



AMERICAN Educator

A QUARTERLY JOURNAL OF EDUCATIONAL RESEARCH AND IDEAS

How Words Cast Their Spell

**Spelling Instruction Focused
on Language, Not Memory,
Improves Reading and Writing**

17

What Will Improve a
Student's Memory?

26

The Burden and Beauty
of the Humanities

30

Labor History:
Lessons on Collective Power

Knowledge

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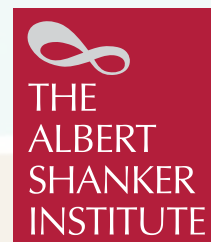
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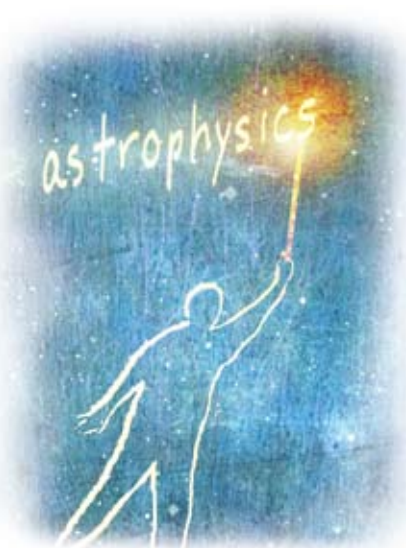
Democracy Web offers teachers background information on different elements of democracy, and uses comparative studies to highlight what freedom is and, more importantly, what it is not.

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Democracy Web was made possible by funding from the National Endowment for the Humanities.





3 Notebook

17 Ask the Cognitive Scientist

What Will Improve a Student's Memory?

BY DANIEL T. WILLINGHAM

Since the primary focus of school is learning new knowledge and skills, wouldn't it make sense for students to know how memory works? With this column and related demonstration lessons, teachers can show their students how to commit things to memory, avoid forgetting, and judge when they've studied enough.

24 Classroom Demonstrations of the Three Principles of Memory

6 How Words Cast Their Spell

Spelling Is an Integral Part of Learning the Language, Not a Matter of Memorization

BY R. MALATESHA JOSHI, REBECCA TREIMAN, SUZANNE CARREKER, AND LOUISA C. MOATS

To those who haven't had the benefit of language-based spelling instruction, English spelling seems terribly confusing—so many sounds with multiple spellings (e.g., *eight* and *ate*) and so many spellings with multiple sounds (e.g., the *ch* in *church* and *chorus*). It's no wonder that spelling instruction often focuses on memorization, with flashcards and weekly quizzes. But researchers have found that there is a better way. By emphasizing sound-letter correspondences and then adding in some history of the language, spelling instruction becomes more effective—and improves students' reading and writing too.

9 The Real Magic of Spelling: Improving Reading and Writing

14 Spelling Programs That Provide Well-Sequenced Instruction

26 The Burden and Beauty of the Humanities

BY WILFRED M. MCCLAY

Why do we need the humanities? To understand ourselves and the world around us in human terms. And what do the humanities need from us? The courage to defend their value.

30 Why Teach Labor History?

BY JAMES GREEN

Union members have played a significant role in democratizing America and humanizing the workplace. From pushing for mine safety laws and workers' compensation to helping raise the minimum wage, the labor movement has been—and con-

tinues to be—a positive force for change. The Web sites highlighted here will help your students learn of labor's accomplishments.

38 One Part Whimsy, Two Parts Science

A Fantastical Journey through the Human Body

BY DAVID MACAULAY

In *The Way We Work: Getting to Know the Amazing Human Body*, David Macaulay uses humorous, yet informative, illustrations to show the inner workings of the human body. Although it won't replace the textbook, it will help biology teachers liven up anatomy lessons.



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AMERICAN EDUCATOR (USPS 008-462) is published quarterly by the American Federation of Teachers, 555 New Jersey Ave. N.W., Washington, DC 20001-2079. Phone: 202/879-4400
www.aft.org

Letters to the editor may be sent to the address above or to amered@aft.org.

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Periodicals postage paid at Washington, D.C., and additional mailing offices.

POSTMASTER: Send address changes to AMERICAN EDUCATOR 555 New Jersey Ave. N.W., Washington, DC 20001-2079.

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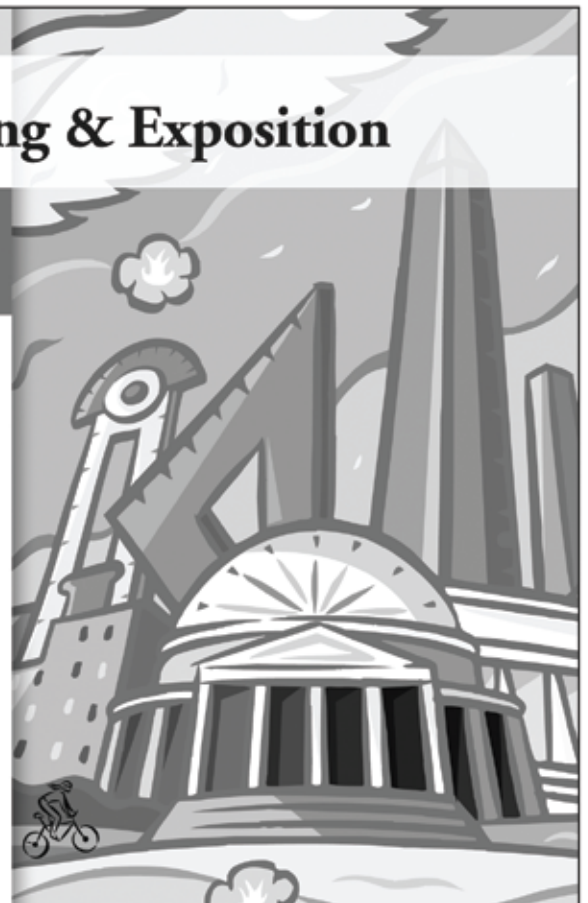
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A Virtual Children's Bookshelf

HOW MANY CHILDREN'S books are at your fingertips? Thanks to **BigUniverse.com**, probably a few more than you think.

Founded by IT expert Anil Hemrajani, this recently launched, virtual bookshelf provides teachers a free resource to build their students' background knowledge and vocabularies—and at the same time, enhance their love of reading. The collection includes more than 300 fiction and nonfiction titles, including *I Wandered Lonely as a Cloud*, *Why Animals Live in Webs*, and *Adding and Subtracting at the Lake*, all of which can be read in their entirety at **BigUniverse.com**.

The Web site's searchable database is easy to use, allowing visitors to search by name or keyword, or browse by genre, age group (0–2, 3–5, 6–8, 9–12, or 13 and up), or language (various works are available in Albanian, Armenian, Czech, French, Hungarian, Romanian, Russian, Serbian, Slovak, Spanish, and Ukrainian). The site also allows visitors to recommend books after reading them and to search for books recommended by students, parents, teachers, and librarians. For those books you want to have on hand, hard copies can be purchased at any time.

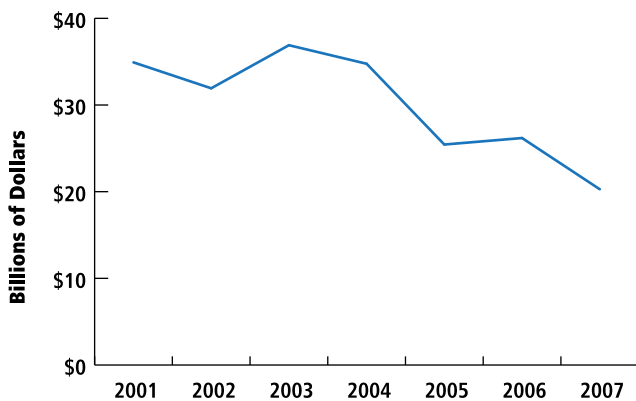
Still, our favorite aspect of Big Universe is that it allows aspiring writers to create their own children's books. This



unique tool offers thousands of static and animated images from which teachers and students can choose. The books can then be published on **BigUniverse.com**.

Schoolhouse Shouldn't Be Poorhouse

Annual Investment in School Facilities



AN ANALYSIS BY the Economic Policy Institute (EPI) shows that the majority of school buildings are in need of major renovations. Although student enrollment has increased 3 percent since 2001, school infrastructure spending on maintenance and construction (after adjusting for higher input costs) has dropped by 42 percent from \$34.9 billion in 2001 to \$20.3 billion in 2007, as the chart above shows. EPI also cites a U.S. Department of Education survey in which 43 percent of schools reported that the condition of their permanent facilities “interferes with the delivery of instruction.” For more information, see www.epi.org/content.cfm/webfeatures_snapshots_20080903.

A Rewarding Assignment

IF YOU'RE A HIGH SCHOOL history teacher, the presidential election may have prompted some valuable classroom discussion. Students probably voiced their opinions on a range of issues facing this country. If those issues included the best way to improve the lives of America's children, encourage your students to put their thoughts on paper.

The Workforce and Family Program at the New America Foundation is sponsoring an essay contest for high school seniors nationwide. The grand prize of \$2,500 goes to the student who best answers this question: “You have just been elected President of the United States. What is the most important thing you will do to improve the lives of America's children?”

New America Foundation staff will recognize semifinalists and finalists for their work. A panel of judges will decide the winning essay based on “clarity of thought, creativity, practicality, potential to improve the lives of children, and potential to draw attention to policies that help young people.”

Essays must be no longer than 600 words and must be submitted by February 20, 2009. For official rules, entry forms, and last year's winning essay, visit www.newamerica.net/programs/workforce_and_family/essay_contest.

For the Young Historian

ALTHOUGH ELEMENTARY SCHOOLS often rely on textbooks to give students an understanding of American history, such books alone provide only a partial picture of the past. Teachers looking to supplement their history lessons should consider a new resource from the Gilder Lehrman Institute of American History.

“American History: Elementary School Edition” is the fourth volume in its *History in a Box* series. This particular box set is divided into 10 units, covering many important topics in American history: Native Americans; the Cherokee; the Colonial Era; the American Revolution; Making a New Nation; Westward Expansion; Slavery and Abolition; the Civil War; a Nation of Immigrants, 1850–1938; the Industrial Revolution; and Civil Rights.

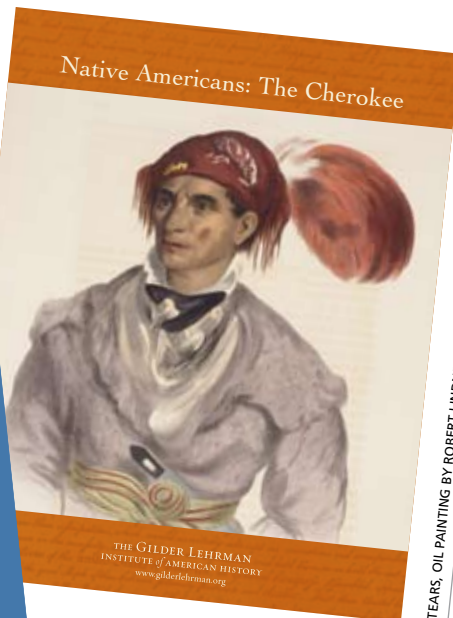
Each unit consists of the following:

- a booklet containing a short overview of the period;
- four primary source documents (including photographs and letters) with related questions;
- two longer classroom activities that provide opportunities for group work, role play, and art projects;
- a list of suggested books and Web sites for further reading;
- four to six discussion cards focusing on notable individuals; and
- a 17" x 22" poster.

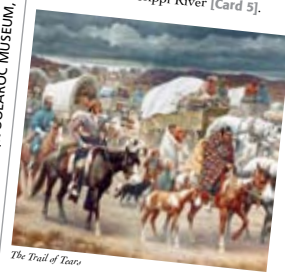
The set also includes a DVD of poems and songs that can be used to introduce most units, and a CD with an electronic version of each booklet.

The Gilder Lehrman Institute recommends this collection for the fifth grade, but selected materials can supplement American history lessons in grades 3 through 8. It can be purchased online for \$195 at www.gilderlehrmanstore.org.

LIBERTY DISPLAYING THE ARTS AND SCIENCES, PAINTING BY SAMUEL JENNINGS, 1792. (THE LIBRARY COMPANY OF PHILADELPHIA)



THE TRAIL OF TEARS, OIL PAINTING BY ROBERT LINDNEUX, 1942. (MOHAROC MUSEUM, BARTLESVILLE, OKLAHOMA)



The Trail of Tears

In 1835 John Ross, the Principal Chief of the Cherokee people, again went to Washington to attempt to convince the federal government to allow the Cherokee to stay on their land. President Jackson refused to see him. Instead, the United States government offered the Cherokee a new treaty, which said the Cherokee would receive five million dollars in return for their removal. Only 350 of the 17,000 Cherokee attended the treaty negotiations. At the conclusion and signing fewer than

The Supreme Court ruled that the Constitution allowed only the federal government to make treaties with the Indians and that Georgia did not have the right to make laws for the Cherokee Nation. The Court ruled that Native Americans owned their land and had the right to govern themselves.

Despite the Supreme Court ruling in their favor, the Cherokee faced additional problems. In a separate action, the United States Congress had passed the Indian Removal Act. It ordered the removal of Indians from their homelands to territory west of the Mississippi River [Card 5].

100 remained. John Ross, the Principal Chief, was not there [Card 2].

One of the powerful signers. Major Ridge said, "I am one of the natives of these wild woods...[but] they are and we are weak. We are few, many...I know we love the graves of our fathers...We can never forget our history. I would willingly die to preserve our lands, our lives and the lives of our children...Make a treaty of cession."

The treaty was ratified by the United States Senate in May 1836 by one vote. The majority of the Cherokee people opposed the treaty. In May 1838 the United States began rounding up Cherokee and them in stockades. In the fall, thirteen thousand Cherokee set out on an 800-mile journey in the winter. Many died without adequate supplies or transportation as many as four thousand Cherokee died along the way. This forced march was known to the Cherokee as "Nunna-da-ul-ti" or the place where they cried. Today it is known as the "Trail of Tears."

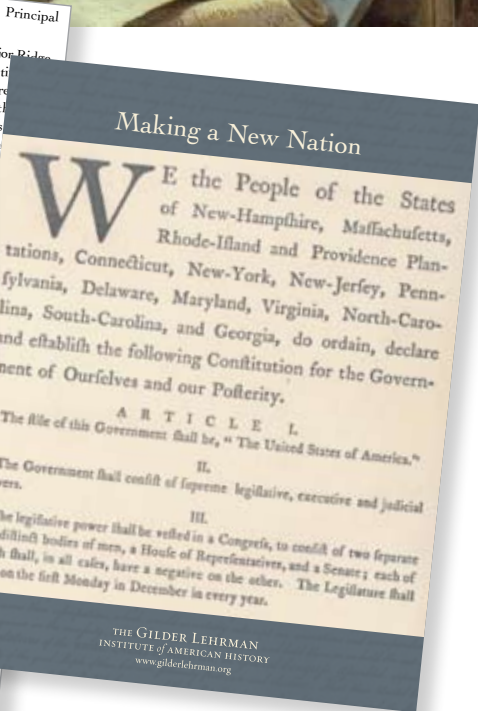
In the new Cherokee settlement in the West, there would be a bloody struggle amongst different groups of Cherokee for control of the Cherokee Nation. However, in the Treaty of 1846, the three groups came together. John Ross became the leader, and the Cherokee Nation began to rebuild. Today the Cherokee govt is based in Oklahoma has one hundred and fifty thousand Cherokee enrolled. A number of Cherokee, about ten thousand people, live on federally protected land in Cherokee, North Carolina.

Congratulations Ruth and Sandy

THIS QUARTER WE BID a fond farewell to two dear colleagues. Ruth Wattenberg, former editor of *American Educator*, served the AFT for 28 years, most recently as the assistant to AFT Secretary-Treasurer Antonia Cortese and as an advisor to AFT President Randi Weingarten.

Sandra Hendricks, *American*

Educator's longtime copy and production editor, as well as photo researcher and all around go-to person, served the AFT for 20 years. We wish both of them healthy, happy retirements.



Career Academies Pay Off

Month-by-Month Impacts on Total Monthly Earnings by Young Men

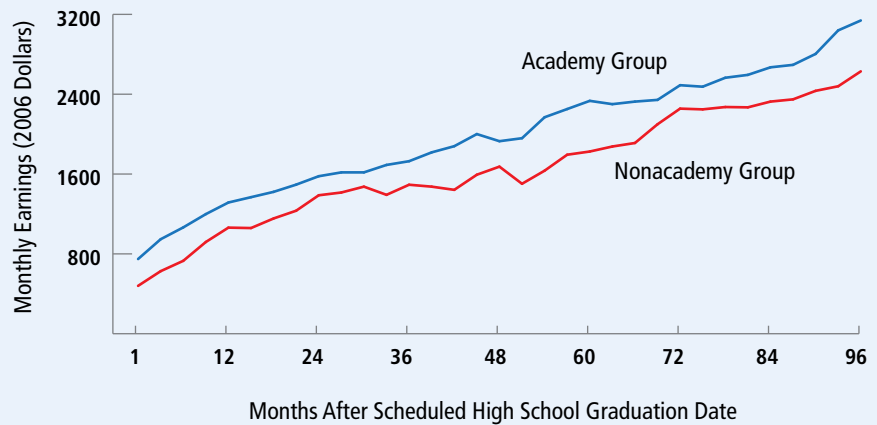


CHART ADAPTED FROM THE MDRC REPORT

A REPORT PUBLISHED by the research group MDRC shows that career academies—which typically offer career-themed academic and technical education, as well as work opportunities, to 150 to 200 high school students—positively affect the career earnings of students, especially young men, who graduate from such programs. Since 1993, MDRC has been conducting a rigorous evaluation of career academies in nine high schools across the United States. More eligible students wanted to attend a career academy than could be served, so applicants were randomly assigned either to a

career academy or to their schools' regular education programs. As the chart above shows, young men who attended a career academy earned substantially more in the eight years after high school than the young men who did not attend a career academy. By the eighth year, young men from career academies were earning 16 percent more than their noncareer-academy peers. To view the entire report, *Career Academies: Long-Term Impacts on Labor Market Outcomes, Educational Attainment, and Transitions to Adulthood*, by James J. Kemple, visit www.mdrc.org/publications/482/full.pdf.

How Words Cast Their Spell

Spelling Is an Integral Part of Learning the Language, Not a Matter of Memorization

BY R. MALATESHA JOSHI, REBECCA TREIMAN,
SUZANNE CARREKER, AND LOUISA C. MOATS

In 1773, Noah Webster stated that “spelling is the foundation of reading and the greatest ornament of writing.”¹ He was right. Good spelling is critical for literacy, and it makes writing much easier—allowing the writer to focus on the ideas to be conveyed, not the letters needed to put those ideas on paper. But ever since Webster’s “spellers” (which focused on how to spell the sounds that make up words and thus taught spelling and reading simultaneously) went out of fashion in the early 1900s, spelling has not received as much attention as reading. This is unfortunate because spelling instruction underpins reading success by creating an awareness of the sounds that make up words and the letters that spell those sounds. As children learn to spell, their knowledge of words improves and reading becomes easier.² And yet, even though there is a close relationship between reading and spelling (the correlation between the two is quite strong,³ ranging from 0.66 to 0.90, where 0 would indicate no correlation

R. Malatesha Joshi is professor of literacy education at Texas A&M University, author of numerous books and articles on reading and spelling, and founding editor of Reading and Writing: An Interdisciplinary Journal. Rebecca Treiman is Burke and Elizabeth High Baker Professor of Child Developmental Psychology at Washington University and author of dozens of studies on reading, writing, and spelling. Suzanne Carreker is vice president of program development at the Neuhaus Education Center, author of several language and literacy programs, and a former teacher and school consultant. Louisa C. Moats is consultant on professional development and research initiatives for Sopris West Educational Services; author of several literacy programs, books, and reports, including the AFT’s Teaching Reading Is Rocket Science; and a former teacher and school psychologist.

and 1 would indicate a perfect correlation), spelling in the elementary grades is usually taught as an isolated skill, often as a visual task.*

Collectively, the authors of this paper have eight decades of experience helping preservice and inservice teachers improve their instruction in spelling, reading, and writing. One common perception we have encountered is that visual memory, analogous to taking a mental picture of the word, is the basis of spelling skill. Teachers often tell us that they teach spelling by encouraging whole-word memorization (e.g., using flashcards and having students write words 5 or 10 times) or by asking students to close their eyes and imagine words. We’ve encountered this perception that spelling relies on visual memory so many times that we became curious about when and how it originated—after all, it’s a far cry from Webster’s spellers. We traced it back to the 1920s: one of the earliest studies to stress the role of visual memory in spelling was published in 1926, and it found that deaf children spelled relatively well compared with normal children of similar reading experience.⁴ Based on this study, and the perception that the relationship between sounds and the letters that spell them is highly variable, many people concluded that learning to spell is essentially a matter of rote memorization. Thus, researchers recommended that spelling instruction emphasize the development of visual memory for whole words.⁵

More recent studies, however, do not support the notion that visual memory is the key to good spelling.⁶ Several researchers have found that rote visual memory for letter strings is limited to two or three letters in a word.⁷ In addition, studies of the errors

* Throughout this article, the research and instructional strategies discussed are about spelling in English; they may not apply to other languages.



children make indicate that something other than visual memory is at work. If children relied on visual memory for spelling, regular words (e.g., *stamp*, *sing*, *strike*) and irregular words that are similar in length and frequency (e.g., *sword*, *said*, *enough*) should be misspelled equally often. But they are not. Children misspell irregular words more often than regular words.⁸

So, if words aren't memorized visually, how do we spell? That will be thoroughly explained later in this article. For now, here's the short answer: Webster was right not just on the importance of spelling, but on how to teach it too. Spelling is a linguistic task that requires knowledge of sounds and letter patterns. Unlike poor spellers, who fail to make such connections, good spellers develop insights into how words are spelled based on sound-letter correspondences,[†] meaningful parts of words (like the root *bio* and the suffix *logy*), and word origins and history.⁹ This knowledge, in turn, supports a specialized memory system—memory for letters in words. The technical term for this is “orthographic memory,” and it's developed in tandem with awareness of a word's internal structure—its sounds, syllables, meaningful parts, oddities, history, and so forth. Therefore, explicit instruction in language structure, and especially sound structure, is essential to learning to spell.

Don't Students Learn to Spell through Flashcards and Writing Words?

Given both the widespread belief that English spelling is irregular and the previous studies that stressed visual memory for

[†] In technical terms, the smallest sounds of speech are known as phonemes, and the letters and letter groups that represent them are known as graphemes. So what we are calling sound-letter correspondences, other authors may refer to as phoneme-grapheme correspondences.

words, it's no surprise that many teachers teach spelling by writing words on flashcards and exposing students to them many times or by having students write words 5 to 10 times. Unfortunately, the effectiveness of such methods is not well established. In contrast, studies show that spelling instruction based on the sounds of language produces good results. For example, to test whether a visual approach or language-based method is better, researchers taught spelling to typical second graders using two different methods: a visual method and a method in which students focused on correspondences between sounds and letters.¹⁰ After administering lists of words as spelling tests, these investigators drew the attention of the visual group to their errors, wrote the correct spellings on flashcards, and showed children the correct spellings. In contrast, the children in the language-based group were given instruction on the sounds involved in their misspellings. The group that received the language-based spelling instruction showed significantly greater progress than the visual group. Similarly, another researcher, after examining five successful spelling instructional approaches for children with learning disabilities, observed that the successful programs had one thing in common: they were all based on structured language instruction that explicitly taught principles like sound-letter correspondences.¹¹ Researchers also have found that second and third graders at risk of literacy problems improved their spelling (as well as their word recognition, handwriting, and composition skills) after structured spelling instruction based on the concept that speech sounds are represented by letters in printed words (i.e., the alphabetic principle).¹² And a series of studies showed that training in phonological awareness (i.e., awareness of the sounds that make up language) improved the spelling and reading of children in low-income, inner-city

schools. The training was especially effective among the lowest-performing children.¹³ In sum, these and other studies have found that effective spelling instruction explicitly teaches students sound-spelling patterns. Students are taught to think about language, allowing them to learn how to spell—not just memorize words.

As a result, linguistically explicit spelling instruction improves spelling of studied words *and* novel words. Two exploratory spelling intervention studies contrasted linguistically explicit spelling instruction with implicit spelling instruction, and found that the explicit instruction gave students the knowledge of spelling patterns that they needed to more accurately spell novel words. In the first study, second- through fourth-grade students



Researchers have estimated that the spellings of nearly 50 percent of English words are predictable based on sound-letter correspondences that can be taught. And another 34 percent of words are predictable except for one sound.

were taught to spell Latin-based words that ended in *tion* or *sion*.¹⁴ The students were divided into two groups. One group was taught to spell the words with an emphasis on the orthographic patterns *tion* and *sion*, but without discussion of the words' sound patterns. Instead, activities focused students on the words' visual patterns. For example, students sorted spelling words by the final endings *tion* or *sion*. The second group, which received linguistically explicit instruction, was taught to spell the words with a simultaneous emphasis on the orthographic patterns *tion* and *sion* and the sound patterns /shŭn/ and /zhŭn/.^{*} For example, students sorted words by letter patterns and by sound patterns. The orthographic and sound patterns of the other syllables in the words, in particular the syllables that preceded *tion* or *sion*, were also emphasized. For example, /shŭn/ is most frequently spelled *tion*. However, after a syllable that ends in /l/, the ending /shŭn/ is spelled *sion*, as in *compulsion* or *expulsion*. Compared with the students in the other group, the students who received the linguistically explicit instruction were better able to discriminate the sounds /sh/ and /zh/, spell the word endings correctly, and generalize the spellings of the word endings to novel words.

In the second study, first-grade students were divided into two groups.¹⁵ Both groups were taught to spell one-syllable words that ended in /k/. One group was taught to spell the words by using letter units such as *ank*, *ack*, and *ake*. The other group was taught to segment the sounds of the words and to think about

the pattern that would determine the spelling of /k/ (e.g., after a consonant or two vowels, /k/ is spelled *k*; after a short vowel, /k/ is spelled *ck*; after a long vowel, /k/ is spelled *k* with a final *e*). The students in the second group spelled the words more accurately and read them faster.

Is English Predictable Enough for Explicit Spelling Instruction?

This is a question we hear often. If English spelling were completely arbitrary, one could argue that visual memorization would be the only option. However, spelling is not arbitrary. Researchers have estimated that the spellings of nearly 50 percent of English words are predictable based on sound-letter correspondences that can be taught (e.g., the spellings of the /k/ sound in *back*, *cook*, and *tract* are predictable to those who have learned the rules). And another 34 percent of words are predictable except for one sound (e.g., *knit*, *boat*, and *two*).[†] If other information such as word origin and word meaning are considered, only 4 percent of English words are truly irregular and, as a result, may have to be learned visually (e.g., by using flashcards or by writing the words many times).¹⁶

Far from being irregular and illogical, to the well-known linguists Noam Chomsky and Morris Halle, English is a “near optimal system for lexical representation.”¹⁷ How could they possibly make such a claim? They understand that written language is not merely speech written down. The major goal of the English writing system is not merely to ensure accurate pronunciation of the written word—it is to convey meaning. If words that sound the same (i.e., homophones such as *rain*, *rein*, and *reign*) were spelled the same way, their meanings would be harder to differentiate. For example, if we regularize the spelling, then the sentence *They rode along the rode and, when they reached the lake, they rode across it* would be hard to understand, while *They rode along the road and, when they reached the lake, they rowed*

(Continued on page 10)

* To aid the reader, sounds of the letters are represented within // rather than using the symbols from the International Phonetic Alphabet. Thus, /l/ as in *ship* is represented by /sh/, and /tʃ/ as in *chin* is represented by /ch/.

† Note that the exception was for one *sound*, not one *letter*. For example, only one sound is wrong if *automobile* is spelled *automobeal* or if *bite* is spelled *bight*.

The Real Magic of Spelling: Improving Reading and Writing

In the mid-19th century, spelling was the means by which children were taught to read. In the 21st century, however, spelling is the abandoned stepchild in the family of language arts, overlooked by federal grants such as Reading First, federal and state assessment policies, state program-adoption guidelines, publishers of comprehensive instructional programs, and the educational research community. The reasons for this are many, including the dominance of the “writers’ workshop” approach to composition, in which spelling instruction is contextualized, nonsystematic, and reactive (since it often just addresses students’ errors). In addition, many assumptions about the nature of spelling—including the widespread belief that spelling is a rote visual-memory skill—are misinformed. Knowledge of spelling, contrary to many people’s expectations, is closely related to reading, writing, and vocabulary development, as they all rely on the same underlying language abilities.¹

Spelling is most obviously connected to writing. A consistent research finding is that poor spelling, in addition to causing the writer frustration and embarrassment, adversely affects composition and transmission of ideas.² On the whole, students who spell poorly write fewer words³ and write compositions of lower quality. Writers who struggle to remember spelling often limit themselves to words they can spell, losing expressive power. In addition, nonautomatic spelling drains attention needed for the conceptual challenges of planning, generating ideas, formulating sentences, and monitoring one’s progress. The written work of poor spellers, moreover, is judged more harshly than that of students who present neat, correctly spelled work. Readers expect accurate spelling as a courtesy of communication, and inaccurate spelling may result in poor grades or poor job evaluations.

Although not as obvious, the development of spelling is also intimately connected with the development of reading.⁴ Knowledge of speech sounds and their spellings, and fluent use of this knowledge, are necessary for both word reading and spelling. Young children become better readers and spellers when explicit instruction in speech sound awareness and sound-letter correspon-

dence is emphasized in kindergarten and first grade.⁵

Good spellers are almost always good readers. Spelling, however, is more difficult than reading. We generally cannot accurately spell words we cannot read. On the other hand, since most of us spend much more time reading than writing, we typically read many more words than we spell. Poor spellers need dozens of opportunities to write difficult words before they can remember them. Indeed, poor spellers (who form the majority of students in many high-poverty schools) in the intermediate and middle grades make many spelling errors that reflect poor understanding of word structure, even when they can read in the average range.⁶

If we do learn to spell a word, the mental representation of all the letters in that word are fully specified in memory, and recall is likely to be fluent and accurate. Recognition of words “by sight” is facilitated by knowing the details of sound-letter correspondence in the spelling system.⁷ Good spellers are also familiar with the patterns and constraints of English spelling⁸ and use that knowledge to help them remember specific letters in specific words. On the other hand, general “visual” cues, such as the configuration or outside contour of a word in print, are not very helpful for either recognizing or recalling printed words. (See the main article for more on language-based versus visual spelling instruction.)

Spelling also has a strong relationship with reading comprehension.⁹ The correlation between spelling and reading comprehension is high because both depend on a common denominator: proficiency with language. The poorer a child’s language abilities, the poorer that child’s spelling will tend to be.¹⁰ The more deeply and thoroughly a student knows a word, the more likely he or she is to recognize it, spell it, define it, and use it appropriately in speech and writing.

Systematic spelling lessons (such as

with the programs highlighted on page 14) provide an opportunity to learn to think analytically about words and language. The attention to detail required by comparison and differentiation of words like *flush*, *flesh*, *fresh*, and *thresh*¹¹ nurtures a more generalized

The correlation between spelling and reading comprehension is high because both depend on a common denominator: proficiency with language. The more deeply and thoroughly a student knows a word, the more likely he or she is to recognize it, spell it, define it, and use it appropriately in speech and writing.

consciousness about words that in turn encourages careful consideration of all aspects of language.

At its best, spelling instruction richly supports vocabulary and language development. Good spellers not only demonstrate a good sense of the sounds in words, they also have a good sense of the meaningful parts of words (e.g., *un-*, *desir[e]*, *-able*), the roles words play in sentences (e.g., *packed* is a past-tense verb, but *pact* is a noun), and the relationships among words’ meanings that exist in spite of differences in their sounds (e.g., *image* and *imagination*). Precocious spellers in the Scripps National Spelling Bee display exceptional knowledge of vocabulary, etymology (the history of words), and parts of speech. A wide, deep knowledge base underlies what on the surface may seem like a “simple” skill. Not all children can win spelling bees, but all can benefit from knowing how spelling reflects word origin, meaning, and pronunciation.

—R.M.J., R.T., S.C., and L.C.M.

(Endnotes on page 43)

(Continued from page 8)

across it makes sense. In addition, the English writing system reveals the history of the English language. For example, *ch* pronounced as /ch/, as in *chair* or *chief*, appears in Anglo-Saxon or Old English words; the same letter combination *ch* pronounced as /sh/, as in *chef* and *chauffeur*, appears in French words of Latin origin; and *ch* pronounced as /k/, as in *ache* and *orchid*, appears in words borrowed from Greek. Approximately 20 percent to 25 percent of English words are of Anglo-Saxon origin and about 60 percent are of Latin origin (of which 50 percent are directly from Latin and another 10 percent are from Latin through French, as in *chef* and *chauffeur*). The remaining 15 to 20 percent of English words are primarily of Greek origin.*

What Types of Information Make Spelling Predictable?

There are three types of information that, once learned, make spelling much more predictable: (1) word origin and history, (2) syllable patterns and meaningful parts of words, and (3) letter patterns. Each of these is discussed briefly below; suggestions on when and how to teach them are in the sections that follow.

Word Origin and History

Knowing the origins of words can be helpful in pronouncing and spelling them.¹⁸ For example, in words of Greek origin, which tend to be long and scientific, /f/ is reliably spelled *ph*, as in *photosynthesis* and *philodendron*, and /k/ is often spelled *ch*, as in *chlorophyll* and *chemistry*. Fancy French words use that same *ch* combination for the /sh/ sound, as in *champagne* and *chandelier*, but Anglo-Saxon uses *sh*, as in *ship* and *wish*, while sophisticated Latin words use *ti*, *si*, or *ci*, as in *nation*, *percussion*, and *special*.

Let's take a little closer look at words of Anglo-Saxon origin. They are typically short, related to daily life (as opposed to science, like a lot of Greek words, or lofty ideas, like a lot of Latin words), and often have silent letters that were once pronounced (e.g., *knee*, *gnat*, *ghost*, *climb*, *wrist*). The pronunciations of the words changed over time, but the spellings did not—they continue to convey the earlier pronunciations. As students learn to spell these words, they may enjoy using a special Anglo-Saxon pronunciation to help them remember the silent letters. This pronunciation cues students to the correct spellings of the words. Students also can make connections among words that have similar meanings but that vary in whether or not they have silent letters. For example, in remembering how to spell words with a silent *w*, such as *wrist*, *wring*, and *wrench*, it is helpful for students to note that these words share the meaning “twist.”

The spellings of some words are unusual because of their associations with certain historical figures. For instance, *caesarean* is associated with Julius Caesar, who is said to have been delivered through surgery, and *silhouette* can be traced to Etienne de Silhouette, a French finance minister in the middle of the 1700s who was known for his shady deals. *Leotard*, a garment worn by acrobats and dancers, was named for Jules Léotard, a 19th-century French aerialist. Similarly, *pasteurize* comes from

Louis Pasteur, the famous French chemist and microbiologist, and *galvanize* from Luigi Galvani, an Italian physician and physicist. *Maverick* comes from Sam Maverick, who refused to brand his cattle; hence a maverick is someone who is different, out of the ordinary. Other words come not from historical figures but from other words (especially, as we have seen, Latin and Greek words). For example, *radical* means root, hence *radish* means edible root. And *anthology* literally means flower gathering; thus, an anthology editor is supposed to have gathered the choicest flowers in the field.[†]

The major goal of the English writing system is not merely to ensure accurate pronunciation of the written word—it is to convey meaning. If words that sound the same (e.g., *rain*, *rein*, and *reign*) were spelled the same way, their meanings would be harder to differentiate.

Syllable Patterns and Meaningful Parts of Words

There are two common types of syllables, called closed and open, that are very helpful in spelling.¹⁹ A closed syllable has one vowel followed by at least one consonant and the vowel is short (e.g., *cat*, *ball*, and *pencil*). An open syllable ends in one vowel and the vowel is long (e.g., *he*, *go*, and the first syllable in *hotel*). Learning about open and closed syllables is especially helpful for deciding whether or not to double a consonant in the middle of a word. If students have been taught about closed and open syllables, then they know why *rabbit* is spelled with two *b*'s in the middle while *label* is spelled with only one. The word *rabbit* divides between the two consonants, *rab/bit*. The first syllable, *rab*, is closed, and the vowel is pronounced as a short *a*. The word *label* divides before the consonant, *la/bel*. The first syllable, *la*, is open, and the vowel is pronounced with a long *a* sound. Known as the “rabbit rule,” it's a simple formula to remember: in a two-syllable word, there's a double consonant in the middle after a short vowel.²⁰ Instead of memorizing whether to use one or two consonants in the middle of words like *cotton*, *tennis*, *sudden*, *muffin*, and *happen*, students can use the rabbit rule. Of course, there are exceptions, such as *cabin*, *robin*, *lemon*, and *camel*, but these words are not as frequent as words that follow the rabbit rule.

Knowledge of the meaningful parts of words—prefixes, suffixes, and roots—is of great help in the development of spelling (and vocabulary). Technically, what we're talking about here are known as morphemes—they are the smallest meaningful units in words. When the units have meaning by themselves, such as the words *cat* and *play*, they are referred to as free morphemes.

[†] An excellent reference for words from various languages, words from Greek and Latin roots, and words from names is R. L. Venezky, *The American Way of Spelling: The Structure and Origins of American English Orthography* (New York: Guilford Press, 1999).





However, *cats* has two morphemes—a free morpheme *cat* and a bound morpheme *s*. Bound morphemes do not have meaning by themselves; they take on meaning when attached to a free morpheme (another example is the *ed* in *played*).

Teaching morphemes often requires more information on word origin. For example, when teaching the spellings of words with the suffixes *er* and *or*, which mean *one who*, as in *worker* or *actor*, teachers can tell their students that words from Old English are basic survival words. Words such as *worker*, *carpenter*, *farmer*, *grocer*, *baker*, *brewer*, and *butcher* are Old English and use *er*, whereas words of Latin origin are more sophisticated and use *or*, as in *actor*, *professor*, *educator*, *aviator*, *director*, and *counselor*. The same principle applies to the suffixes *able* and *ible*, both meaning *able to*. We use *able* for Old English base words and *ible* for Latin roots. Thus, we have *passable*, *laughable*, *breakable*, *agreeable*, and *punishable*, as compared to *edible*, *audible*, *credible*, *visible*, and *indelible*.[‡]

Letter Patterns in Words

Knowledge of letter patterns in words provides students with clues for spelling. English has certain constraints on how letters can be used. For example, *q* is almost always followed by *u* and then another vowel, as in *queen* and *quail*. Exceptions are mostly proper nouns borrowed from other languages, like *Qatar* and *Iraq*. Another example of a letter pattern is the rule that words do not end with *v*; hence we have *give*, *love*, and *live*, with *kiev* being an exception because it is borrowed from Russian. Also, certain letters never or rarely double in any position, such as *h*, *k*, *j*, *v*, *x*, and *y*. A final example of a letter pattern is that words do not begin with identical consonants, *llama* being one of the few exceptions because of its Spanish origin. Even young children often follow this pattern, although they are unable to verbalize

it. For example, researchers asked kindergartners and first graders to tell which item looked more like a real word: *nuss* or *nnus*.²¹ A majority of children were able to identify correctly that *nuss* looks more like a real word. As noted in this and other studies, first graders do not often begin words with *ck* or with letter combinations like *bc*.²²

Students need not learn all of the possible letter patterns, but they should learn the letter patterns that frequently represent speech sounds. For instance, /k/ in initial or medial position can be spelled with *c* or *k*. Before *a*, *o*, *u*, or any consonant, /k/ is spelled *c* (e.g., *cat*, *cot*, *cut*, *clasp*, *crust*). Before *e*, *i*, or *y*, /k/ is spelled *k* (e.g., *keep*, *kite*, *sky*). (One mnemonic device that is helpful involves the four criteria that are used for evaluating diamonds. The four *c*'s stand for *carat*, *color*, *cut*, and *clarity* or, when applied to spelling, /k/ is spelled with *c* before *a*, *o*, *u*, or any consonant.) Of course, there are exceptions to this pattern, such as *kangaroo*, *skunk*, and *skate*. By discovering exceptions, students can demonstrate and reinforce their understanding of patterns. Students may discover the exceptions on their own, or teachers may point them out and teach these words through mnemonic sentences (e.g., *The kangaroo and the skunk like to skate*) rather than asking students to visually memorize these words.

Clearly, there is a great deal for students to learn, but it is manageable when spread over several years. The next two sections provide an overview of what to teach in the elementary and middle grades, and suggestions for how to deliver language-based instruction. In addition, the sidebar on page 14 shows samples from two carefully developed, well-sequenced spelling programs.

What Should Be Taught in Each Grade?

The order in which various patterns are introduced may differ from one spelling program to the next. However, the following sequence offers some guidance for planning systematic, explicit spelling instruction for kindergarten through grade 7.

In kindergarten, activities that heighten students' awareness of the sounds that make up language and that develop their letter-name and letter-sound knowledge provide a foundation for spelling. For example, students can (1) count the number of syllables in words, (2) listen for a particular sound in words and give a "thumbs-up" if the sound is heard, and (3) count the number of sounds in words by saying a word slowly and moving a counting token for each sound. By the end of kindergarten, students should be able to quickly name letters on a chart as the teacher points to each letter, and quickly give the sounds of letters with one frequent sound (e.g., *b*, *d*, *f*). In addition, plentiful opportunities to write will help students connect speaking and writing.

Anglo-Saxon words with regular consonant and vowel sound-letter correspondences are introduced in grade 1. Students learn to spell one-syllable words with one-to-one correspondences such as the short vowels and the consonant sounds /b/, /d/, /f/, /g/, /h/, /l/, /m/, /n/, /p/, /s/, and /t/. They learn a few common patterns for sounds that have more than one spelling, such as that /k/ before *a*, *o*, *u*, or any consonant is spelled *c* (e.g., *cap*, *cot*, *cub*, *class*, *club*) and before *e*, *i*, or *y* is spelled *k* (e.g., *kept*, *kiss*, *skit*). Other common patterns to teach in first grade include (1) the fact that when a long vowel sound

[‡] For detailed descriptions of morpheme meanings and their spellings in relation to their origins, see: Marcia K. Henry, *Unlocking Literacy: Effective Decoding and Spelling Instruction* (Baltimore, MD: Paul H. Brookes, 2003).

in the initial or medial position is followed by one consonant sound, *e* is added to the end of the word (e.g., *name, these, five, rope, cube*), and (2) the “floss rule,” which helps students remember that after a short vowel, a final /f/ is spelled *ff*, final /l/ is spelled *ll*, and final /s/ is spelled *ss* (as in *stiff, well, and grass*). Some common exceptions to point out are *if, this, us, thus, yes, bus, and his*. Once students are secure with the spelling of the first three sounds, they can add /z/, as in *fizz*.

By second grade, students should be ready for more complex Anglo-Saxon letter patterns and common inflectional endings. Students learn to spell one-syllable words with patterns such as:

- final /k/ after a short vowel in a one-syllable word is spelled *ck* (e.g., *back, peck, sick, sock, duck*);
- final /k/ after a consonant or two vowels is spelled *k* (e.g., *milk, desk, book, peek*);
- final /ch/ after a short vowel in a one-syllable word is spelled *tch* (e.g., *catch, pitch, match*), and after a consonant or two vowels is spelled *ch* (e.g., *bench, pouch*); the words *which, rich, much, and such* are exceptions;
- final /j/ after a short vowel in a one-syllable word is spelled *dge* and *ge* after a long vowel, a consonant, or two vowels (e.g., *badge, fudge, age, hinge, scrooge*); and
- initial and medial /au/ is usually spelled *ou* and final /au/ is spelled *ow* (e.g., *out, found, cow, how*).

Students also learn to spell words with inflectional endings, such as *ing* and *ed*. Spelling words with these endings may require doubling or dropping a letter. For example, when a suffix that begins with a vowel is added to a one-syllable word that ends in one vowel and one consonant, the final consonant is doubled (e.g., *hopping, running, stopped, and bagged*). The same is true when a suffix that begins with a vowel is added to the last syllable of a multisyllabic word that ends in one vowel and one consonant, and is stressed* (e.g., *beginning* and *occurred*). When a suffix that begins with a vowel is added to a word that ends in a final *e*, the final *e* is dropped (e.g., *hoping, naming, saved, joked*).

Students learn how to spell multisyllabic words, the unstressed vowel schwa (as in *sofa* and *alone*), and most common prefixes and suffixes in grade 3. They learn more complicated patterns such as using *c* for both the final /k/ after a short vowel in a word with more than one syllable (e.g., *public, lilac, fantastic*) and for the medial /s/ in a multisyllabic word after a vowel and before *e, i, or y* (e.g., *grocery, recess, recite*). Students also learn to spell words with common suffixes that may require changing a letter. For example, they learn to change *y* to *i* when a suffix that does not begin with *i* is added to a word that ends in a consonant and a final *y* (e.g., *happiness, babies, plentiful*).

Latin-based prefixes, suffixes, and roots are introduced in grade 4. Students spell words with meaningful word parts such

as *vis* (*television*), *audi* (*auditorium*), *duc* (*conductor*), *port* (*transportation*), and *spect* (*spectacular*).

Greek combining forms are introduced in grades 5 to 7. Students spell words with meaningful word parts such as *photo* (*photography*), *phono* (*symphony*), *logy* (*biology*), *philo* (*philosophy*), *tele* (*telescope*), and *thermo* (*thermodynamic*).

How Should Spelling Be Taught?

Students should be taught about the lawfulness of spelling, even while irregularities are acknowledged. Students can be encour-

The spellings of English words are influenced by the positions of the letters within the words, meaningful word parts, and the history of English. Spelling, therefore, is a window on what a person knows about words. Learning about words and about the language will improve spelling skills.

aged to recognize, learn, and use the patterns in English spelling through systematic, explicit instruction and activities. Such instruction requires careful planning, but is much more effective than memorizing words in a rote fashion.

With guidance, students can be led to recognize the sounds in words and their most frequent spellings.²³ For example, a sound-spelling pattern might be introduced by preparing a list of five or six words that contain the same sound and the same spelling of that sound. Let’s use the words *ship, shop, wish, dish, flash, and usher* to see how such a lesson would unfold with first-grade students. Before diving into the list, students should be taught the terms *initial, medial, and final* to refer to the positions of sounds and letter patterns in words. *Initial* is used to denote a sound or letter pattern at the beginning of a word or syllable. *Medial* includes any sound or letter pattern that is between the initial and final positions (e.g., the letter *n* is in the medial position of the words *snip* and *splint*). *Final* denotes a sound or letter pattern at the end of a word or syllable. The lesson then proceeds as follows:

Teacher: Say each word after me and listen for the sound that is the same in all the words. [The teacher reads the words—*ship, shop, wish, dish, flash, usher*—one at a time. Students repeat each word.] Tell me the sound that is the same in all these words.

Students: /sh/

Teacher: In what positions did you hear /sh/? Did you hear it in the initial position?

Students: Yes.

Teacher: In which words?

Students: In *ship* and *shop*.

* This last condition applies to one-syllable words as well, but they are all stressed.

Teacher: Listen to the words again. [The teacher reads the words again.] Did you hear it in final position?

Students: Yes, in *dish* and *splash*.

Teacher: Listen to the words again and tell me if you hear /sh/ in medial position. [The teacher reads the words again.]

Students: Yes, in *usher*.

Teacher: [The teacher writes the words on the board.] Look at these words and tell me what letter or letters are the same.

Students: *sh*

Teacher: In what positions do you see the letter or letters?

Students: In initial position and in final position and in medial position.

Teacher: Tell me the pattern.

Students: When you hear /sh/, spell it *sh*.

This type of lesson heightens students' awareness of sounds in words and calls their attention to the letters and letter patterns that spell the sounds.

Students can also recognize letter patterns through word sorts. Table 1 shows a list of words where /k/ is spelled with *k* or *c* in the initial position and with *k*, *ck*, or *c* in the final position. Students can be given the list of words and asked to write the words where they belong in worksheets like those shown under Table 1. After completing this activity, students can be led to see when /k/ is represented by the letter *k* and when it is represented by the letter *c*. They will also see the spelling patterns of /k/ in final position. Even if only 10 to 30 of these words appear in the weekly spelling lesson and on the spelling test, students should be able to generalize what they've learned to all of the words that follow the patterns of spelling /k/.

A similar activity can be developed to teach *ch* or *tch* at the end of a word. Give a list of words that end in *ch* or *tch*, as in Table 2, and use this to help children figure out the spellings of the corresponding sound.

How Should Spelling Be Assessed?

When testing students' spelling, it's important to go beyond simply marking words right or wrong. The assessment should be an opportunity to evaluate students' understanding of sounds and conventional spelling patterns. The kinds of words that students miss and the types of errors they make are important in evaluating their spelling achievement and their understanding of language structures.²⁴ For example, by carefully reviewing students' errors, a teacher may see that some students are confusing /b/ and /p/. Figuring out what to do requires some follow-up. Many students confuse /b/ and /p/ because the letters that are used to spell them are visually similar. But some students who consistently confuse /b/ and /p/ may not be aware that even though the positions of the tongue, teeth, and lips are the same when pronouncing /b/ and /p/, one sound is voiced (i.e., /b/ activates the vocal cords) and the other is unvoiced.²⁵ This difficulty can be corrected by having the student place two fingers on his or her vocal cords as the word is pronounced in order to feel whether or not the vocal cords are activated.

To deliver more targeted instruction, researchers devised a
(Continued on page 16)

Table 1. List of words with various spellings for /k/ in initial and final positions.

traffic	dock	lock
brick	music	seek
brook	book	block
keg	meek	lilac
hook	keep	kettle
public	thick	trunk
crash	pack	luck
track	cure	shook
kindle	kilt	culvert
week	crater	speck
quick	kept	duck
carpet	sulk	shellac
attic	crook	kin
cord	combat	elk
peck	frantic	rock
look	task	deck

Initial position

k	c
keg	crash

Final position

k	c	ck
brook	traffic	brick

Table 2. List of words with *ch* or *tch*.

beach	witch
pouch	preach
starch	church
batch	notch
crunch	clutch
hitch	march
hutch	sketch
finch	scratch
botch	punch
perch	switch

ch	tch
beach	batcch

Teaching Spelling

These Language-Based Programs Provide the Grade-by-Grade, Well-Sequenced Instruction That Students Need

English spelling is more regular and rule bound than commonly believed, but that doesn't mean it's easy to teach. Instruction needs to be carefully sequenced so as to build up from common, regular words (like cat) to uncommon, specialized words (like hydroponics). Since such instruction must be spread across several grades, educators may find that a well-planned program is the best way to deliver coherent spelling instruction.

Unfortunately, very little research exists to guide educators in selecting a program: we are not aware of any large-scale studies that compare the relative effectiveness of various spelling programs. Nonetheless, as explained in the main article, research has found

language-based spelling instruction (e.g., that focuses on sound-letter correspondences) to be more effective than instruction that relies heavily on visual memorization of words (e.g., that uses flashcards). The two programs shown here—*Primary Spelling by Pattern*, for early elementary students, and *Spellography*, for upper elementary students—offer explicit, carefully sequenced instruction in the structure and history of the English language. They both emphasize sound-letter correspondences and provide an array of activities to help students understand and remember the regularities and patterns in English.

—EDITORS

Lesson 10 Parent Page

In Lesson 7, students were introduced to the pattern for spelling the final /k/ sound. We will be revisiting that pattern this week. Students learned that the ck spelling is used right after a short-vowel sound.

Spelling /ng/ and /nk/ Words

The second part of the lesson focuses on the /ng/ sound. The /ng/ sound is made by raising the back of the tongue and pushing air out through the nose. Pinch your nose and try to say "sing, sang, song." Have your child do the same. You will soon be giggling together. The sound /ng/ is spelled with ng unless it comes right before /k/. Then we use the letter n for the /ng/ sound. The easiest way to help your child remember the spelling of ng and nk words is to teach him or her that all the words that rhyme with the words sing, sang, and song and bank, wink, and bunk are spelled in the same way.

On the Road to Success

This is a good time to assess your child's progress. Check to see whether your child can spell these nonsense words. Use the information you gather to help you work with your child at home.

Errors with the following nonsense words indicate . . .

Which consonants and short-vowel sounds are not used?

Day 1

Spelling Pattern

When the /k/ sound is right after a short vowel in a one-syllable word, spell it ck. The /ng/ sound is usually spelled ng. It is in these word families: ing, ang, ong, ung (as in sing, sang, song, sung). Words that rhyme with bank, wink, bunk, and bank are spelled with nk. The letter n before k stands for the /ng/ sound.

Materials

- Self-stick notes on which you have written the words cob, kitten, tack, cuff, kiss, and deck
- Self-stick notes on which you have written c, k, and ck
- Student pages, Lesson 10
- Lesson 10 Parent Page

Review

Three Ways to Spell /k/

Place the self-stick notes with c, k, and ck on the board. Hold up one self-stick note at a time for the words cob, kitten, tack, cuff, kiss, and deck.

Say: Let's read this word. Is there a /k/ sound? How is it spelled?

Place the c, k, and ck words below the correct /k/ spelling on the board.

c	k	ck
cob	kitten	tack
cuff	kiss	deck

Say: What are three ways to spell /k/? Where is ck used? (ck is used only at the end of a word.)

Linguistic Awareness

Short- and Long-Vowel Discrimination

Say: Before we learn this week's spelling pattern, we are going to be sure everyone can hear the difference between short-vowel sounds and other vowel sounds. We are going to play a game. When I say a word, listen to the vowel sound. If you hear a short-vowel sound, squat down and make yourself short. If the vowel sound you hear is not short, stand up. For example, if I say bed, you will squat down because the vowel in bed has its short sound. If I say bike, you will stand up because the vowel in bike does not have its short sound.

Lesson 10 Sing, Sang, Song (Word Families)

Spelling Pattern

When the /k/ sound is right after a short vowel in a one-syllable word, spell it ck. The /ng/ sound is usually spelled ng. It is in these word families: ing, ang, ong, ung (as in sing, sang, song, sung).

Lesson 10 Home Support Activities

Day 1

Review the pattern for choosing the correct spelling for a final /k/ sound. Ask your child to explain the ck pattern to you.

Day 2

Listen to your child read the silly sentences that were used for the dictation exercise today. Encourage fluent reading.

- Nick sat on the stack of sticks.
- He had a snack of cracker jacks and milk.
- It was just luck that Nick did not sit on the tack in the back of the truck.
- The duck ran to check on the flock of chicks stuck in the black mud.
- The elk went past the big rock.

Day 3

Ask your child to explain why it's impossible to hold your nose and say sing, sang, song.

Day 4 At school today, your child played a game called "I Spy." You can play it at home, too. The game is played as follows: Pick a word on the page of a book you have been reading together. Give your child clues. Then ask your child to try to guess the word you're thinking of. Here are some example clues:

The word has a short ____ sound.
It starts with the ____ sound.
It has a ____ ending.
It rhymes with ____.

When your child becomes good at finding words, you can reverse roles and let your child give the clues.

Play the game using the following words or other single-syllable words.

fun	trick	shed	slip	book
take	boil	draw	shook	mine
glad	dream	turn	milk	champ
shout	duck	list	block	mine

Understanding the Spelling Pattern/Guided Practice

Word Sort: A Slick Magic Trick

Say: Turn to Lesson 10, page 37. We are going to sort these words together. I will read them to you, and then you write them in the correct column on your paper. Remember, we use ck only after a short-vowel sound, when there is not another consonant sound before the /k/ sound. If it is not a single-syllable word (or a compound word—two words hooked together—) sound words will be introduced in Lesson 21.

Words List				
week	park	ask	hike	yuck
ick	slick	speak	pink	hulk
k	make	week	disk	
	spank	chick	neck	

Not Short	Short Vowel + Two Consonant Sounds	Short Vowel + /k/
ck	silk	snack
ck	spank	slick
	ask	speak
	pink	chick
	disk	yuck
	hulk	neck

Lesson 10 Parent Page. Encourage students to review the ck pattern.

Primary Spelling by Pattern Teacher

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Lesson 10 Sing, Sang, Song (Word Families)

Word Sort: A Slick Magic Trick

Write each word from the word list in the correct hat.

peek silk talk snack park slick make
spank ask speak week chick hike
pink disk neck yuck hulk



Vowel Is Not Short

- peek
-
-
-
-
-

Short Vowel + Two Consonant Sounds

- silk
-
-
-
-
-

Short Vowel + /k/

- snack
-
-
-
-
-



Sing, Sang, Song

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Primary Spelling by Pattern

Developed by Ellen Javernick, a first- and second-grade teacher, and Louisa Moats, a researcher who specializes in reading and spelling, *Primary Spelling by Pattern* is a program for first through third graders, or for older students who are having difficulty. Level 1 of the program is currently available; two more levels are being developed. The samples shown here are all from Lesson 10 on how to spell the /k/ and /ng/ sounds; there are two pages from the teacher edition, one student worksheet, and the parent handout.

Spellography

Developed by Louisa Moats, a researcher who specializes in reading and spelling, and Bruce Rosow, a middle-grades resource teacher and curriculum coordinator, Spellography is a program for fourth and fifth graders (who read at or above the mid-third-grade level) or for middle-grades students in need of more structured language instruction. The sample pages shown here, all of which are from the student workbook, are from Lesson 15 on spelling the /j/ sound.

Word Construction Zone Compounding is an Anglo-Saxon way of forming new words by combining shorter words. Compound words can be joined together (himself), separated (White House), or hyphenated (dog-eat-dog).



Stage Fright Congratulations! You are at the stage in life when it's just right for you to find compound words built with the word **stage**. List four of them here.



LESSON 15 Huge Smudge

Lesson 15 Word List

- | | |
|-------------|----------------|
| 1. dodge | 13. verge |
| 2. bulge | 14. plunge |
| 3. page | 15. dredge |
| 4. ridge | 16. refuge |
| 5. forge | 17. smudge |
| 6. huge | 18. indulge |
| 7. pledge | 19. message |
| 8. fringe | 20. damage |
| 9. judge | 21. village |
| 10. stage | 22. knowledge* |
| 11. largely | 23. wreckage |
| 12. cage | 24. challenge |

Irregular words: sought, by, of, some
* Marks a word that does not follow the pattern.

short **v + -dge** (ridge, dodge)
short **v + -ge** (bulge, indulge)

Spelling Concept: At the ends of words, the /j/ sound is spelled with **-dge** or **-ge**. In this lesson, we'll review the work we did with the **-dge** or consonant + **-ge** spellings in Lesson 10—Hodgepodge, plus add a few more wrinkles to the /j/ sound study and—hopefully—to your brain.

First of all, it is a spelling fact that no words in English end in a plain letter **j**. So spelling /j/ with a **j** is NOT an option. That leaves us with "soft **g**": a **g** followed by an **e** to represent the sound /j/.

Short vowels need extra protection if you add **-ge** after them. If you add **-ge** after a vowel, a "magic **e**" spelling results. For example, the word **wage** has a long vowel followed by **-ge**. To spell a short vowel before a /j/ sound, the **-ge** needs some help from a guardian that will keep the "magic **e**" far enough away. That's why we add a **-dge** after short vowels, unless there is already another consonant between the vowel and the **-ge**. The words in this week's spelling list have these patterns:

short **v + -nge** (fringe, plunge)
v + r + **-ge** (verge, forge)

Long vowels can be followed directly by **-ge**. The silent **e** is doing two jobs: it is representing the soft sound of **g** and it is marking the vowel as long.
long **v + -ge** (page, huge)



Phoneme Substitution and Deletion Create word magic by following these instructions.

- Say **dot**. Change the /i/ to /j/.
- Say **batch**. Change the /ch/ to /j/.
- Say **refuge**. Change the /f/ to /s/.
- Say **wreckage**. Change the /j/ to /n/.
- Say **forge**. Change the /f/ to /s/.
- Say **verge**. Change the /j/ to /s/.
- Say **large**. Change the /j/ to /k/.
- Say **strange**. Say it without the /j/.



Mark the vowels in these words from this lesson's study list as long (L), short (S), v + r (R), or silent (/) (a diagonal line).

- | | | | | | |
|--------|---------|--------|--------|---------|------|
| dodge | forge | judge | verge | smudge | page |
| bulge | huge | stage | plunge | indulge | cage |
| pledge | largely | dredge | ridge | fringe | |

These words also have schwa vowels. Mark the vowels as in Exercise #2a, then underline the schwa vowels.

- | | |
|-----------|-----------|
| knowledge | challenge |
| message | damage |



Speed Read This journal entry describes Professor Thinker's life among the natives in Anchorage. Speed-read this absolutely fascinating account out loud, and record your time and errors on three different days.

Strange Georgia

North of Anchorage—through a peaceful village, along a ridge, and over an aged arched bridge—sits a hermitage with a cottage. The cottage is perched beside Three Cow Gorge, named for the strange cow Georgia who lives there with the sage, Page. For a cow, Georgia is strangely arranged and about the size of the grange. Each sunrise,



Page trudges to the barn and gives Georgia a huge hug. Georgia nudges Page gently with her bulging baggage. Page then indulges Georgia, feeding her tonnage of organic wheat and corn porridge. Since Georgia gorges on porridge, her poundage is outrageously outstanding. Standing outside the hermitage, I often spot that huge cow and the grungy dog Bess near the garbage, bingeing on compost. Page thinks this is funny and is glad there is less wastage at the hermitage along the ridge.

Day 1	Day 2	Day 3
Time: _____	Time: _____	Time: _____
Errors: _____	Errors: _____	Errors: _____

Challenge Activity
Underline all of the letter spellings for the /j/ sound in this passage. How many did you find?

Finally: Take the Posttest, and record your score here. **Number Correct:** _____

Spelling Concept: The ge Complex If a word ending begins with any letter other than **g** or **l**, don't drop the **g** from **-ge** words. The word needs the **g** to keep the soft sound of **g**, which is /j/.



Add the given suffixes and write the new spellings in the blanks.

- gorge + ous _____
- age + less _____
- outrage + ous _____
- arrange + ment _____
- huge + ly _____
- knowledge + able _____
- dodge + ing _____
- manage + able _____



(Continued from page 13)

seven-point rubric to judge kindergarten students' spelling.²⁶ A score of 0 designated a random string of letters with no alphabetic representations. Scores of 1 to 5 indicated increasing degrees of accuracy, and 6 represented a correct spelling. The scores of low-income, inner-city students improved on this measure after 11 weeks of instruction on the sounds that make up English words, even though the trained students did not spell all of the post-test words correctly. However, their post-test spellings demonstrated improvement in segmenting sounds and sound-letter knowledge. Although the assessment of spelling using a validated rubric takes more time than marking words right or wrong, it provides a more complete picture of students' linguistic knowledge and is helpful in designing appropriate instruction.*



Our knowledge of spelling (and writing) has lagged behind our understanding of reading. It has often been assumed that spelling mostly involves rote visual memorization, but we have argued that this is not the case. As Rebecca Treiman, one of the authors of this article, has written, "For young children, spelling is a creative linguistic process rather than a learned habit involving rote visual memorization. Young children create spellings for words based on their knowledge of language and their knowledge of print. They do not simply memorize letter sequences."²⁷ Treiman has further argued that "knowledge of the alphabet and phonological awareness are two foundations on which literacy learning rests. Young children are not just rote memorizers when learning about the sounds of letters, when learning about the printed forms of their own names, and when learning to read their first few words. Linguistic factors are intimately involved in this learning, just as they are in the development of phonological awareness."²⁸

We do not wish to argue that visual memory has no role in learning to spell. Rather, we emphasize that memory for spelling patterns relies on and is facilitated by an understanding of linguistic concepts, including speech sounds, sound-letter correspondences, word origins, and meaningful parts of words. The primary mechanism for word memory is not a photographic memory, as many believe; it is insight into why the word is spelled the way it is.

(Continued on page 42)

* To learn more about assessing spelling, see: Kathy Ganske, *Word Journeys: Assessment-Guided Phonics, Spelling, and Vocabulary Instruction* (New York: Guilford Press, 2000); and Donald R. Bear, Marcia Invernizzi, Shane R. Templeton, and Francine Johnston, *Words Their Way: Word Study for Phonics, Vocabulary, and Spelling Instruction* (Upper Saddle River, NJ: Prentice Hall, 2003).

Don't Computers Make Spelling Instruction Unnecessary?

Sometimes, spelling instruction ends up on the back burner because of the existence of computer spell checkers. Isn't mastery of correct spelling within the reach of every computer user? Not really. Spell checkers do not eliminate the need to learn to spell accurately. When we used a computer spell checker for the sentence *The bevers bild tunls to get to their loj*, the spell checker gave correct spellings for *bevers* (*beavers*) and *bild* (*build*). However, the spell checker did not come up with the words needed to replace *tunls* (*tunnels*) or *loj* (*lodge*). Instead, for *tunls* it provided *tuns, tunas, tunes, tongs, tens, tans, tons, tins, tense, teens, and towns*. And for *loj*, it provided *log, lot, lox, loge, look, lost, lorid, load, lock, lode, lout, lo, lob, lose, low, and logs*. The fact is, computer spell checkers are mainly a tool for correcting typos. They are helpful for those who are reasonably good spellers, but they cannot compen-

sate for poor spelling. Further, computer spell checkers cannot be relied on with homophones. For instance, a spell checker cannot correct the errors in the sentence *Your sure glad to no* for *You're sure glad to know*. It also misses errors such as *meet* for *meat* and *week* for *weak*.

A study with two fourth-grade boys with learning disabilities reported that spell checkers provided the correct spellings of misspelled words 51–86 percent of the time.¹ Other studies reported a wider range of performance in identifying correct spellings, between about 25 percent and 80 percent of the time.² If a word was misspelled phonetically, the spell checker was able to identify it about 80 percent of the time. If a word was not spelled phonetically—something that commonly occurs among young children—the spell checker was able to identify it only about 25 percent of the time. Addi-

tional problems involving spell checkers include words spelled correctly but used inappropriately (e.g., *then* for *them*) and the fact that some children cannot pick the correct word from the list of suggested words.³ Thus, although computer spell checkers are useful, they do not substitute for explicit spelling instruction.

—R.M.J., R.T., S.C., and L.C.M.

Endnotes

1. Bridget Dalton, N. E. Winbury, and Catherine Cobb Morocco, "If You Could Just Push a Button": Two Fourth Grade Boys with Learning Disabilities Learn to Use a Computer Spelling Checker," *Journal of Special Education Technology* 10 (1990): 177–91.
2. Charles A. MacArthur, Steve Graham, J. B. Haynes, and S. DeLaPaz, "Spell Checkers and Students with Learning Disabilities: Performance Comparisons and Impact on Spelling," *Journal of Special Education* 30 (1996): 35–57; and Donna J. Montgomery, George R. Karlan, and Martha Coutinho, "The Effectiveness of Word Processor Spell Checker Programs to Produce Target Words for Misspellings Generated by Students with Learning Disabilities," *Journal of Special Education Technology* 16 (2001): 27–41.
3. Charles A. MacArthur, "Using Technology to Enhance the Writing Processes of Students with Learning Disabilities," *Journal of Learning Disabilities* 29 (1996): 344–54.

ASK THE COGNITIVE SCIENTIST

What Will Improve a Student's Memory?



How does the mind work—and especially how does it learn? Teachers' instructional decisions are based on a mix of theories learned in teacher education, trial and error, craft knowledge, and gut instinct. Such gut knowledge often serves us well, but is there anything sturdier to rely on?

Cognitive science is an interdisciplinary field of researchers from psychology, neuroscience, linguistics, philosophy, computer science, and anthropology who seek to understand the mind. In this regular American Educator column, we consider findings from this field that are strong and clear enough to merit classroom application.

BY DANIEL T. WILLINGHAM

Question: I often have students tell me that they studied for a test, meaning that they reviewed their notes and the textbook, but they still did not do well. If they have reviewed the material, why don't they remember it? Is there anything I can do to help them study more effectively?

Answer: Many of my students also tell me that they reviewed their notes and were quite surprised when they did not do well

on the test. I've found that these students typically know little about how their memories work and, as a result, do not know how to study effectively.

In this article, I'll discuss what to tell your students about how memory works: how to commit things to memory, to avoid forgetting, and to know when they've studied enough. I'll provide examples for classroom demonstrations to make the abstract ideas more vivid for your students, and I'll describe how they can apply those abstract ideas when they study.

* * *

From the time a child enters school until she earns a diploma, her principal task is to learn new facts and skills. It would seem natural, therefore, that somewhere along the way (perhaps around sixth grade or so, when schoolwork really becomes demanding) she would be told

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something about how her memory works—and something about how to make it work better. But that rarely happens. In fact, most college students report that they have improvised their own systems of study.¹ In this article, I will describe three principles of memory that are relevant to most of the learning that students do in elementary and secondary school (and, for that matter, most of the learning that adults need to do too). The three principles I'll describe apply equally to all sorts of learning—from memorizing new vocabulary words, to reading a novel so as to prepare for a class discussion the next day on its plot and style, to conducting a chemistry lab in the morning in order to compare the outcome with examples in a problem set to be handed out that afternoon.

Memory is a vast topic of study, and much is known about it. Let's take the broad question, what will improve a student's memory?, and break it into three more manageable parts: (1) How can I commit things to memory? (2) How can I avoid forgetting the things I have committed to memory? (3) How can I be certain that I have actually committed to memory the things I want to know? I will take up each of these questions in turn. Then, we'll apply what we've learned to the classroom.

How Can I Commit Things to Memory?

Some of what we experience day to day is stored away in our minds for future reference, but much of it is not. For example, you might describe in vivid detail the interior of a quaint ice cream parlor you visited last summer, but be unable to recall what flavor ice cream you had. Why would your memory system hold on to part of that experience—the parlor—and discard another—the flavor? The short answer is that you remember the part that you thought about.

One of the interesting features of your memory system is that you don't control what is stored. *Wanting* to remember something doesn't have much bearing on whether or not you will actually remember it.² Indeed, when you think about it, most of what you remember is not stuff that you consciously tried to store. Your knowledge of current events, of movie plots, of your friends' latest doings—you didn't try to commit any of that to memory. What you did do was think about those things. And here's how you should think about memory: it's the residue of thought, meaning that the more you think about something, the more likely it is that you'll remember it later.

But wait, before you think about that so much that you commit it to memory, let me clarify one point. It's only the most salient bit—the part you *really* think about—that turns into a memory. Back in that ice cream parlor, while you were selecting your ice cream and then eating it, you certainly devoted some thought to the flavor. But if it's the interior that you recall later on, then that's the part to which you devoted most of your attention and thought.

It can be hard to grasp just how specific, or narrow, your thoughts—and thus your memories—can be, so let's walk through one more example. Suppose you encounter a barking dog while on a walk. There are several aspects of the dog that you could think about. You could think about the *sound* of the dog's bark, what the dog *looked* like, or the *meaning* of the bark (why it's barking, whether it's barking at you, the likelihood that a bark-

ing dog will bite, and so on). Each of these thoughts will lead to different memories of the event the next day. If you think about the sound of the dog's bark, the next day you'll probably remember that quite well, but not its appearance.³ Now, suppose that when you saw the barking dog, you thought mostly about what a nuisance the noise must be to the neighbors. If, the next day, I asked, "Did you see anything on your walk that could bite?" you might well say, "No, I don't think I did."⁴ To put this example into broader terms, even simple concepts have multiple aspects of meaning; which one of these you think about will determine what you remember.

Thus, the first principle for students is that *memories are formed as the residue of thought*. You remember what you think about, but not every fleeting thought—only those matters to which you really devote some attention.

I'll discuss what this principle means for the classroom in more detail below, but it's worth pausing now to note an important implication. It is vital to know what you're going to want to remember later, because that dictates how you should think about the material. Most of the time, teachers want students to know what things mean. Thus, the advice offered to students should center on ways to help them think about meaning and avoid study methods that do not encourage them to think about meaning.

How Can I Avoid Forgetting the Things I Have Committed to Memory?

In my experience, people usually believe that forgetting happens over time; if you don't use a memory, you lose it. That may be a factor in forgetting, but it's probably not a major one. This may be hard to believe, but sometimes the memory isn't gone—it's just hard to get to. So, more important than the passage of time or disuse is the quality of the *cues* you have to get to the memory. Cues are bits of information that are the starting point for retrieving a memory. The good news is that the right cue can bring back a memory that you thought was lost. For example, you might believe that you remember very little of your childhood home, but when you visit as an adult, the sight of the house acts as a cue that brings memories flooding back. Or you may think that you have forgotten all of your high school Spanish, but a few days of constant exposure to Spanish when you visit Mexico leaves you understanding much more than you expected.

A poor cue, in contrast, will not get you access to a memory, even if you know that the memory is in the system. For example, suppose that I say to a friend, "Here's the \$20 I owe you," whereupon he says, "You don't owe me \$20." A better cue would offer more information, like this: "Remember, we were at Macy's and I wanted to buy that shirt but their computer wouldn't take my card so I had to borrow cash?" Your access to things that are stored in your memory will succeed or fail depending on the quality of the cues. One obvious source of forgetting, then, is poor cues. You haven't really forgotten—you just can't retrieve the memory at the moment because you don't have the right cues.

So far my examples have been cues that come from the environment (be it a house or a friend), but when you are trying to remember something, you generate your own cues. This process is sometimes obvious, as when you've lost something and you mentally try to retrace your steps. But sometimes it isn't: the

process can be so rapid that it's not very noticeable. For example, even a student who is very well prepared for an exam on American history must prompt her memory when answering a broad essay question on a test, such as, "Analyze the eventual impact of the Louisiana Purchase on the events leading to the American Civil War." The environment (that is, the exam) provides very few cues to memory—the student must generate her own. A well-prepared student will do this rapidly, with each bit of information recalled serving as a cue for another.

As we've seen, sometimes a cue isn't good because it doesn't offer enough detail or the right detail. At other times, a cue isn't good because it leads to more than one memory. For example, suppose I give you a list of words to remember and the list includes several fruits. You, clever memorizer that you are, mentally categorize the list, thinking, "Some of the words were fruits." Doing so lets you generate a good cue at recall ("Let's see, I know some of the words were fruits. . ."). But what happens if I give you a second list, which again includes some fruits? Now your cue ("some of the words were fruits") will not be so effective because it leads to two memories: fruits from the first list and fruits from the second list. How to untangle them?

Students face this problem all the time. Some to-be-remembered material interferes with other to-be-remembered material, and the greater the similarity between them, the more likely that the cues will be the same, and therefore the more ambiguous they will be. Thus, studying French vocabulary and then working some geometry problems probably won't cause much interference. But studying French vocabulary and then studying Spanish vocabulary will: for example, the cue *red* calls up both *rouge* and *rojo*.

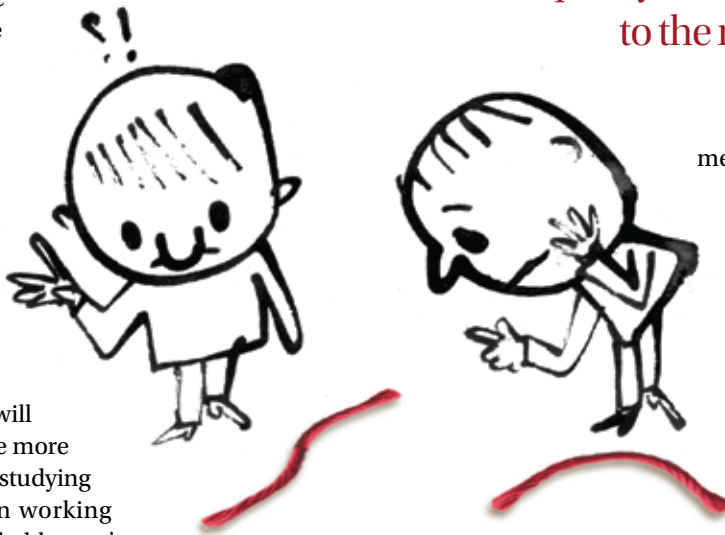
So, our second principle is that *memories are inaccessible mostly due to missing or ambiguous cues*. Thus, to minimize forgetting, we will focus on ways to ensure that we have cues and that they are distinctive.

How Can I Be Certain That I Have Actually Committed to Memory the Things I Want to Know?

Do you know who played Han Solo in the film *Star Wars*? Do you know the atomic number for Iron? Do you know the name of the professional football team that plays in Seattle? We are usually able to provide rapid answers to such questions (even if the answer is "no"), and the way we do so might seem obvious. You use the question as a cue, and either there is, or is not, a relevant entry in your memory. But that can't be the whole story, because sometimes you have a *feeling* that you know the answer, even if you can't call it up right now.

Researchers have found that people's feeling-of-knowing is meaningful—if you feel that you know something, it is more likely that you do know it than if you feel that you don't—but it is an imperfect guide. One way to test the accuracy of feeling-of-knowing is to give people a series of general information questions like those above. For each, the person must say whether he would know the answer if he saw it. Often, instead of a simple yes or no, the person is asked to make a probability judgment, such as, "I'm 75 percent sure I know the answer." After each judg-

People usually believe that forgetting happens over time; if you don't use a memory, you lose it. This may be hard to believe, but sometimes the memory isn't gone—it's just hard to get to. So, more important than the passage of time or disuse is the quality of the cues you have to get to the memory.



ment, the person sees four possible answers and must choose one. If the person's feeling-of-knowing is accurate, his probability judgments should match the proportion of questions he gets right. For example, taking all the questions for which he professed 75 percent confidence, he should get 75 percent of those questions right (taking into account that he'll likely get 25 percent

correct by guessing from among the four answers).

Experiments like this⁵ show that most adults think they know more than they actually do.* Somewhat surprisingly, school-age children[†] are about as good as adults in gauging their knowledge.⁷ Of course, given that adults are not so effective in judging what they know, it is no great compliment to children that they perform equally well.

This clearly poses a problem for a student trying to decide if he has studied enough. If students (like adults) tend to be more confident in their knowledge than is warranted, we would expect that they will, on average, not study enough. That prediction is borne out by experimental work. For example, in one study,⁸ fourth- and fifth-grade students were given a passage

* The exception is when people judge that there is no chance that they know something. On occasion, they actually do know, and so in these cases people are underconfident.

† There are other ways of testing the accuracy of feeling-of-knowing, and children are worse than adults on some of these,⁶ but these paradigms bear little resemblance to schoolwork.

of school-related material (either social studies or science) to be read and learned. All students were told that they should study so that they would know the material very well. After studying, they took a 10-item multiple choice test. The experimenters estimated how much studying each student needed to acquire such knowledge by using another passage and test of equal difficulty and seeing how much study time each student needed to get 100 percent on the test. Then they compared that required time with the amount of time students themselves

sages. In one study, fourth- through eighth-grade students read brief passages about animals.¹² For example, one began, “The Western Spotted Skunk lives in a hole in the ground. The skunk’s hole is usually found on a sandy piece of farmland near crops.” After reading each sentence, students were to ask themselves why that piece of information might be true. The researchers found that doing so produced a quite sizable benefit to memory, compared with students who were simply told to read the passage and remember it.

Although this strategy is effective for shorter passages, it’s not clear that it would apply well to longer ones. I cannot imagine students asking themselves “why?” after each sentence of a textbook chapter—but I can imagine them asking why at the end of every few paragraphs or every section.

Another strategy that might achieve the same goal is to have students search for and write out the main ideas of a textbook chapter after they have read it. Next, they can identify how the author elaborates on these points. Students can draw a hierarchical diagram with the main chapter ideas at the top of the diagram, and branching down to subordinate ideas that support the main ideas. The point of this exercise is to get students thinking about what the main ideas of the chapter actually are, and to think about how the author supports those ideas. It is a broader-scale version of Pressley’s strategy of getting students to ask “why?”

Still another technique is to ask students to write an outline of a textbook chapter or of their notes from a unit. Then ask students to try to write a *different* outline. Is there another way to organize the material? Students might also use a different format: if they used the standard outline format (alternating numbers and letters), they might use a flow diagram, or a hierarchy, or a cross-referenced document like a Web site. Again, the goal is to give students a concrete task that they cannot complete without considering which ideas have been covered and how they relate to one another.

Knowing that memory is the residue of thought also gives us some insight into what study strategies will *not* work. Unfortunately, these include the two that I most often encounter as a college instructor. When I ask a student how he studied for a test, the typical answer is that he copied his notes (or marked them with a highlighter) and read over the textbook. Neither strategy guarantees that the student will think about what the material means. Even worse, viewing the material several times leads to the illusion that one knows it because it seems increasingly

* This is, of course, the basic idea behind SQ3R and similar study strategies. The acronym stands for five things to do as you read: Survey what you will read, generate Questions as you survey, as you Read try to answer the questions, Recite the important information as you progress, and Review when you have finished reading. There are many other similar strategies, each with its own acronym. There is some evidence that they are effective,¹⁰ but much less than one might expect. These methods are widely taught; so if what I’ve said is right, wouldn’t they be highly effective, and therefore frequently used? I think the problem with these methods is that they are difficult to do well. It’s hard to know what questions to ask before you know what you’re reading, and it’s hard to remember to answer the questions as you’re trying to understand the text. Students need a strategy that is more specific.

If students (like adults) tend to be more confident in their knowledge than is warranted, we would expect that they will, on average, not study enough. That prediction is borne out by experimental work. In one study, fourth- and fifth-grade students allocated, on average, just 68 percent of the time needed.

allocated to the task. The key finding was that students allocated, on average, just 68 percent of the time needed to get the target score.⁹

We can sum this up by saying the third principle is that *people tend to think their learning is more complete than it really is*. Thus, to help students study effectively, we need to find ways to get them to assess their knowledge more realistically.

Applying These Principles to Classroom Work

I’ve summarized three principles that are important to how your memory system operates. What concrete strategies can you suggest to your students to capitalize on these principles? I’ll address these strategies in two broad categories: forming memories and retrieving memories.

Forming Memories

The first principle—memory is the residue of thought—describes how memories are formed. What remains in your memory from an experience depends mostly on what you thought about during the experience. Given that we typically want students to retain meaning, we will mostly want students to think about what things mean when they study. It would be nice if you could simply tell your class, “When you read your textbook, think about what it means.” Naturally, you know that’s not the case. The instruction to “think about meaning” is difficult to follow because it is not specific enough. A better strategy is for students to have a specific task that will force them to think about meaning.*

Through a series of studies, reading researcher Michael Pressley¹¹ figured out a way to do this that asked students to pose just one simple, specific question. He encouraged students to ask themselves “why?” at the end of each sentence as they read pas-



familiar, but viewing the material does not give it much sticking power in memory. For example, how well do you know what a penny looks like? Is “Liberty” written on the front or the back? Is Lincoln wearing a tie? Most people don’t know the details of a penny’s appearance,¹³ despite having seen thousands of pennies. Repetition (like copying notes or rereading a text) is helpful, but only when one repeats thinking about meaning. “Shallow” repetition (i.e., that does not focus on meaning) is not as helpful as it seems.

“Think about meaning” sounds like good advice, but there are things to be learned that are, essentially, meaningless. For example, what should students do when learning that *rojo* is the Spanish word for *red*? Meaningless material is difficult to learn because it is hard to find a good cue. As discussed above, remembering is prompted by cues, and it is hard to associate the cue (the Spanish word for *red*) with the target memory (*rojo*) when the cue and

memory have no meaningful relation. Ironically, learning something by rote memorization is a great time to get creative. The memorization strategies (called mnemonics) listed in the table on page 23 give students ways to make up meaningful relationships. And the more creative or distinctive, the better.

Mnemonics work largely (but not exclusively) by using the first two principles described earlier. Mnemonics make meaningless material more meaningful, giving you something to think about and a good cue. For example, the acrostic and acronym techniques give you the first letter of the to-be-remembered item, an excellent cue. Then too, many of the mnemonics encourage the use of visual imagery. Imagery is helpful because it makes cues more distinctive and less ambiguous. When you create a visual image of a duck, you must think of a *particular* duck. You must specify its size, proportions, coloring, posture, etc. All of these details make the duck more distinctive, and thus

Myths of Memory

Myth 1: Subliminal learning or sleep learning is possible. “Subliminal” means outside of awareness. For example, you might listen to a recording of music that has a simultaneous, almost inaudible track of someone reading an informative essay. If you listen to this recording enough times, will you come to know the content of the essay, even if the voice was always subliminal? No. Stimuli that are outside of awareness can have a subtle impact on some types of behavior,¹ but you won’t be able to consciously access the memory the way you would access a regular memory. Sleep learning—in which the essay would be played as you slept with the hope that you would remember it upon waking—unfortunately works no better than subliminal learning.²

Myth 2: Memory is like a video recording. One sometimes reads that all of your experiences are recorded perfectly in your memory and you only forget things because you don’t have the right cues. One also sometimes hears, as supporting evidence, that hypnosis can improve memory; it’s as though the hypnotic state gives you direct access to the memory without the need for cues. This idea seems plausible, given what we’ve said in the main article about the importance of cues, and it is, of course, impossible to disprove—a supporter of the idea can always claim that every experience is stored away, just waiting for the right cue. But most memory researchers don’t believe that this is true. It would be an odd and terribly inefficient way to design a memory system. The hypnosis claim is testable, and has been shown to be wrong. Hypnosis doesn’t make memory any more accurate, although it does make people more confident that they are right.

Myth 3: There are herbal supplements or pharmaceuticals that can enhance memory or attenuate the cognitive decline associated with aging. There are a few—a very few—suggestive findings, and there are a lot of claims that go far beyond what the data support. Simply put, we are not there yet.³

Myth 4: Memory depends on the input modality. You have probably seen some version of this: “We remember 10 percent of what we read, 20 percent of what we hear, 30 percent of what we see, 50 percent of what we see and hear, 70 percent of what we discuss with others, 80 percent of what we personally experience, and 95 percent of what we teach others.” In the main article, I’ve argued that the most important factor determining whether or not a memory is long lasting is how much you think about it. The ordering of the activities may roughly correspond—you will definitely think about material carefully if you teach it to others—but the ordering could easily change. There are many things that I read (e.g., professional journal articles) that I remember much better than things I experience (e.g., my drive to work this morning).⁴

—D.T.W.

Endnotes

1. Laurie T. Butler and Dianne C. Berry, “Understanding the Relationship between Repetition Priming and Mere Exposure,” *British Journal of Psychology* 95 (2004): 467–87.
2. Louis Aarons, “Sleep-Assisted Instruction,” *Psychological Bulletin* 83 (1976): 1–40.
3. Peter H. Canter and Edward Ernst, “Ginkgo biloba Is Not a Smart Drug: An Updated Systematic Review of Randomized Clinical Trials Testing the Nootropic Effects of *G. biloba* Extracts in Healthy People,” *Human Psychopharmacology: Clinical and Experimental* 22 (2007): 265–78; and Mark A. McDaniel, Steven F. Maier, and Gilles O. Einstein, “‘Brain-Specific’ Nutrients: A Memory Cure?” *Psychological Science in the Public Interest* 3 (2002): 12–38.
4. For interesting detective work on the origins of this memory myth, see Will Thalheimer, “People Remember 10%, 20% ... Oh Really?” May 1, 2006, www.willatworklearning.com/2006/05/people_remember.html (accessed August 5, 2008).



less likely to be confused with other ducks, and therefore a better cue to the target memory.

Retrieving Memories

How can students ensure that what they learn is not forgotten? There are a few things students might do. One, which is explained in the table on mnemonics, is to select distinctive cues so as to decrease the likelihood that they will be ambiguous. Another way to make memories longer lasting is to distribute studying over time—in other words, don't cram. Students will sometimes (with perverse pride) brag that they studied immediately before a test, scored well, but soon forgot what they had learned. Research bears out their boasts. Studying at several different times means that you are used to cuing and retrieving the memory at lots of different points in time. But if learning is all crammed into the same time, you have always cued and retrieved the memory during the same time. When you cram, the memory becomes associated with the particular time you study, making the memory harder to retrieve later on (although this is not the only factor¹⁴). But if you distribute studying, the memory doesn't have that association because you keep studying it at different times. Naturally, this sound advice—study early and often—is difficult for students to follow. Small wonder that most books on study skills have a chapter on time management.

The final strategy to avoid forgetting is to overlearn. Students know that they forget, so if they study just to the point that they know the material, what will happen when they take a quiz the next day? Some forgetting will have occurred—they won't know the material as well as they did the night before. This should be obvious to students once it's pointed out to them—but just as students tend to overestimate how complete their learning is, they also tend to underestimate their own forgetting.¹⁵ The solution is straightforward. Students should study until they know the material and then keep studying. How long they should continue studying depends on how long they hope to retain the material, how they will be tested, and other factors, but a good rule of thumb is to put in another 20 percent of the time it took to master the material.

This advice—to continue studying after you know the material—requires that you can accurately gauge how complete your knowledge is. What can be done to help students better know what it is they know? The most important advice for them is to test themselves the way they will be tested. Students tend to gauge their knowledge based on their feeling-of-knowing; as they “read over their notes,” they get an increasing feeling of familiarity. But a feeling of familiarity is not the same thing as

being able to reproduce the material on a test.¹⁶ How many teachers have heard a student say, “I *know* it, I just can't explain it”? Most likely, the student understands it when *you* explain it, but doesn't understand it well enough to explain it herself. The best way to test oneself is to explain the material to another person, ideally one who can ask sensible follow-up questions. This method will provide a much better metric for the student as to what she really knows. As an added bonus, testing yourself in this manner helps the material stay in memory.



Mnemonics work largely (but not exclusively) by giving you something to think about and a good cue. Imagery is helpful because it makes cues less ambiguous. When you create a visual image of a duck, you must think of a *particular* duck. The details make the duck more distinctive, and therefore a better cue to the target memory.

The box below summarizes the three principles of memory and the corresponding recommendations. Much more could be written about memory, but the topic can quickly become overwhelming. The three principles discussed here are the most important for students. Naturally, these principles will be more meaningful to your students if they see them in action, so see page 24 for some classroom demonstration ideas. □

1. Memories are formed as a residue of thought.
 - If you want to remember what things mean, you must select a mental task that will ensure that you think about their meaning.
 - If what you want to remember has little meaning, use a mnemonic.
2. Memories are lost mostly due to missing or ambiguous cues.
 - Make your memories distinctive.
 - Distribute your studying over time.
 - Plan for forgetting by continuing to study even after you know the material.
3. Individuals' assessments of their own knowledge are fallible.
 - Don't use an internal feeling to gauge whether you have studied enough. Test yourself, and do so using the same type of test you'll take in class.

(Additional resources and endnotes on page 44)

Mnemonic	How It Works	Example	Principle Used
Pegword	Useful for memorizing lists of unrelated items in order. You create a visual image of each item in the list with a “peg” word. You have already committed the pegs to memory, so they provide cues for the to-be-remembered items.	Pegs are usually easy to learn because they rhyme with numbers. “One is a bun, two is a shoe, three is a tree,” and so on. If you wanted to remember the list <i>onion, duck, artist</i> , you would associate <i>onion</i> with a bun (e.g., a man making a face because his sandwich contains only onion), <i>duck</i> with shoes (e.g., a duck trying to paddle on a pond with big tennis shoes on), and <i>artist</i> with a tree (e.g., a man with a beret and a palette who made his artist’s smock into a hammock between two maple trees).	The pegs provide cues to memory. Using bizarre imagery helps to ensure that the cues are distinctive and unlikely to be confused with other cues.
Method of Loci	Useful for memorizing lists of unrelated items in order. You commit a “mental walk” to memory—a familiar route with separate, identifiable locations—then create a visual image that associates each item on the list with a location on the mental walk.	Here’s a mental walk from my front door to my driveway. The first location is my front porch, which has a bird’s nest by the door, the second is the sidewalk, which has a large crack, the third is my asphalt driveway with a red paint stain. To memorize the list <i>onion, duck, artist</i> , I would associate <i>onion</i> with my front door, perhaps by putting onions in the nest instead of eggs. Then I’d associate <i>duck</i> with the sidewalk by imagining the duck with its beak stuck in the crack, and <i>artist</i> with an artist admiring the paint stain on the asphalt.	The stations on the walk provide cues to memory. As with the pegword strategy, using bizarre imagery helps to ensure that the cues are distinctive and unlikely to be confused with other cues.
Acronym	Create an acronym using the first letter of each of the to-be-remembered items; if you can remember the acronym, you have a good cue for each of the items.	The Great Lakes can be remembered with HOMES (Huron, Ontario, Michigan, Erie, Superior), the wavelength order of the visible spectrum of light with ROY G. BIV (red, orange, yellow, green, blue, indigo, violet).	The first letter of each item is a good cue to memory, and using a word (such as <i>homes</i>) is meaningful, and therefore easier to remember than a random set of letters would be.
Acrostic	Create an easy-to-remember sentence in which the first letter of each word provides a cue for the to-be-remembered material. A sentence is always easier to remember than disconnected words, and often one can create a vivid visual image of it, which makes it memorable.	To remember the order of the notes on the treble clef, countless children have memorized “Every Good Boy Does Fine.” Likewise, the order for operations in arithmetic can be remembered with “Bless My Dear Aunt Sally” (brackets, multiplication, division, addition, subtraction).	Like the acronym method, acrostics provide a good cue for each item and are easy to remember because they are formed with meaningful material, in this case a sentence.
Music or Rhymes	The to-be-remembered material is set to a familiar tune, set to a rhythm, or made into a rhyme.	Music and rhymes are used a lot with young children, as in learning the alphabet with the ABC song and in learning how many days are in each month with the rhyme “30 days hath September....”	If you forget the words, the melody can provide a cue to help you remember it. A rhyming cue (“another month must rhyme with September”) is also useful.
Mnemonic Associations	Something in the to-be-remembered material is associated with an aspect of the material that is hard to remember.	These are often useful in spelling. To remember that the administrator of a school is spelled with a final <i>pal</i> (not <i>ple</i>), note that she is your <i>pal</i> . To remember how to spell <i>grammar</i> (not <i>grammer</i>), think “don’t <i>mar</i> your work with bad <i>grammar</i> .” Here’s one more: “stalactites grow from the ceiling; stalagmites from the ground.”	These associations inject meaning into meaningless associations. The last three letters of principal are meaningless when considered as separate letters, but the mnemonic makes them into the meaningful word <i>pal</i> .
Keyword	Often used for foreign vocabulary words. Find an English word that is close in sound to the foreign vocabulary word. Then create a visual image that connects the English sound-alike word to the translation of the foreign word.	The Spanish word for <i>mushrooms</i> is <i>champiñones</i> , which sounds like the English word <i>champions</i> . Create a visual image of a boxing champion in the ring, arms aloft in victory, wearing big mushrooms on his hands instead of gloves.	This mnemonic uses a two-step process. The image creates an association between the cue word, <i>mushroom</i> , and another word, <i>champion</i> , which then is used as a sound cue for the to-be-remembered material <i>champiñones</i> .

Demonstrations of the Three Principles

If you'd like to teach your students about how memory works, it may be useful to illustrate the three principles from the main article in your class. Here are some demonstrations you might use.

DEMONSTRATION 1

This exercise illustrates that (1) students do not need to try to remember in order for things to get in memory, and (2) thinking about meaning is much more effective for getting material into memory than thinking about other aspects of the content.

What to tell your students:

Please get out a blank piece of paper and number the lines from 1 to 30, so that you have 30 places to put answers. [Wait until they have completed this task. To save time, you can distribute sheets with numbered lines.] I'm going to read aloud 30 words and for each word you just have to perform one of three tasks. Each task is really simple.

The first is called spoken to the left. If I turn my head to the left like this [demonstrate] when I say the word, then you should write "y" on your paper for "yes." But if I keep my head looking straight at the class, then you should write "n" for "no." So for example, I might say, "Spoken to the left? [Turn your head to the left as you say the next word.] Shell." And you would write "y" on your paper. Okay?

The second task is called A or U. If I say "A or U?" you should write "y" for "yes" if the following word has either an A or a U in it. So if I say, "A or U? Doctor." You would write "n" for "no."

The third task is called rate for pleasantness. For that one, I want you to listen to the word I say, and think of whether it makes you think of pleasant things or unpleasant things. Then write a number from 1 to 7 showing how pleasant the word is. A 1 means it's really unpleasant—for example, the word "injury" might get a 1. Write a 7 if it's really pleasant—for example, "birthday." Use numbers between 1 and 7 for medium pleasantness.

You have to listen carefully because there are three tasks, and I'm going to mix them up. I'll tell you right before each word which task you should do for that word. Let's try a couple of each for practice; you don't need to write your answers for these.

*A or U? Save
Spoken to the left? [Keep your head straight.] Worth
Rate for pleasantness: Coin
Rate for pleasantness: Tiny
A or U? Moral
Spoken to the left? [Turn your head to the left.] Upper*

Any questions?

What to do:

Read each item and then pause for students to answer, which should only take a moment.

1. *Spoken to the left? [Keep your head straight.] Hundred*
2. *Rate for pleasantness: Corn*
3. *A or U? Cool*
4. *Spoken to the left? [Keep your head straight.] Rate*
5. *A or U? Jump*
6. *Spoken to the left? [Turn your head to the left.] Place*
7. *Rate for pleasantness: Urge*
8. *A or U? Country*
9. *Spoken to the left? [Turn your head to the left.] Entirely*
10. *A or U? About*
11. *Rate for pleasantness: Diamond*
12. *Spoken to the left? [Keep your head straight.] Into*
13. *Rate for pleasantness: Welcome*
14. *A or U? Window*
15. *Spoken to the left? [Turn your head to the left.] Hold*
16. *Rate for pleasantness: Airplane*
17. *Spoken to the left? [Keep your head straight.] Thread*
18. *A or U? Match*
19. *Spoken to the left? [Turn your head to the left.] Fleet*
20. *Rate for pleasantness: Fruit*
21. *A or U? Melt*
22. *Spoken to the left? [Turn your head to the left.] Training*
23. *Rate for pleasantness: Race*
24. *A or U? Only*
25. *Rate for pleasantness: Winter*
26. *A or U? Single*
27. *Rate for pleasantness: Disease*
28. *A or U? Yourself*
29. *Spoken to the left? [Keep your head straight.] Else*
30. *Rate for pleasantness: Camp*

Then tell your students:

Now I'd like you to try to remember all of the words that you were asked to judge. You can omit the practice words, but see how many of the others you can remember. Turn over the paper you just used, and write down as many as you can.

How to score the data:

It is easiest to have the students score their own papers. Show them (for example, on an overhead projector) the 30 words, grouped by task—there are 10 of each. Ask them to count how many words out of 10 they got right for each of the three tasks. Then ask for a show of hands: how many people got the most right for the *rate for pleasantness* task, then the *A or U* task, and then the *spoken to the left* task? (You can let students raise their hands twice if there is a tie.)

How to interpret what happened:

It's a very good bet that students will remember the most from the pleasantness task. You can highlight two points to students. First, they remembered lots of words even though they were *not* trying to remember them. You might also point out how much of what is in their memory is not stuff that they tried to remember, as described in the main article. Second, you should point out that the pleasantness task was the "winner" because it forced students to think about what the words meant. Students could answer the *spoken to the left* question without even listening to the word, and they could answer the *A or U* question by just thinking of the spelling. But on the *rate for pleasantness* task, they had to think of meaning, and that's what really helps memory.

DEMONSTRATION 2

This exercise demonstrates the interference that occurs when you continually use the same cue to try to remember more and more material. Thus, it shows that it is important to try to use different, distinctive cues.

What to tell your students:

I'm going to read a list of words to you. All you need to do is listen to the words and then, when I say "go," write down as many as you can remember. We'll do several of these lists. For each one, you

only need to remember the words from the list that I just read to you. [Students should have a piece of paper and a pencil or pen ready.]

What to do:

Read each of the lists below at a rate of about one second per word. At the end of the list, say “go.” There is a natural tendency to use a slightly different tone (usually higher pitch) for the last word of the list. Try to resist that tendency and to read the last word just as you read the others. After you say “go,” give the students some time to try to recall the words, but it needn’t be terribly long (perhaps 15 or 20 seconds). Given a longer time they probably will not remember much more. After each list, ask students to draw a line on their paper or indicate in some other way that they are remembering a new list.

List 1: *Apple, Blueberry, Grape,*

Orange, Raspberry, Watermelon, Fig

List 2: *Lime, Pear, Cherry, Strawberry, Honeydew, Mango, Kiwi*

List 3: *Apricot, Banana, Peach, Lemon, Grapefruit, Blackberry, Plum*

List 4: *Firefighter, Teacher, Chef, Secretary, Police Officer, Tailor, Doctor*

How to score the data:

For this one you probably don’t even need to have them score their answers as correct (although you certainly could). Just ask students to count how many words they remembered from each list. Then ask, “How many got more words right on the first list than on the third list?” Most should. Then ask, “How many got more words right on the third list than on the first list?” There should be very few of these. Finally ask, “How many got more words right on the fourth list than on the third list?” Again, most students should have done so.

How to interpret what happened:

Students will, of course, remember that the list consisted of fruits, so when they try to remember the words on the list, they try to think of fruits. But that cue becomes more ambiguous with each new list, because the cue “fruits that the teacher just read to me” gets crowded with words that are correct (the current list) and words that are incorrect (words

from the previous list). But students use a different, unambiguous cue for the final list (occupations) and so recall improves.

DEMONSTRATION 3

This demonstration shows that people are generally more likely to be overconfident about what they know than underconfident.

What to tell your students:

I’m going to ask you to make some judgments about what you know. For each question, I want you to take just a second or two and then write down “yes” or “no,” regarding whether you think you know that information. You won’t have time to actually try to remember it, just make a quick judgment about whether you think you could, if you had enough time.

What to do:

Obviously, this demonstration will not work if you pose questions that are too easy or too hard—students will confidently say that they can or cannot answer them, and they will be right! Here are some ideas for questions that might work, but if they look too easy or difficult to you, replace them with more suitable questions. Make sure that you don’t pose questions with just one answer (e.g., “Who was the first actor to play James Bond?”), because such questions encourage students to consult their memory for the answer, and to make their judgment on that basis. Here are some ideas for questions.

1. *Can you name the seven dwarfs?* (Dopey, Grumpy, Doc, Happy, Bashful, Sneezy, Sleepy)
2. *Can you name the world’s continents?* (North America, South America, Antarctica, Africa, Europe, Asia, Australia)
3. *Can you name five [or four, or seven] recent presidents?* (G. W. Bush, Clinton, G. H. W. Bush, Reagan, Carter, Ford, Nixon, etc.)
4. *Can you name the presidents on Mount Rushmore?* (Lincoln, Washington, Jefferson, Teddy Roosevelt)
5. *Can you name the members of the Beatles?* (John Lennon, Paul McCartney, George Harrison, Ringo Starr)
6. *Can you name the states on the*

eastern seaboard? (Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, Florida)

7. *Can you name the first four elements of the periodic table?* (Hydrogen, Helium, Lithium, Beryllium)
8. *Can you name the titles of the seven Harry Potter books?* (Harry Potter and the Sorcerer’s Stone, Harry Potter and the Chamber of Secrets, Harry Potter and the Prisoner of Azkaban, Harry Potter and the Goblet of Fire, Harry Potter and the Order of the Phoenix, Harry Potter and the Half-Blood Prince, Harry Potter and the Deathly Hallows)

After students make their judgments for two or three questions, ask them to go ahead and write down the answers. Even if they said that they couldn’t remember, they should try their best and guess if necessary.

How to score the data:

For this demonstration it is important that students know whether their memory was accurate, so you must give them the correct answers for scoring. Once they know whether their memory was accurate, ask for a show of hands: how many students, for any of the questions, judged that they *would* be able to answer the question but then were not able to? Next, ask for a show of hands for all those who thought they would *not* be able to answer the question correctly, but actually were able to do so. There ought to be more of the former than the latter, reflecting the general overconfidence of memory.

How to interpret what happened:

Tell your students that overconfidence about what we know is a pervasive feature of memory. The consequence is that we *think* we know things that we actually don’t quite know. This means that you can’t rely on your gut feeling when trying to judge whether or not you know something—for example, when trying to judge whether you are prepared for a test or need to study a little more. The only way to combat the problem is to test yourself, and see whether the material is actually in your memory.

—D.T.W.

The Burden and Beauty of the Humanities



BY WILFRED M. MCCLAY

Lamentations about the sad state of the humanities in modern America have a familiar, indeed almost ritualistic, quality about them. The humanities are among those unquestionably nice endeavors, like animal shelters and tree-planting projects, about which nice people invariably say nice things. But there gets to be something vaguely annoying about all this cloying uplift. One longs for the moral clarity of a swift kick in the rear.

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Enter the eminent literary scholar Stanley Fish, author of a regular blog for the *New York Times*, who addressed the subject with a kicky piece entitled "Will the Humanities Save Us?" (January 6, 2008). Where there is Fish there will always be bait, for nothing pleases this contrarian professor more than double-crossing his readers' expectations and enticing them into a heated debate, and he did not disappoint.

Fish asserted that the humanities can't save us, and in fact they don't really "do" anything, other than give pleasure to "those who enjoy them." Those of us involved with the humanities should reconcile ourselves to the futility of it all, and embrace our uselessness as a badge of honor. At least that way we can claim that we are engaged in "an activity that refuses to regard itself as instrumental to some larger good."

This sustained shrug elicited a blast of energetic and mostly negative response from the *Times'* online readers. To read through the hundreds of comments is to be reminded that Americans do seem to have a strong and abiding respect for the

humanities. For many of these readers, Fish's remarks failed the test of moral seriousness, and failed to come to terms with exactly what it is that makes the humanities special and places upon them a particular task, a particular burden, in the life of our civilization.

What does it mean to speak of the "burden" of the humanities? The phrase can be taken several ways. First, it can refer to the weight the humanities themselves have to bear, the things that they are supposed to accomplish on behalf of us, our nation, or our civilization. But it can also refer to the near opposite: the ways in which the humanities are a source of responsibility for us, and their recovery and cultivation and preservation our job, even our duty.

Both of these senses of burden—the humanities as instructor, and the humanities as task—need to be included in our sense of the problem. The humanities, rightly pursued and rightly ordered, can do things, and teach things, and preserve things, and illuminate things, which can be accomplished in no other way. It is the humanities that instruct us in the range and depth of human possibility, including our immense capacity for both goodness and depravity. It is the humanities that nourish and sustain our shared memories, and connect us with our civilization's past and with those who have come before us. It is the humanities that teach us how to ask what the good life is for us humans, and guide us in the search for civic ideals and institutions that will make the good life possible.

The humanities are imprecise by their very nature. But that does not mean they are a form of intellectual finger painting. The knowledge they convey is not a rough, preliminary substitute for what psychology, chemistry, molecular biology, and physics will eventually resolve with greater finality. They are an accurate reflection of the subject they treat, the most accurate possible. In the long run, we cannot do without them.

But they are not indestructible, and will not be sustainable without active attention from us. The recovery and repair of the humanities—and the restoration of the kind of insight they provide—is an enormous task.

First, we should try to impart some clarity to the term "humanities." It is astounding to discover how little attention is given to this task. More often than not, we fall back upon essentially bureaucratic definitions that reflect the ways in which the modern research university parcels out office space. The commonest definition in circulation is a long sentence from a congressional statute—the National Foundation on the Arts and the Humanities Act of 1965, the legislation that established the National Endowment for the Humanities and the National Endowment for the Arts. As you might expect, this rendition is wanting in a certain grace. But here it is:

The term "humanities" includes, but is not limited to, the study and interpretation of the following: language, both modern and classical; linguistics; literature; history; jurisprudence; philosophy; archaeology; compara-

tive religion; ethics; the history, criticism, and theory of the arts; those aspects of social sciences which have humanistic content and employ humanistic methods; and the study and application of the humanities to the human environment with particular attention to reflecting our diverse heritage, traditions, and history and to the relevance of the humanities to the current conditions of national life.

In some respects, this provides a useful beginning. But doesn't it tacitly assume that we already understand the thing being defined? Rather than answer the larger question, a long list merely evades it. One doesn't capture the animating goals

Science teaches us that the earth rotates on its axis while revolving around the sun. But in the domain of the humanities, the sun still also rises and sets, and still establishes, in that diurnal rhythm, one of the deepest and most universal expressive symbols of all the things that rise and fall, or live and die.

of a manufacturing firm merely by listing all of the firm's discrete activities, from procurement of raw materials to collection of accounts receivable. The task of definition requires that some overarching purpose be taken into account.

It is a bad sign that defenders of the humanities become tongue-tied so quickly when a layperson asks what the humanities are, and why we should value them. Sometimes the answers are downright silly. At a meeting of the American Council of Learned Societies two years ago in Philadelphia, the subject was "Reinvigorating the Humanities," but the discussion was anything but vigorous. Consider this witticism from Don Randel, then the president of the University of Chicago and president-elect of the Andrew W. Mellon Foundation: "When the lights go out and our friends in science haven't developed a national energy policy, they'll be out of business. We, with a book of poems and a candle, will still be alive." Well, we'll see about that. This is the kind of self-congratulatory silliness that gives the humanities a bad name. And when Pauline Yu, president of the council, addressed herself to the big, obvious question—Just what will it take to reinvigorate the humanities?—the answer was stupefyingly predictable. What was needed was more: more money, more fundraising attention from university leaders, more support from Congress, more jobs for professors.

This answer suggests that many of those who speak for the humanities, especially within the organized scholarly disciplines (history, English, and the like), have not quite acknowledged the nature of the problem. The humanities reached

unprecedented heights of prestige and funding in the post-World War II era. But their advocates can only dream of such status today.

The thing most needful is not more money, but a willingness to think back to first principles. What are the humanities, other than disciplines with “humanistic content”? What exactly are the humanities for, other than giving pleasure to people who enjoy playing inconsequential games with words and concepts?

It is perhaps more helpful, if still somewhat abstract, to say that “the humanities” include those branches of human knowledge that concern themselves with human beings and their culture, and that do so in ways that show conversancy with the language of human values and respect for the dignity and expressive capacity of the human spirit.

But this can be stated even more directly. The distinctive task of the humanities, unlike the natural sciences and social sciences, is to grasp human things in human terms, without converting or reducing them to something else: not to physical laws, mechanical systems, biological drives, psychological disorders, social structures, and so on. The humanities attempt to understand the human condition from the inside, as it were, treating the human person as subject as well as object, agent as well as acted-upon.

Such means are not entirely dissimilar from the careful and disciplined methods of science. In fact, the humanities can benefit greatly from emulating the sciences in their careful formulation of problems and honest weighing of evidence. But the humanities are distinctive, for they begin (and end) with a willingness to ground themselves in the world as we find it and experience it, the world as it appears to us—the thoughts, emotions, imaginings, and memories that make up our picture of reality. The genius of humanistic knowledge—and it is a form of knowledge—is its continuity with the objects it helps us to know. Hence, the knowledge the humanities offer us is like no other, and cannot be replaced by scientific breakthroughs or superseded by advances in material knowledge. Science teaches us that the earth rotates on its axis while revolving around the sun. But in the domain of the humanities, the sun still also rises and sets, and still establishes, in that diurnal rhythm, one of the deepest and most universal expressive symbols of all the things that rise and fall, or live and die.

It utterly violates the spirit of literature, and robs it of its value, to reduce it to something else. Too often, there seems to be a presumption among scholars that the only interest in Dickens or Proust derives from the extent to which they can be read to confirm the abstract propositions of Marx, Freud, and the like and promote the right preordained political attitudes, or to lend support to fashionable literary theories or the identity politics du jour. Meanwhile, in my experience, the genuine, unfeigned love of literature is most faithfully repre-

sented not in the universities but among the intelligent general readers and devoted secondary school teachers scattered across the land.

Why is this so? The chief reason has to do with the peculiar effect of academia on literary and humanistic studies. Intelligent and curious general readers, who are more numerous than we sometimes imagine, and secondary teachers, who spend their lives operating on the front lines of literacy, have no stake in the publish-or-perish mentality that shapes most of the highly specialized writing that flows out of academic venues. Nor, for obvious reasons, do they have any time for works and

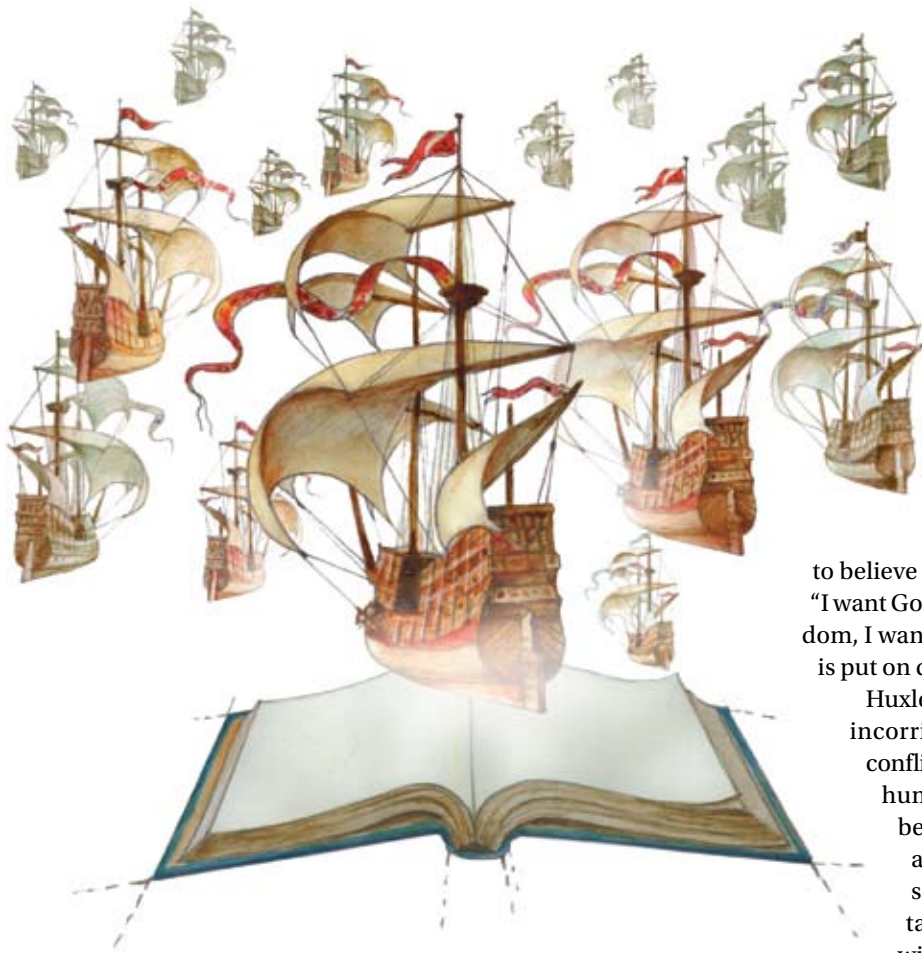
The genuine, unfeigned love of literature is most faithfully represented not in the universities but among the intelligent general readers and devoted secondary school teachers scattered across the land. They are trying to keep alive their own humanistic interests, and to pass those interests along to the younger generation.

authors that seem to call into question or even undermine the general value of the literary enterprise itself, as so much of the literary theory of the past 30 years, including that of Stanley Fish himself, so often did. They are trying to keep alive their own humanistic interests, and to pass those interests along to the younger generation. They do so not because literature is their business, but because it is their passion.

The chief point to make here is that the humanities do have a use, an important use—an essential use—in our lives. Not that we can’t get along without them. Certainly not in the same sense that we can’t get along without a steady supply of air, water, and nutrients to sustain organic life, and someone to make candles and books for the world’s poets. But we need the humanities in order to understand more fully what it means to be human, and to permit that knowledge to shape and nourish the way we live.

For many Americans, not just Stanley Fish, such a statement goes against the grain. After all, we like to think of ourselves as a practical people. We don’t spend our lives chasing fluffy abstractions. We don’t dwell on the past. We ask hardheaded questions, such as Where does that get you? How can you solve this problem? What’s the payoff? If you’re so smart, we demand, why aren’t you rich?

Well, there’s nothing wrong with concentrating on the “uses” of something. The difficulty comes when we operate with too narrow a definition of “use.” At some point, we have to consider the ultimate goals toward which our life’s actions are directed. What makes for a genuinely meaningful human life? Of what “use” are things that fail to promote that end? If you’re so rich, we must ask, why aren’t you wise—or happy?



If the humanities are the study of human things in human ways, then it follows that they function in culture as a kind of corrective or regulative mechanism, forcing upon our attention those features of our complex humanity that the given age may be neglecting or missing. It may be that the humanities are so hard to define because they have always defined themselves in opposition. What we are as humans is, in some respects, best defined by what we are not: not gods, not angels, not devils, not machines, not merely animals. The humanities, too, have always defined themselves in opposition, and none of the tendencies they have opposed (such as the tendency toward materialism or faith in technology) have ceased to exist, even if they are not as dominant as they once were. That is one of the many reasons why great works of the past—from Aristotle to Dante to Shakespeare to Dostoevsky—do not become obsolete, and have shown the power to endure, and to speak to us today, once we develop the ability to hear them.

But there can be little doubt that the principal challenges to humanity's humanness have always shifted over time. In our own age, the very category of "the human" itself is under attack, as philosophers decry the hierarchical distinction between humans and animals, or humans and nature. We also are far less clear about what we mean by the word "culture," and about the standards by which it is judged, including most notably the clear distinction between "high" and "low," let alone "excellence" and "mediocrity."

One of the ways that the humanities can indeed help to save us—if they can recover their nerve—is by reminding us that the ancients knew things about humankind that modernity has failed to repeal, even if it has managed to forget them. One of the most powerful witnesses to that fact was Aldous Huxley, whose *Brave New World* (1932) continues to grow in stature as our world comes increasingly to resemble the one depicted in its pages. In that world, as one character says, "everybody's happy," thanks to endless sex, endless consumer goods, endless youth, mood-altering drugs, and all-consuming entertainment. But the novel's hero, who is named the Savage, stubbornly proclaims "the right to be unhappy," and dares to believe that there might be more to life than pleasure: "I want God, I want poetry, I want real danger, I want freedom, I want goodness. I want sin." In the end, the Savage is put on display as if he were a rare zoo animal.

Huxley understood that there was something nobly incorrigible in the human spirit, a restlessness and conflictedness that is built into the constitution of our humanity, an unease that somehow comes with being what we are, and that could not be stilled by a regime of mere good feeling, or willingly be sacrificed for its sake. But he also teases and taunts us with the possibility that we might be willing to give up on our peculiarly betwixt-and-between status, and give up on the riddle that

every serious thinker since the dawn of human history has tried to understand. Huxley was disturbing, but also prescient, in fearing that in the relentless search for happiness, it is entirely thinkable that human beings might endeavor to alter their very nature, tampering with the last bastion of fate: their genetic constitution. Should that happen, supreme irony of ironies, the search for human happiness could culminate in the end of the human race as we know it. We would have become something else.

This is, of course, not really so different from the self-subverting pattern of the 20th century's totalitarian ideologies, which sought to produce "happy" societies by abolishing the independence of the individual. Yet the lure of a pleasure-swaddled posthumanity may be the particular form of that temptation to which the Western liberal democracies of the 21st century are especially prone. Hence the thrust of Huxley's work, to remind us that if we take such a step in our "quest to live as gods," we will be leaving much of our humanity behind. One of those things left behind may, ironically, be happiness itself, since the very possibility of human happiness is inseparable from the struggles and sufferings and displacements experienced by our restless, complex, and incomplete human natures. Our tradition teaches that very lesson in a hundred texts and a thousand ways, for those who have been shown how to see and hear it. It is not a lesson that is readily on offer in our increasingly distracted world. It is the work of the humanities to remind us of it, and of much else that we are ever more disposed to forget. □

Why Teach Labor History?

By JAMES GREEN

Many retired union members I know worry that their struggles have been forgotten. They fear that few now understand the sacrifices of their forebears who fought for the eight-hour day and the 40-hour week—"the folks who brought you the weekend," as one union bumper sticker reads. Like the character in Milan Kundera's novel,¹ who believes the struggle against power "is the struggle of memory against forgetting," the elder generation of union members and retirees I have spoken with believe that ignorance of labor history will disempower today's workers and students.

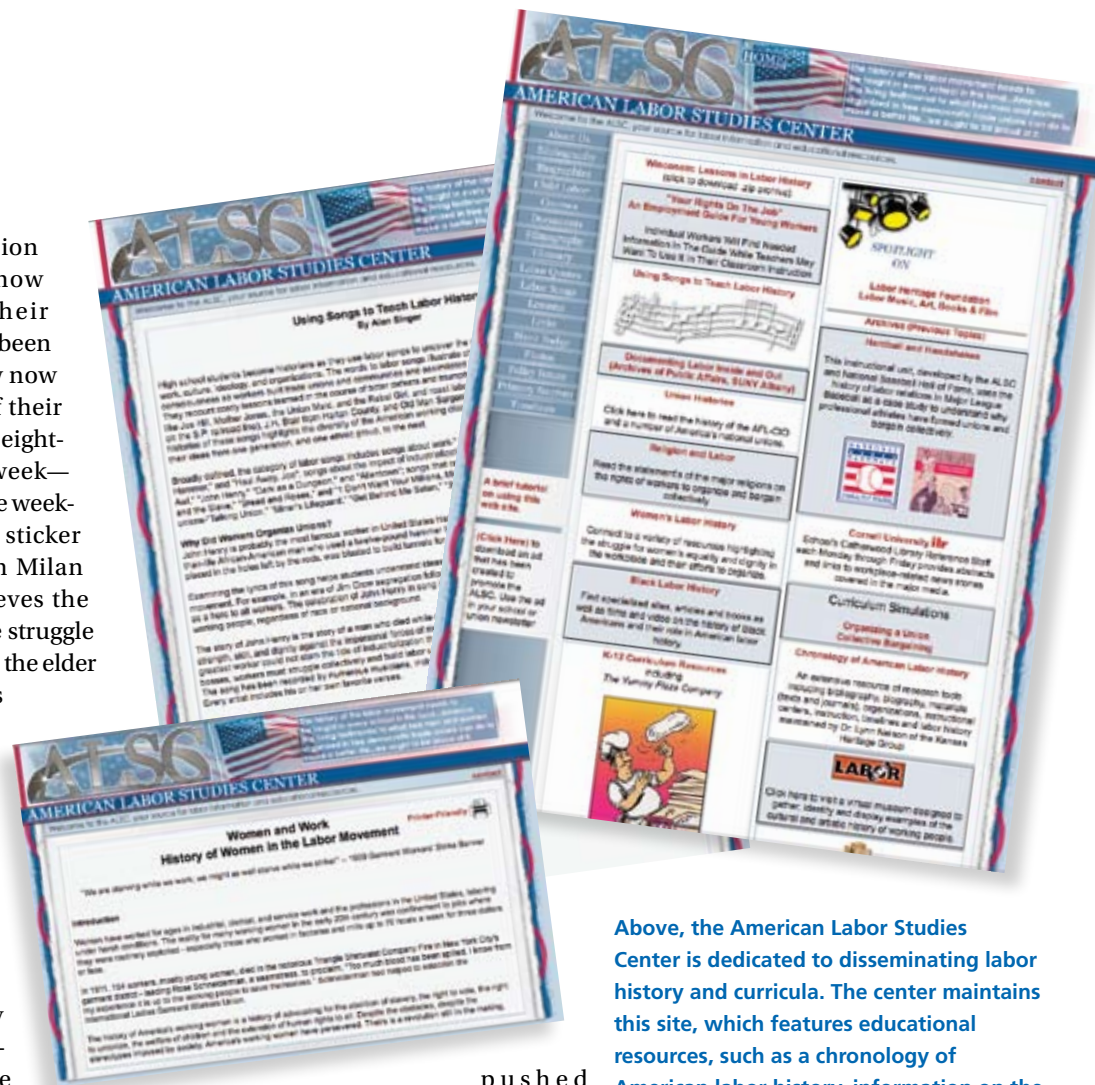
So, the reason for teaching labor history in our social studies classrooms is obvious to these union veterans. They want young people to study the contributions that generations of union activists have made to building a nation and to democratizing and humanizing its often brutal workplaces. While their predecessors successfully fought for monumental changes that benefited all Americans (not just union members), such as passing the Social Security Act of 1935 and ending child labor, today's union veterans can take pride in their own accomplishments. For example, they

pushed for mine safety laws and workers' compensation laws. They fought for the Occupational Safety and Health Act of 1970, the Pregnancy Discrimination Act of 1978, the Americans with Disabilities Act of 1990, and the Family and Medical Leave Act of 1993.*

Of course, their struggles included not only legislative activism, but also work-site organizing and pushing reluctant state officials, federal officials, and judges to grant workers the right to collectively bar-

* Today's active union members continue in this proud tradition. In the past couple of years, they helped win passage of a federal law raising the minimum wage and supported the State Children's Health Insurance Program. Currently, they are fighting for the passage of the Employee Free Choice Act, which would reinforce workers' right to join a union.

James Green is professor of history at the University of Massachusetts-Boston and author of *Death in the Haymarket: A Story of Chicago, the First Labor Movement, and the Bombing That Divided Gilded Age America*. This article is adapted from Green's "Why Teach Labor History?" in the winter 1997 issue of the OAH Magazine of History.



Above, the American Labor Studies Center is dedicated to disseminating labor history and curricula. The center maintains this site, which features educational resources, such as a chronology of American labor history, information on the roles that women and African Americans played in the labor movement, labor quotes and songs, and information on child labor. www.labor-studies.org

gain. And so, most of all, our elder workers hope young people will learn from labor history that individual workers can achieve some dignity if they assert their collective power.

Looking back, there have been several obstacles to the inclusion of workers' history in our K-12 classrooms. Until the 1960s, the history profession included few scholars of labor history. Even after the emergence of the new social and labor history 40 years ago, textbook writers were



Left and below, a virtual museum displaying “the cultural artifacts of working people,” Labor Arts includes powerful images from labor history and culture, as well as works of art representing labor’s struggles using various media such as photography, painting, and sculpture, and organizing paraphernalia including buttons, fliers, and posters. www.laborarts.org



WOMEN'S EQUALITY BUTTON, 1978 (IMAGE COURTESY LABOR ARTS)



"RAISING WALLS," OIL PAINTING BY JOE PASTOR, 2005 (IMAGE COURTESY OF SULLIVAN GOSS GALLERY, PAGE COPYRIGHT LABOR ARTS)

slow to adopt the insights of new scholarship. In other words, for some time, the specialized studies of labor historians were not incorporated into a wider synthesis that fully integrated labor history into the national narrative. That challenge has now been met by the American Social History Project and the excellent text *Who Built America?*[†] Moreover, in the past few decades, labor historians, teachers, students, and activists have created a professional association of their own, the Labor and Working-Class History Association, to promote civic engagement and encourage the study of working people’s history.[‡]

which outlawed child labor and created the 40-hour work week, came after the age of industrial violence ended—so too did health and safety protection, and the legalization of organizing and collective bargaining by federal workers and other public employees, including school teachers.

Nonetheless, to some of the policymakers and educators who determine our social studies standards and influence the content of our textbooks, it seems that labor history is no longer relevant—that it is a bloody story of conflict, a depressing chapter from the dark ages of America—and thus the union story is not told as thoroughly as it could and should be. These conflicts are, of course, worth studying. They raise important questions: Why did so many people who demanded their rights suffer from such violent repression in a free society? Why was American labor history so much more violent than the labor history of other industrial nations?

Neither the conflicts nor the peaceful victories tell the whole



COURTESY OF THE NATIONAL BASEBALL HALL OF FAME AND MUSEUM, EDUCATION DEPARTMENT



Above, this instructional unit, “Hardball and Handshakes,” uses the history of professional baseball to examine the relationship between employer and employee. Developed by the American Labor Studies Center and the Baseball Hall of Fame, the unit focuses on collective bargaining and is geared toward high school and college students. http://education.baseballhalloffame.org/experience/thematic_units/labor_history.html

The conflict-free events and issues are, of course, also worth studying. In fact, U.S. labor history shows that the most important achievements unions have gained for working people have been achieved peacefully. Historic accomplishments like the Fair Labor Standards Act of 1938,

[†] To learn more about *Who Built America?*, go to the American Social History Project’s Web site at www.ashp.cuny.edu.

[‡] To learn more about the Labor and Working-Class History Association, go to <http://lawcha.org>.

The AFT: Committed to Social Justice

The AFT has always been a force for human advancement and social justice, even when such activities were politically unpopular. In the first half of the 20th century, when many trade unions excluded African Americans from membership, the AFT was one of the first to extend full membership to minorities. African American teachers in segregated Southern school districts organized their own locals and readily affiliated with the AFT. And African American teachers elsewhere joined on equal footing with their white counterparts to organize integrated AFT locals in their school districts.

In 1918, the AFT called for equal pay for African American teachers and the election of African Americans to local school boards. In 1919, the AFT demanded equal educational opportunities for African American children and, in 1928, called for the contributions of African Americans to be taught in the public schools.

By the middle of the 20th century, the AFT was taking bolder steps. In 1948, the union stopped chartering segregated locals. In 1954, the AFT, virtually alone among teachers' organizations, filed an amicus brief in support of the plaintiffs in the landmark *Brown v. Board of Education* case, in which the U.S. Supreme Court ultimately ruled that racially segregated schools were unconstitutional. And finally, in 1957, the AFT expelled any local unions that refused to admit African Americans. The AFT, then only a small union, lost nearly 7,000 members (roughly 14 percent of its membership) during the 1950s, but the result—a fully integrated union—was worth it.



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In the 1960s, AFT members and staff helped organize the 1963 March on Washington for Jobs and Freedom. In 1964, 1965, and 1966, hundreds of AFT members traveled to the South to register new African American voters and to teach in Freedom Schools. The AFT lobbied for passage of key civil rights legislation, such as the Equal Employment Opportunity Act, the Fair Housing Act, and the Voting Rights Act.

Over the past few decades the AFT has continued in this tradition by working to improve public schools, particularly those in high-poverty neighborhoods, and to close achievement gaps. To learn more about the AFT's history, go to www.aft.org/about/history/index.htm. An in-depth video on the AFT's history, titled "A Proud Tradition," is available for \$10 at www.costore.com/aft/productenlarged.asp?peid=283&pid=695247.

—EDITORS

story, however. Labor unions should be no more exempt from critical historical study than corporations. Scholars of union history have fully documented the ways some labor officials have engaged in corrupt and undemocratic activity, and how labor organizations have actively discriminated against immigrants, women, and workers of color. It is important for students to understand these failings, just as it is for them to understand the historic failures of business and government. But after 40 years of teaching

labor history to college students and union members, I am confident that an honest examination of "labor's untold story" will show that, overall, unions have been far more democratic than other private institutions and less exclusionary than businesses or the professions. In fact, union history shows that labor organizations have made much more progress at including women, immigrants, African Americans, and Mexican Americans than banks, law firms, or other private corporations—they have even been more inclu-

sive than universities. Public sector and service sector labor unions are now among the most integrated private institutions in the country. (The American Federation of Teachers, in particular, has much to be proud of; for a brief look at its history regarding desegregation, see the box above.)

We should teach our students the lessons of how union members helped democratize America, particularly during the New Deal era when the labor movement created active voters and engaged



California Federation of Teachers
AFT/AFL-CIO
CELEBRATING 20 YEARS OF LABOR EDUCATION IN 2007

Resources for teachers, students, union members & the public



What if every student had opportunity to learn about union history classes included labor his

The screenshot shows a webpage titled "Elementary curricula" with a navigation menu on the left and a main content area. The main content includes a section titled "Why teach children about unions and collective bargaining?" followed by a list of resources such as "Elementary Curricula", "Along the Shore", "I, Tomato", "Let Me Tell You About This", "Trouble in the Mill", and "Yummy Pizza".

Left, the California Federation of Teachers' Labor in the Schools Committee maintains this site, which features curricula and educational activities for elementary through high school students. Lesson plans, biographies of union leaders, and photographs of children at work reflect the long struggle by unions to improve the lives of working people. www.cft.org/about/comm/labor/elementary.html

The screenshot shows the "Labor in America" website with a navigation bar and a main content area. The main content includes a section titled "Essential for Teachers" with a list of resources such as "American Workers: Child Labor", "American Workers: Women at Work", and "American Workers: Union Leaders".

The screenshot shows the "Who really built America?" website with a title and a main content area. The main content includes a section titled "Who really built America?" with a list of resources such as "Who really built America?" and "Who really built America?".



LIBRARY OF CONGRESS, PRINTS & PHOTOGRAPHS DIVISION, FSA-OWI COLLECTION, LC-USF33-011324-M4 D1C

citizens out of millions of blue collar workers, most of them disfranchised African Americans and Mexican Americans, as well as immigrants and the children of immigrants. Infusing at least a little labor history into American history or government courses need not take a lot of time. For example, during Black History Month,

consider a lesson on A. Philip Randolph and the Brotherhood of Sleeping Car Porters, and on the Memphis sanitation workers' strike, which brought Dr. Martin Luther King Jr. to the Lorraine Motel in 1968. Or, while studying the Constitution,

Above, this Library of Congress site features lesson plans on child labor and working conditions at the turn of the 20th century. The site also provides an extensive list of links to online resources such as films and photographs, as well as a bibliography of reference books about labor in America. www.memory.loc.gov/learn/community/cc_labor.php

Additional Resources for Teaching Labor History



The Dramas of Haymarket

Produced by the Chicago Historical Society and Northwestern University, this online project examines the Haymarket affair, a riot that began when striking workers clashed with police on May 4, 1886, in Chicago. The site recounts the incident and its aftermath, and contains collections of images, and video and audio clips.

www.chicagohistory.org/dramas/overview/over.htm



The Triangle Factory Fire

This site tells the story of the fire at the Triangle Waist Company in New York City on March 25, 1911. The fire claimed the lives of 146 young immigrant workers. Photographs, illustrations, testimonials, and newspaper and magazine articles posted on the site depict the inhumane working conditions that caused this tragedy.

www.ilr.cornell.edu/trianglefire

Child Labor Photographs

For a collection of compelling images, visit this site featuring photographs of child labor. Taken by Lewis Hine, a New York City schoolteacher and photographer, the black and white images include children working in factories and in the fields in the early 1900s. The site also includes lesson plans that focus on Hines's photography.

www.archives.gov/education/lessons/hine-photos



teachers could lead discussions with questions such as: Where do workers' rights come from? Should the First Amendment be interpreted as protecting free speech and the right to free association in the workplace? Why are most American workers "employees at will" (meaning they can be terminated at any moment without any legal recourse, except in the case of workers who can hire attorneys to sue employers for intentionally violating laws against discrimination based on race, gender, age, or disability)?

Teachers who wish to delve deeper into labor history or to look more broadly at the history of working people will find an

abundance of fairly recent scholarship on the working class since the Industrial Revolution. As the Web sites shown here demonstrate, high-quality teaching resources on everything from child labor in the early 1900s to collective bargaining in baseball to labor-related works of art are readily available.

Today, with union membership reduced, government standards for worker rights and safety under assault, and job security in jeopardy everywhere, young people entering the labor market are still vulnerable to abuse in the workplace. And yet, most are alarmingly unaware of the decades of struggle that previous genera-

tions engaged in—and that union members are still engaged in today—to extend human and civil rights to the workplace. At work, all too many Americans are instructed that "democracy stops at the factory or office door," as if democracy could be "relegated only to evenings and weekends."² Studying the labor movement is one good way to counter this limited notion of citizenship and this restricted concept of democracy. □

Endnotes

1. Milan Kundera, *The Book of Laughter and Forgetting* (New York: Penguin Books, 1981), 3.
2. Elaine Bernard, "Why Unions Matter," *Open Magazine Pamphlet Series 36* (Westfield, NJ: Open Media, 1996).

The Ongoing Need for Strong Unions

A Primer for Your Students

BY FRED GLASS

Arturo Perez worked in a large grocery store in Berkeley, California, famous for its huge selection of fresh produce and healthy foods. In the progressive Berkeley community, such a reputation attracts customers. But the workers weren't as pleased with the store as the customers were. Confronting low wages, poor working conditions, and favoritism in hiring and promotion, they decided that they needed a union to represent them. During the union organizing drive, store managers accused Perez of stealing some garbanzo beans, and fired him. Perez was an outspoken supporter of the union campaign. Union organizing is legal. What happened to Perez—being fired on a flimsy pretext, but really for being a union activist—is illegal. It is a common occurrence nonetheless. According to the U.S. Department of Labor, up to 20,000 American workers are fired for union organizing every year.

Luckily, Perez did not face store management on his own. His co-workers defended him, and the union—the United Food and Commercial Workers Local 120—persuaded the National Labor Relations Board to hold hearings on whether the store management had committed unfair labor practices, including Perez's firing, during the organizing drive. Rather than face the bad publicity resulting from such hearings, the store negotiated agreements to recognize the union, pay back wages to Perez (as well as another fired worker), and post a notice inside the store promising not to engage in such practices again. The union bargained a contract that included health benefits for all workers, substantial wage increases, and regular pay for jury duty.

Perez's story had a happy ending. Not all workers are so lucky. Even when the laws are observed, work in today's economy can be rough. As many as 30 million people—nearly one-quarter of the

work force in the United States—are classified as the working poor: people who work hard, but still can't make ends meet and are just one or two paychecks from homelessness.

These are the workers at the bottom of the economy, and they are the people who could benefit the most from belonging to a union. But over the past few decades, the percentage of union members in the work force has shrunk,

from about 33 percent to just over 12 percent. Plenty of new jobs have been created during that time, and a lot of new wealth. But the new jobs have tended to be either high skill/high wage, or low skill/low wage. Jobs in the middle—the jobs that used to be available in manufacturing, with decent wages and benefits, enough to support a family—have been disappearing.

Coincidentally, these are the jobs that used to belong to union members. So there are parallel developments under way. The number of workers enrolled in unions is shrinking, and so is the number of jobs that support a middle-class way of life.

Some people interpret the decline of organized labor as if unions belong to the past, and have no role to play in the global economy of the 21st century. They point to the numbers and say that workers are choosing not to join unions anymore. The real picture is more complex, and contradicts this view. Most workers would prefer to belong to unions if they could. But many are being prevented from joining, rather than choosing not to join. Unions remain the best guarantee of economic protection and political advocacy for workers. But as



AP PHOTO/CHARLES KNOBLOCK

PHOTO BY JOE RAEDLE/GETTY IMAGES

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unions shrink, fewer people know what unions are, and do. And fewer remember what unions have to do with the prosperity of working people.

What Is a Union?

A union is a group of workers who have organized themselves for mutual aid and collective action. It is a tool developed by and for working people, to provide them with a collective voice in their place of employment and in the broader society. Like any tool, it can be used well, badly, or not at all. Used properly, a union provides workers with a means to improve their lives in many ways.

Unions bring working people increased pay and benefits, and legal, legislative, and political remedies addressing the issues workers and their families care about: secure jobs and safe communities; necessary social services like public education, health care, and public safety; and a measure of support in old age through employee pension plans and government programs such as Social Security and Medicare.

The reason why workers need unions



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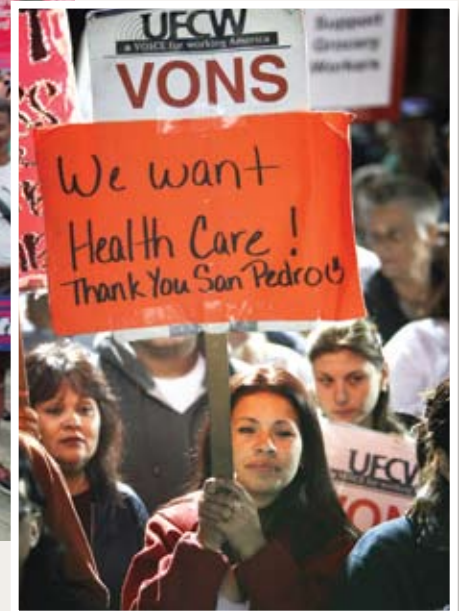


PHOTO BY DAVID MCNEWGETTY IMAGES

boils down to this: employers have far more power than workers do, especially if workers have to negotiate with them over wages and working conditions as individuals. On the side of employers, we find greater financial resources, favorable laws, and the power that comes from the ability to hire and fire people who need to work for a living. However kind or well intentioned they might be as individual human beings, employers are motivated by maximizing profits in their businesses. All too often, that motivation overrides fair treatment of employees.

By forming unions, workers gain the power that comes with being part of a group created for collective action. As a group, workers can negotiate with their employers with greater chance of success than they can as individuals. This is why Cesar Chavez, for example, became a union organizer. After many years of attempting to address the poverty and powerlessness of California farm workers through community organizing, Chavez decided that a union was the most effective vehicle for achieving a better life for farm workers. His singular achievement was to build the first farm workers union that lasted more than a few years—the United Farm Workers of America. As a result, tens of thousands of farm workers enjoy higher salaries, have health insurance and old age pensions, and experience a greater measure of safety on the job.

How Do Workers Organize?

A union is formed when workers agree that they need the strength of numbers and a collective voice on the job. In most cases, this means that they seek the assistance of an organizer from an already existing union. The organizer helps the

workers form a committee, which provides an effective way of reaching out to more workers until a majority has decided to establish a union in the workplace. This is the key to effective unionism: it is the result of the democratic process, the actions of workers themselves, and the backing of an organization with resources.

Once a majority of workers have indicated they want a union, the employer has the opportunity to recognize the organization as the official representative of the workers, and to sit down and negotiate a contract with them. If the employer does not readily agree to recognize the union and bargain, then usually the workers move to an election. In the private sector, this is overseen by the National Labor Relations Board (NLRB), and in the public sector, by various agencies.

If a majority of those voting cast ballots in favor of the union, and the employer does not file a challenge to the election results, then the union is certified as the exclusive collective bargaining agent for the workers. (An alternative to this method is called “card check,” in which the employer recognizes the union through a simple presentation of cards signed by a majority of workers indicating they want representation by the union.)

After a union has been elected by the workers and certified by the NLRB or a public-sector labor agency, the law requires that the employer begin the collective bargaining process with the union. Collective bargaining means worker representatives sitting down with management representatives to discuss and decide matters such as how much workers will be paid and how to resolve conflicts, when they arise, in a manner fair to everyone involved.

But a union is often much more than that. It is a measure of dignity for workers on the job. It is a kind of extended family, where workers take care of each other.

The Meaning of Labor’s Decline for Working People

The power of collective bargaining supports higher wages and benefits, better safety and health conditions, and greater confidence among workers when they need to speak their minds. With such a clear set of advantages, why don’t more workers belong to unions? In today’s political environment, unions are often not allowed to function the way they are meant to. The laws designed to enable workers to form unions of their own choosing were passed many years ago. The workplace has changed, the economy has changed, and the society has changed. The laws have not kept up, and no longer provide the protections they were written to provide. A sustained, decades-long employer offensive has weakened unions, and as membership has declined, so has awareness of the benefits of unionism. As a result, many of the problems that were eradicated when the labor movement was stronger have reemerged.

Economic Disparities

In 1980, the differential between the average chief-executive-officer salary of Fortune 500 companies and the average worker income in his company was 42 to 1. By 2004, the differential was 430 to 1. This is the highest ratio of its kind in the world, and demonstrates an alarming trend: an unequal distribution of wealth worse than the United States has seen since the 1920s.

Besides the growing gap between the

wealthiest class and working families, there are other signs of an economy tilting against people who work for a living. In the three decades following World War II, the income of all groups rose at more or less the same rate. For the past quarter century, there have been growing numbers of poor people at the bottom, substantial numbers (but comparatively fewer) leading upper-middle-class lives, and a diminishing number of working families in the middle. The very rich remain few, but their share of the wealth is increasing dramatically.

More and more jobs can be found in low-paying areas of the economy. Fewer jobs are permanent, or offer health benefits or retirement plans. The largest private employer in the United States is now Walmart, where wages are so low that many workers are eligible for and receive government assistance. For instance, in 2005, 24 percent of Walmart workers had no health coverage or were enrolled in a public health program.

The Return of Forced Labor

Most people in the United States think that slavery disappeared in the 19th century, with the end of the Civil War. As a matter of fact, today, here in the U.S., it continues to exist, just as it does elsewhere in the world. This isn't the slavery of the Old South, of course. It looks different—when you can see it. Mostly it's hidden, behind the walls of old buildings, where lawbreaking employers hold workers against their will for long hours and little pay, where minimum wage laws are but a rumor, and common sense health and safety rules—let alone laws—are ignored every moment of every day. It is reliably estimated that more than 10,000 people in the U.S. are currently employed under conditions of forced labor—in restaurants, agriculture, garment factories, and other industries with a high demand for cheap workers.

Failing Health Care Coverage

As union density has declined, employment-based health coverage has slid down

a similar slope. In 1973, with about a quarter of the work force organized, health care coverage was nearly universal. One of the benefits of widespread collective bargaining was that even nonunion employers were pressured to match union-negotiated wage and benefit levels, or risk losing workers to the companies with unions and collective bargaining. Over the three decades since then, the decay of union density has been accompanied by a loss of health care coverage for enormous numbers of people. As of 2006, employer-based health coverage had been jettisoning a million people a year for five years. Worse, more than 45 million people, or about one in every six people in the United States, have no health care coverage at all.

Deteriorating Health and Safety Standards

The Occupational Safety and Health Administration (OSHA) was created in 1970 because unions convinced Congress that U.S. workers needed an agency devoted to overseeing their welfare in often dangerous workplaces. At its peak in 1980, OSHA employed 2,951 workplace inspectors. Today, in a work force that has grown by nearly 30 million workers, the number of OSHA inspectors has been reduced to just 2,208.

Employer Coercion

Over half of all union organizing campaigns face threats by management or owners to close the company if the union election is successful. Workers are typically harassed, threatened, disciplined, or fired if they openly support the union. While precise statistics are not possible to keep, somewhere between 10,000 and 20,000 workers are fired each year for activities related to union organizing.

Such threats and firings are illegal under the National Labor Relations Act, which was originally enacted explicitly to “level the playing field” between workers and bosses. But over the decades, the act has been amended so many times, and so many court decisions have modified the

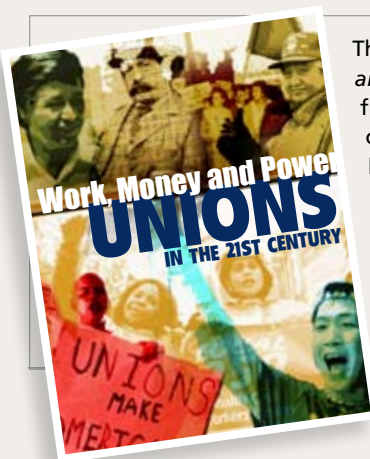
regulations, that little effective machinery remains to deter employers from engaging in such unfair and supposedly illegal activities. When the NLRB finds a company has engaged in unfair labor practices—often after years of legal maneuvering—the only “remedy” might be that the company must post a notice admitting guilt, and promise not to do it again. Even if an employee is found to have been fired for legally protected activities such as union organizing, and the company is forced to hire her or him back with full back pay, years may have gone by, the other workers involved in the campaign might have moved on to new jobs, and the union will have to start all over again, with no guarantee that anything different would happen this time around.

This blatant culture of intimidation works quite effectively. The surprising thing is that workers keep trying, and their election win rate is over 50 percent. This is a testament not only to the courage of the workers who persist in the face of such obstacles, but to the continuing need for unions in the American workplace. Nonetheless, the number of elections has declined over the years, a clear sign of the effectiveness of the anti-union industry and illegal tactics arrayed against workers. According to a recent survey, were it not for the fear of being fired, 57 million workers would readily join a union.

When collective bargaining was widely recognized as the best model for conflict resolution between labor and capital, it had a leveling effect on income distribution. Fewer people were very poor or very rich, and most working families were not only able to get by, but could expect to advance beyond their parents' economic position.

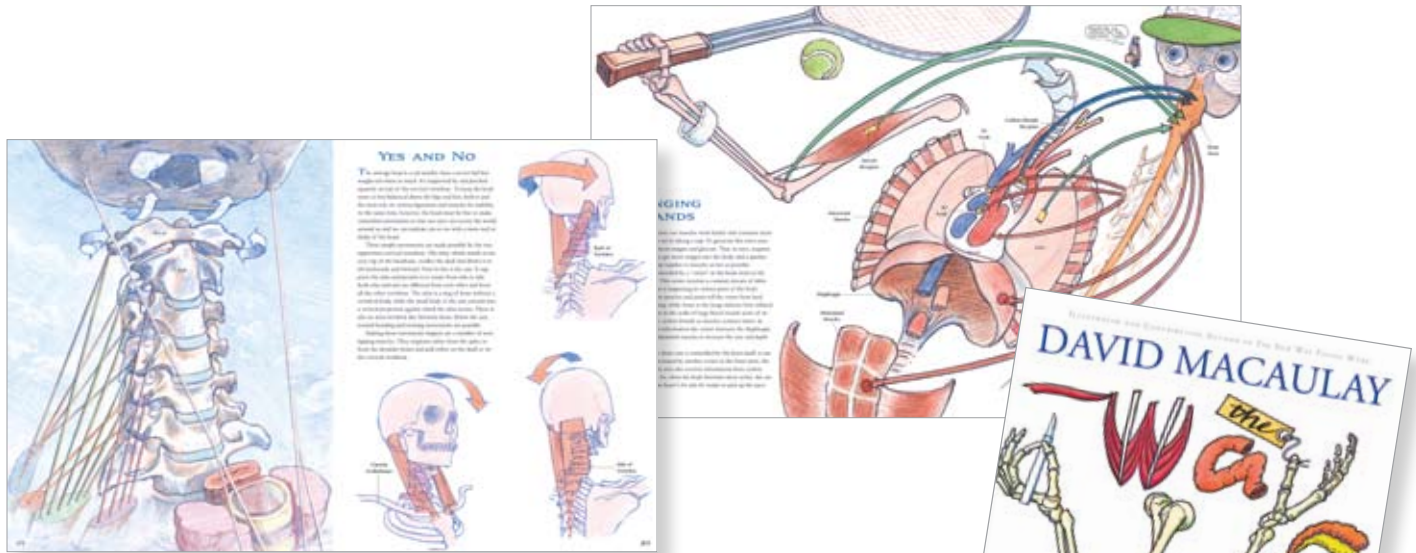
The union advantage continues to give workers an incentive to fight back against employers unwilling to pay decent wages, even with all the obstacles to organizing that workers face today. The higher standards of union workplaces, and access through collective bargaining to fair, open rules for conflict resolution, provide an important alternative for workers who wonder what they can do about unfair bosses. And union values, summed up in the slogan, “an injury to one is an injury to all,” continue to inspire workers to seek improvement in their lives by trusting in the power gained when they stand together.

This primer on unions is adapted from *Work, Money, and Power: Unions in the 21st Century*. To read the full-length version, which also includes information on labor history and details on the economic benefits of unionization, go to www.cft.org/uploads/resources/docs/workmoneypower.pdf. *Work, Money, and Power* was published by the UC Berkeley Labor Center. To purchase classroom copies (for \$1.25), go to http://laborcenter.berkeley.edu/publications/work_money.shtml.



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—EDITORS

David Macaulay has illustrated and written more than 20 books and won numerous awards, including a Caldecott Medal and a MacArthur Fellowship. *The Way We Work* was coauthored by Richard Walker, a science writer and former teacher. Excerpted from *The Way We Work* by David Macaulay. Illustrations copyright © 2008 by David Macaulay. Text copyright © by David Macaulay, Richard Walker. Reprinted by permission of Houghton Mifflin Harcourt Publishing Company. All rights reserved.

BY DAVID MACAULAY

Our body may be the first and is certainly the most remarkable thing we learn to take for granted. Because it works 24 hours a day, seven days a week, and makes only a few routine demands on our schedules, it's hardly surprising that we're much more familiar with its outside appearance than we are with what's going on inside. That is, of course, until something goes wrong. But why wait for trouble to stimulate curiosity? Each of us owns and inhabits an exceptional example of biological engineering and one that deserves to be understood and celebrated.

Everyone's journey begins as a single cell that contains everything we will need to get the ball rolling. If all goes well, that single cell will multiply into a population reaching tens of trillions. While these cells are invisible to the naked eye, each and every one is alive. And though they may do different work, the fundamental structure and basic operation of every cell is pretty much the same.

Once committed to the building of a multicellular organism, no cell exists in isolation. Each is part of a neighborhood and is in constant communication with its neighbors. Each cell also receives messages from farther afield. We are able to accomplish the huge number of things we

do, things that make us human, only because our cells willingly collaborate with each other. This is not a random act of kindness on their part. They are looking out for themselves. If their survival is threatened, so is ours. By arranging themselves into strictly organized groups, each with its own particular functions, they build and operate the systems needed to maintain the steady internal environment upon which they depend, regardless of what's going on outside.

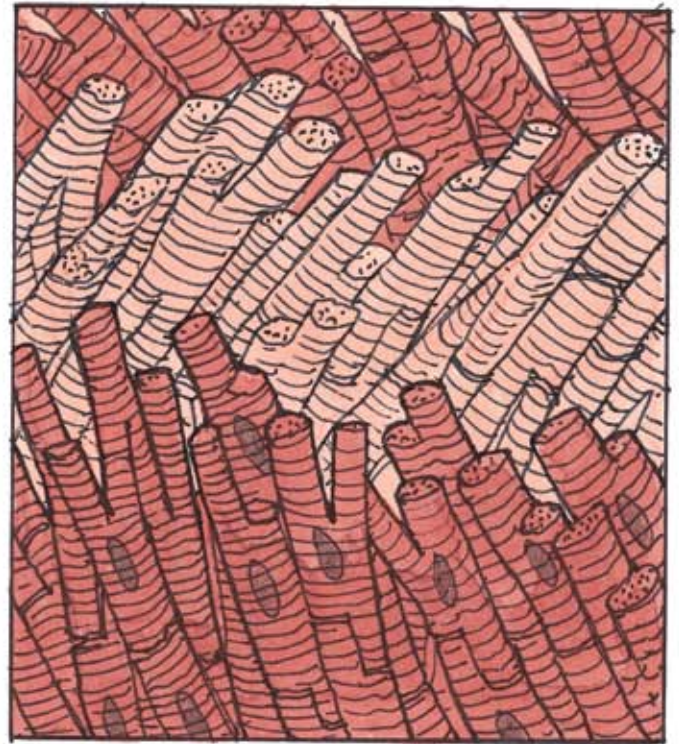
These systems, with familiar names such as respiratory, circulatory, and digestive, are introduced and explored through the various sections of *The Way We Work*. They are presented one at a time to avoid overwhelming the reader, but it should be kept in mind that just as our cells must work together, one system without the others would undoubtedly fail. Ultimately, this is the story of the superb interdependence of all the systems that make up the human body. This, in essence, is the way we work. □

NEVER TIRING

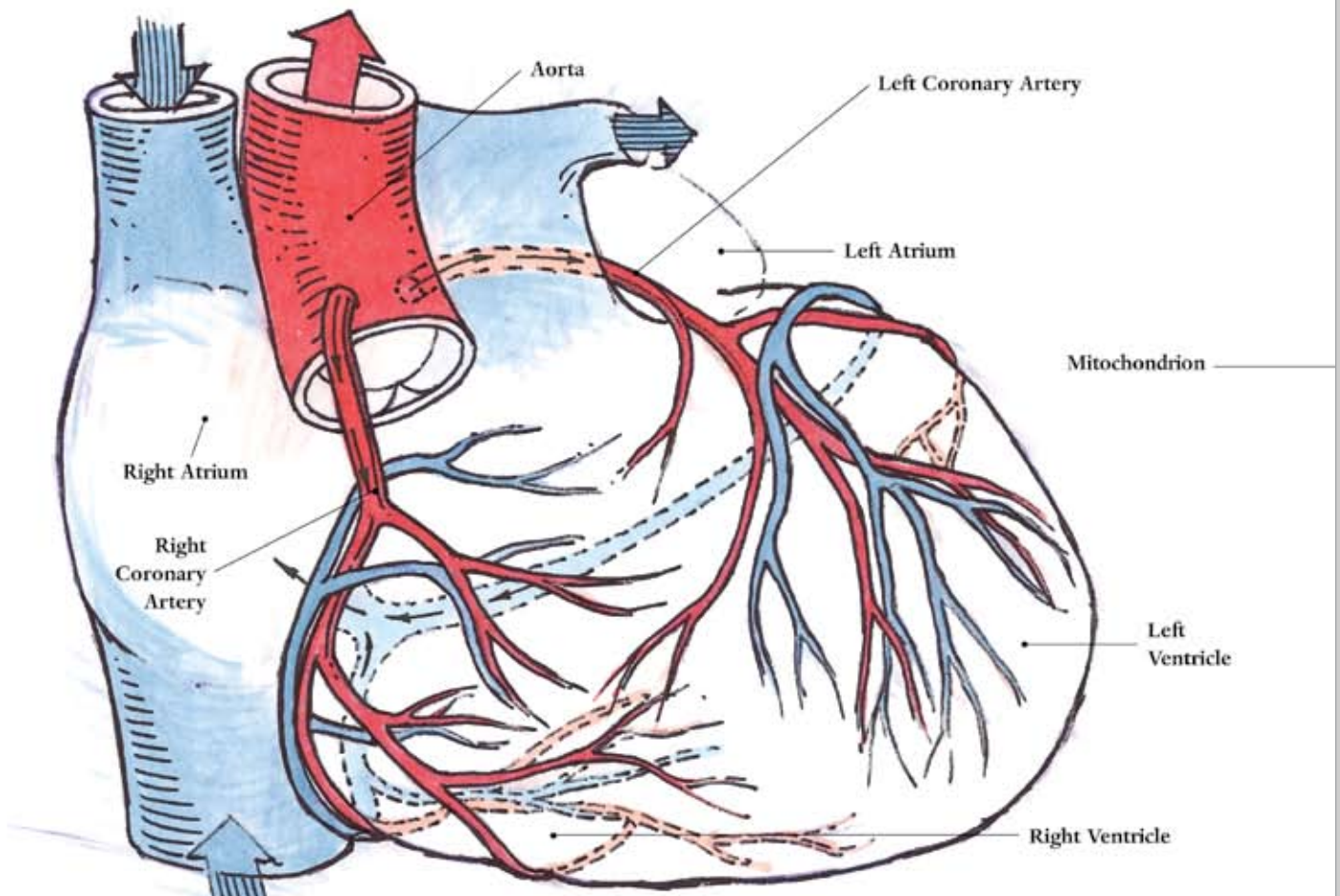
Most of the wall enclosing all four chambers of the heart is made up of cardiac muscle, a type of muscle unique to the heart. It consists of branching muscle cells firmly anchored to each other, bundled, and reinforced by connective tissue fibers that prevent tearing when the cells contract.

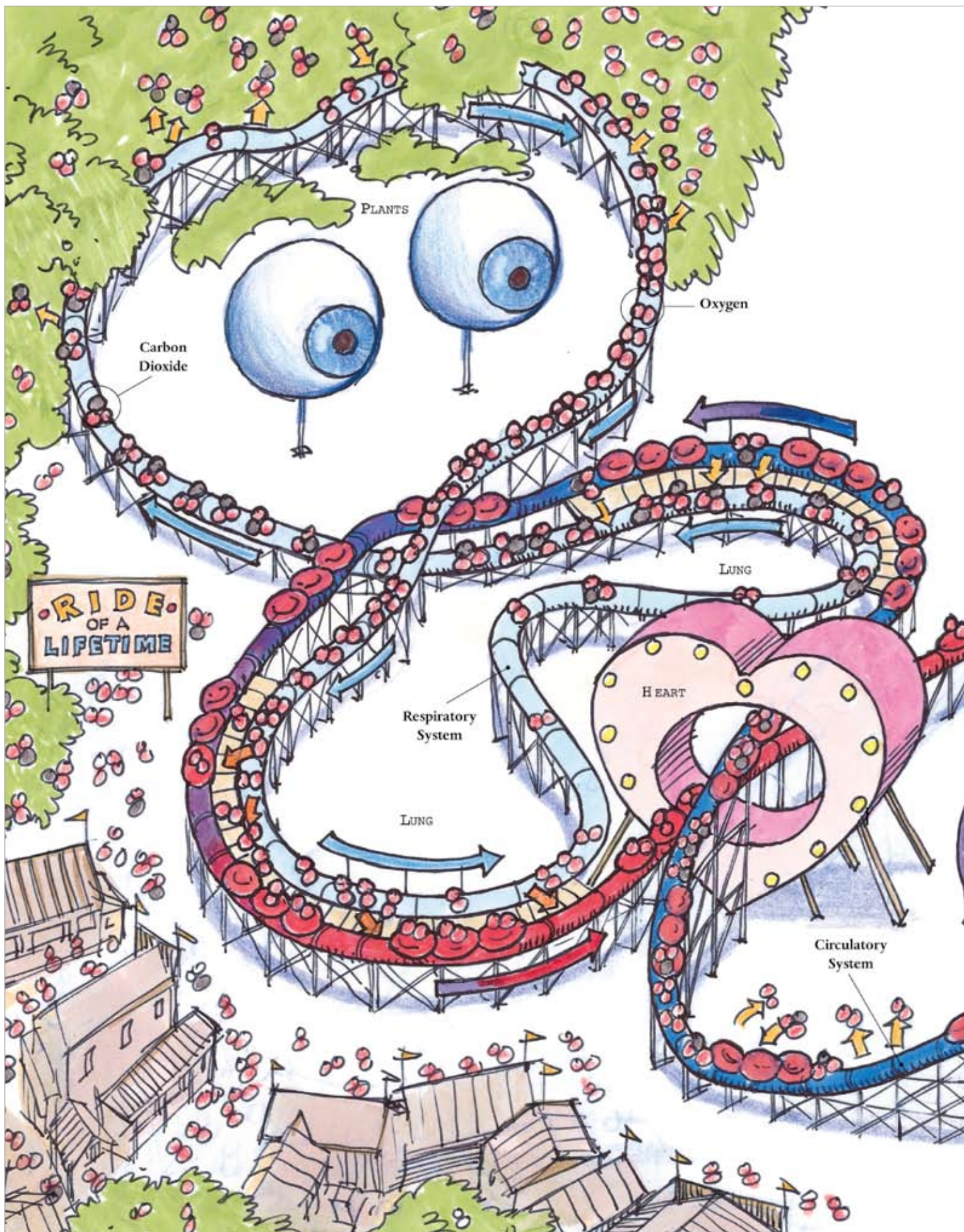
Try clenching your fist repeatedly without stopping. The arm and hand muscles that power this movement will soon tire. The same isn't true for cardiac muscle. Its cells can work nonstop for a lifetime because they generate much more energy than regular cells, including other kinds of muscle cells. Large numbers of bigger-than-normal mitochondria occupy around one-quarter of the space inside each cell.

The copious amounts of oxygen and fuel required by mitochondria to release energy are provided by the heart's own dedicated blood supply. So important is this supply that the first arteries to branch off the aorta—the main artery leaving the heart's left side—are the two coronary arteries. If this supply becomes blocked or fails for some reason, the heart and therefore the entire body are soon in trouble.



CARDIAC MUSCLE



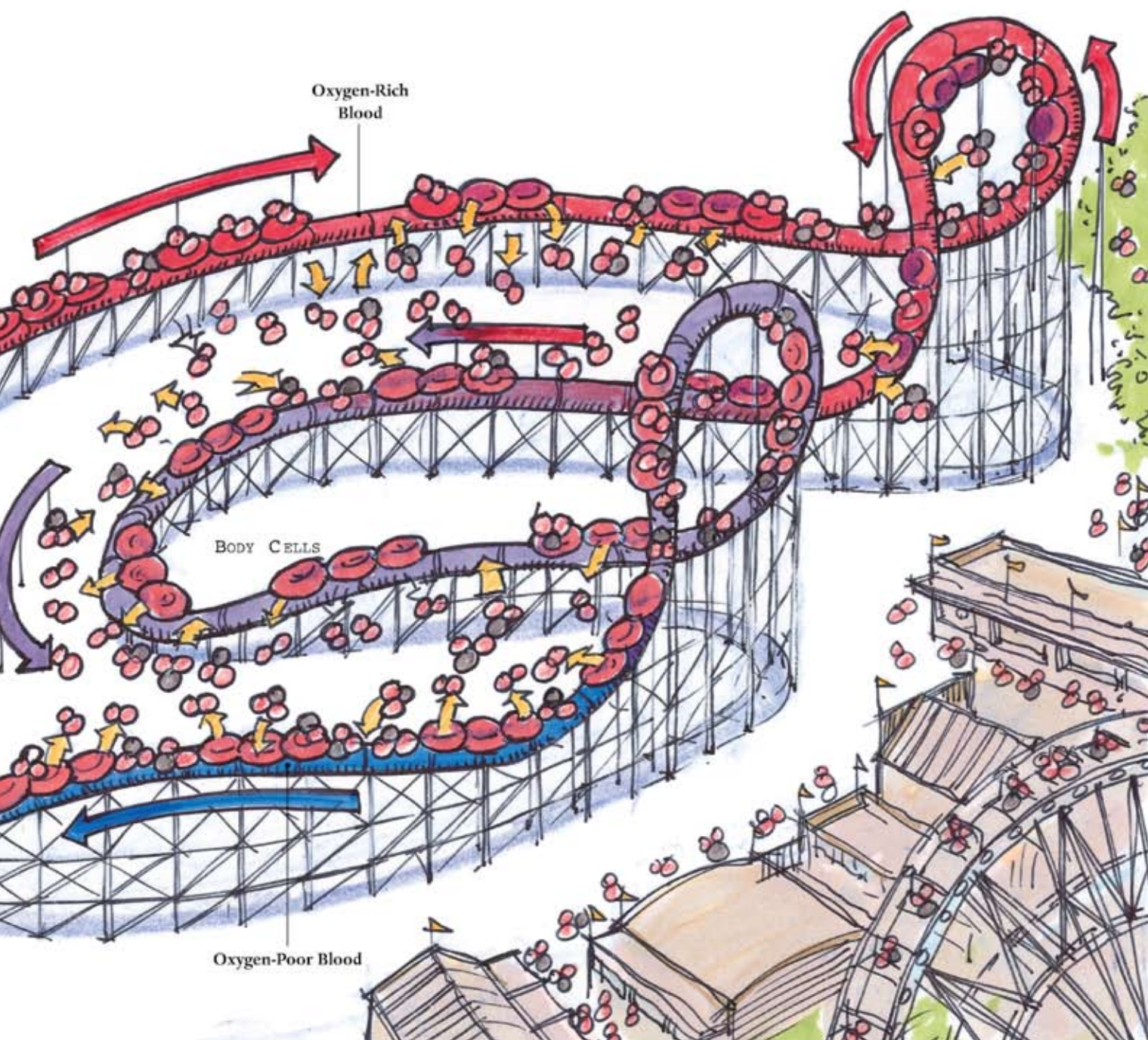


SUPPLY CHAIN

Consuming oxygen and generating carbon dioxide happen day and night for the lifetime of most organisms on the planet, including us. As oxygen is being used up, it is replaced by a process called photosynthesis that happens in trees, ferns, and countless other plants. During the day, this vegetation soaks up carbon dioxide and, using the energy of sunlight, combines it with water to make the food it needs. Photosynthesis, like any metabolic process, produces waste.

Fortunately for us, that waste is oxygen.

To take in an adequate supply of oxygen molecules and get them where they are needed, our cells have constructed a pair of distinct but mutually dependent systems. The first, the respiratory system, draws oxygen into the lungs and sends waste carbon dioxide out. The second, the circulatory system, delivers that fresh oxygen from the lungs to each and every cell and carries the waste back.



Language-Based Spelling Instruction

(Continued from page 16)

The spellings of English words are influenced by the positions of the letters within the words, meaningful word parts, and the history of English. Teachers can draw children's attention to the types of information provided in this article, and this may be expected to improve children's spelling performance. Spelling is a psychological, linguistic, and conceptual process involving knowledge of the alphabet, syllables, word meaning, and the history of words.²⁹ Spelling, therefore, is a window on what a person knows about words. Learning about words and about the language will improve spelling skills. □

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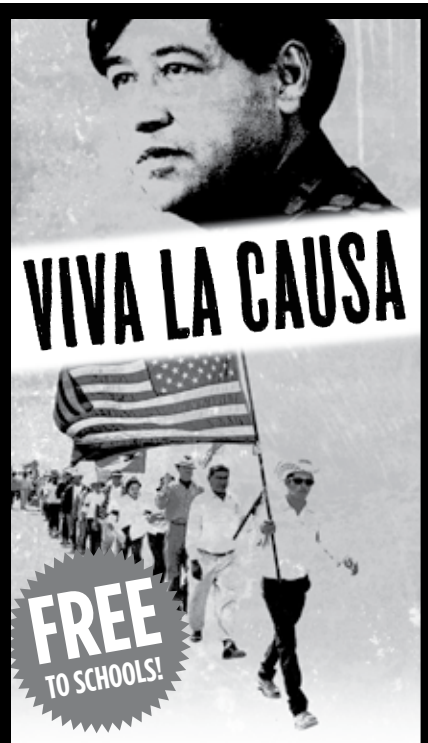
A public service message from the U.S. General Services Administration.

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(Continued from page 9)

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Improving Memory

(Continued from page 22)

For Further Reading

For more information about memory, I recommend these books:

Alan Baddeley, *Your Memory: A User's Guide* (Richmond Hill, Ontario: Firefly Books, 2004).

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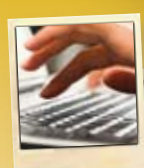
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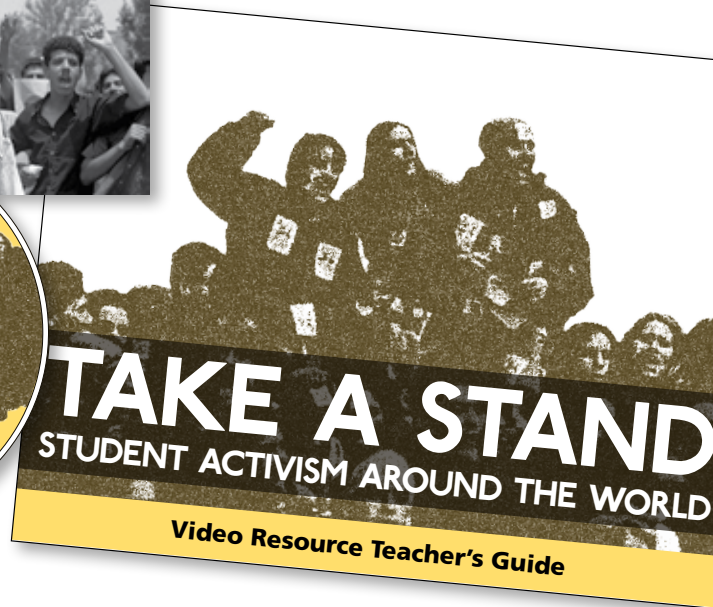
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