thinking can be defined, taught, and assessed. More important, creative and coherent thought is an attribute of a lifelong learner. By teaching students to think, we prepare them not only for employment and citizenship, but also for leading abundant lives. **EL**

¹For more information about the National Paideia Center, visit www.paideia.org.

²The poem was reprinted by permission of the publishers and the Trustees of Amherst College from *The Poems of Emily Dickinson*, Thomas H. Johnson, ed., Cambridge, MA: The Belknap Press of Harvard University Press, Copyright 1951, 1955, 1979, 1983 by the President and Fellows of Harvard College.

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