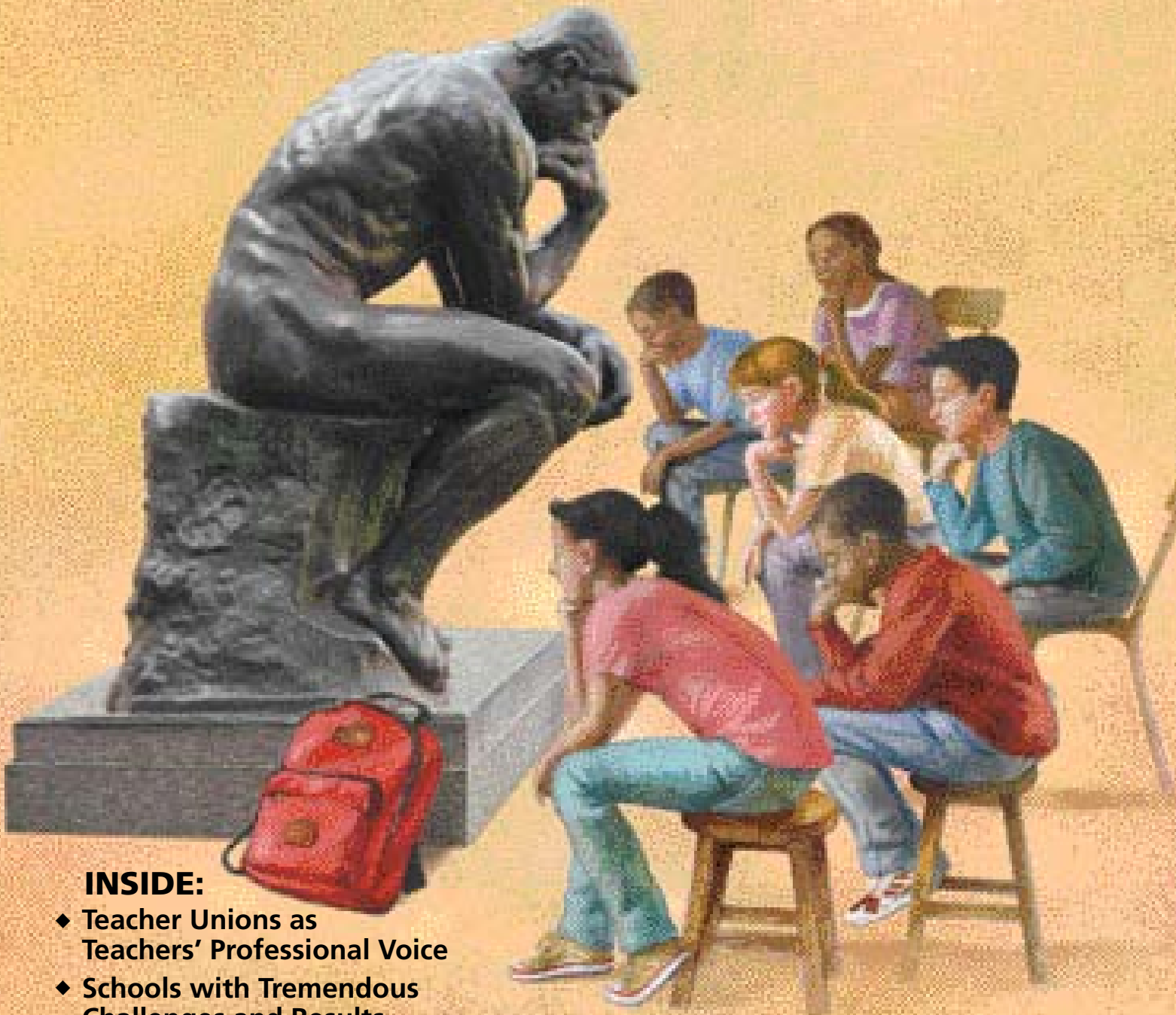


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Can Critical Thinking Be Taught?

... Not in the Way You Might Think



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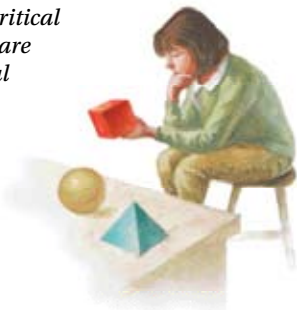
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Why Is It So Hard to Teach?

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There's no such thing as critical thinking "skills." There are strategies that aid critical thinking—but these can only take one's thinking to the precipice, no further. Then what? Critical thinking depends on knowing relevant content very well—and thinking about it, repeatedly, in critical ways.



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Teacher unionism was never just about wages and working conditions. From the start, it has aimed at providing teachers with a voice on the professional and educational issues that drew them to teaching in the first place. Today teacher unions are key advocates of teacher quality and the conditions and standards that will promote teaching as a profession.



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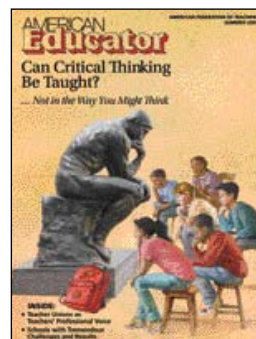
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Together, Poetry and History Make Field Trips Memorable

By Anne Marie Whittaker

Educational tour designer Anne Marie Whittaker pairs U.S. monuments with her favorite poems. She shares her love of verse while taking her students back in time—and helping them see that there is a place for poetry in their lives, too.

48 **The Year in Review**

Didn't have time to read the winter issue or catch last fall's cover article? This summer, once you've had your fill of steamy beach reading, recharge for the new school year with American Educator. Our Year in Review will help you figure out which articles you missed, and where you can find them online.



COVER ILLUSTRATION BY NENAD JAKESEVIC AND SONJA LAMUT



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Real Solutions

I read with interest “Get Real: Here’s the Boost that Poor Children, Their Teachers, and Their Schools Really Need” (Spring 2007) by Antonia Cortese. I appreciate the attention the article brings to the issue of summer learning loss. This issue is the core of my work.

I appreciate the approaches and solutions Ms. Cortese offers. At the Center for Summer Learning, our mission is to create opportunities for high-quality summer learning for young people, particularly disadvantaged youth, as a strategy for closing the achievement gap.

—RON FAIRCHILD
*Center for Summer Learning
Johns Hopkins University
Baltimore, Md.*

The measures proposed in “Get Real” are all well and good, but most of them are not as cost-effective as intervening in the first five years of life. Evidence is abundant that public investments in high-quality early-childhood education can eliminate the achievement gap that too many children bring to kindergarten. The AFT needs to push them with much more vigor, and to involve itself more actively in bringing public schools and early educators into mutually supportive relationships.

—JOHN SURR
Bethesda, Md.

I read with great interest Antonia Cortese’s article “Get Real.” I was

particularly impressed with her fourth step: “Provide a knowl-
edge-rich, grade-by-
grade, core curriculum.”

What I read in step four was a vivid, accurate description of the Core Knowledge Sequence curriculum developed by E.D. Hirsch, Jr., and the Core Knowledge Foundation for use in kindergarten through grade eight.

Our school adopted this curriculum in 1994 and has never looked back—except to congratulate ourselves on choosing the very best curriculum we have seen. Anyone who is sincerely interested in “getting real” with curriculum needs to take a good look at the Core Knowledge Sequence. Our students leave our school with a wealth of knowledge enabling them to succeed on a higher level in high school and in college.

I commend Ms. Cortese for her insightful article on identifying workable steps for educators to take.

—BOB HAMM
*Principal
Sacred Heart Academy
San Diego, Calif.*

The School Improvement Zone Works

“In the Zone: How a Virtual District Provides Real Help for Really Strug-



gling Schools" (Spring 2007) by Jennifer Jacobson was an excellent in-depth look at Miami-Dade County School Superintendent Rudy Crew's School Improvement Zone.

With accountability, many school districts have begun to require more from their teachers. Few have been willing to pay for it. It is highly commendable that Crew has been paying his teachers in the 39 Zone schools higher salaries.

For the Zone, which works, and for the increase in pay, I salute Dr. Crew. However, there is still something lacking in the Zone and in most of our public schools: parent accountability. We will never be as successful as we want to be unless a significant number of parents hold themselves accountable for the behavior of their children, for providing their children with the proper school supplies, and for giving the schools current contact information.

—ALAN W. RIGERMAN
Miami Lakes Middle School
Miami Lakes, Fla.

Weak Exams Make for Mismatch, Too

Your Spring 2007 article, "Mismatch: When State Standards and Tests Don't Mesh, Schools are Left Grinding Their Gears," rightly points out that vague academic standards impede students' success in school. (In my 13 years of public education, the only concrete standard I ever met was reading 25 books.) But the mismatch between standards and tests can also be caused by weak tests.

One example of this is the high school math test in New York State. Over the last decade or so, the state's Regents exams in math went from mostly show-all-work problems to mostly multiple choice problems. The content became laughable—a few recent "Math A" examinations even excluded the parabola. In addition, the grading scale makes the test virtually impossible to fail, regardless of mathematical knowledge. That sort of exam falsely indicates that students are "making the grade"; it does not








test the knowledge that even broad, loose standards require.

—EUGENIA FUCHS
Student
Brooklyn, N.Y.

Teachers Deserve Time for Family and Friends

Tom Moore's article ("Movie Fantasy vs. Classroom Reality," Spring 2007) about the portrayal of teachers in movies and on television made me stand up and cheer. Many people seem to think that because we choose the profession of teaching, we should sacrifice our after-work hours, weekends, and personal money for the benefit of our students. This is a job. Yes, working with children and teaching is also a calling, and we do get emotionally involved. However, we can be good teachers and still leave work while it's light outside, and have families, relationships, social lives, and activities. Make movies about the rest of us!

—SARAH HUDSON
Sheridan Elementary
San Francisco, Calif.

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Notebook

New Mexico Expands Kindergarten-Plus

It's no secret that, on average, disadvantaged children enter school behind. Even before first grade, they typically lag behind their middle-class peers when it comes to knowing their letters and numbers, and exhibiting well-developed social skills. Poor kids tend to have fewer books at home and fewer opportunities for enrichment outside of the classroom. To catch up to their middle-class peers, they need extra time in school.

State officials in New Mexico realized this a few years ago. They responded by implementing Kindergarten-Plus, an initiative devised by the late AFT President Sandra Feldman to lengthen the kindergarten year for our most disadvantaged students. In the 2003-2004 school year, New Mexico started Kindergarten-Plus as a three-year pilot program administered in four school districts—Albuquerque, Gadsden, Gallup-McKinley, and Las Cruces—and focused on literacy, numeracy, cognitive, and social skills. The districts' programs varied. Some added 40 instructional days to the school year, others implemented a half-day pre-kindergarten program, and others added time at the begin-

ning of first grade, rather than at the end of kindergarten.

Based on the pilot's success, Gov. Bill Richardson has signed legislation to extend the three-year pilot for another six years, expand it to include disadvantaged students in kindergarten through third grade, and provide \$8 million for the program. A 2005 state evaluation found that the program "seems to be an effective way to nurture student success, particularly among high-poverty students." The evaluation also said that the at-risk students "displayed gains in literacy skills ... developed important social skills, and benefited from increased parental involvement."



Want to Support Our Troops? Send Children's Books

The immense value of reading to young children is undisputed. The earlier children are exposed to books, the greater the chances are that their literacy skills will be strong, their vocabulary well-developed, and their background knowledge vast. And, of course, there's an extra, equally important benefit to having parents read to their young children: The very act of reading aloud helps strengthen the bond between parent

and child. When military parents are deployed, everyday pleasures like reading to their children are missing, creating a serious strain for parents and children alike.

Thanks to United Through Reading, a program in which soldiers send videos of themselves reading children's books home to their children or other young relatives, our service men and women can stay connected to loved ones even though they're miles away. Seeing a parent on tape provides children with the much-needed reassurance that their mother or father is safe, and it reinforces the importance of reading. But the program, sponsored by the Family Literacy Foundation, desperately needs more books for kids ages 1 to 8.

That's why AFT President Edward J. McElroy is asking members to help sustain and expand this program so peo-

ple like Diane Adloff (left), a school nurse and member of the Cleveland Teachers Union, can continue to read to her grandchildren during her deployment. Adloff is a major with the U.S. Army Reserves and is currently working as a community health nurse in a combat support hospital in Iraq.

Here's what to do: Organize book drives to collect new or used children's books for kids ages 1 to 8. Once you've collected books, please write on the inside cover page the appropriate age for each book and the following: "Donation from AFT." If you'd like, add the name of your local, city, and state. Send the books directly to:

Major Steve Hopper
25th ID Task Force Lightning
Unit #72111
APO AE 09393

For more information, contact the AFT public affairs department at mkeane@aft.org.



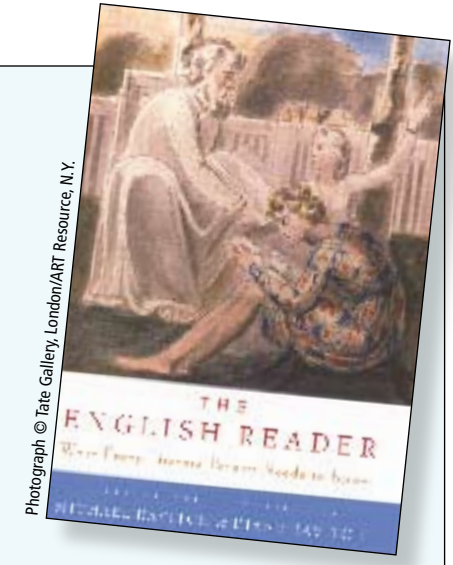
Photograph courtesy of Diane Adloff

English Lit. 101

A key to understanding American history, literature, and culture lies in the once indomitable British Empire, which at its height encompassed 400 to 500 million people. At its center, of course, was England. That small island, miles across the Atlantic Ocean, inspired our country's democratic and literary traditions, a fact with which young Americans are all too often unfamiliar. A new book, however, can help teachers instruct students in the British influence on America—and the world. *The English Reader: What Every Literate Person*

Needs to Know (Oxford University Press, 2006) is an anthology of some of the greatest works in English literature, edited by education historian Diane Ravitch and her son, Michael Ravitch, a freelance critic and writer.

The collection is impressive. The nearly 500-page volume is filled with poems, essays, speeches, black and white images (including those shown below), and songs from seminal moments in British history. There's Queen Elizabeth's inspiring oration before the invasion of the Spanish Armada in 1588 and Winston Churchill's powerful words to the House of Commons during World War II. Of course, Shakespeare's sonnets and plays are included, as are the poems of John Donne, a priest whose vibrant writing influenced the likes of W.B. Yeats and T.S. Eliot. The works of political philosophers, such as Thomas



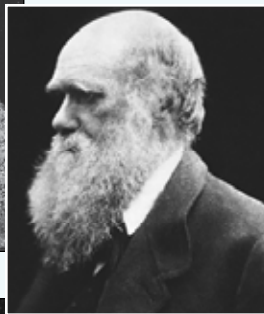
Photograph © Tate Gallery, London/ART Resource, N.Y.

Hobbes (*Leviathan*), John Locke (*Second Treatise on Government*), and John Stuart Mill (*On Liberty*) are sprinkled throughout. The volume also includes the essays of scientific thinkers like Isaac Newton and Charles Darwin.

With such wide-ranging selections, this volume is an excellent resource for high school humanities and science teachers looking to add depth to their lessons. But remember, as the editors explain, an "anthology is merely an introduction."



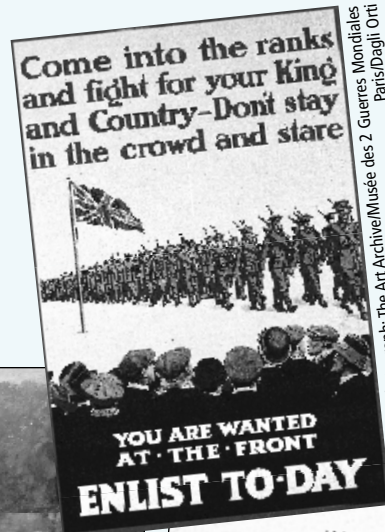
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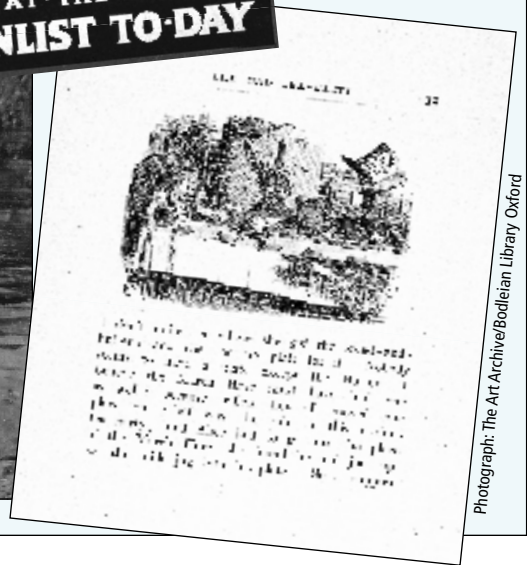
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Largest Study Yet: Teacher Transfer Rights and Equity

Various studies have indicated that high poverty schools are more likely than other schools to have high teacher turnover rates, relatively less experienced teachers, and a larger proportion of teachers without full certification.

As we reported in our winter issue, a number of researchers and organizations have claimed, based on having examined a handful of school districts, that this “quality gap” was caused by teacher unions and specifically, collectively bargained transfer rights for senior teachers.

A new study, the first to look at a large number of districts, refutes this claim. For this study, two Stanford University researchers analyzed 488 collective bargaining agreements in California and examined the relationships between their provisions and relevant district characteristics. Here’s how they summarized their findings:

Contrary to prior research and conventional wisdom, districts with strong transfer provisions tend to have larger percentages of credentialed teachers.

This study finds that school districts with more determinative transfer and leave provisions tend to have larger percentages of credentialed teachers. These provisions, which allow more senior teachers to transfer to their preferred schools, might help districts recruit and retain higher-quality teachers. It is unclear, however, whether the stronger seniority provisions act to attract and retain teachers, or whether there are other attractive contractual provisions or district-level factors. Moreover, the authors note that the relationship may go the other way. Strong seniority preference provisions may be the result of more qualified teachers and stronger unions. The finding that districts with more determinative transfer and leave provisions have greater percentages of credentialed teachers persists even when the authors controlled for a wide range of other district characteristics.

Strong district transfer and leave provisions have no systematic effect on teacher-quality gaps among schools.

Consistent with prior research, the authors find that schools with larger percentages of minority students, with more students, with enrollment growth, and with smaller average class sizes all have fewer certified and experienced teachers. They do not, however, find convincing evidence that this problem is greater in districts with strong [i.e., more determinative] transfer and

leave provisions. In other words, such strong provisions have no independent effect on the quality of teachers in schools within districts. There is also no compelling evidence that the transfer and leave provisions have an indirect effect on teacher distribution among schools by either strengthening or weakening the observed relationship between teacher quality and school characteristics (percentage of minority students, average class size, student enrollment, and school growth). (Summary, p. 2)

In a follow-up set of interviews with 19 human resource directors from a sample of the studied districts, the researchers probed why the strong transfer language didn’t impede equitable hiring and assignment practices. Their finding? Mainly, the reasons were positive: The contracts included language that put students’ needs above teacher seniority; the administrators and union leaders worked together to make sure that students’ best interests came first; and policies were developed to encourage teachers to choose schools where they were really needed. However, some administrators circumvented the contract by, for example, hiding openings until they could be advertised outside the district.

To sum up, the researchers’ write, “While all administrators reported that they ‘live within the letter’ of the contract, most find that the contractual language and working relationships permit a great deal of discretion in most cases. Consequently, our quantitative and qualitative analyses both suggest that the teacher-quality gap is most likely not due to nor exacerbated by the CBA (collective bargaining agreement) transfer and leave provisions” (main report, p. 78). The AFT has argued that the most effective way to remedy any teacher “quality gap” across high- and low-poverty schools is to use improved working conditions and incentives to attract highly qualified teachers to high-poverty schools.

The study, titled *Curbing or Facilitating Inequality? Law, Collective Bargaining, and Teacher Assignment Among Schools in California*, is available online both in full and as a summary. For the full report, go to [http://irepp.stanford.edu/documents/GDF/STUDIES/14-Koski-Horng/14-Koski-Horng\(3-07\).pdf](http://irepp.stanford.edu/documents/GDF/STUDIES/14-Koski-Horng/14-Koski-Horng(3-07).pdf). For the summary, go to <http://irepp.stanford.edu/documents/GDF/SUMMARIES/Koski.pdf>.

ILLUSTRATED BY BRU ASSOCIATES



Kids' Quality of Life: What's Up? What's Down?

After years of steady improvement, the quality of life of America's children appears to be at a standstill, according to the Child and Youth Well-Being Index (CWI). The CWI is based on a composite of 28 key indicators of well-being that are grouped into seven quality-of-life domains: family economic well-being, health, safety/behavioral concerns, educational attainment, community connectedness, social relationships, and emotional/spiritual well-being. The CWI has been tracking the well-being of children annually since 1975.

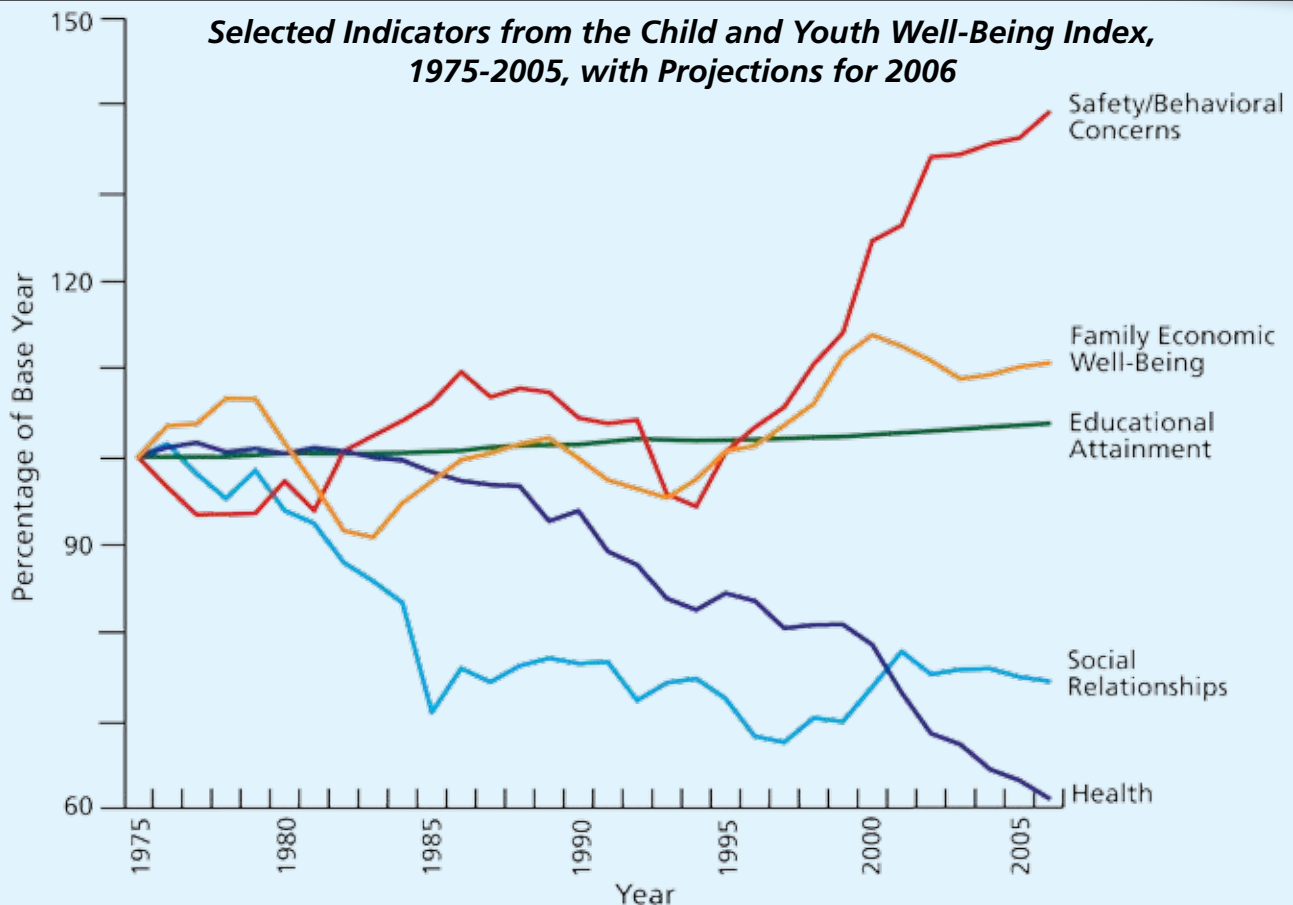
Despite an eight-year upward trend from 1994 through 2002, improvements in the quality of life of America's children and youth have stalled. The study found that children's health continues to decline largely due to a slowdown

in the improvement of child mortality rates and a dramatic rise in the number of children who are obese. The CWI also found that progress in narrowing racial and ethnic disparities has stalled.

On average, children and youth in the U.S. are doing only slightly better today than they did in 1975. And their education results have shown only marginal improvement. The CWI's educational attainment domain, which is based on national mathematics and reading tests, has shown slight improvements in math scores since 1980, improvements that have accelerated since 1999 at age 9 in both mathematics and reading scores, and at age 13 in mathematics scores. At age 17, however, there is only a slight improvement in mathematics scores, and a slight decline in reading scores since 1980.

On a positive note, children, more than ever before, are safer and engage in less risky behavior. The CWI found a continuing decline in the rates of teen pregnancy, violent crime, and drug and alcohol use among youth.

The CWI's full results are available online at www.newamerica.net/files/2007%20CWI%20Report--Final.pdf.



Source: Adapted from the 2007 report of the Foundation for Child Development, Child and Youth Well-Being Index.

Critical Thinking

Why Is It So Hard to Teach?

By Daniel T. Willingham

Virtually everyone would agree that a primary, yet insufficiently met, goal of schooling is to enable students to think critically. In layperson's terms, critical thinking consists of seeing both sides of an issue, being open to new evidence that disconfirms your ideas, reasoning dispassionately, demanding that claims be backed by evidence, deducing and inferring conclusions from available facts, solving problems, and so forth. Then too, there are specific types of critical thinking that are characteristic of different subject matter: That's what we mean when we refer to "thinking like a scientist" or "thinking like a historian."

This proper and commonsensical goal has very often been translated into calls to teach "critical thinking skills" and "higher-order thinking skills"—and into generic calls for teaching students to make better judgments, reason more logically, and so forth. In a recent survey of human resource officials¹ and in testimony delivered just a few months ago before the Senate Finance Committee,² business leaders have repeatedly exhorted schools to do a better job of teaching students to think critically. And they are not alone. Organizations and initiatives involved in education reform, such as the National Center on Education and the Economy, the American Diploma Project, and the Aspen Institute, have pointed out the need for students

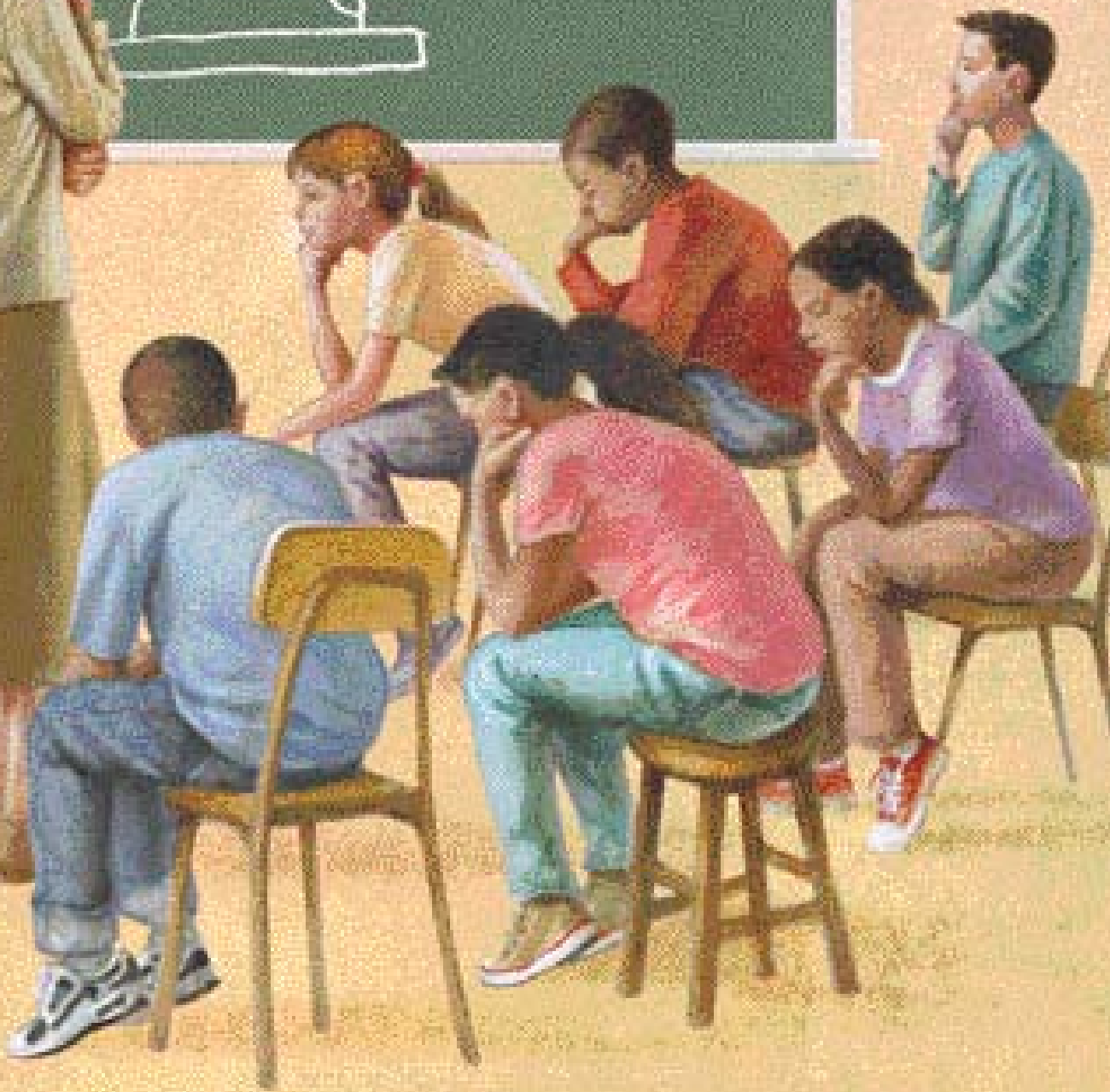
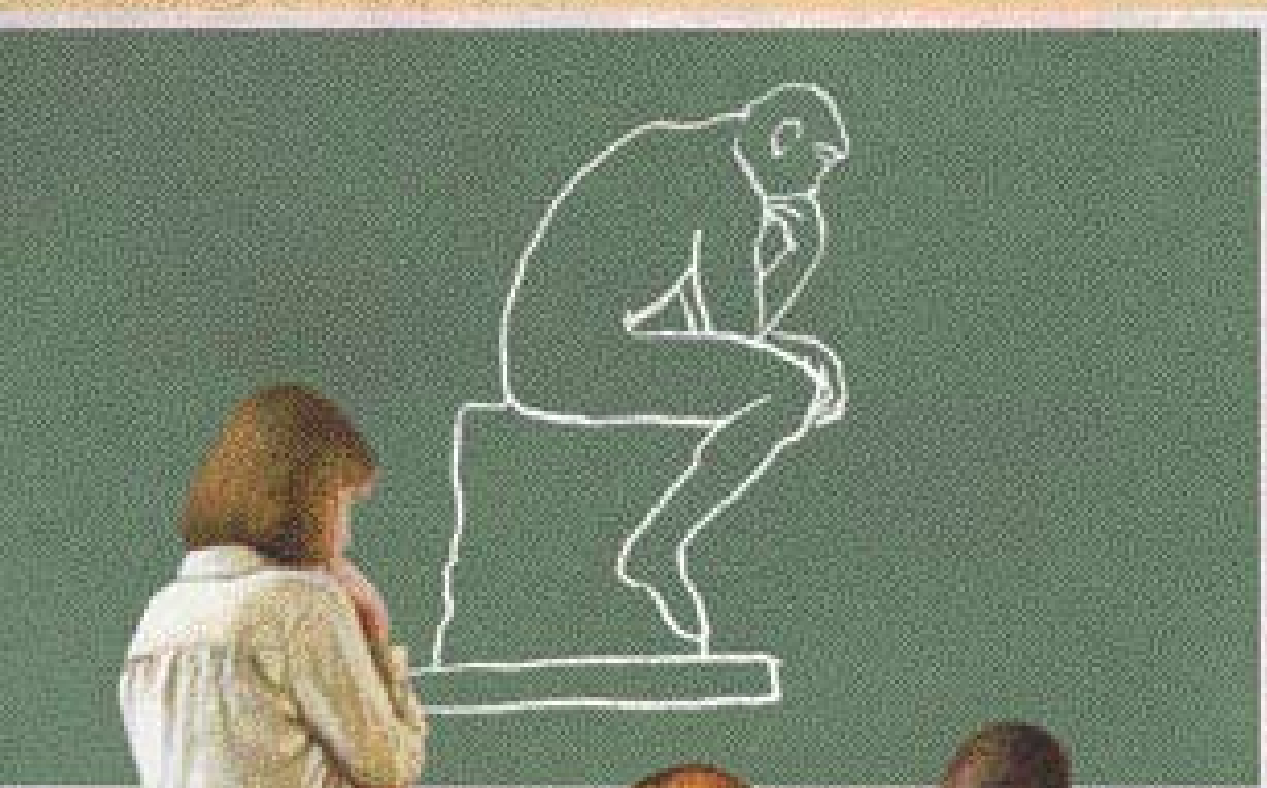
*Daniel T. Willingham is professor of cognitive psychology at the University of Virginia and author of *Cognition: The Thinking Animal* as well as over 50 articles. With Barbara Spellman, he edited *Current Directions in Cognitive Science*. He regularly contributes to *American Educator* by writing the "Ask the Cognitive Scientist" column. His research focuses on the role of consciousness in learning.*

to think and/or reason critically. The College Board recently revamped the SAT to better assess students' critical thinking. And ACT, Inc. offers a test of critical thinking for college students.

These calls are not new. In 1983, *A Nation At Risk*, a report by the National Commission on Excellence in Education, found that many 17-year-olds did not possess the "higher-order" intellectual skills" this country needed. It claimed that nearly 40 percent could not draw inferences from written material and only one-fifth could write a persuasive essay.

Following the release of *A Nation At Risk*, programs designed to teach students to think critically across the curriculum became extremely popular. By 1990, most states had initiatives designed to encourage educators to teach critical thinking, and one of the most widely used programs, *Tactics for Thinking*, sold 70,000 teacher guides.³ But, for reasons I'll explain, the programs were not very effective—and today we still lament students' lack of critical thinking.

After more than 20 years of lamentation, exhortation, and little improvement, maybe it's time to ask a fundamental question: Can critical thinking actually be taught? Decades of cognitive research point to a disappointing answer: not really. People who have sought to teach critical thinking have assumed that it is a skill, like riding a bicycle, and that, like other skills, once you learn it, you can apply it in any situation. Research from cognitive science shows that thinking is not that sort of skill. The processes of thinking are intertwined with the content of thought (that is, domain knowledge). Thus, if you remind a student to "look at an issue from multiple perspectives" often enough, he will learn that he ought to do so, but if he doesn't know much about



Critical thinking is not a set of skills that can be deployed at any time, in any context. It is a type of thought that even 3-year-olds can engage in—and even trained scientists can fail in.



an issue, he *can't* think about it from multiple perspectives. You can teach students maxims about how they ought to think, but without background knowledge and practice, they probably will not be able to implement the advice they memorize. Just as it makes no sense to try to teach factual content without giving students opportunities to practice using it, it also makes no sense to try to teach critical thinking devoid of factual content.

In this article, I will describe the nature of critical thinking, explain why it is so hard to do and to teach, and explore how students acquire a specific type of critical thinking: thinking scientifically. Along the way, we'll see that critical thinking is not a set of skills that can be deployed at any time, in any context. It is a type of thought that even 3-year-olds can engage in—and even trained scientists can fail in. And it is very much dependent on domain knowledge and practice.

Why Is Thinking Critically So Hard?

Educators have long noted that school attendance and even academic success are no guarantee that a student will graduate an effective thinker in all situations. There is an odd tendency for rigorous thinking to cling to particular examples or types of problems. Thus, a student may have learned to estimate the answer to a math problem before beginning calculations as a way of checking the accuracy of his answer, but in the chemistry lab, the same student calculates the components of a compound without noticing that his estimates sum to more than 100 percent. And a student who has learned to thoughtfully discuss the causes of the American Revolution from both the British and American perspectives doesn't even think to question how the Germans viewed World War II. Why are students able to think critically in one situation, but not in another? The brief answer is: Thought processes are intertwined with what is being thought about. Let's explore this in depth by looking at a particular kind of critical thinking that has been studied extensively: problem solving.

Imagine a seventh-grade math class immersed in word problems. How is it that students will be able to answer one problem, but not the next, even though mathematically both word problems are the same, that is, they rely on the same mathematical knowledge? Typically, the students are focusing on the scenario that the word problem describes (its surface structure) instead of on the mathematics required to solve it (its deep structure). So even though students have been taught how to solve a particular type of word problem, when the teacher or textbook changes the scenario, students still struggle to apply the solution because they don't recognize that the problems are mathematically the same.

Thinking Tends to Focus on a Problem's "Surface Structure"

To understand why the surface structure of a problem is so distracting and, as a result, why it's so hard to apply familiar solutions to problems that appear new, let's first consider how you understand what's being asked when you are given a problem. Anything you hear or read is automatically interpreted in light of what you already know about similar subjects. For example, suppose you read these two sentences: "After years of pressure from the film and television industry, the President has filed a formal complaint with China over what U.S. firms say is copyright infringement. These firms assert that the Chinese government sets stringent trade restrictions for U.S. entertainment products, even as it turns a blind eye to Chinese companies that copy American movies and television shows and sell them on the black market." Background knowledge not only allows you to comprehend the sentences, it also has a powerful effect as you continue to read because it narrows the interpretations of new text that you will entertain. For example, if you later read the word "Bush," it would not make you think of a small shrub, nor would you wonder whether it referred to the former President Bush, the rock

How Do Cognitive Scientists Define Critical Thinking?

From the cognitive scientist's point of view, the mental activities that are typically called critical thinking are actually a subset of three types of thinking: reasoning, making judgments and decisions, and problem solving. I say that critical thinking is a subset of these because we think in these ways all the time, but only sometimes in a critical way. Deciding to read this article, for example, is not critical thinking. But carefully weighing the evidence it presents in order to decide whether or not to believe what it says is. *Critical* rea-

soning, decision making, and problem solving—which, for brevity's sake, I will refer to as critical thinking—have three key features: effectiveness, novelty, and self-direction. Critical thinking is effective in that it avoids common pitfalls, such as seeing only one side of an issue, discounting new evidence that disconfirms your ideas, reasoning from passion rather than logic, failing to support statements with evidence, and so on. Critical thinking is novel in that you don't simply remember a solution or a

situation that is similar enough to guide you. For example, solving a complex but familiar physics problem by applying a multi-step algorithm isn't critical thinking because you are really drawing on memory to solve the problem. But devising a new algorithm is critical thinking. Critical thinking is self-directed in that the thinker must be calling the shots: We wouldn't give a student much credit for critical thinking if the teacher were prompting each step he took.

—D.W.

band, or a term for rural hinterlands. If you read "piracy," you would not think of eye-patched swabbies shouting "shiver me timbers!" The cognitive system gambles that incoming information will be related to what you've just been thinking about. Thus, it significantly narrows the scope of possible interpretations of words, sentences, and ideas. The benefit is that comprehension proceeds faster and more smoothly; the cost is that the deep structure of a problem is harder to recognize.

The narrowing of ideas that occurs while you read (or listen) means that you tend to focus on the surface structure, rather than on the underlying structure of the problem. For example, in one experiment,⁴ subjects saw a problem like this one:

Members of the West High School Band were hard at work practicing for the annual Homecoming Parade. First they tried marching in rows of 12, but Andrew was left by himself to bring up the rear. Then the director told the band members to march in columns of eight, but Andrew was still left to march alone. Even when the band marched in rows of three, Andrew was left out. Finally, in exasperation, Andrew told the band director that they should march in rows of five in order to have all the rows filled. He was right. Given that there were at least 45 musicians on the field but fewer than 200 musicians, how many students were there in the West High School Band?

Earlier in the experiment, subjects had read four problems along with detailed explanations of how to solve each one, ostensibly to rate them for the clarity of the writing. One of the four problems concerned the number of vegetables to buy for a garden, and it relied on the same type of solution necessary for the band problem—calculation of the least common multiple. Yet, few subjects—just 19 percent—saw that the band problem was similar and that they could use the garden problem solution. Why?

When a student reads a word problem, her mind inter-

prets the problem in light of her prior knowledge, as happened when you read the two sentences about copyrights and China. The difficulty is that the knowledge that seems relevant relates to the surface structure—in this problem, the reader dredges up knowledge about bands, high school, musicians, and so forth. The student is unlikely to read the problem and think of it in terms of its deep structure—using the least common multiple. The surface structure of the problem is overt, but the deep structure of the problem is not. Thus, people fail to use the first problem to help them solve the second: In their minds, the first was about vegetables in a garden and the second was about rows of band marchers.

With Deep Knowledge, Thinking Can Penetrate Beyond Surface Structure

If knowledge of how to solve a problem never transferred to problems with new surface structures, schooling would be inefficient or even futile—but of course, such transfer does occur. When and why is complex,⁵ but two factors are especially relevant for educators: familiarity with a problem's deep structure and the knowledge that one should look for a deep structure. I'll address each in turn.

When one is very familiar with a problem's deep-structure, knowledge about how to solve it transfers well. That familiarity can come from long-term, repeated experience with one problem, or with various manifestations of one type of problem (i.e., many problems that have different surface structures, but the same deep structure). After repeated exposure to either or both, the subject simply perceives the deep structure as part of the problem description. Here's an example:

A treasure hunter is going to explore a cave up on a hill near a beach. He suspected there might be many paths inside the cave so he was afraid he might get lost. Obviously, he did not have a map of the cave; all he had with him were some common items such as a flashlight and

a bag. What could he do to make sure he did not get lost trying to get back out of the cave later?

The solution is to carry some sand with you in the bag, and leave a trail as you go, so you can trace your path back when you're ready to leave the cave. About 75 percent of American college students thought of this solution—but only 25 percent of Chinese students solved it.⁶ The experimenters suggested that Americans solved it because most grew up hearing the story of Hansel and Gretel, which includes the idea of leaving a trail as you travel to an unknown place in order to find your way back. The experimenters also gave subjects another puzzle based on a common Chinese folk tale, and the percentage of solvers from each culture reversed. (To read the puzzle based on the Chinese folk tale, and the tale itself, go to www.aft.org/pubs-reports/american_educator/index.htm.)

It takes a good deal of practice with a problem type before students know it well enough to immediately recognize its deep structure, irrespective of the surface structure, as Americans did for the Hansel and Gretel problem. American subjects didn't think of the problem in terms of sand, caves, and treasure; they thought of it in terms of finding something with which to leave a trail. The deep structure of the problem is so well represented in their memory, that they immediately saw that structure when they read the problem.

Looking for a Deep Structure Helps, but It Only Takes You So Far

Now let's turn to the second factor that aids in transfer despite distracting differences in surface structure—knowing to look for a deep structure. Consider what would happen if I said to a student working on the band prob-

Critical Thinking Programs: Lots of Time, Modest Benefit

Since the ability to think critically is a primary goal of education, it's no surprise that people have tried to develop programs that could directly teach students to think critically without immersing them in any particular academic content. But the evidence shows that such programs primarily improve students' thinking with the sort of problems they practiced in the program—not with other types of problems. More generally, it's doubtful that a program that effectively teaches students to think critically in a variety of situations will ever be developed.

As the main article explains, the ability to think critically depends on having adequate content knowledge; you can't think critically about topics you know little about or solve problems that you don't know well enough to recognize and execute the type of solutions they call for.

Nonetheless, these programs do help us better understand what can be taught, so they are worth reviewing briefly.

A large number of programs¹ designed to make students better thinkers are available, and they have

some features in common. They are premised on the idea that there is a set of critical thinking skills that can be applied and practiced across content domains. They are designed to supplement regular curricula, not to replace them, and so they are not tied to particular content areas such as language arts, science, or social studies. Many programs are intended to last about three years, with several hours of instruction (delivered in one or two lessons) per week. The programs vary in how they deliver this instruction and practice. Some use abstract problems such as finding patterns in meaningless figures (Reuven Feuerstein's Instrumental Enrichment), some use mystery stories (Martin Covington's Productive Thinking), some use group discussion of interesting problems that one might encounter in daily life (Edward de Bono's Cognitive Research Trust, or CoRT), and so on. However it is implemented, each program introduces students to examples of critical thinking and then requires that the students practice such thinking themselves.

How well do these programs work? Many researchers have tried

to answer that question, but their studies tend to have methodological problems.² Four limitations of these studies are especially typical, and they make any effects suspect: 1) students are evaluated just once after the program, so it's not known whether any observed effects are enduring; 2) there is not a control group, leaving it unclear whether gains are due to the thinking program, to other aspects of schooling, or to experiences outside the classroom; 3) the control group does not have a comparison intervention, so any positive effects found may be due, for example, to the teacher's enthusiasm for something new, not the program itself; and 4) there is no measure of whether or not students can transfer their new thinking ability to materials that differ from those used in the program. In addition, only a small fraction of the studies have undergone peer review (meaning that they have been impartially evaluated by independent experts). Peer review is crucial because it is known that researchers unconsciously bias the design and analysis of their research to favor the conclusions they hope to see.³

lem, “this one is similar to the garden problem.” The student would understand that the problems must share a deep structure and would try to figure out what it is. Students can do something similar without the hint. A student might think “I’m seeing this problem in a math class, so there must be a math formula that will solve this problem.” Then he could scan his memory (or textbook) for candidates, and see if one of them helps. This is an example of what psychologists call metacognition, or regulating one’s thoughts. In the introduction, I mentioned that you can teach students maxims about how they ought to think. Cognitive scientists refer to these maxims as metacognitive strategies. They are little chunks of knowledge—like “look for a problem’s deep structure” or “consider both sides of an issue”—that students can learn and then use to steer their thoughts in more productive directions.

Helping students become better at regulating their

thoughts was one of the goals of the critical thinking programs that were popular 20 years ago. As the sidebar below explains, these programs are not very effective. Their modest benefit is likely due to teaching students to effectively use metacognitive strategies. Students learn to avoid biases that most of us are prey to when we think, such as settling on the first conclusion that seems reasonable, only seeking evidence that confirms one’s beliefs, ignoring countervailing evidence, overconfidence, and others.⁷ Thus, a student who has been encouraged many times to see both sides of an issue, for example, is probably more likely to spontaneously think “I should look at both sides of this issue” when working on a problem.

Unfortunately, metacognitive strategies can only take you so far. Although they suggest what you ought to do, they don’t provide the knowledge necessary to implement the strategy. For example, when experimenters told sub-

Studies of the Philosophy for Children program may be taken as typical. Two researchers⁴ identified eight studies that evaluated academic outcomes and met minimal research-design criteria. (Of these eight, only one had been subjected to peer review.) Still, they concluded that three of the eight had identifiable problems that clouded the researchers’ conclusions. Among the remaining five studies, three measured reading ability, and one of these reported a significant gain. Three studies measured reasoning ability, and two reported significant gains. And, two studies took more impressionistic measures of student’s participation in class (e.g., generating ideas, providing reasons), and both reported a positive effect.

Despite the difficulties and general lack of rigor in evaluation, most researchers reviewing the literature conclude that some critical thinking programs do have some positive effect.⁵ But these reviewers offer two important caveats. First, as with almost any educational endeavor, the success of the program depends on the skill of the teacher. Second, thinking programs look good when the outcome measure is quite similar to the material in the program. As one tests for transfer to more and more dissimilar material, the apparent effectiveness of the program

Knowing that one should think critically is not the same as being able to do so. That requires domain knowledge and practice.

rapidly drops.

Both the conclusion and the caveats make sense from the cognitive scientist’s point of view. It is not surprising that the success of the program depends on the skill of the teacher. The developers of the programs cannot anticipate all of the ideas—right or wrong—that students will generate as they practice thinking critically, so it is up to the teacher to provide the all-important feedback to the students.

It is also reasonable that the programs should lead to gains in abilities that are measured with materials similar to those used in the program.

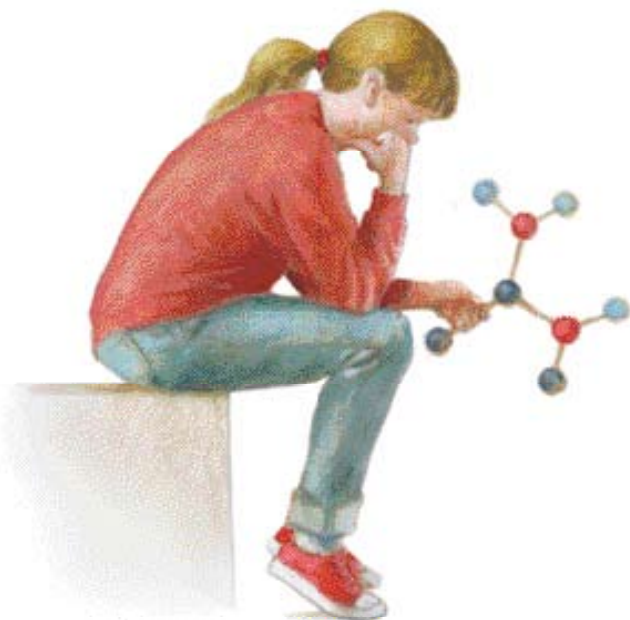
The programs that include puzzles like those found on IQ tests, for instance, report gains in IQ scores. In an earlier column,* I described a bedrock principle of memory: You remember what you think about. The same goes for critical thinking: You learn to think critically in the ways in which you practice thinking critically. If you practice logic puzzles with an effective teacher, you are likely to get better at solving logic puzzles. But substantial improvement requires a great deal of practice. Unfortunately, because critical thinking curricula include many different types of problems, students typically don’t get enough practice with any one type of problem. As explained in the main article, the modest benefits that these programs seem to produce are likely due to teaching students metacognitive strategies—like “look at both sides of an issue”—that cue them to try to think critically. But knowing that one should think critically is not the same as being able to do so. That requires domain knowledge and practice.

—D.W.

*See “Students Remember ... What They Think About” in the Summer 2003 issue of *American Educator*; online at www.aft.org/pubs-reports/american_educator/summer2003/cogsci.html.

(*Endnotes on page 19*)

Teaching students to think critically probably lies in large part in enabling them to deploy the right type of thinking at the right time.



jects working on the band problem that it was similar to the garden problem, more subjects solved the problem (35 percent compared to 19 percent without the hint), but most subjects, even when told what to do, weren't able to do it. Likewise, you may know that you ought not accept the first reasonable-sounding solution to a problem, but that doesn't mean you know how to come up with alternative solutions or weigh how reasonable each one is. That requires domain knowledge and practice in putting that knowledge to work.

Since critical thinking relies so heavily on domain knowledge, educators may wonder if thinking critically in a particular domain is easier to learn. The quick answer is yes, it's a *little* easier. To understand why, let's focus on one domain, science, and examine the development of scientific thinking.

Is Thinking Like a Scientist Easier?

Teaching science has been the focus of intensive study for decades, and the research can be usefully categorized into two strands. The first examines how children acquire scientific concepts; for example, how they come to forgo naive

conceptions of motion and replace them with an understanding of physics. The second strand is what we would call thinking scientifically, that is, the mental procedures by which science is conducted: developing a model, deriving a hypothesis from the model, designing an experiment to test the hypothesis, gathering data from the experiment, interpreting the data in light of the model, and so forth.[†] Most researchers believe that scientific thinking is really a subset of reasoning that is not different in kind from other types of reasoning that children and adults do.⁸ What makes it *scientific* thinking is knowing when to engage in such reasoning, and having accumulated enough relevant knowledge and spent enough time practicing to do so.

Recognizing *when* to engage in scientific reasoning is so important because the evidence shows that being able to reason is not enough; children and adults use *and* fail to use the proper reasoning processes on problems that seem similar. For example, consider a type of reasoning about cause and effect that is very important in science: conditional probabilities. If two things go together, it's possible that one causes the other. Suppose you start a new medicine and notice that you seem to be getting headaches more often than usual. You would infer that the medication influenced your chances of getting a headache. But it could also be that the medication increases your chances of getting a headache only in certain circumstances or conditions. In conditional probability, the relationship between two things (e.g., medication and headaches) is dependent on a third factor. For example, the medication might increase the probability of a headache *only* when you've had a cup of coffee. The relationship of the medication and headaches is conditional on the presence of coffee.

Understanding and using conditional probabilities is essential to scientific thinking because it is so important in reasoning about what causes what. But people's success in thinking this way depends on the particulars of how the question is presented. Studies show that adults sometimes use conditional probabilities successfully,⁹ but fail to do so with many problems that call for it.¹⁰ Even trained scientists are open to pitfalls in reasoning about conditional probabilities (as well as other types of reasoning). Physicians are known to discount or misinterpret new patient data that conflict with a diagnosis they have in mind,¹¹ and Ph.D.-level scientists are prey to faulty reasoning when faced with a problem embedded in an unfamiliar context.¹²

And yet, young children are sometimes able to reason about conditional probabilities. In one experiment,¹³ the researchers showed 3-year-olds a box and told them it was a "blicket detector" that would play music if a blicket

† These two strands are the most often studied, but these two approaches—content and process of science—are incomplete. Underemphasized in U.S. classrooms are the many methods of scientific study, and the role of theories and models in advancing scientific thought.

‡ Although this is not highly relevant for K-12 teachers, it is important to note that for people with extensive training, such as Ph.D.-level scientists, critical thinking does have some skill-like characteristics. In particular, they are better able to deploy critical reasoning with a wide variety of content, even that with which they are not very familiar. But, of course, this does not mean that they will never make mistakes.

“Teaching content alone is not likely to lead to proficiency in science, nor is engaging in inquiry experiences devoid of meaningful science content.”

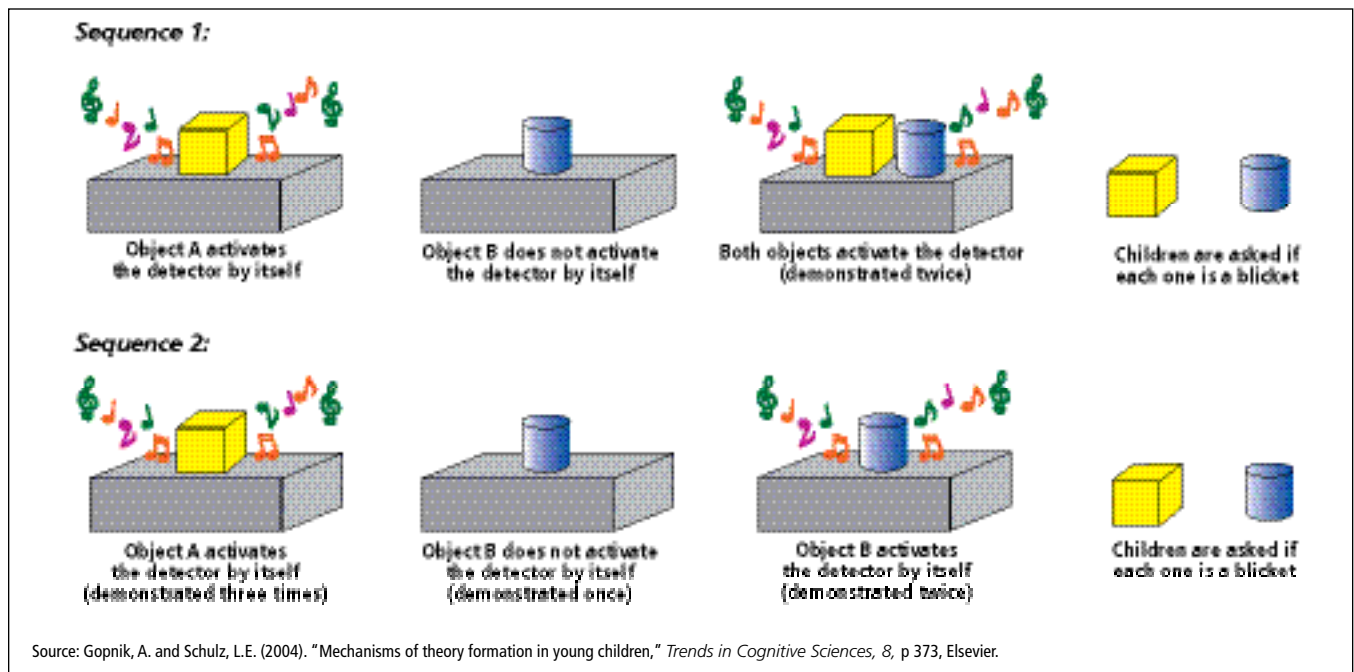
—National Research Council

Note that the relationship between each individual block (yellow cube and blue cylinder) and the music is the same in sequences 1 and 2. In either sequence, the child sees the yellow cube associated with music three times, and the blue cylinder associated with the absence of music once and the presence of music twice. What differs between the first and second sequence is the relationship between the blue and yellow blocks, and therefore, the conditional probability of each block being a blicket. Three-year-olds understood the importance of conditional probabilities. For sequence 1, they said the yellow cube was a blicket, but the blue cylinder was not; for sequence 2, they chose equally between the two blocks.

This body of studies has been summarized simply: Children are not as dumb as you might think, and adults (even trained scientists) are not as smart as you might think. What’s going on? One issue is that the common conception of critical thinking or scientific thinking (or historical thinking) as a set of skills is not accurate. Critical thinking does not have certain characteristics normally associated with skills—in particular, being able to use that skill at any time. If I told you that I learned to read music, for example, you would expect, correctly, that I could use my new skill (i.e., read music) whenever I wanted. But critical thinking is very different. As we saw in the discussion of conditional probabilities, people can engage in some types of critical thinking without training, but even with extensive training, they will sometimes fail to think critically. This understanding that critical thinking is not a skill is vital.* It tells us that teaching students to think critically probably lies in small part in showing them new ways of thinking, and in large part in enabling them to deploy the right type of thinking at the right time.

Returning to our focus on science, we’re ready to address a key question: Can students be taught when to

were placed on top. The child then saw one of the two sequences shown below in which blocks are placed on the blicket detector. At the end of the sequence, the child was asked whether each block was a blicket. In other words, the child was to use conditional reasoning to infer which block caused the music to play.



engage in scientific thinking? Sort of. It is easier than trying to teach general critical thinking, but not as easy as we would like. Recall that when we were discussing problem solving, we found that students can learn metacognitive strategies that help them look past the surface structure of a problem and identify its deep structure, thereby getting them a step closer to figuring out a solution. Essentially the same thing can happen with scientific thinking. Students can learn certain metacognitive strategies that will cue them to think scientifically. But, as with problem solving, the metacognitive strategies only tell the students what they should do—they do not provide the knowledge

that students need to actually do it. The good news is that within a content area like science, students have more context cues to help them figure out which metacognitive strategy to use, and teachers have a clearer idea of what domain knowledge they must teach to enable students to do what the strategy calls for.

For example, two researchers¹⁴ taught second-, third-, and fourth-graders the scientific concept behind controlling variables; that is, of keeping everything in two comparison conditions the same, except for the one variable that is the focus of investigation. The experimenters gave explicit instruction about this strategy for conducting experiments and then had students practice with a set of materials (e.g., springs) to answer a specific question (e.g., which of these factors determine how far a spring will stretch: length, coil diameter, wire diameter, or weight?). The experimenters found that students not only understood the concept of controlling variables, they were able to apply it seven months later with different materials and a different experimenter, although the older children showed more robust transfer than the younger children. In this case, the students recognized that they were designing an experiment and that cued them to recall the metacognitive strategy, “When I design experiments, I should try to control variables.” Of course, succeeding in controlling all of the relevant variables is another matter—that depends on knowing which variables may matter and how they could vary.

Why Scientific Thinking Depends on Scientific Knowledge

Experts in teaching science recommend that scientific reasoning be taught in the context of rich subject matter knowledge. A committee of prominent science educators brought together by the National Research Council¹⁵ put it plainly: “Teaching content alone is not likely to lead to proficiency in science, nor is engaging in inquiry experiences devoid of meaningful science content.”

The committee drew this conclusion based on evidence that background knowledge is necessary to

Did Sherlock Holmes Take a Course in Critical Thinking?

No one better exemplifies the power of broad, deep knowledge in driving critical thinking than Sherlock Holmes. In his famous first encounter with Dr. Watson, Holmes greets him with this observation: “You have been in Afghanistan, I perceive.” Watson is astonished—how could Holmes have known? Eventually Holmes explains his insight, which turns not on incredible intelligence or creativity or wild guessing, but on having relevant knowledge. Holmes is told that Watson is a doctor; everything else he deduces by drawing on his knowledge of, among other things, the military, geography, how injuries heal, and current events. Here’s how Holmes explains his thought process:

I knew you came from Afghanistan. From long habit the train of thoughts ran so swiftly through my mind, that I arrived at the conclusion without being conscious of intermediate steps. There were such steps, however. The train of reasoning ran, “Here is a gentleman of a medical type, but with

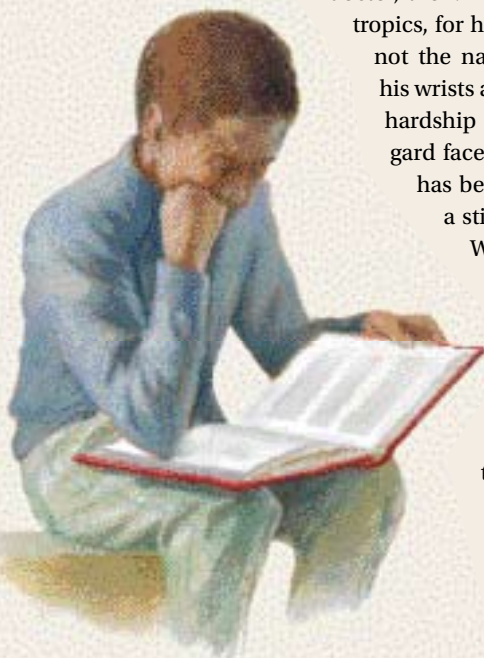
the air of a military man. Clearly an army doctor, then. He has just come from the tropics, for his face is dark, and that is not the natural tint of his skin, for his wrists are fair. He has undergone hardship and sickness, as his haggard face says clearly. His left arm has been injured. He holds it in a stiff and unnatural manner.

Where in the tropics could an English army doctor have seen much hardship and got his arm wounded?

Clearly in Afghanistan.” The whole train of thought did not occupy a second. I then remarked that you came from Afghanistan, and you were astonished.

—EDITORS

Source: *A Study in Scarlet* by Sir Arthur Conan Doyle.



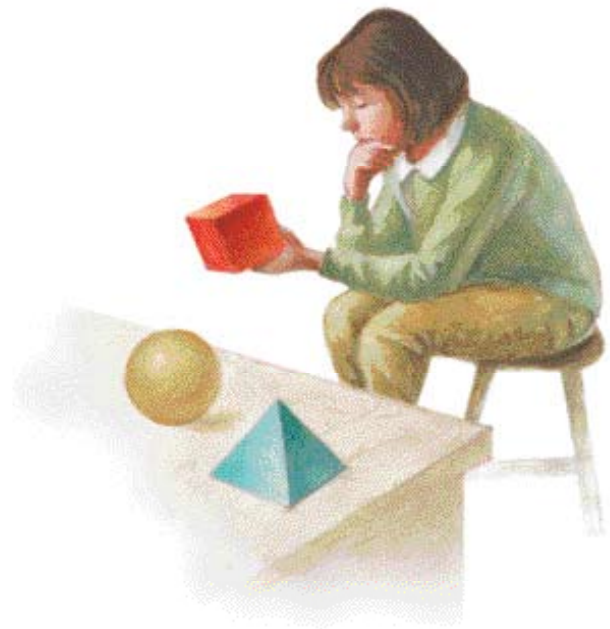
engage in scientific thinking. For example, knowing that one needs a control group in an experiment is important. Like having two comparison conditions, having a control group in addition to an experimental group helps you focus on the variable you want to study. But knowing that you need a control group is not the same as being able to create one. Since it's not always possible to have two groups that are *exactly* alike, knowing which factors can vary between groups and which must not vary is one example of necessary background knowledge. In experiments measuring how quickly subjects can respond, for example, control groups must be matched for age, because age affects response speed, but they need not be perfectly matched for gender.

More formal experimental work verifies that background knowledge is necessary to reason scientifically. For example, consider devising a research hypothesis. One could generate multiple hypotheses for any given situation. Suppose you know that car A gets better gas mileage than car B and you'd like to know why. There are many differences between the cars, so which will you investigate first? Engine size? Tire pressure? A key determinant of the hypothesis you select is plausibility. You won't choose to investigate a difference between cars A and B that you think is unlikely to contribute to gas mileage (e.g., paint color), but if someone provides a reason to make this factor more plausible (e.g., the way your teenage son's driving habits changed after he painted his car red), you are more likely to say that this now-plausible factor should be investigated.¹⁶ One's judgment about the plausibility of a factor being important is based on one's knowledge of the domain.

Other data indicate that familiarity with the domain makes it easier to juggle different factors simultaneously, which in turn allows you to construct experiments that simultaneously control for more factors. For example, in one experiment,¹⁷ eighth-graders completed two tasks. In one, they were to manipulate conditions in a computer simulation to keep imaginary creatures alive. In the other, they were told that they had been hired by a swimming pool company to evaluate how the surface area of swimming pools was related to the cooling rate of its water. Students were more adept at designing experiments for the first task than the second, which the researchers interpreted as being due to students' familiarity with the relevant variables. Students are used to thinking about factors that might influence creatures' health (e.g., food, predators), but have less experience working with factors that might influence water temperature (e.g., volume, surface area). Hence, it is not the case that "controlling variables in an experiment" is a pure process that is not affected by subjects' knowledge of those variables.

Prior knowledge and beliefs not only influence which hypotheses one chooses to test, they influence how one interprets data from an experiment. In one experiment,¹⁸ undergraduates were evaluated for their knowledge of electrical circuits. Then they participated in three weekly, 1.5-hour sessions during which they designed and con-

Subjects who started with more and better integrated knowledge planned more informative experiments and made better use of experimental outcomes.



ducted experiments using a computer simulation of circuitry, with the goal of learning how circuitry works. The results showed a strong relationship between subjects' initial knowledge and how much subjects learned in future sessions, in part due to how the subjects interpreted the data from the experiments they had conducted. Subjects who started with more and better integrated knowledge planned more informative experiments and made better use of experimental outcomes.

Other studies have found similar results, and have found that anomalous, or unexpected, outcomes may be particularly important in creating new knowledge—and particularly dependent upon prior knowledge.¹⁹ Data that

Teaching Critical Thinking

Teaching students to think critically is high on any teacher's to-do list. So what strategies are consistent with the research?

■ **Special programs aren't worth it.** In the sidebar on page 12, I've mentioned a few of the better known programs. Despite their widespread availability, the evidence that these programs succeed in teaching students to think critically, especially in novel situations, is very limited. The modest boost that such programs may provide should be viewed, as should all claims of educational effectiveness, in light of their opportunity costs. Every hour students spend on the program is an hour they won't be learning something else.

■ **Thinking critically should be taught in the context of subject matter.** The foregoing does not mean that teachers shouldn't teach students to think critically—it means that critical thinking shouldn't be taught on its own. People do not spontaneously examine assumptions that underlie their thinking, try to consider all sides of an issue, question what they know, etc. These things must be modeled for students, and students must be given opportunities to practice—preferably in the context of normal classroom activity. This is true not only for science (as discussed in the main article), but for other subject matter. For example, an important part of thinking like a historian is considering the source of a document—who wrote it, when, and why. But teaching students to ask that question, independent of subject matter knowledge, won't do much good. Knowing that a letter was written by a Confederate private to his wife in New Orleans just after the Battle of Vicksburg won't help the student interpret the letter unless he knows something of Civil War history.

■ **Critical thinking is not just for advanced students.** I have sometimes heard teachers and administrators suggest that critical thinking exercises make a good enrichment activity for the best students, but struggling students should just be expected to understand and master more basic material. This argument sells short the less advanced students and conflicts with what cognitive scientists know about thinking. Virtually everyone is capable of critical thinking and uses it all the time—and, as the conditional probabilities research demonstrated (see p. 15), has been capable of doing so since they were very young. The difficulty lies not in thinking critically, but in recognizing when to do so, and in knowing enough to do so successfully.

■ **Student experiences offer entrée to complex concepts.** Although critical thinking needs to be nested in subject matter, when students don't have much subject matter knowledge, introducing a concept by drawing on student experiences can help. For example, the importance of a source in evaluating a historical document is familiar to even young children; deepening their understanding is a matter of asking questions that they have the knowledge to grapple with. Elementary school teachers could ask: Would a letter to a newspaper editor that criticized the abolishment of recess be viewed differently if written by a school principal versus a third-grader? Various concepts that are central to scientific thinking can also be taught with examples that draw on students' everyday knowledge and experience. For example, "correlation does not imply causation" is often illustrated by the robust association between the consumption of ice cream and the number of crimes committed on a given day. With a little prodding, students soon realize that ice cream consumption doesn't

Knowing that a letter was written by a Confederate private to his wife in New Orleans just after the Battle of Vicksburg won't help the student interpret the letter—unless he knows something of Civil War history.

cause crime, but high temperatures might cause increases in both.

■ **To teach critical thinking strategies, make them explicit and practice them.** Critical thinking strategies are abstractions. A plausible approach to teaching them is to make them explicit, and to proceed in stages. The first time (or several times) the concept is introduced, explain it with at least two different examples (possibly examples based on students' experiences, as discussed above), label it so as to identify it as a strategy that can be applied in various contexts, and show how it applies to the course content at hand. In future instances, try naming the appropriate critical thinking strategy to see if students remember it and can figure out how it applies to the material under discussion. With still more practice, students may see which strategy applies without a cue from you.

—D.W.

seem odd because they don't fit one's mental model of the phenomenon under investigation are highly informative. They tell you that your understanding is incomplete, and they guide the development of new hypotheses. But you could only recognize the outcome of an experiment as anomalous if you had some expectation of how it would turn out. And that expectation would be based on domain knowledge, as would your ability to create a new hypothesis that takes the anomalous outcome into account.

The idea that scientific thinking must be taught hand in hand with scientific content is further supported by research on scientific problem solving; that is, when students calculate an answer to a textbook-like problem, rather than design their own experiment. A meta-analysis²⁰ of 40 experiments investigating methods for teaching scientific problem solving showed that effective approaches were those that focused on building complex, integrated knowledge bases as part of problem solving, for example by including exercises like concept mapping. Ineffective approaches focused exclusively on the strategies to be used in problem solving while ignoring the knowledge necessary for the solution.

What do all these studies boil down to? First, critical thinking (as well as scientific thinking and other domain-based thinking) is not a skill. There is not a set of critical thinking skills that can be acquired and deployed regardless of context. Second, there are metacognitive strategies that, once learned, make critical thinking more likely. Third, the ability to think critically (to actually do what the metacognitive strategies call for) depends on domain knowledge and practice. For teachers, the situation is not hopeless, but no one should underestimate the difficulty of teaching students to think critically. □

Endnotes

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The Quest for Professional Voice

*Why It Has Been—and Continues to Be—
High on Our Teacher Union Agenda*

By Leo Casey

For all of the conflicts that divide American education today, there is a remarkably broad consensus on one central idea: The classroom teacher makes a huge difference in the successful education of a student.¹ This insight has been commonplace among educators and parents, but more recently it has been confirmed by powerful statistical studies.² It is now widely agreed that a qualified, experienced teacher, expert in pedagogy and in subject material, has more of a positive effect on a student's learning than any other school factor, including class size, quality of the academic program and curriculum, and school mission and size. By contrast, unprepared and inexperienced teachers lacking the fundamental tools and essential knowledge of teaching have a negative effect on a student's learning, and a student seldom recovers from having such teachers three years in a row. Accomplished teachers are particularly important in the education of struggling students, and in bridging the achievement gap for poor students and students of color.

Today's critical question is this: How can we ensure that

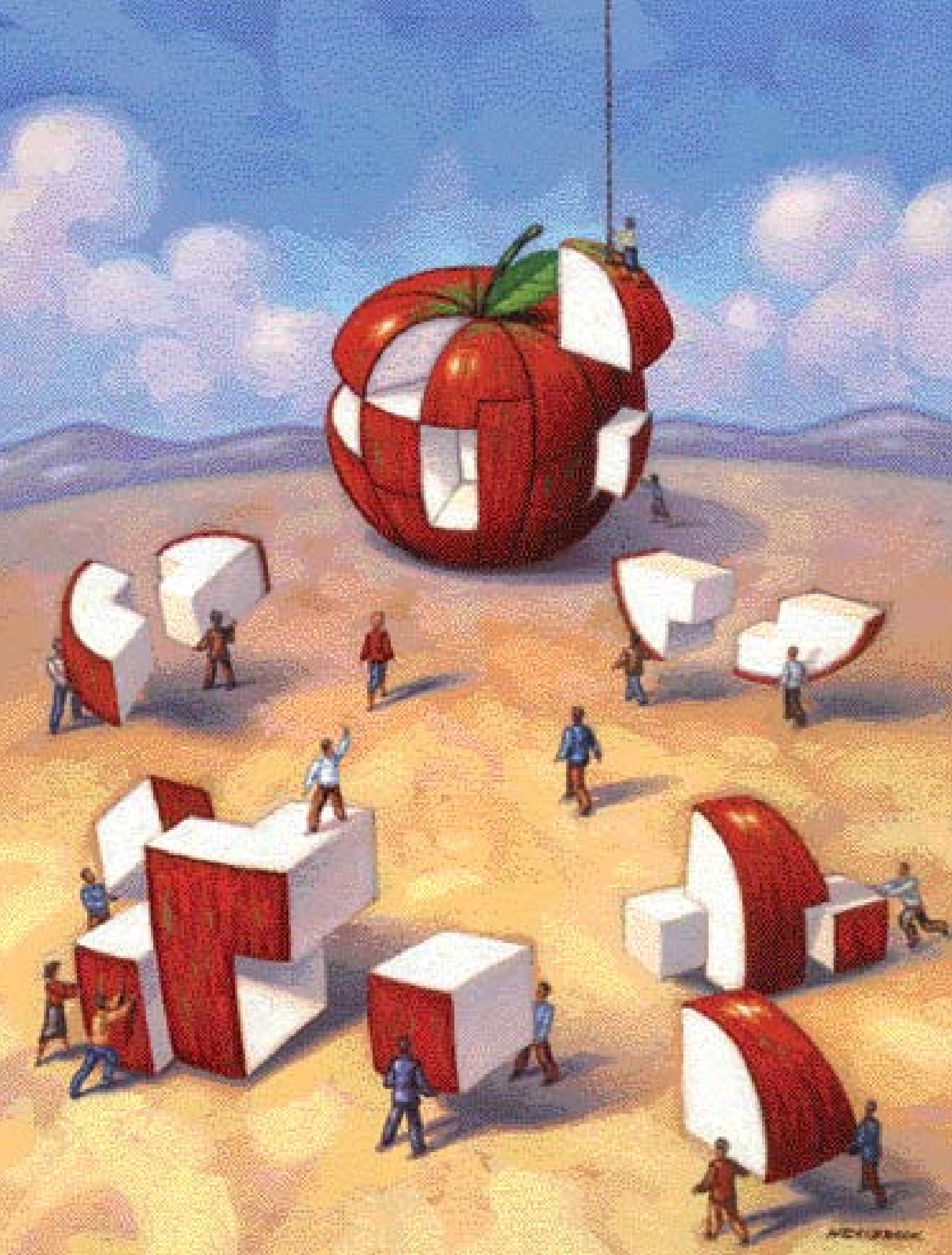
*Leo Casey is special representative for high schools for New York City's United Federation of Teachers. Previously, he taught for 14 years in the Crown Heights section of Brooklyn, where his classes regularly won city and state championships, and placed as high as fourth in the nation in the "We the People" civics competition. Casey was the American Teacher Awards' 1992 Social Studies Teacher of the Year. He holds a doctorate in political philosophy and has published on education, civics, and teacher unionism. Portions of this article first appeared in *Collective Bargaining in Education*, Jane Hannaway and Andrew J. Rotherham (eds.), Cambridge, Mass.: Harvard Education Press, 2006.*

all students benefit from accomplished teaching in every class they take, in every grade? American teacher unions are central actors, I argue here, in the quest to improve the quality of teaching.

In the four decades since they first became a significant presence in American education, teacher unions have made a vital contribution to the quality of teaching. Today, they are uniquely positioned to advance that cause in coming years. Yet, the role of teacher unions in promoting the quality of American teaching and improving American education is not generally well understood or appreciated. Too often, ideological assertions that unions are concerned only, or primarily, with the narrowest economic interests of their members are accepted unquestioningly.³ But such assertions are far from the reality of American teacher unions—what we have been in the past and who we are today. Most importantly, they bear no resemblance to our vision for the future of American education.

A Three-Legged Stool

To understand how teacher unions support and improve teacher quality, let us begin with an old but profound truth, too often neglected and forgotten: Unions are organized expressions of solidarity. They exist for the purpose of furthering the interests their members hold in common, and they use the power of concerted action and collective organization to realize those interests. When unions function in this way, they provide what one might call "professional voice" for their members. By voice I mean what the economist Albert Hirschman defined in his classic text *Exit, Voice and Loyalty*.⁴ Hirschman argues that when faced with difficult and undesirable conditions, people have a choice between leaving for another, hopefully bet-



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ter situation, the “exit” option, or staying and working to change those conditions, the “voice” option. While exit is a classically economic, market reaction to untenable conditions, voice is the political response, rooted in democratic notions of participatory decision-making. At its center is the civic principle that a person has a right and an obligation to join with others to make changes for the better in their shared conditions.

Understood this way, teacher unionism has a broad purview. It involves, without question, efforts to win a decent and fair standard of living and economic security for our members, and to secure basic rights and due process in the workplace. But it also has a much broader horizon: to further teachers’ common interest in teaching as a profession and a vocation and in improving the educational performance of schools. With this vision, the quality of teaching leaps to the top of the teacher union agenda.

When I think of how the union can express teachers’ collective, professional voice, I think of a three-legged stool, with three distinct, but interrelated and interdependent strategies being employed: collective bargaining, political action, and professional development. As an example of how these strategies interrelate, think of school violence, an issue that is important to parents, community members, and teacher unions. To reduce school violence, unions have negotiated contractual clauses and lobbied for legislation that require schools to remove disruptive and violent students from classrooms and schools and that create meaningful penalties for school violence; professional development organized by unions provides teachers with tools to avert violence, prevent bullying, and diminish gang activity. It is the combination of the three strategies, the three different avenues of professional voice, that gives teacher union work on these issues their efficacy and power: The whole is much more than the sum of its parts.

These three avenues for expressing teachers’ voice are necessary in part because in each of these strategic arenas, the union faces different limits and obstacles to achieving its goals. Take the arena most often connected with teacher unions, collective bargaining. The obvious limit and obstacle here lies in the fact that such bargaining is conducted with another party, district management, which has a different set of interests and goals. Every particular collective bargaining situation has its own balance of forces, depending upon the relative power of the two parties; but even unions in a position of considerable strength have to engage in a process of give and take to reach an agreement. As a result, collective bargaining agreements involve numerous compromises, and are not unqualified expressions of teachers’ voice.

Unfortunately, among observers of teacher union-school district contracts, there is a naive view that the contract represents only the union voice, which is not accurate. Even among fellow unionists, there are those who have lost sight of the fact that collective bargaining entails compromises between the interests of management and the interests of educators, and thus, of the limits of collective bargaining as an expression of professional voice.

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They have adopted, at times, a view in which the collective bargaining agreement acquires the status of sacred scriptures, and unionism consists of being completely faithful to the letter of the contractual law. In so doing, they have mistaken a set of means of unionism for its ends: Fidelity to the contract becomes the end of unionism, and the limits and the compromises required by that particular means become obscured and even forgotten.

We are teaching at a time when collective bargaining itself is under attack, and it is absolutely necessary for unionists to defend the progress that has been made and the rights that have been established through that process. But blindly defending every letter of the contractual status quo actually arms our critics and constricts the union’s ability to function as the teachers’ voice. If we are to be a truly effective professional voice of our members, we need to define, revise, and energize our vision of the place of teachers in the future of American education. To do that well, it’s helpful to go back in history.

Looking Back

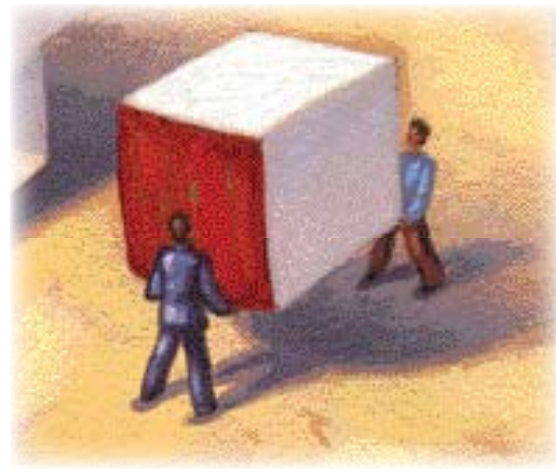
When New York City’s United Federation of Teachers (UFT) negotiated the first major American educational collective bargaining agreement in 1962, blazing the trail for other

teacher union locals, it took as its template the contracts of the progressive industrial unions of the era, such as Walter Reuther's United Auto Workers. In 1962, there was a reasonably good fit between those contracts and the world of New York City public education, because city schools, like the rest of American public education, were largely organized along industrial principles of mass production.⁵ Educational collective bargaining agreements codified this standardization of school life, adopting the industrial framework as its terms of reference. From the union point of view, these universal standards placed limits on the extension and intensification of work, and reined in supervisory arbitrariness, thus introducing a measure of fairness into the system. From the management point of view, universal standards confirmed a minimum level of acceptable work and performance against which teachers could be measured. And since the standards applied to all schools in a district, treating teachers as interchangeable assembly-line workers was also codified.

And yet, it must be noted that teacher unions from the very start made a valiant effort to use collective bargaining to address issues of professionalism and school improvement. In its first contract negotiation, the UFT submitted a remarkable set of education proposals that extended far beyond limits on class size and relief from nonprofessional, nonteaching chores to central issues of teaching quality.⁶ Consider these examples. Drawing on craft union traditions (such as the apprenticeship), and reflecting the large numbers of teachers who came into the system without the proper preparation, in 1962 the UFT proposed an apprenticeship for all future New York City public school teachers, the Teacher Internship Program. Under this proposal, a new teacher would be apprenticed with an experienced, accomplished teacher for a period of two to three years, during which time he or she would master the fundamentals of teaching in a practical setting. During this apprenticeship period, the teacher intern would have a reduced class load, which would gradually be increased to full size as the apprenticeship progressed and the teacher's skills improved. The UFT also proposed a comprehensive program to attract experienced, qualified teachers to what were called "hard to staff" schools. The proposal called for many of the supports for teaching in challenging buildings, such as lower class sizes, proven curricular programs, and literacy specialists, which New York City finally, albeit too briefly, provided 40 years later, in partnership with the UFT, in the Chancellor's District.⁷

But in those first contract negotiations, the UFT found what teacher unionists throughout the U.S. discovered in subsequent years, that school districts fiercely resisted giving teachers and their unions a meaningful say in educational policy. This was an area of "management rights," the districts insisted. In this stance, the districts had on their side the national collective bargaining norms established by the Wagner Act when it created the National Labor Relations Board (NLRB) in 1935, even though the law did not directly apply to public employees. The NLRB had brought into being an adversarial regime of labor relations in which

Collective bargaining's obvious limit and obstacle lies in the fact that it is conducted with another party, district management, which has a different set of interests and goals.



a wall of separation was established between management and labor, with obligatory topics of collective bargaining being restricted to issues of wages, working conditions, and due process. And initially, school districts were able to use this weight of precedent to thwart teacher union contractual initiatives on matters of educational policy.

Combating Teaching as a Low-Status "Easy-In/Easy-Out" Occupation

But of course, collective bargaining norms were not the only obstacle preventing emerging teacher unions in the 1960s from addressing educational issues and improving the quality of teaching. The structure of the teacher workforce was just as important. Seeking to minimize the costs of educational labor, school districts across the U.S. had historically adopted a human resources strategy that depended heavily on recruitment rather than retention.⁸ Over 100 years ago, teaching in the public schools was established as a "lower status, easy-in/easy-out, high-turnover occupation."⁹ Relatively unselective entry criteria, front-loaded salaries that paid newcomers relatively well compared to veterans, poor pre-service preparation with low standards and requirements—all of these policies

A teaching labor force that has a high-turnover rate and a high number of novices is a teaching labor force where all too many teachers lack the requisite knowledge and skills to be accomplished, quality teachers.

favored a revolving door of recruitment over retention.

The resultant structure of the teacher workforce had a negative impact on the quality of teaching. Teaching is an extraordinarily demanding and difficult craft, requiring a thorough knowledge of subject material, a solid grasp of pedagogy, an understanding of child or adolescent psychology, and strong skills of classroom organization and leadership. Under the ideal conditions of solid preparation, good mentoring, and appropriate professional development, it takes a number of years of active classroom teaching for a teacher to master all of the fundamental tools of the craft.¹⁰ Consequently, a teaching labor force that has a high-turnover rate and a high number of novices is a teaching labor force where all too many teachers lack the requisite knowledge and skills to be accomplished, quality teachers.

And yet, for most of American history, the full effects of this educational labor policy of “recruitment, not retention” were not felt. Teaching was an occupation open to women and people of color who were denied opportunities in other professional fields, and American schools benefited from the talents of this captive section of its workforce.¹¹ Moreover, in periods of economic crisis, such as the Great Depression, the steady work of teaching attracted professionals who were unable to find stable employment in other fields.

But during the 1960s, when teacher unions first became a force in American education, the barriers of gender and racial discrimination were also significantly lowered for the

first time, and the economy was on a long-term upswing. With new career options opening up for talented women and people of color, it became more and more difficult to attract to teaching the necessary numbers of America’s “best and the brightest.”

The emerging teacher unions proved a powerful, countervailing factor, blunting the impact of the diminishment of discrimination on teaching quality. As unions improved the compensation and conditions of teaching and gave teachers a degree of professional voice, teaching careers became more appealing. Teacher unions dramatically improved the salaries of teachers—economists agree that a significant teacher union salary premium was established following unionization, with estimates ranging as high as 22 percent during the 1970s.¹² Over time, the increased compensation in unionized districts pushed up compensation throughout the country. Further, unions established minimum standards for teaching and learning conditions, such as limits on the sizes of classes and on the number of classes a teacher could be assigned to teach. And, they protected academic freedom by securing tenure and bringing a modicum of fairness, in the form of due process, to teaching. These advances made the teaching profession more attractive at a time when American schools could no longer count on a captive labor force.

While these early accomplishments were significant, teacher unions were swimming upstream against some powerful currents that ran deep in the education, culture, and economy of the U.S. The historical structure of American teaching as a low status, high-turnover occupation in which educators had little voice could not be easily or quickly transformed: This effort would prove to be a decades-long, intensive struggle that continues to this day. Just consider the current “retention crisis” in American education, where nearly one in every two new teachers leaves teaching by the fifth year, citing poor teaching conditions, disorderly and violent schools, and a lack of professional respect and inadequate support from school administrators and district officials.¹³ Or, look at one telling barometer of the professional status of American teachers, their salaries: Despite the significant increases that came with the union salary premium, teacher salaries still lag behind those of similarly educated professionals and have stagnated in recent decades.¹⁴ For all of the early progress of teacher unions, a great amount of work remains just to create the conditions in which large numbers of talented teachers would want to continue teaching for more than a few years.

The Professionalism Agenda

In the face of these challenges, visionary AFT leaders, starting with Albert Shanker (1974 to 1997), pushed the work of teacher unions forward beyond the horizons of early industrial unionism. They never lost sight of the fact that there is a world of difference between the mass production of automobiles and the education of youth. Under their innovative leadership, teacher unions seized every avail-

The Heart and Mind of a Teacher Unionist

Like many teachers, I did not originally plan on a career in K-12 education. I came from a family of teachers—both of my parents taught in New York City public schools, and four of my five siblings are educators—but my passions were politics and the life of the mind, and as I approached 30, I was working on a doctorate in political philosophy. Early in the 1980s, I needed to find a way to support myself until I could complete my dissertation, and teaching seemed a natural choice. In September 1984, I went to work as a social studies teacher at an inner-city high school in the Crown Heights section of Brooklyn.

My plan was to complete my dissertation and find a job in political philosophy at the university level. But somewhere in that first year of teaching, after I had gotten over the shock of just how hard this work was and how much skill it required, I began to fall in love with educating. My students won my heart and gave my life a deeper purpose. I knew the work I was doing was important, for it could better the lives of young people that had been abandoned by the larger society because they were youth of color, mostly poor, and largely recent immigrants. I still worked on my dissertation during summer vacations, finishing it four years later, but by then, the die was cast.

The year I began teaching, the New York City Board of Education began a renovation of my school building. They gave a group of fly-by-night construction companies free run of the place. The construction crew worked through the school day, disrupting classes with drilling and hammering. The school was constantly filled with dust and debris of a then-unknown nature, and there were days it was so thick, I could barely see down the first-floor hallway. Staff and students began to suffer allergic and asthmatic attacks.

By the end of my second year of

teaching, everyone who worked in the school, from the principal to the stock man, had had enough. Since I had more political experience and organizing skills than others in the school, I ended up leading efforts to get this problem under control. We reached out to a law firm, and within hours, we had a court order to close the school.

When the court-ordered tests of the school building were done, the results came back positive for high levels of asbestos in a form that could be easily breathed in or ingested. Some combination of the construction companies and the Board's Division of School Buildings had submitted falsified tests (for which some Board officials were eventually jailed). To give you just one example of what that meant for those of us in the school, an entire section of the asbestos-containing ceiling in the cafeteria had been removed while students and teachers sat there eating lunch.

For three months, our school building was closed under court order for a complete asbestos abatement.

The UFT had not anticipated any of this. But once the issue was raised, the union quickly grasped what was at stake. Randi Weingarten, then the UFT's counsel (now its president), negotiated a protocol with the Board of Education to cover the resumption and completion of the renovation work at our school, starting with the novel idea that work should be done when classes were not in session. This protocol became the basis for a set of regulations that govern construction work in any school to this day. The union hired experienced industrial hygienists, and developed a Health and Safety Committee in each borough, with staff trained to respond immediately to a whole series of potential hazards. It negotiated health and safety language into the collective bargaining agreement.

It is hard to imagine a tale of such criminal malfeasance in a school serving well-to-do students....

Teachers must have a voice, and that is what our union provides.

I drew some lessons from this experience that defined my understanding of what it means to be a teacher unionist.

First, our interests as teachers are inextricably linked to the interests of the students we teach. It is hard to imagine a tale of such criminal malfeasance in a school serving well-to-do students. The story of asbestos is only one of many examples that could have been provided here: I tell it because it is my story, and the story of teachers with whom I worked.

Second, this struggle reinforced for me a basic truth: There would be a limit to what one teacher could do alone, especially in a place as vast as New York City. Teachers had to be organized, for the good of our students as much as for our own good, and I needed to be part of that organization. I ran for the union Chapter Leader in my school, and began many years of involvement in the UFT. Teachers must have a voice, and that is what our union provides.

—L.C.

able opportunity to breach the industrial wall of separation between management and labor that had placed educational issues outside of the union purview.

An important breakthrough took place in the early 1980s after the appearance of *A Nation At Risk*. In retrospect, we can see that this report signaled the start of a long period of dramatic changes in American education, as the nation began to grapple with the new demands on schools and teachers that came with the emergence of the global economy. But this was far from obvious at that time; and for many of us, the report's credibility was undermined by its hyperbolic rhetoric, and in the fact that it was generated by President Ronald Reagan's administration, which was no friend of public education (or unions). Albert Shanker showed foresight in refusing to join the "circle the wagons" forces that were prepared to defend the educational status quo, and demonstrated remarkable leadership in successfully convincing the ranks of the AFT that *A Nation At Risk* had to be confronted head on. American education would have to raise its standards to meet the challenges of the new knowledge economy and global society. Excellence became the new educational watchword, and the standards movement in American education was born, with the AFT playing a prominent role.

Under the impetus of the drive for higher standards, new interest was paid to teaching: how to attract talented teachers, how to identify the expertise they needed (and provide them the authority and conditions to use it), how to create career ladders that would recognize teacher growth. In short, attention was directed at how to make teaching a profession in a much fuller sense of the word. This direction attracted serious interest from the business, academic, and public policy worlds. Lots of creative thinking and proposals streamed forth. There was a new energy among teacher unionists to engage in issues of teacher and school quality and a greater receptivity in some school districts to engage with teacher unions. Teacher unions around the nation began to negotiate educational policy initiatives in their collective bargaining agreements, with a new emphasis on the quality of teaching. These changes were centered on a renewed notion of teacher professionalism, focused on the idea that a profession ensures the quality of the service it provides to the public by educating and policing itself.

One project that embodied this idea of teacher professionalism was the National Board for Professional Teaching Standards (NBPTS), a Shanker-inspired project that was launched in the late 1980s with the strong support of both national teacher unions.¹⁵ Based on the model of the medical profession, where board certification in an area of specialty indicates that a doctor has met an exacting standard of excellence in the field, NBPTS developed an intensive process for certifying an analogous level of excellence in teaching. Teacher union efforts around the NBPTS employed all three avenues of professional voice: pay differentials for NBPTS certified teachers were negotiated into collective bargaining agreements; political action led state governments to provide supports for the NBPTS cer-

Craft union traditions, such as apprenticeships, entry standards, and master craftsmen/women, provided a rich source of models for ensuring the quality and integrity of teaching.



tification process and pay incentives for NBPTS certified teachers; and locals developed programs of professional development designed to support members in the exhaustive certification process.

Teacher unions came to see that quality professional development was indispensable to raising educational standards, and many locals began to develop extensive professional development arms of their own.¹⁶ The teacher union commitment to professional voice brought a new perspective to what had been known as teacher training. In all too many districts, this teacher training consisted largely of one-shot presentations delivered by outside "experts" and nonteaching administrators who had little appreciation for the actual work of teachers. By contrast, the teacher union professional development model was ongoing, school-based, and focused on classroom practice. Drawing upon best practices in professional development and applying what we know about the learning process to the continuing education of teachers, teacher union professional development was built upon a foundation of conversation between teachers, professional development leaders, and the body of educational research and professional teaching knowledge.

Another facet of the new professionalism agenda of teacher unions was the effort to raise the entrance stan-

dards for the teaching profession, an effort that continues to this day.¹⁷ Reflecting the low status of the teaching profession, American teacher education had evolved as the stepchild of the academy, and was often used as a cash cow to help finance other schools and programs in the university considered more prestigious. Truly excellent teacher preparation programs were the exception, not the rule. Teacher unions and leading teacher educators made common cause around a call for strengthening teacher preparation with nationally accredited, robust courses of study with intensive work in pedagogy, an academic subject major, and a meaningful internship component. An effort was also mounted to establish a meaningfully high national standard for obtaining a teaching license, as requirements varied considerably in rigor from state to state. But these efforts have run aground amidst the constant push to contain costs, mainly by resisting salary increases for teachers. Faced with shortages, states and districts persist in lowering the standards for becoming a teacher, not raising them.

In focusing on the promotion of teacher professionalism, teacher unions drew on the rich history of the American labor movement. Craft union traditions, such as apprenticeships, entry standards, and master craftsmen/women, provided a rich source of models for ensuring the quality and integrity of teaching. With this inspiration, a number of pioneering AFT locals negotiated path-breaking peer evaluation/review and peer intervention programs, mentoring programs for new teachers, and career ladders that included positions of lead or master teacher.¹⁸ Where such programs were started, accomplished teachers assumed a pivotal role in inducting new teachers into the profession, in evaluating the performance of teachers, and in providing professional development. In addition, they were enlisted to help experienced teachers who were having difficulties in the classroom to improve, or when that was not possible, to counsel them out of teaching and into new employment. More recently, lead teacher positions have been established in struggling, hard-to-staff schools as a way of reducing teacher turnover by giving new teachers they support they need.¹⁹

During the 1980s and 1990s, teacher union locals such as New York City's UFT negotiated a number of contractual clauses designed to define and promote teacher professionalism. A process known as professional conciliation was developed to resolve conflicts between teachers and supervisors over matters of pedagogy and teaching approaches, and an alternative system of evaluation to the standard observation, designed to promote professional development and self-reflection, was created.²⁰ Specific attention was paid to defining the rights and responsibilities of teachers with regard to lesson planning.²¹

When the public demand for more rigorous, effective schools spawned the small schools movement at the end of the 20th century, the UFT saw another opportunity to expand teacher professionalism. The new schools, which proliferated in New York City, were more autonomous, the hierarchy was typically flatter, and there was a strong

These changes were centered on a renewed notion of teacher professionalism, focused on the idea that a profession ensures the quality of the service it provides to the public by educating and policing itself.

focus on teamwork and teacher participation in important school decisions.²² But these new schools also posed a problem for teacher unions, as the sheer variety of their organizational forms did not easily fit within the terms of collective bargaining agreements. The UFT took the initiative well over a decade ago in negotiating a School Based Option (SBO) into the collective bargaining agreement to address this problem. SBOs allow a school to change contractual rules and Department of Education regulations governing matters such as class size, rotation of assignments/classes, and teacher schedules. Such changes happen with a 55 percent vote of the members in the school, and by agreement of school, district, and union leaders.²³ Today, a majority of New York City schools take advantage of SBOs, through which they create innovative school schedules with classes of different lengths, organize blocks of professional development, provide additional evening parent conferences, reconfigure class sizes to recognize the different needs of particular students and/or subject matter.

Professional teacher unionism also gave impetus to a more democratic conception of good school leadership. Opponents of teacher unions often argue that to be effective, school leaders must be unfettered in their power, free to act without regard for the voice of any other educational

Some alternative certification programs see teaching—and especially teaching our neediest students—as a public service that requires a big heart and a bright mind, but no particular knowledge or skills, no experience, and therefore, no long-term commitment.

stakeholders. At the core of this model of “benevolent despotism” is a disparaging view of educational expertise, perhaps best captured in the notions that a school leader need not be a professional educator with a solid background in teaching and learning, and that he or she need not heed the knowledge and accumulated wisdom of the professional educators with whom he or she works. In this view, the less experienced and less knowledgeable the teacher workforce, the better: A novice teacher without the protection of tenure is assumed more fearful of authority and more willing to follow orders.

By contrast, advocates of professional teacher unionism took up the traditional idea that the school leader should be more like a “principal teacher” who is, above all else, an instructional leader—someone who collaborates with his or her staff, drawing upon the store of educational expertise in the school and in the wider educational community. Important school decisions get made with the input and participation of all the school stakeholders, and take as a constant beacon the academic achievement of the students. Where the benevolent despotism model treats school leadership as a zero sum game, in which power shared with others is power lost by the leader, the collaborative vision of professional teacher unionism sees power shared as power multiplied. Indeed, a collaborative school leader sees the development of teacher leaders as one

of the most important tasks of school leadership, and so embraces programs like the lead teacher and the professional career ladder.

To demonstrate such a vision in action, New York City’s UFT has started two charter schools of its own, one elementary and one secondary. The UFT’s charter schools match the compensation and benefits package supplied to teachers in New York City public schools, and its teachers work under the terms and conditions of the New York City collective bargaining agreement. In these respects, and by virtue of the fact that they are located in one of the city’s poorest communities, they are indistinguishable from district schools. What they do, every public school in New York City could do.

In both UFT charter schools there is active teacher voice in all of the schools’ policies and decisions. The schools have a Board of Trustees composed of three teachers, three parents, three community representatives, three representatives of the UFT, and the school leaders. The important educational work of the school is done by school-based committees working with the school leader, such as the teacher-majority Personnel Committee that hires staff. With the promise of authentic teacher voice and a compensation package equivalent to the local school district, the UFT charter schools have found it easy to recruit a solid corps of experienced, accomplished teachers. Employing this knowledge and skill base, the schools are able to develop and use complex courses of study and sophisticated pedagogical techniques, focusing students on the achievement of rigorous academic standards. A Teachers’ Center, staffed with a full-time facilitator, organizes ongoing professional development in each school and works with the teachers in their development of the curriculum and in strategies for teaching and learning. To promote teacher professionalism throughout the faculty, the schools have fostered a culture of collaboration, embedded in such practices as collegial inter-visitation, observation, and evaluation. In an important practical and symbolic statement, the UFT schools provide their teachers with all of the tools of their craft, from a personal laptop to the Internet and from telephone access to “smart boards” in their classrooms.

Teacher Professionalism at a Crossroads

In contrast to this view of collegial leadership that recognizes teachers as professionals, there is a counterview of teachers that is gaining favor: the deskilled teacher. This is apparent in a number of nonunion schools (many of these are charter schools, but some are also regular public schools, public schools under private management, and private schools). These schools recruit largely novice faculties, often straight out of college, who are idealistic about teaching. Then, to compensate for their teachers’ lack of experience and skill, the schools have them work a much longer school day, week, and year and employ “teacher proof” curricula. These teachers are typically paid less than their union counterparts for their labor, and are

The quest for professional voice, so central to the mission of teacher unions, has never been as important to the future of American education as it is today.



provided inferior health insurance and pension plans. Teachers quickly burn out under these conditions: Faculty turnover in these schools well exceeds the generally high rate in K-12 education.²⁴

There are two other models of deprofessionalized, deskilled teaching: One has emerged among some of those who favor alternative teacher certification programs, the other among those who place student test scores above all else. While some alternative certification programs are committed to turning out professional, competent, knowledgeable teachers, others do not take the notion of teacher preparation seriously at all. They see teaching—and especially teaching our neediest students—as a public service that requires a big heart and a bright mind, but no particular knowledge or skills, no experience, and therefore, no long-term commitment. As a result, whether intentionally or not, they contribute to the idea of teaching as an easy-in, easy-out job. Likewise, the current fixation on student test scores—and particularly reading and math scores—is leading some to claim that teacher quality should be judged on student test scores alone. When tests are well-designed and appropriately used, they can provide useful information, but no professional should be judged on only one dimension. Just as student assessments need to be based on multiple forms of evidence of their knowledge, so do teacher evaluations.

So, the quest for teacher professionalism is at a crossroads: The emergence of the global knowledge economy has posed in dramatic fashion the need for a fully professionalized, quality American teaching force, and has contributed to the emergence of a stream of professional teacher unionism. But, at the same time, other trends are pushing to undermine existing union and professional standards by creating schools that rely on novice teachers' energy—as opposed to veteran teachers' expertise—and will thereby exacerbate the trend toward teaching as a high-turnover job. So today, there are forces for and against teacher professionalism. Which of the two will prevail has yet to be determined.

The quest for professional voice, so central to the mission of teacher unions, has never been as important to the future of American education as it is today. For all the educational progress that has been made in the four decades since teacher unions first became major actors in American education, much remains to be done. While teachers are more skilled and knowledgeable than our predecessors, the demands on education in an age of the global knowledge economy are far greater than ever before. If American education is to meet the great challenges of our day, and educate all youth for meaningful, productive lives and democratic citizenship, teachers need voice. They must complete the work of building a teaching profession dedicated to the highest standards of teacher quality. That will require a committed union. □

Endnotes

- ¹ See the National Commission on Teaching and America's Future, *No Dream Denied: A Pledge to America's Children*, Washington, D.C., 2003, and *What Matters Most: Teaching for America's Future*, New York: 1996. For a clear overview of the recent research showing the link between the quality of the teacher and student learning, see The Education Trust's "The Real Value of Teachers: If Good Teachers Matter, Why Don't We Act Like It?" in *Thinking K-16*, 8, 1 (Winter 2004) and "Good Teaching Matters: How Well Qualified Teachers Can Close the Gap," in *Thinking K-16*, 3, 2 (Summer 1998).
- ² The pioneering statistical work in this area has been done by William Sanders; see his papers, co-authored with Sandra Horn, "The Tennessee Value-Added Assessment System (TASS): Mixed Model Methodology in Educational Assessment" and "Research Findings from the Tennessee Value-Added Assessment System (TAAS) Database: Implications for Educational Evaluation and Research."
- ³ Terry Moe, "No Teacher Left Behind: Unions don't have children's best interests at heart," January 22, 2005, *Wall Street Journal*.
- ⁴ Albert Hirschman, *Exit, Voice and Loyalty: Responses to Decline in Firms, Organizations and States*, Cambridge, Mass.: Harvard University Press, 1970; Richard Freeman and James Medoff, *What Do Unions Do?* New York: Basic Books, 1984, were the first to apply Hirschman's concept of "voice" to unions.
- ⁵ Raymond Callahan, *Education and the Cult of Efficiency: A Study of the Social Forces That Have Shaped the Administration of Public Schools*, Chicago: University of Chicago Press, 1962; and Kate Rousmaniere, *City Teachers: Teaching and School Reform in Historical Perspective*, New York: Teachers College Press, 1997.
- ⁶ The demands discussed here are drawn from primary documents in the UFT Archives, 52 Broadway, New York, N.Y. 10010.
- ⁷ Deinya Phenix, et al., *Virtual District, Real Improvement: A Retrospective Evaluation of the Chancellor's District, 1996-2003*, New York: Institute for Education and Social Policy of New York University, June 2004. See also Julia Koppich, (2002), "Using Well-Qualified Teachers Well: The Right Teachers in the Right Places," *American Educator*, 26, 4, pp. 22-30, 51-52.

(Continued on page 47)

Uncovering Academic Success

By Karin Chenoweth

Can it be done? Can schools help all children learn to high levels, even poor children who typically enter school far behind their more privileged peers? Is it even possible?

As a longtime education reporter and columnist, I knew the answer was yes, but I knew it as an article of faith rather than actual knowledge. I had never actually seen such a school. I had seen glimmers of hope in the fifth-grade classroom of Linda Eberhart, where African-American boys and girls from a very poor section of Baltimore met state math standards at higher rates than any other school in the state. I had seen hope in the extraordinary kindergarten class of Lorraine Gandy, who could boast without fear of contradiction that in 30 years she had taught just about every one of her students to read. I had also seen hope in a couple of schools that were committed to educating every child. But a whole school where the average poor child and child of color could walk in from the neighborhood and be pretty sure he or she would learn to read and do math and otherwise succeed academically? That I had never seen.

But I would not let go of the notion that our public

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schools are places that offer all children the chance to become educated and where, if they work hard, they can gain access to all the opportunities our country has to offer. The folks at The Education Trust, a national education organization that for years has identified schools where poor children and children of color do better than their peers in other schools, would not give up on that notion either. The Education Trust had actually identified such schools through their data—but it had never explained what they do to have such dramatically different results from other schools. In late 2004, The Education Trust joined together with four other organizations—the Business Roundtable, the Citizens' Commission on Civil Rights, the National Center for Educational Accountability, and the National Council of La Raza—to form The Achievement Alliance, and they hired me to visit such schools and describe what they do.

To determine which schools to visit, analysts from The Education Trust and I pored over state data. We were looking for public, open-enrollment schools that had high percentages of students of poverty and students of color, had at least two years of data showing high levels of student achievement (or very rapid, sustained improvement), and had closed (or greatly narrowed) achievement gaps between various groups of students.

The two years I spent visiting schools were a revelation in a lot of ways. I began this project not knowing at all what I would find. For all I knew (and feared), I would find soul-deadening test-prep factories. Perhaps, I worried, I would





Karin Chenoweth spent two years visiting schools that achieve extraordinary results with disadvantaged children. The children shown here, and on the next several pages, attend one such school—Stanton Elementary in North Philadelphia. How does Stanton do it? That story begins on page 37.

I found none of that. Instead, I found dedicated, energetic, skilled professionals who care deeply that all their students have access to the kinds of knowledge and opportunities that most middle-class white children take for granted.

find schools where the teachers and principals were worn to a frazzle, burnt-out and bitter with all the expectations that have been placed on their shoulders. Or, even worse, I would find schools where the teachers were automatons, robbed of all creativity.

That means they include art and music and physical fitness and field trips and science and history and all the things that some people say schools must cut in order to focus on the reading and math skills tested in state assessments. That doesn't mean that the people in the schools I

have visited don't care deeply about reading and math or doing well on state assessments. But they, and their principals, know that it is a mistake to "narrow the curriculum" and "teach to the test"—two of the epithets floating around the education world.

And happily, I found teachers and principals who love

their jobs. They work hard, and some work long hours. They may occasionally be tempted to move to schools where it might be easier to teach; but they stay on the job because, as one teacher said to me, "We're successful. And we're like family." Many are bolstered by the idea that they are engaged in important work—work that, if enough people paid attention, could improve the public schools and, to some extent, the nation itself. But, stunningly, their work has gone almost unnoticed.

Early on in this project, I was talking with a very thoughtful principal. I said that many people think schools cannot help children who are behind because of poverty and discrimination catch up to their more privileged peers. "They say it can't be done," I said. She replied simply, "It's being done." I spent the next two years proving her point and then stole her words as the title of the book I wrote profiling each of these schools.

Although all the schools I profiled for this project have large concentrations of students of color, students of poverty, or both, they are very different in just about every other way. They are big and small; integrated and racially isolated; high-tech and low-tech; urban, rural, and suburban. Some require uniforms; some do not. Some follow traditional school calendars; some follow year-round calendars. Some are in big districts; some are



in small ones. Some have adopted pre-packaged school improvement designs; some have developed their own model of improvement. Some have beautiful facilities; some are in buildings that should have been torn down years ago. Some have successfully engaged their parents and communities; some have not.

Those are the characteristics that many say make the difference in school quality. And yet, despite those differences, all these schools either have very high rates of proficiency or impressive trajectories of improvement. So the question arises: Is there something deeper that these schools share? Is there something more than uniforms and school size and computers that makes the difference?

I have become convinced that there is no single factor that is at the core of a successful school. That is, there is no one structure that, if every school in the country were to adopt, would transform them into high-achieving schools. Schools are too complex for simple solutions. Over and over, the teachers and principals in these schools told me, “There is no magic bullet.”

But there are some characteristics that they all share, and I was pondering how to try to convey them when I had an experience that brought into stark relief the things I wanted to highlight. I visited a school that on paper looked like another success story; it posted very high proficiency rates on state tests in a state with high standards. The students were all African American and almost all were poor, most lived in a nearby housing project. I was looking forward to another “beating the odds” story.

When I arrived at the school, the hallways were filled with children gathering for the start of school, but few looked as if they had anything to look forward to. When I got to the office, it was locked. I asked an adult where the principal was; she said, “She’s not here yet,” as though it were normal for the principal not to be there at the beginning of school. When the principal did show up, she was surprised I was there, even though I had called and e-mailed several times in the previous weeks to confirm my visit.

The principal showed me around the school. In many classrooms she opened the door onto quickly dampened noise. The teachers (there were several substitutes that day) looked up with relief. Quite a few said things like, “Oh, I’m glad you’re here—the kids are really acting up.” On those occasions the principal yelled at the disruptive students in front of their teachers, classmates, and me, a stranger taking notes. “What did you promise me?” she shouted at a young boy who looked absolutely miserable being humiliated in public. “You sat in that office and promised me and your mother something. What was it?” She yelled at teachers and even a parent in the same way. At no time did the principal say she wanted to introduce me to a teacher or a student or see classroom teaching. In fact, there was very little classroom instruction visible. The two exceptions were a kindergarten teacher who was enthusiastically leading her students in a song they were preparing for an end-of-the-year ceremony and a class where a poet had come in as part of a foundation grant to introduce older children to poetry. Finally, the principal stated the

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obvious: “Once the state tests are done, we don’t do a lot of instruction—we’re doing field trips and getting ready for the end of the year.” The state tests are given in March and April, months before school lets out. What little she did say about instruction made it clear that it was focused almost entirely on what would appear on the state test, such as teaching students the specific words that the state tests use and teaching them to take notes on reading passages.

Some students had been left behind from a field trip that day either because they hadn’t gotten their permission forms in on time or because they were being punished for poor behavior. They had been given an assignment to write about what job they would like in the future. Although the students were in seventh grade, none of their essays was longer than a paragraph, and none included many salient details. Two of the most ambitious of the students said that they would like to run a laundry and a hairbraiding and nail salon. The principal gave the students a lecture about how they should think about other possibilities, such as running a shaved ice booth or selling cold water on a hot day.

From all I had seen—the atmosphere of distrust, disrespect, and barely controlled chaos; little interest in instruction; and extremely low ambitions for the kids (a water stand!)—I concluded that the high scores the school posted had not been attained in a legitimate way. That conclusion was strengthened when the principal told

Using time wisely doesn't mean that kids don't ever have fun or recess. It means that students are engaged in productive activities just about all the time.

They have high expectations for their students. They assume that their students are able to meet high standards and believe their job is to help their students get there. They do not assume that their students are so crippled by poverty and discrimination that they cannot meet high standards. "It's not about feeling sorry for kids," says Barbara Adderley, principal of Stanton Elementary (see article, p. 37), located in an economically devastated part of North Philadelphia. "It's about making sure that they understand what it is they're expected to do." They talk with their students about going to college or into high-level technical training. This is true for all the levels of schooling—elementary, middle, and high.

They use all the data they can get their hands on and embrace accountability, but they don't teach to the state tests. They want to know how their students are doing, and they know that classroom observation by teachers, though important, is fragmentary and doesn't allow overall patterns to be observed. State test data, district data, classroom test data, and any formative assessment data they can get their hands on are all eagerly studied. If the district doesn't provide the data in the form they need, they come up with their own ways of charting and displaying data. And, if another school nearby outperforms them, they are the first ones to try to figure out what that school did and incorporate it into their own practice.

All the schools make sure their students know what their state's tests look like in terms of the format, and they try to ensure that their students aren't surprised by the material or the kinds of questions that will be asked. But none of them spend a huge amount of time teaching their students what will be on the state tests or teaching them how to "bubble in" a scoring sheet. They teach a rich, coherent curriculum tied to state standards. They don't teach the test, particularly in those states where the tests are low-level reading and math tests. In the states where the tests are a bit more sophisticated and high-level, such as the Massachusetts MCAS and the New York Regents, the schools might spend more time teaching directly to what will be tested, but that is because those tests are more closely tied to a set of high standards.

They use school time wisely and add time for students, particularly those who are struggling. They establish classroom and school routines to ensure that endless amounts of time are not spent going to the bathroom, getting out and putting away books and materials, and going from one activity or class to another. School time is for instruction, and instruction is treated as something sacred. Most of the schools establish uninterrupted blocks of time for instruction so that classes aren't disrupted by bus announcements or by students being pulled out for speech therapy or counseling. Using time wisely doesn't mean that kids don't ever have fun or recess. It means that students are engaged in productive activities just about all the time.

me that teachers administering state tests were "under strict accountability to not allow students to turn in half-filled-out answer sheets, and they can't have any wild answers either." Though I tried to keep my face as deadpan as possible, I think the principal knew she had made a damaging admission: There are no legitimate ways to keep students from giving "wild answers" on a state test. In addition, the principal said she had some concerns this spring because the testing protocols had changed. I could barely wait to escape, and I caught an early flight home, depressed by what I had seen. Months later, my suspicions about the level of learning at the school were confirmed when that spring's test results were published—fewer than 10 percent of the students had met state standards.

Seeing that school helped crystallize in my mind what I wanted to say about schools that are getting the job done. I did not hit on a magic bullet, far from it: I found that these schools shared about two dozen characteristics that—together—contributed to their success. I describe all of them in my book; here I present just a handful of those characteristics that seem most important. Much of what I saw in these impressive schools was extremely high-quality teaching. But I also saw leadership that supported such teaching, so I think it is essential for teachers and principals alike to carefully study these characteristics.

Different schools add time in different ways. Some have before-and-after-school classes and summer school. Some have year-round calendars with intensive tutoring during the intersessions. They all figure out ways to get their children more time for instruction, and they do so with the same kinds of resources (often involving federal funds) that are available to many high-poverty schools and within the parameters of the teacher union contracts. Many also see that extra time as an opportunity for enrichment, and they offer interesting classes such as music, drama, and sign language.

They do not spend a lot of time disciplining students in the sense of punishing them. They do spend time disciplining children in the original sense of the word: leading them (think of the word disciple). They teach students how to act by noticing and encouraging kindness and consideration and they teach kids how to have good social and professional relationships by explicitly teaching them how to disagree with someone without getting upset and fighting. But their main method of discipline



is to aim for high-quality instruction every moment, on the theory that busy and actively engaged students do not have time to misbehave. In those instances when behavior issues are deeper than boredom-induced mischief, teachers aren't left high and dry. These schools have additional interventions to use when needed, such as pairing disrupt-

ive students and their families with mentors or with outside social services.

They provide teachers with the time to meet, observe each other, and do serious professional development. Either the principal or an assistant principal spends a great deal of time building a schedule so that children have coherent instructional days and teachers have time to work together. The most common strategy in elementary and middle school is to schedule an entire grade to have "specials" (usually art, music, physical education, and sometimes science) at the same time so that the teachers can meet. Teachers review data, go over student work, develop lesson plans, and map curriculum. Teachers are also encouraged to seek out and observe colleagues who have perfected a particular lesson or who are trying something new and want feedback about whether it is clear and coherent.



The general theory among these schools is that if students are weak in a particular area, the teachers need to learn more about it. Professional development that does nothing to deepen teachers' content knowledge, understanding, or pedagogical skill is not typical in these schools. And, they realize that new teachers often don't know enough about classroom management, curriculum, assessment, reading instruction, or how to physically set up a classroom, so mentors are often provided to help induct new teachers into the profession.

Although the principals are important leaders, they are not the only leaders. Teachers and other administrators, and sometimes parents and community members as well, sit on committees that make important decisions for the school, such as hiring, curriculum, school policies and procedures, Title I spending, and much more. Trennis Harvey, assistant principal of Capitol View Elementary in Atlanta said, "Of course your leader has to make some decisions, but most decisions here are made by teams." In most cases, this is part of an explicit practice to institutionalize improvement so that it is not reliant on a single individual. These principals are consciously trying to build enduring structures that will outlast them.

It would be reasonable to wonder if the teachers and principals are nearing nervous-breakdown level. Overwhelmingly, that's not what I found.

These schools are achieving at higher levels and improving at faster rates than some in the education world think is possible. It would be reasonable to wonder if the teachers and principals are nearing nervous-breakdown level. Overwhelmingly, that's not what I found. Mind you, the schools are not easy places to work. But because the atmosphere is respectful and teachers' work is organized in a way that allows them to be successful and take leadership roles, they are nice places to work. As a result, they do not have the kind of turnover that many schools with similar demographics have.

After visiting all the schools profiled in this book, I began to feel as if the folks in these schools can be likened to the Wright brothers, who proved once and for all that manned flight was possible. In much the same way, the schools profiled in my book demonstrate that the job of educating all kids to high levels is possible. When you overcome drag and gravity with enough thrust and lift, you get flight; when you overcome poverty and discrimination with effective leadership, thoughtful instruction, careful organization, and what can only be recognized as the kind of pig-headed optimism displayed by the Wright brothers, you get learning—even in schools where many people wouldn't expect it. □



Inside a Philadelphia Success Story

By Karin Chenoweth

Anyone looking for a dramatic turnaround of a school need look no further than M. Hall Stanton Elementary. In just two years, Stanton went from being a school where few children met state standards to one where most students met them. Stanton sits in just about as difficult an urban environment as exists in America—North Philadelphia. Its neighborhood of narrow brick rowhouses is one where a block of houses that bravely sports pumpkins and autumn leaves at Halloween immediately gives way to many blocks scarred by burned-out and boarded-

the school was in chaos. “No one wanted to come to the top floor” where the older children were, said Christina Taylor. Taylor was a fifth-grade teacher then, and she said her students used to beg her to allow them to eat lunch in her classroom because they were frightened to go into the halls. “We had the third- and fourth-grade gang wars,” she said. “I just kept my kids with me all day.”

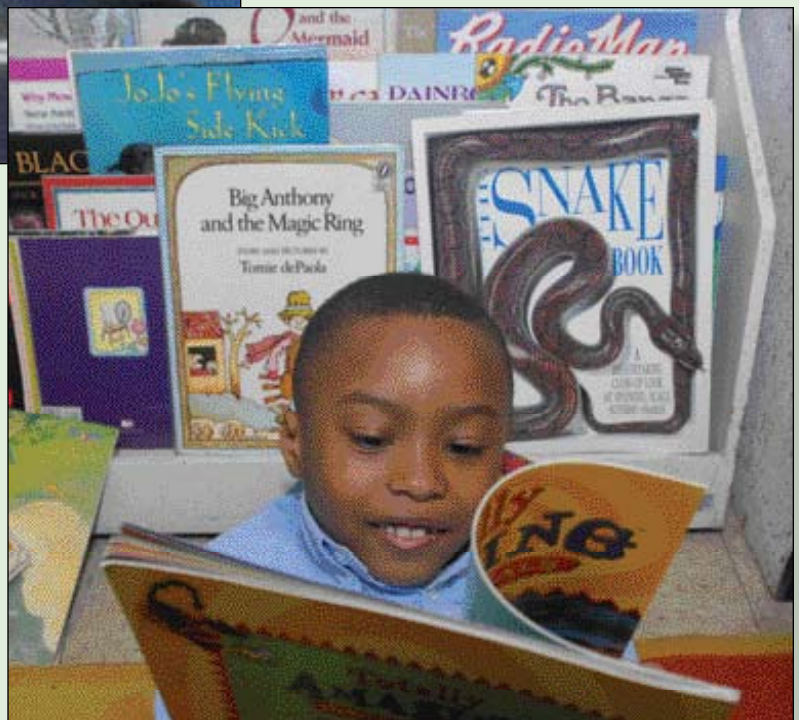
Achievement levels at Stanton were among the lowest in Philadelphia. But in the 2003-2004 school year, the scores skyrocketed: 71 percent of Stanton’s students met state reading standards and 47 percent met state math standards. The growth was so dramatic, in fact, that the district retested the students to make sure there had been no mistake or chicanery. The retest confirmed the results. When the 2005 test scores were released, showing that 73 percent of the students met state reading standards and 84 percent met state math standards, it was clear that 2004 had not been a one-year fluke, but rather a reflection of new practices—practices that included a careful reorganization of instruction, comprehensive professional development for teachers, close examination of student



up buildings, with individual houses and even entire blocks torn down—piles of rubble mark where homes once stood. Children walking to school regularly pass crack houses. Nightly shootings are common. “This is not the worst part of Philadelphia,” said the Chief Academic Officer of the city’s school system, Greg Thornton. “But it’s close.”

Stanton is a school of almost 500 K-seventh-grade students, virtually all of whom are African American and qualify for free or reduced-price lunch. Principal Barbara Adderley arrived in the 2001-2002 school year, when Stanton was one of 21 Philadelphia schools under a three-year restructuring process that in turn was part of a state program of supervision of the city’s schools.

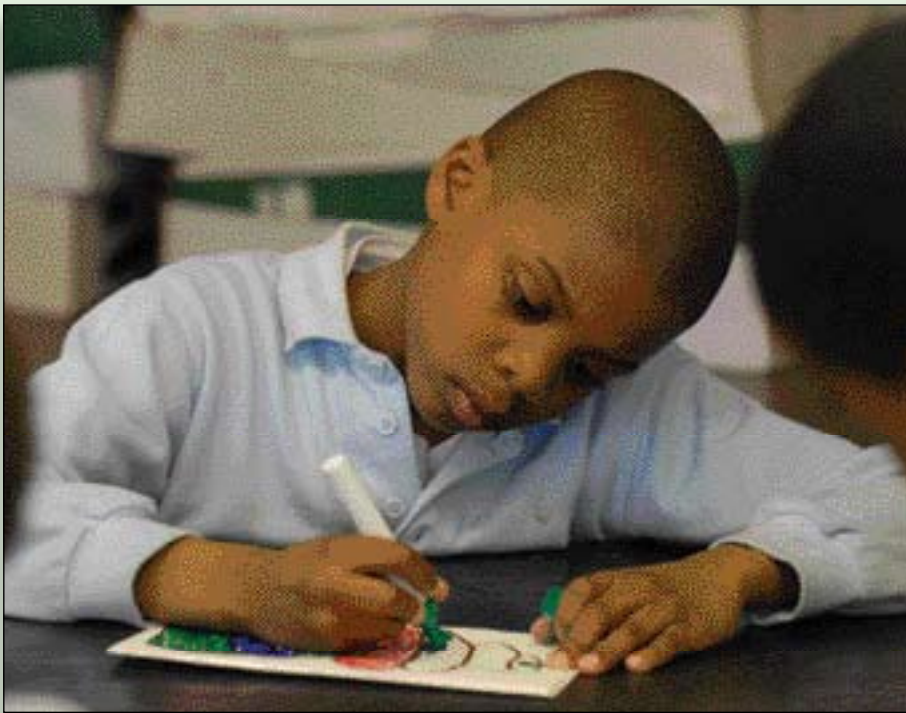
According to teachers who were there at the time,



data, a curriculum tightly aligned to state standards, and shrewd use of federal Title I dollars.

The first thing a visitor notices is that, despite the fact that Stanton is housed in a large, dreary, three-story school building, it is kept very clean and the halls are as welcoming as institutional halls can be, with a huge fish tank in the hall outside the office, a curio cabinet with Adderley's doll collection, student work posted in the hallways, and teddy bears posed on rocking chairs next to tables with lots of inviting picture books. "People in other schools tell me they can't do this because their kids would tear the stuff apart," said Thornton. "But the kids here don't do that." "The only reason things fall off our walls," bragged Taylor, "is because the tape doesn't hold." The books get disarranged because "the children are reading them," she added. Taylor, a former fifth-grade teacher, is currently the lead math teacher for the whole school and team leader of one of the school's three "academies."

Each academy has a team leader who works with classroom teachers to plan lessons, look at student data, work with small groups, provide model lessons, and help plan activities. The team leaders are colleagues of the classroom teachers, not supervisors.



Breaking the school into three academies—the Ruby Bridges Academy, the Bill Cosby Academy, and the Ben Carson Academy—was one of Adderley's first organizational changes. Students are randomly assigned to the academies, each of which has kindergarten through sixth grades. The only difference in their curricula is that each student is expected to know something about the namesake of his or her academy. Also, the academies may have slightly different projects. In the fall of 2005, the whole school adopted a travel theme, for example, and each academy studied a particular area of the world—one academy chose Africa, another the British Isles, and the hallways and classrooms of each were filled with maps, artifacts, and paintings that the students were studying and preparing to explain to students in the other academies.



Adderley organized each academy to house all the grades because she wanted the older children to act as role models for the younger children. Also, teachers get to know the children in their academies even before they have them in their classrooms. "It becomes a family," Adderley said. To combat the separation that the three academies might cause, Adderley instituted a school-wide convocation outside the building every morning at 8:25 A.M., when children, teachers, administrators, and parents and guardians say the *Pledge of Allegiance*, sing a song such as "Lift Every Voice," and hold a moment of silence. A closing ceremony ends the day at 3:05 P.M. "It provides a time for the whole school to feel a sense of community," Taylor said. Teachers also have time to work together to ensure they do not become isolated in their academies. "Specials"—art, music, physical education, and computer classes, in addition to a weekly science lesson taught by a science teacher—are scheduled so that grade-level teachers across the academies can meet together to plan lessons.

Each academy has a team leader who works with classroom teachers to plan lessons, look at student data, work with small groups, provide model lessons, and help plan school- and academy-wide activities. The team leaders are colleagues of the classroom teachers, not supervisors. Their

authority lies solely in their ability to be helpful to teachers.

The team leaders are also literacy, math, and science specialists. In many schools, math and literacy specialists are still classroom instructors. At Stanton, the lead teachers almost never do classroom instruction except when teaching a model lesson as an example for a teacher. "We're supposed to teach the teachers, not the students," says Taylor. For example, when a second-grade teacher's class consistently took more than 10 minutes to gather English Language Arts (ELA) materials for the literacy block, his lead teacher advised him to organize the materials ahead of time in bins so that the children could get immediately to work. "The ELA bins have cut down on wasted time," the teacher, Ted Smith, said.

During the restructuring process, Stanton had math and literacy coaches who came to the school to help guide instruction. They alternated weeks—one week of math, one of literacy. Their "all day, every day" presence, helping teachers plan, providing model lessons, and generally guiding teacher practice, Adderley said, "is something that has really supported going from corrective action to being just a regular school."

For the first two years Adderley was at Stanton, the district sent trainers to the school to provide focused professional development in the curriculum as well as training

Results Like These Are No Fluke

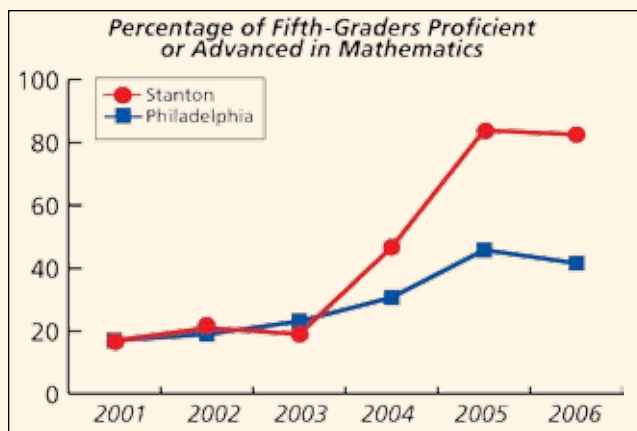
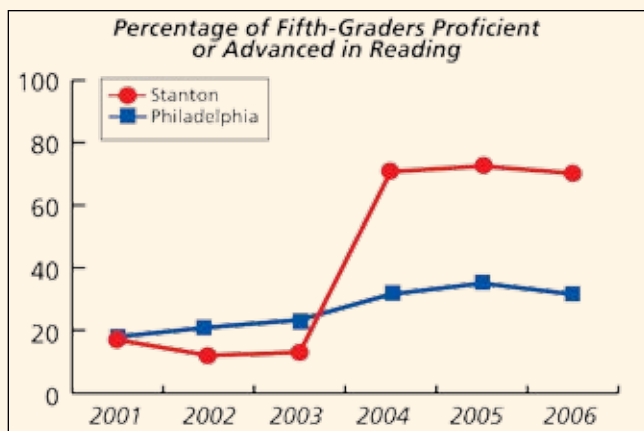
Early on in this project, in 2004, Dr. Greg Thornton, the chief academic officer of the Philadelphia school system, took me to visit two schools, and M. Hall Stanton was the one that really captured my attention. To get there from the district's office in downtown Philadelphia, we had driven through vast sections of North Philadelphia. To my shame, I hadn't realized how big and how devastated North Philadelphia is. Block

after block, mile after mile of what appeared to be a bombed-out city rolled by the car window. I hadn't seen anything like it since the South Bronx in the 1970s, and I wouldn't see anything worse until New Orleans after Hurricane Katrina.

Stanton posted scores that almost belied belief in 2004. After viewing the school, I believed the scores had been gained legitimately, but I realized that many others would

be doubtful and would likely dismiss its 2004 scores as a fluke. For that reason, I waited a year, crossing my fingers that in 2005 the scores would at least stay the same. They took another jump up. So I headed back to Stanton for a second look. Fifth-grade results are shown below (that's the only grade with longitudinal data); other grades had generally consistent results in 2006.

—K.C



Source for both graphs: *The School District of Philadelphia, Pennsylvania System of School Assessment.*

“I loved my kids. I believed I was successful. But we didn’t look at the data.”

—Christina Taylor
Stanton Team Leader

in such things as using student data to drive instruction. Now that Stanton has become one of the more successful schools in the city, the district has pulled back from its direct intervention, and it no longer requires particular training or professional development. Stanton is now in charge of designing its own professional development, and the leadership team at the school has decided to focus

its attention on literacy. This reflects a need shown by the school’s data: Although 16 percent of Stanton’s students do not meet state math standards, 27 percent do not meet state reading standards.

Kathleen Shallow, who had taught kindergarten before Adderley arrived and is now the literacy lead teacher and an academy team leader, said that back when she was a classroom teacher, she had high expectations for her students and good control of the classroom, but, “I had no idea what to teach.” A provision in the 2000-2004 contract between the Philadelphia Federation of Teachers and the district called for the district to implement a common, detailed, grade-by-grade program of instruction. The new, citywide reading and math curriculum was introduced during the 2003-2004 school year; for the first time, all elementary schools in the city were working on the same material at the same time. In the 2005-2006 school year, the district added on a citywide social studies and science curriculum. Though some longtime teachers lament the loss of autonomy, they acknowledge that children who move frequently do not get as lost with the core curriculum. Children who transfer into Stanton are brought up to speed quickly.

Taylor agreed with Shallow that the training and professional development provided during restructuring helped focus the school on instruction. “I loved my kids. I believed I was successful. But we didn’t look at the data.” Today, teachers, team leaders, and the principal meet once a week to look at student work in a focused way to

Sharing the Secret of Success

Stanton Teachers Tell How the School Improved

Several teachers have spent their entire careers at Stanton. They remember the school’s past struggles and have witnessed—and contributed to—its transformation.

American Educator talked to first-grade teacher Pam Mace, who has been at Stanton for 13 years, fifth-grade teacher John Coats, who has taught there for 22 years and is currently the union building representative, and team leaders Christina Taylor and Kathleen Shallow, who have worked there for 8 and 12 years respectively, to find out what Stanton’s improvement process has been like. Here are some of their comments on what’s working and why—and what’s still tough.

—EDITORS

Coats: Your work day doesn’t begin and end at Stanton. Your day begins at home as you’re preparing to come to Stanton to meet the kids’ needs. Then you can teach them. You can build relationships. I think that’s what made the difference: The teachers are actually building relationships with not only the kids, but the community, the family, so the kids are buying into the program. And they’ll come out for Saturday school. They’ll come out for extended day. When I have a [math tutoring] club at 7:00 in the morning, they’ll come out for the additional support.

Mace: We’re definitely an assessment-driven school. We look at our

assessments to see where our students need help. And we look at our standards.

Shallow: Since the restructuring [in which the district provided Stanton and 20 other schools with a variety of additional supports] and the adoption of the citywide core curriculum, instruction is standards-driven. Teachers have the core, they have a guide, they have the benchmarks, they know where they have to be and what students need to do. We do a lot more data analysis now, so we are really focusing in on students’ needs—for children who need additional support, but also for children who are excelling. We differentiate the instruction to meet the children’s needs at all levels.

Today, teachers, team leaders, and the principal meet once a week to look at student work in a focused way to see whether or not students are meeting standards and to evaluate whether instruction needs to change.

see whether or not students are meeting standards and to evaluate whether instruction needs to change. “In the past,” Adderley said, “teachers looked at student work to grade it, put it up on the board, and discussed it with parents. But we never looked at it together.”

At one of these meetings in the fall of 2005, second-grade teachers Ted Smith, Kimberly Gallagher, and Margo

Pinckney met with literacy lead teacher Kathleen Shallow and math literacy teacher Christina Taylor, as well as principal Adderley, to discuss their students’ progress in writing. Smith’s class was working on using rich, specific details in their writing. Smith had assigned his students to write a poem about fall and said he was looking to see if “the kids are really seeing” what they wrote about. “I see the tree tops high up in the sky” was an image Smith liked in one of his student’s writing. But other sentences were vague and flat. “I don’t think he has a—I don’t want to say clue, but he doesn’t understand how to add detail,” Taylor commented. Someone suggested giving students lists of descriptive words to offer them ideas about what details to add. Team leader Shallow suggested, “As you’re reading [aloud], if there are descriptive words, point them out.” Smith said he would try both suggestions.

Keeping the emphasis on teaching techniques and strategies means the discussion stays on instruction. “It’s not about feeling sorry for kids,” Adderley said. “It’s about making sure that they understand what it is they’re expected to do.”

That work takes place every day in classrooms, as teachers lead the students in the day’s reading as set out in the citywide curriculum and then work with small groups of students on specific skills as other students work at centers or related projects that teachers choose. If the reading is on Lou Gehrig, for example, students might work in small groups and independently on baseball math. Those projects are determined by the teachers in their grade-level

Mace: The team leaders have been so helpful. They are in the classroom making sure we have what we need, being very helpful to new teachers as well as the veteran teachers. Working with them you get a fresh look at things, something that you aren’t already doing, or a different twist or approach.

Taylor: As a team leader, I’m in charge of our math program. I model lessons—my ultimate goal is to teach teachers best practices. I also help out with the struggling math students in the classrooms. I receive professional development, too. Once a month the other team leader, Ms. Shallow, and I go to meetings to learn new things that we can then present to the staff; I go to a math meeting and Ms. Shallow goes to a literacy meeting.

Shallow: Professional development throughout the entire district has

improved. There’s more focus with the core curriculum. In addition to what the district mandates, we also have morning breakfasts in which one of the teachers shares a best practice. We’ve had two or three this year. So the teachers are also responsible for the professional development—it’s not just Ms. Taylor and me giving out information.

Coats: The main piece of advice that I would offer to other schools that need to improve is to make sure that everyone, all the stakeholders—not just the administration, but also the teachers, the community, the parents—buy into what you’re doing. Make the community a part of the school. Offer them jobs in the building. Have them come in to volunteer, work in the classrooms, assist the teachers, provide office support, police the halls, make sure that children are in class, and help out with tutoring or reading enrichment.

Taylor: You have to hold yourself accountable. I think many teachers, back when we first went to school, learned that as a teacher you got a guide that told you what and how to teach and that’s all you did. If, as a teacher, you notice that 18 of your 25 kids failed the test, then you need to re-teach the material a whole other way. So you need to walk outside your classroom and ask your colleagues how they taught that material.

Shallow: Nobody can do it alone; you have to work together. And you have to analyze the data. At Stanton, we know the neighborhood is rough, but we can’t worry about that. We can’t worry about what’s going on at home. We know it affects the students, but that can’t be our reason for not pushing hard. Everything we do is standards-driven. We have a tight agenda. Every minute of the day is focused on work.

meetings so that all students in a grade are working on the same content and expected to meet the same standards.

To make sure students are learning what is expected, teachers administer regular assessments, including short “checkpoint” tests every two weeks and districtwide “benchmark” tests every six weeks. Any child who is falling behind is identified, and is the subject of a meeting with teachers, Adderley, and the parents. The team leader will videotape a few minutes of the child while in the classroom so that all team members, including the parents, have a picture of how the child is functioning. They then agree to particular teaching strategies or interventions



work in the classrooms—one in the younger grades and one in the older grades—to provide support to the students and the teachers. “As much as possible, we want special education students in regular ed classrooms,” said Liz Baeringer, the head of special education services at Stanton. The special education teachers, who have additional training in different methods of reading and math instruction, teach model lessons and help teachers structure their lessons and work with struggling students, whether they are identified for special education or not. The city’s core curriculum, she said, “works for my children and

and meet again in 30 days to evaluate whether those interventions are working or whether others are needed.

The meeting room has an assessment wall that is covered with sticky notes, each note represents a child, color-coded by teacher, and arranged by reading level so that the faculty members have an instant read on the progress of all 487 children in the school, each of whom has an individual plan in place. In many schools, individual plans are done only for students identified as needing special education services, but at Stanton each student has one. Students who need special education services have more formal plans, known as Individualized Education Programs (IEPs), and Stanton has roughly 25 such students. Although a few who cannot function in a regular classroom are in a self-contained classroom, the rest are included in the regular classrooms. Two special education teachers

works for the teachers,” especially because children in Philadelphia are so transient. “We want consistency and research-based instruction.”

By keeping the focus on high-quality, fast-paced instruction with careful attention to anyone who needs it, Adderley said that less attention needs to be paid to discipline issues. Good instruction, she says, encourages good behavior. In addition, Stanton does a number of things to encourage students to be good school citizens. Teachers have “being good” tickets that they give children they see doing something nice for someone else, such as picking up a dropped pencil or performing some other type of good deed. Each ticket is worth 25 cents toward school supplies, such as notebooks or hole punchers, and each child who receives one is entered into a drawing for a monthly lunch with the principal. Every day a child is on time for school, he or she



receives a ticket to enter a monthly raffle drawing for a large prize such as a bicycle or radio. In this way, Adderley said, the school promotes an atmosphere that rewards good behavior rather than simply punishing bad behavior. Throughout Philadelphia, all school staff members—including building service staff—received training in behavioral management so that they are part of the support team.

To build relationships with the students' parents, Stanton has a "community liaison" responsible for arranging meetings with parents whose children are struggling or who are consistently absent. "I'm the link between the home and the school," community liaison Sharon Stewart said. Among other things, Stewart attends truancy court once a month to testify against parents whose children do not regularly attend. She also arranges parenting classes on Friday mornings that include nutrition information and advice on how to shop at the supermarket, how to clean up bad credit, and other practical seminars.

Stewart's salary comes from Stanton's Title I money. Title I is the federal program targeted specifically to help poor children achieve at the same levels as non-poor children, and Stanton uses the money very strategically in ways agreed to by the staff in what Adderley describes as a "collaborative process." The bulk of it goes to pay for materials, books, and supplies, but Stewart's salary is included as part of the school's efforts to improve parental involvement, a goal of Title I. In addition, Title I funds go for afterschool and Saturday enrichment classes that are used to help students who are falling behind, as well as to provide extras, such as afterschool sign language instruction and teachers' professional development.

The district pays for a school nurse three days per week. Stanton uses its general funds to pay for the rest of the week. "I think it's important," Adderley said about extending the nurse's week, explaining that many of her students have asthma or other health problems that require monitoring and careful administration of medication, which the nurse can provide. The nurse also arranges for outside help for students. For example, she applied for the Eagle Eye Foundation (sponsored by the Philadelphia Eagles) to bring its bus, equipped with eye examination equipment, to give students eye exams and provide them with glasses if needed.

With all of its canny use of resources and its consequent successes, Stanton still faces enormous challenges. Hiring is one. In the fall of 2005, the sixth grade had two new teachers who, even though they were provided with what Adderley called "the best support we had to offer," didn't last the first week. That left Stanton scrambling to fill the positions with substitutes. Just as Adderley thought she had found a good long-term substitute, he didn't show up one day, forcing the school to scatter the students throughout the school in different classes. It was months before Adderley was satisfied that her sixth-graders had good teachers, months that she said hurt the students. And

Stanton's "community liaison" attends truancy court once a month to testify against parents whose children do not regularly attend. She also arranges parenting classes on Friday mornings.

when the test results came in, they showed that she was correct. The 2006 data showed strong growth for the third grade, achievement that held stable for the fifth grade, but a disappointing performance for the sixth grade (only 52 percent of students were proficient or above in math, and just 16 percent were proficient or above in reading).

In part, this reflects that Stanton lost some of its previous year's fifth-graders to charter and magnet schools, as well as received quite a few new students. In addition, the sixth grade had substitute teachers for more than half of the school year. Since the curriculum completely changes between fifth and sixth grades, students need good instruction to score well on sixth-grade assessments.

As much as Stanton tries to keep the emphasis on instruction, the difficulties of the children's lives outside of school intrude regularly. Students are always jittery the day after a shooting in the neighborhood—tragedy is never far away. One day in November of 2005, a student died after his aunt gave him one of her pain pills in a misguided attempt to help him through an asthma attack. As difficult as these things are for the school community, however, none of it is allowed to stop the mission of the school: teaching and learning. Stanton demonstrates that when a school is carefully organized to make every minute, every lesson, and every child count, it can make enormous and sustained progress. □

A Place for Poetry

Together, Poetry and History Make Field Trips Memorable

By Anne Marie Whittaker

Geography

Islands and peninsulas, continents and capes,
Dromedaries, cassowaries, elephants and apes,
Rivers, lakes and waterfalls, whirlpools and the sea,
Valley-beds and mountain-tops—are all Geography!
The capitals of Europe with so many curious names,
The North Pole and the South Pole and Vesuvius in flames,
Rice-fields, ice-fields, cotton-fields, fields of maize and tea,
The Equator and the Hemispheres—are all Geography!
The very streets I live in, and the meadows where I play,
Are just as much Geography as countries far away,
Where yellow girls and coffee boys are learning about me
One little white-skinned stranger who is in Geography!

—Eleanor Farjeon

As a fourth-grader in the New York City public schools, this poem is how I learned about geography. The year was 1963, and my schoolmarmish teacher, Miss Vera Fastenberg, required us all to memorize and recite it. While I had little trouble with the memorization because I had become accustomed to it with my own family, I did have to look up such exotic creatures as dromedaries and cassowaries; I already knew about elephants and apes.

Forty years later, I still remember this poem and roughly 100 others that the New York City curriculum—not just Ms. Fastenberg—required us to memorize. To this day, I can even recite a line I learned in first grade. Our class had memorized Edward Lear's *The Owl and the Pussycat*, and my line in our playlet was, "So they took it away and were married next day by the turkey who lived on the hill."

I loved the way Farjeon's and Lear's words rolled off my tongue. And I relished the vivid images their rhymes created in my head. These poems have not only enriched my personal life, but have come in handy in my professional life, as well. I'm an educational guide and tour designer. Based in Alexandria, Va., I give roughly 22 tours to about a thousand students each year. I take them on visits to Washington, D.C.,

Anne Marie Whittaker designs educational tours for students throughout the United States and Canada. She writes The Educational Tour Marm blog <http://tourmarm.blogspot.com> where she posts tips to improve student tours.

monuments as well as historical sites up and down the east coast. But I don't just tell students why a particular memorial is important or give them the *CliffsNotes* version of a historical event. I make statues and stone come alive with poetry. And as teachers see how enthusiastically their students react, I encourage teachers to incorporate poetry into their field trips and classes.

* * *

My family background is best summed up by Elias Lieberman's poem, *I am an American*. I was brought up in both urban and rural environments and was blessed by parents who loved literature. Family members, from both sides, read poetry to me as soon as I uttered my first words. Three of my most prized books were, and still are, *When We Were Very Young* and *Now We Are Six* (both by A.A. Milne) as well as an anthology of over 700 poems, *Favorite Poems Old and New*, edited by Helen Ferris Tibbetts. Prayers and psalms from the Bible, followed by the dramatic passages and sonnets of Shakespeare augmented my repertoire, all before eighth grade.

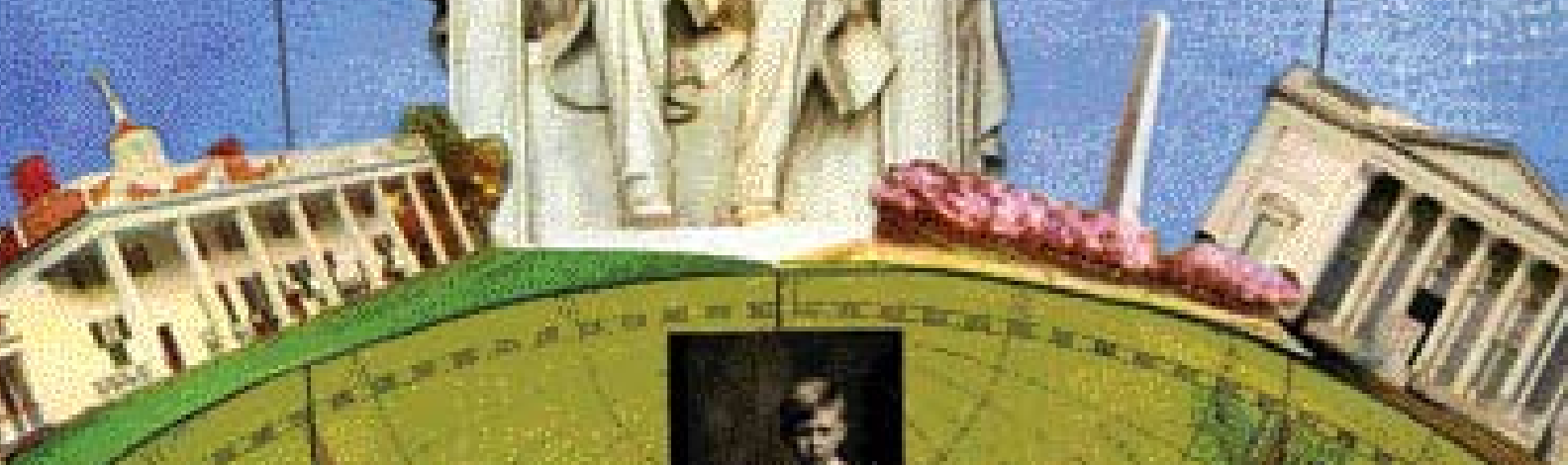
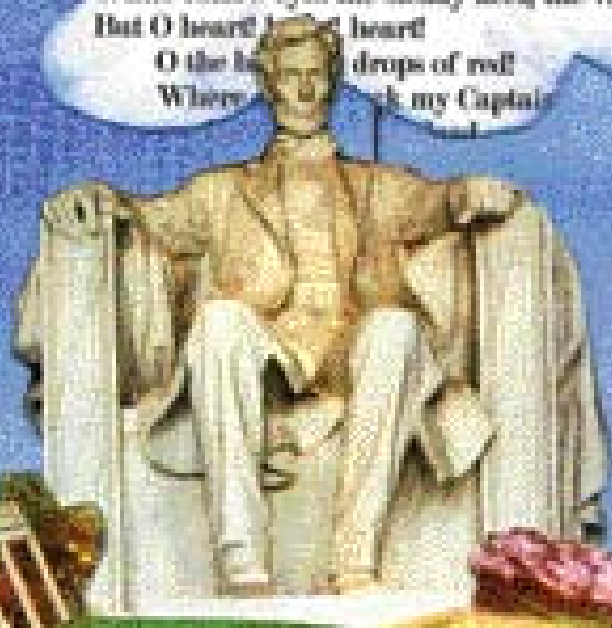
Memorization was an acquired skill employed by my family members for diversion as well as discipline. The older generation had neither radio nor television growing up, and going to a movie was a rare treat. Recitation and music were the acceptable outlets; reading was required for both. I was required at times to recite poems for the enjoyment of my family. Once, when I forgot a line, my father chided me that young Winston Churchill (who was nearly at the bottom of his class at Harrow) could recite over 1,200 lines of Macaulay's *Lays of Ancient Rome*. (I imagined that they were short lines, but have since found out otherwise.) Elderly members of my father's family in the Northern Neck of Virginia could conceivably have matched Sir Winston Churchill; they constantly regaled us with *John Henry* and other long folk poems and songs. My late cousin, Harvey Bailey, was particularly entertaining and could, at the drop of a hat, recite something that he had learned nearly 95 years ago, when he was a young whippersnapper.

In the summer of 1969, I tried writing poems of my own. That time was particularly magical for me. It's when I first started to understand and write love poetry, for it was the year of my first boyfriend. It was also the summer of *Apollo 11*. My family was glued to the television watching the *Apollo 11*

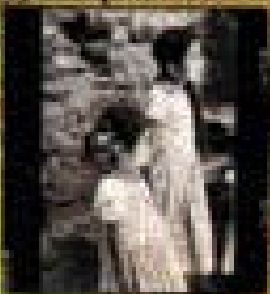
For the... George Washington
 (At last I've got it straight)
 The first in war, the first in peace,
 The goodly and the great,
 At, when you think about him now,
 From here to Valley Forge,
 Remember this—he might have been
 A highly different specimen,
 Where on a... we be, the

the early is...
 Lies on laughter-covered
 and I've climbed, and joined the tumbling
 sun-split clouds - and done a hundred
 not dreamed of - wheeled and soared
 high in the sunlit silence. Hov'ring the
 chased the short... along, and
 under craft the... balls of

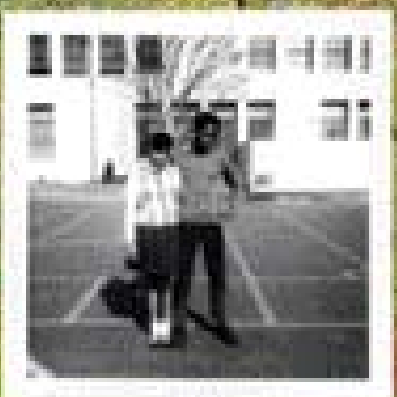
... my Captain... fearful trip
 The ship has weathered every rack, the prize
 The port is near, the bells I hear, the people all exult
 While follow eyes the steady keel, the vessel grim and
 But O heart! heart! heart!
 O the happy drops of red!
 Where... my Captain



HISTORY



POETRY



REMEMBRANCE

mission and mesmerized by Neil Armstrong and Buzz Aldrin. "That's one small step for a man, one giant leap for mankind." Talk about poetry!

When the astronauts eventually rested, Dad opined that in any other century such a momentous occasion would be marked and celebrated in poetry and song. He lamented whether anyone nowadays would see the poetry in it. Eager to please my father, I rushed upstairs to write something to capture the moment, which has become a family joke:

O! Fain that I would see the day
The moon does not belong to lovers!
Stripped of the lies and myths of past
They of the moon that were truth's covers.
And three were on that awesome flight
'Twas such a very brave endeavor
Scientists were victorious;
Now lovers croon about the weather!

Despite this inauspicious beginning, my poetic attempts were not confined to home. I eventually became the literary editor of my high school's literary arts magazine. While one of my poems included in that publication was given a 'rave review' in the school newspaper, another was panned. I persevered, however, and still write a few lines when the spirit moves me.

* * *

As an educational tour designer, I suggest poems that complement venues and curricula to teachers and tour guides. *Peregrine White and Virginia Dare*, a poem by Rosemary and Stephen Vincent Benét about "the first real Americans" that I memorized as a teenager before visiting Jamestown, has a place on the tour, as does the iconic line from *Apollo 11*, especially when I'm at the National Museum of Air and Space. There are several other places during a tour of Washington and Virginia where one could inject a poem or two. Mount Vernon is a spectacular backdrop for the Benét's, *George Washington*. The Benét's also composed a poem that helps me introduce President Lincoln and his massive memorial; it's called *Nancy Hanks*:

If Nancy Hanks
Came back as a ghost,
Seeking news
Of what she loved most,
She'd ask first
"Where's my son?
What's happened to Abe?
What's he done?"
"Poor little Abe,
Left all alone.
Except for Tom,
Who's a rolling stone;
He was only nine,
The year I died.
I remember still
How hard he cried."
"Scraping along
In a little shack,
With hardly a shirt
To cover his back,
And a prairie wind
To blow him down,
Or pinching times
If he went to town."

"You wouldn't know
About my son?
Did he grow tall?
Did he have fun?
Did he learn to read?
Did he get to town?
Do you know his name?
Did he get on?"

These are relatively simple poems that I learned in fourth grade. I have parts of them written on index cards that I distribute amongst my students to read aloud together. After that, they share their thoughts on how different choices could have changed George Washington's life or how they would reply to the questions posed by Lincoln's mother. Carl Sandburg's, *Washington Monument by Night*, is another poem that my students love; it can be adapted as a sort of a choral piece. I even suggest they compose a poem describing their impressions of another monument or memorial in D.C.

During our three-hour walks through Arlington National Cemetery, out come more index cards so that the students can recite lines from *Bivouac of the Dead* by Theodore O'Hara, *In Flanders Field* by Lt. Col. John McCrae, and *High Flight* by Pilot Officer John Gillespie McGee, Jr. This last poem is chiseled into the back of the Challenger Memorial and seeing it touches the students as they learn that the author was killed just days after we entered World War II. (*High Flight* would also be suitable for the new Air Force Memorial adjacent to the Pentagon.) These poems set the tenor for a solemn visit, as does *Hello David* by Nurse Dusty at the Nurses' Memorial, which is part of the Vietnam Veterans' Memorial.

* * *

Last autumn, as I was bringing a group down the forested mountain at Monticello, I jumped up on a bench to improve my view of the stragglers while holding onto the tree for support. One of the students asked if I were a "tree hugger." In fact, I literally was. I told the group that I loved trees, especially in autumn. To keep their attention, I started to wax lyrical and recite a couple of poems by Emily Dickinson and Robert Frost as well as Joyce Kilmer's *Trees*. Quoting Kilmer, I told them, "Poems are made by fools like me, But only God can make a tree." It was their first time hearing these poems, which I had assumed were already part of their cultural literacy and curriculum.

When the whole group was finally gathered, one of the students asked me to recite another poem. I thought *Geography* would be perfect. The students applauded after I finished. One young man thought that it was a hard poem and must have taken me a long time to memorize. (He probably wondered how I was still capable of remembering it at my advanced age!) They were all stunned when I revealed that I had learned it in fourth grade and it took less than a week.

"That's nothing, would you like to hear me recite the poem for which I received extra credit when I was in fourth grade? It's called *The Highwayman*!" For the next five days I recited poetry and taught them folk songs. *Goover Peas* was the number one crowd pleaser. *Soldier, Soldier, Will You Marry Me?* was also well-received.

On these trips, my audience often includes teachers and administrators. They, too, appreciate the verses I recite. And they recognize that poetry and song are equal partners with history and civics.

Sometimes I just have to remind them. □

Professional Voice

(Continued from page 29)

⁸ Richard Ingersoll, "Is There Really A Teacher Shortage?" CPRE and CTP, September 2003, p. 17-18, <http://depts.washington.edu/ctpmail/PDFs/Shortage-RI-09-2003.pdf>.

⁹ Richard Ingersoll, same as above, p. 18.

¹⁰ This is why actual teaching experience is one of the key attributes of teaching quality. Jennifer King Rice, *Teacher Quality: Understanding the Effectiveness of Teacher Attributes*, Washington, D.C.: Economic Policy Institute, 2003.

¹¹ Sandra Acker (ed.) *Teachers, Gender and Careers*, London: Taylor and Francis, 1989, and Nancy Hoffman, *Women's True Profession: Voices from the History of Teaching*, Cambridge, Mass.: Harvard Education Press, 2003.

¹² William Baugh and Joe Stone, "Teachers, Union and Wages in the 1970s: Unionism Now Pays," in *Industrial and Labor Relations Review*, 35, 3, April 1982.

¹³ These often cited figures are derived from the annual *Schools and Staffing Survey and Teacher Follow Up Survey* of the National Center for Education Statistics. For the latest report, see *Teacher Attrition and Mobility*, Washington, D.C.: National Center for Education Statistics, August 2004.

¹⁴ Sylvia Allegretto, Sean Corcoran, and Lawrence Mishel, *How Does Teacher Pay Compare? Methodological Challenges and Answers*. Washington, D.C.: Economic Policy Institute, 2004.

¹⁵ For more on the history and program of the

National Board, visit its Web site at www.nbpts.org.

¹⁶ For a description of teacher union work in this area, see *A Union of Professionals: Labor Relations and Educational Reform*, Charles Kerchner and Julia Koppich, (eds.), New York: Teachers College, 1993; and Nina Bascia, *Unions in Teachers' Professional Lives: Some Social, Intellectual and Practical Concerns*, New York: Teachers College Press, 1994; and *Triage or Tapestry? Teacher Unions' Work Toward Improving Teacher Quality in an Era of Systemic Reform*, University of Washington: Center for the Study of Teaching and Policy, 2003; "Nurturing Teacher Knowledge: How Union-Led Professional Development is Raising Reading Achievement," Neill S. Rosenfeld, *American Educator*, 30, 4, p. 12-25.

¹⁷ American Federation of Teachers, *Building A Profession: Strengthening Teacher Preparation and Induction*, a Report of the K-16 Teacher Education Task Force, Washington, D.C., April 2000; and Linda Darling-Hammond, Arthur Wise, and Stephen Klein, *A License to Teach: Building A Profession for Twenty-First Century Schools*, Boulder: Westview Press, 1995.

¹⁸ For an overview of peer evaluation and review programs, see American Federation of Teachers and National Education Association, *Peer Assistance and Peer Review: An AFT/NEA Handbook*. Prepared for the Shaping the Profession That Shapes the Future: An AFT/NEA Conference on Teacher Quality, September 1998.

¹⁹ Lynn W. Gregory, et al. (2006-2007). "Cultivate the Right Solution: It's Attracting and

Retaining Experienced Teachers," *American Educator*, 30, 4, p. 27, 32-38.

²⁰ New York City Collective Bargaining Agreement, Articles 24 and 8J. The UFT and the Board of Education developed a joint manual on the alternative evaluation process, "Teaching for the Twenty-First Century," available from the UFT, 52 Broadway, New York, N.Y. 10004.

²¹ New York City Collective Bargaining Agreement, Article 8E. The implementation of Article 8E was laid out in Chancellor's Special Circular #28, 1990-1991.

²² Deborah Meier, *The Power of Their Ideas: Lessons for America from a Small School in East Harlem*, Boston: Beacon Press, 2002; Michelle Fine (ed.), *Chartering Urban School Reform: Reflections on Public High Schools in the Midst of Change*, New York: Teachers College Press, 1994.

²³ 2000-2003 New York City Collective Bargaining Agreement, Article 8B.

²⁴ On the turnover rate in Catholic and private schools, see Richard Ingersoll, "Is There Really A Teacher Shortage?" CPRE and CTP, September 2003, p. 15, <http://depts.washington.edu/ctpmail/PDFs/Shortage-RI-09-2003.pdf>; for the turnover rate in charter schools, see American Federation of Teachers, "Do Charter Schools Measure Up? The Charter School Experiment After 10 Years," Washington, D.C., 2002, p.28, www.aft.org/pubs-reports/downloads/teachers/charter-report02.pdf; also see G. Miron and B. Applegate, "Teacher Attrition in Charter Schools," Education Policy Research Unit and Education and the Public Interest Center, May 2007.

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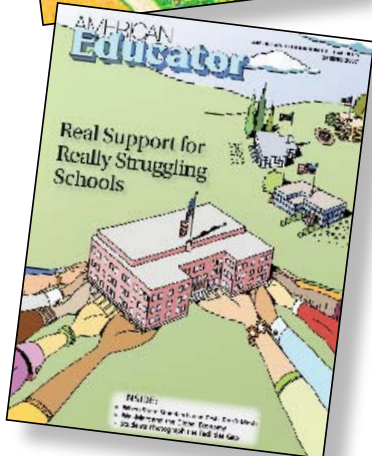
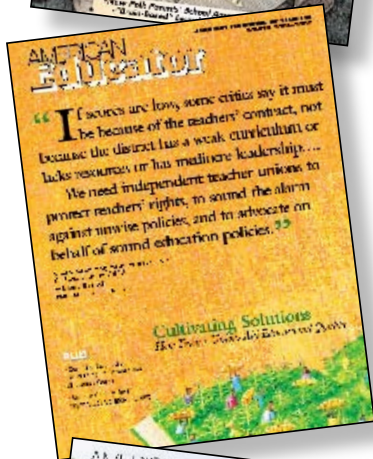
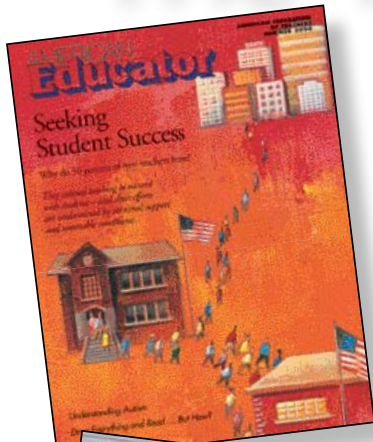
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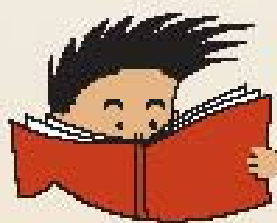
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