

Cover the Material—Or Teach Students to Think?

Marion Brady

“So here’s today’s project, kids. Get in small groups and put together flowcharts tracing the possible long-range consequences of a new state energy conservation law that says you can’t use any kind of motorized vehicle to travel less than one mile.”

“What about emergencies?”

“Hmmm. Let’s say that if you were caught using a motorized vehicle on a short trip and you weren’t bleeding and headed to the hospital, you’d be fined \$200.”

“How about electric scooters or skateboards?”

“They’re motorized. It takes energy to charge their batteries. So, no.”

“Is being late for work, school, or a doctor’s appointment an emergency?”

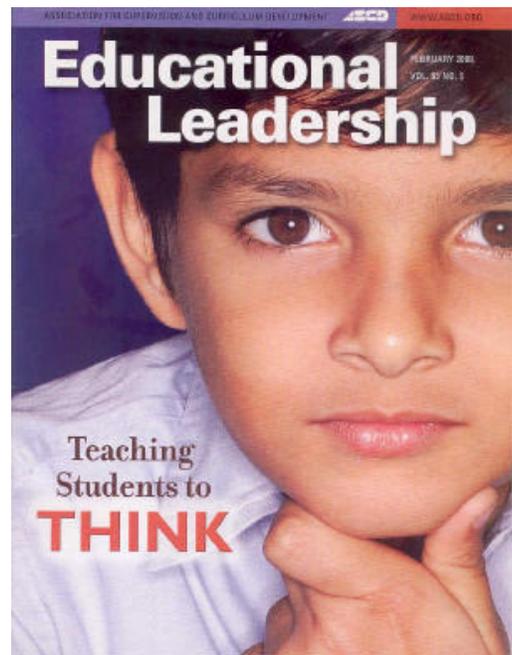
“Nope. You’ll just need to start sooner. Any more questions? OK, then get on with it. As usual, when you think you’ve done all you can do, we’ll combine your work to get as complete a picture of this kind of policy-driven social change as we can.”

This is a reasonable and intellectually stimulating educational activity dealing with a matter of fundamental importance in everyday life – the dynamics of social change. Working on it doesn’t require a specialized vocabulary, mastery of new ideas, or even the ability to read.

Generating similar questions isn’t difficult: What if consumption of fresh water were limited to two gallons per person per day? What if everyone, no exceptions, had to serve one year of public service after high school? What if a reliable pocket-size voice stress analyzer indicating when someone isn’t telling the truth cost just \$10? What if global warming raised the average temperature in the area in which you live by 4°F?

These kinds of questions make students think. Why, then, aren’t such questions routinely asked in school? Why is such an important aim – to help students think more clearly and productively – so hard to put into operation?

The short answer is that for many people, the main purpose of educating isn’t to improve students’ thinking skills but to “cover the material” in math, science, language arts,



social studies, and other school subjects. Covering the material is, of course, important. To function, societies need various kinds of glue to hold their components together. One of those glues is a language of allusion, a body of information that members share that enables them to communicate complicated ideas in few words. The expressions *soccer moms*, *Jeffersonian democracy*, and *green technology* are familiar examples. When a system of mass education sends students on their way with meaning attached to thousands of ideas like those, efficient, society-sustaining dialogue is possible.

A second reason that covering the material is important stems from the obvious fact that the older generation has answers to some important questions about how the world works. Passing this information on saves the young from having to figure out those answers for themselves, sometimes at great expense and with considerable pain. It's useful to know, for example, that in the past, surplus wealth invested in building railroads between trading centers yielded a higher return than did wealth invested in building weapons, or that rapid social change has often triggered religious fundamentalism.

Covering the material makes good sense, then, in terms of contributing to social stability and transmitting useful, important insights. The problem lies in assuming that these are the main purposes of education. In earlier times, when the rate of social, technological, and environmental change from one generation to the next was all but imperceptible, covering the material was a higher priority. Answers to important questions – such as when to plant, what to do for a sick horse, which berries were safe to eat and which ones would kill you – made clear the desirability of listening to the elders.

Obviously, this isn't such a time.

Social change feeds on itself, accelerating at an ever-increasing rate. As a consequence, one generation's shared language of allusion won't transfer to the next. Neither are the older generation's strategies for solving problems, resolving conflicts, and coping with complex moral dilemmas necessarily transferable intact to the young. In eras of rapid social change, old answers rarely fit. Adaptation to changing realities requires higher-order thinking skills.

The mechanics of teaching those skills aren't particularly difficult. What's tough is convincing the public that it's necessary and doable, that an education designed in the 19th century doesn't work in the 21st. What's tough is convincing influential business leaders that greater rigor and "raising the bar" – doing what we've been doing since the Committee of Ten standardized the curriculum in 1892 – will simply make the situation worse. What's tough is convincing politicians that comparing U.S. test scores with those of other countries is meaningless if neither we nor they are doing what needs to be done. What's tough is countering the enormous influence of publishing, testing, and consulting industries determined to get an ever-larger slice of the half-trillion dollars that the United States spends each year on education-related services.¹

We need to accept that what we've been doing isn't the whole story – not even the *main* story – of educating. For centuries, the central question directed at the young has been, How much do you remember? The proper questions for this era are: What's going on here? Why? Where is it likely to take us and what should we be doing?

The Focus on Recall

About 50 years ago, Benjamin Bloom produced a useful tool for thinking and talking about what's happening and not happening inside students' heads. Working with others, he devised the Taxonomy of Educational Objectives – a summary of specific thought processes arranged in order of increasing complexity: These include such skills as recalling, comparing, classifying, inferring, hypothesizing, generalizing, relating, synthesizing, valuing, and predicting.

Having words for different thinking skills makes it easy to get a fix on the kinds of thought processes that students are using. Unfortunately, recall seems to play as important a role in instruction as ever. For example, we can reasonably assume that students are being asked merely to recall something they read or heard for a test when teachers closely monitor them during that test to make certain they're not looking at one another's work or using crib notes, cell phones, or other technology. If the assessment required students to use higher-order thinking skills, then teachers wouldn't need to monitor students so carefully to discourage cheating. Student responses would be distinctive rather than uniform, easily associated with individual learners.

The continued importance of textbooks also testifies to the centrality of recall. Notwithstanding their ever-expanding size and weight, marginal notes, extravagant color, text-box gimmickry, supportive extras, and appalling cost, they're still textbooks, just glitzed-up versions of the read-and-remember, answer-the-questions-at-the-end-of-the-chapter tools they were a century ago. As proof of this, pick up a serious student's textbook and thumb through the pages. If you find underlining or highlighting, it's safe to assume that the student expects to be held accountable for remembering that information.

Conventional textbooks are all but useless for teaching higher-order thinking skills because they represent the final conclusions of other people's thought processes. The opportunities for complex thinking have been squeezed out of them. It's like giving students completed crossword puzzles to study and then, a little later, giving them those very same puzzles but with empty blanks to fill in. Years of practice make some kids good at storing information in short-term memory, but in this era of almost instantaneous access to a universe of information, that's an appalling waste of good brains.

What's true of textbooks is true of lectures, reference sections of libraries, the Internet, and other tools for passing along information from those who supposedly know to those who supposedly don't. They're massive collections of conclusions and somebody else's inferences, hypotheses, generalizations, syntheses, and value judgments handed to students with some rationalization like, "You'll need to know this next year" or "This will be on the test."

Skeptics who don't think this is a problem would do well to borrow the textbooks in a typical adolescent's back-pack and count the ideas their glossaries insist are important. One set of popular 8th grade textbooks covering just four subjects – math, science, language arts, and social studies – notes almost 1,500 important topics. That's for *one year*, or about 170 actual instructional days in those schools that haven't switched to nonstop reading and math test-preparation drills and even fewer days for those schools that have. It's akin to trying to drink from a fire hose.

The Trouble with Tests

Then, of course, there are those tails currently wagging the education dog – so-called standards and the high-stakes tests keyed to them. Of all the obstacles to improving student thinking, these are surely the most damaging. Teachers and administrators may feel forced to administer them, but doing so means ignoring higher-order thinking skills. The reason is simple. Nobody has yet invented a test-scoring computer program that can evaluate the quality of complex thought processes and spit out meaningful numbers. Do two “good” hypotheses generated by a student equal four “fair” hypotheses or seven “poor” ones generated by another student? How much is one spectacularly original and useful hypothesis, generalization, or value judgment worth? There’s no getting around it. The more sophisticated the thought process, the less it lends itself to meaningful mechanical or electronic evaluation.

Machine-scored tests can, of course, ask students to choose a particular hypothesis, generalization, value judgment, or other higher-order thought process from a list of options. But guessing what an anonymous writer of a test item had in mind isn’t higher-order thinking.

Some educators may say, “Teaching students to think is important, but they can’t think without raw materials in the form of facts, so I’m getting them *ready* to think.” Others may insist that many of their students are incapable of “getting beyond the basics.” However, most kids show up for kindergarten already making routine use of higher-order thought processes. They don’t need to be taught to think; they need to learn how to examine, elaborate, and refine their ways of thinking and put this thinking to deliberate use converting information into knowledge and knowledge into wisdom.

The Appeal of the Real

In his 1916 presidential address to the Mathematical Association of England, Alfred North Whitehead noted, “The secondhandedness of the learned world is the secret of its mediocrity.” We should print these words on banners and hang them on classroom walls as a reminder that students learn to think – by thinking.

Traditional instruction is more concerned with the study of opinions *about* the real world than with the study of the real world itself. Internalizing others’ views requires just one thinking skill – recall. Trying to make sense of one’s own day-to-day experience requires the use of *every* known thinking skill.

This notion has made relatively little headway in U.S. classrooms because, for many educators, the line between first-hand and secondhand knowledge is often fuzzy or nonexistent. Many believe that the important thing is for students to be knowledgeable. Where that knowledge comes from – whether someone hands it to the students or they figure it out on their own – seems to be of little consequence. Education leaders can take a crucial step toward getting students to use higher-order thinking skills by drawing a sharp line between firsthand and secondhand knowledge. The best way to do this is to focus attention directly on some part of the real world. Every student’s first priority is to make sense of

“right here, right now,” so most often the best choice of subject matter will be the school itself and its immediate environment. This living, breathing, dynamic slice of reality is big enough to include all major elements of reality; small enough for students to get their heads around, complex enough to challenge every ability level, and accessible enough to enable continuous direct study.

For example, at the middle or high school level, teachers can pose myriad school-focused questions related to every field of study: What kinds of energy power the school? How are these energy sources created and measured? At what cost to taxpayers? At what cost to the environment? What kind of waste does the school produce? Where does it go and how is it processed? What could be done to decrease the school’s carbon footprint?

There are hundreds of possible questions related to technology; psychology, sociology, or history: What are the major determinants of status among students? Who are leaders and why? What patterns of behavior – such as lunchtime seating, cliques, and extracurricular activities – accompany perceptions of status? What’s the officially stated purpose of the school?

What’s the evidence that this purpose is or isn’t taken seriously? What kind of statistical information would be useful in understanding the student population? Going back in time, who or what occupied the site before the school was built?

Questions like these require quantitative measures, engaging students with math. Studying the natural and human-made environment demands the rigors of the biological and physical sciences. Schools are also complex social systems, rich in possibilities for research in the social sciences. In fact, any concept in the general education core curriculum can manifest itself in some meaningful way within the boundaries of the school or neighborhood. Its concreteness will make it memorable and a logical step to study of the larger world.

Real and Rigorous

A focus on real-world issues can alter the entire culture of a school or school system. It enables students and teachers to experience the “meatiness” of the direct study of reality. It’s unfailingly relevant. It shows respect for students, who become more than mere candidates for the next higher grade. It levels the playing field by not privileging those with superior symbol manipulation skills. It disregards the arbitrary, artificial boundaries of the academic disciplines. It’s easily applicable to the wider world. And it shifts the emphasis from cover-the-material memory work to a full range of thinking skills.

1. National Center for Education Statistics. (2007). *Fast Facts*. Washington, DC: Author. Available: <http://nces.ed.gov/fastfacts/display.asp?id=372>.

Marion Brady has taught at the middle school, high school, and university level. He has been a school administrator, text-book author, and education columnist. He is currently retired; mbrady22@cfl.rr.com.