Driven by discontent with the performance of our schools, we are, once again, in the midst of education reform, as we were in 1983 with A Nation at Risk, in 1987 with America 2000, and a few years later with Goals 2000. Each of these reform efforts was intended to rationalize the practice and performance of our schools. Each was designed to work out and install a system of measurable goals and evaluation practices that would ensure that our nation would be first in science and mathematics by the year 2000, that all our children would come to school ready to learn, and that each school would be drug-free, safe, and nonviolent.¹

The formulation of standards and the measurement of performance were intended to tidy up a messy system and to make teachers and school administrators truly accountable. The aim was then, and is today, to systematize and standardize so that the public will know which schools are performing well and which are not. There were to be then, and there are today, payments and penalties for performance.

America is one of the few nations in which responsibility for schools is not under the aegis of a national ministry of education. Although we have a federal agency, the U.S. Department of Education, the 10th Amendment to the U.S. Constitution indicates that those responsibilities that the Constitution does not assign explicitly to the federal government belong to the states (or to the people). And since the Constitution makes no mention of education, it is a responsibility of the states.

As a result, we have 50 departments of education, one for each state, overseeing some 16,000 school districts that serve 52 million students in more than 100,000 schools. In addition, each school district has latitude for shaping education policy. Given the complexity of the way education is organized in the U.S., it is understandable that from one perspective the view looks pretty messy and not altogether rational. Furthermore, more than a few believe that we have a national problem in American education and that national problems

require national solutions. The use of highly rationalized procedures for improving schools is a part of the solution.

I mention the concept of rationalization because I am trying to describe the ethos being created in our schools. I am trying to reveal a world view that shapes our conception of education and the direction we take for making our schools better.

Rationalization as a concept has a number of features. First, it depends on a clear specification of intended outcomes. That is what standards and rubrics are supposed to do. We are supposed to know what the outcomes of educational practice are to be, and rubrics are to exemplify those outcomes. Standards are more general statements intended to proclaim our values. One argument for the use of standards and rubrics is that they are necessary if we are to function rationally. As the saying goes, if you don't know where you're headed, you will not know where you have arrived. In fact, it's more than knowing where you're headed; it's also knowing the precise destination. Thus the specification of intended outcomes has become one of the primary practices in the process of rationalizing school reform efforts. Holding people accountable for the results is another.

Second, rationalization typically uses measurement as a means through which the quality of a product or performance is assessed and represented. Measurement, of course, is one way to describe the world. Measurement has to do with determining matters of magnitude, and it deals with matters of magnitude through the specification of units. In the United States, the unit for weight is pounds. In Sweden or the Netherlands, it is kilograms. It's kilometers in Europe; it's miles in the United States. It really doesn't matter what unit you use, as long as everyone agrees what the unit is.

Quantification is believed to be a way to increase objectivity, secure rigor, and advance precision in assessment. For describing some features of the world, including the educational world, it is indispensable. But it is not good for everything, and the limitations of quantification are increasingly being recognized. For example, although initial discussions about standards emphasized the need for them to be measurable, as standards have become increasingly general and ideological, measurability has become less salient.

Third, the rationalization of practice is predicated on the ability to control and predict. We assume that we can know the specific effects of our interventions, an assumption that is questionable.

Fourth, rationalization downplays interactions. Interactions take into account not simply the conditions that are to be introduced in classrooms or schools but also the kinds of personal qualities, expectations, orientations, ideas, and temperaments that interact with those conditions. Philosophical constructivists have pointed out that what something means comes both from the features of the phenomenon to be addressed and from the way those features are interpreted or experienced by individuals. Such idiosyncratic considerations always complicate assessment. They complicate efforts to rationalize education as well. Prediction is not easy when what the outcome is going to be is a function not only of what is introduced in the situation but also of what a student makes of what has been introduced.

Fifth, rationalization promotes comparison, and comparison requires what is called "commensurability." Commensurability is possible only if you know what the programs were in which the youngsters participated in the schools being compared. If youngsters are in schools that have different curricula or that allocate differing amounts of time to different areas of the curriculum, comparing the outcomes of those schools without taking into
account their differences is extremely questionable. Making comparisons between the math performance of youngsters in Japan and those in the United States without taking into account cultural differences, different allocations of time for instruction, or different approaches to teaching makes it impossible to account for differences in student performance or to consider the side effects or opportunity costs associated with different programs in different cultures. The same principle holds in comparing student performance across school districts in the U.S.

Sixth, rationalization relies upon extrinsic incentives to motivate action; that's what vouchers are intended to do. Schools are likened to businesses, and the survival of the fittest is the principle that determines which ones survive. If schools don't produce effective results on tests, they go out of business.

In California and in some other parts of the country, principals and superintendents are often paid a bonus if their students perform well on standardized tests: payment by results. And, of course, such a reward system has consequences for a school’s priorities. Are test scores the criteria that we want to use to reward professional performance?

The features that I have just described are a legacy of the Enlightenment. We believe our rational abilities can be used to discover the regularities of the universe and, once we’ve found them, to implement, as my colleague David Tyack titled his book, “the one best system.” We have a faith in our ability to discover what the U.S. Department of Education once described as “what works.” The result is an approach to reform that leaves little room for surprise, for imagination, for improvisation, or for the cultivation of productive idiosyncrasy. Our reform efforts are closer in spirit to the ideas of René Descartes and August Compte than to those of William Blake. They are efforts that use league tables to compare schools and that regard test scores as valid proxies for the quality of education our children receive. And they constitute an approach to reform that has given us three major educationally feckless reform efforts in the past 20 years. Are we going to have another?

What are the consequences of the approach to reform that we have taken and what should we pay attention to in order to tell when a school is doing well? First, one of the consequences of our approach to reform is that the curriculum gets narrowed as school district policies make it clear that what is to be tested is what is to be taught. Tests come to define our priorities. And now we have legitimated those priorities by talking about “core subjects.” The introduction of the concept of core subjects explicitly marginalizes subjects that are not part of the core. One of the areas that we marginalize is the arts, an area that when well taught offers substantial benefits to students. Our idea of core subjects is related to our assessment practices and the tests we use to determine whether or not schools are doing well.

Because those of us in education take test scores seriously, the public is reinforced in its view that test scores are good proxies for the quality of education a school provides. Yet what test scores predict best are other test scores. If we are going to use proxies that have predictive validity, we need proxies that predict performances that matter outside the context of school. The function of schooling is not to enable students to do better in school. The function of schooling is to enable students to do better in life. What students learn in school ought to exceed in relevance the limits of the school’s program.

As we focus on standards, rubrics, and measurement, the deeper problems of schooling go unattended. What are some of the deeper problems of schooling? One has to do with the quality of conversation in classrooms. We need to provide opportunities for youngsters
and adolescents to engage in challenging kinds of conversation, and we need to help them learn how to do so. Such conversation is all too rare in schools. I use “conversation” seriously, for challenging conversation is an intellectual affair. It has to do with thinking about what people have said and responding reflectively, analytically, and imaginatively to that process. The practice of conversation is almost a lost art. We turn to talk shows to experience what we cannot do very well or very often.

The deeper problems of schooling have to do with teacher isolation and the fact that teachers don’t often have access to other people who know what they’re doing when they teach and who can help them do it better. Although there are many issues that need attention in schooling, we search for the silver bullet and believe that, if we get our standards straight and our rubrics right and make our tests tough enough, we will have an improved school system. I am not so sure.

The message that we send to students is that what really matters in their education are their test scores. As a result, students in high-stakes testing programs find ways to cut corners—and so do some teachers. We read increasingly often not only about students who are cheating but also about teachers who are unfairly helping students get higher scores on the tests. It’s a pressure that undermines the kind of experience that students ought to have in schools.

Perhaps the major consequence of the approach we have taken to rationalize our schools is that it ineluctably colors the school climate. It promotes an orientation to practice that emphasizes extrinsically defined attainment targets that have a specified quantitative value. This, in turn, leads students to want to know just what it is they need to do to earn a particular grade. Even at Stanford, I sometimes get requests from graduate students who want to know precisely, or as precisely as I can put it, what they need to do in order to get an A in the class.

Now from one angle such a request sounds reasonable. After all, it is a means/ends approach to educational planning. Students are, it can be said, rationally planning their education. But such planning has very little to do with intellectual life, where risk-taking, exploration, uncertainty, and speculation are what it’s about. And if you create a culture of schooling in which a narrow means/ends orientation is promoted, that culture can undermine the development of intellectual dispositions. By intellectual dispositions I mean a curiosity and interest in engaging and challenging ideas.

What the field has not provided is an efficient alternative to the testing procedures we now use. And for good reason. The good reason is that there are no efficient alternatives. Educationally useful evaluation takes time, it’s labor intensive and complex, and it’s subtle, particularly if evaluation is used not simply to score children or adults but to provide information to improve the process of teaching and learning.

The price one pays for providing many ways for students to demonstrate what has been learned is a reduction of commensurability. Commensurability decreases when attention to individuality increases. John Dewey commented about comparisons in a book that he wrote in 1934 when he was 76 years old. The book is _Art as Experience_. He observed that nothing is more odious than comparisons in the arts. What he was getting at was that attention to or appreciation of an art form requires attention to and appreciation of its distinctive features. It was individuality that Dewey was emphasizing, and it is the description of individuality we would do well to think about in our assessment practices. We should be trying to discover where a youngster is, where his or her strengths are, where additional
work is warranted. Commensurability is possible when everybody is on the same track, when there are common assessment practices, and when there is a common curriculum. But when students work on different kinds of problems, and when there is concern with the development of an individual’s thumbprint, so to speak, commensurability is an inappropriate aim.

What have been the consequences of the rationalized approach to education reform that we have embraced? Only this: in our desire to improve our schools, education has become a casualty. That is, in the process of rationalization, education—always a delicate, complex, and subtle process having to do with both cultural transmission and self-actualization—has become a commodity. Education has evolved from a form of human development serving personal and civic needs into a product our nation produces to compete in a global economy. Schools have become places to mass produce this product.

Let us assume that we impose a moratorium on standardized testing for a five-year period. What might we pay attention to in schools in order to say that a school is doing well? If it is not higher test scores that we are looking for, what is it? Let me suggest the kind of data we might seek by raising some questions that might guide our search.

What kinds of problems and activities do students engage in? What kind of thinking do these activities invite? Are students encouraged to wonder and to raise questions about what they have studied? Perhaps we should be less concerned with whether they can answer our questions than with whether they can ask their own. The most significant intellectual achievement is not so much in problem solving, but in question posing. What if we took that idea seriously and concluded units of study by looking for the sorts of questions that youngsters are able to raise as a result of being immersed in a domain of study? What would that practice teach youngsters about inquiry?

What is the intellectual significance of the ideas that youngsters encounter? (I have a maxim that I work with: If it’s not worth teaching, it’s not worth teaching well.) Are the ideas they encounter important? Are they ideas that have legs? Do they go someplace?

Are students introduced to multiple perspectives? Are they asked to provide multiple perspectives on an issue or a set of ideas? The implications of such an expectation for curriculum development are extraordinary. To develop such an ability and habit of mind, we would need to invent activities that encourage students to practice, refine, and develop certain modes of thought. Taking multiple perspectives is just one such mode.

In 1950 the American psychologist J.P. Guilford developed what he called “the structure of intellect,” in which 130 different kinds of cognitive processes were identified. What if we used that kind of structure to promote various forms of thinking? My point is that the activities in which youngsters participate in classes are the means through which their thinking is promoted. When youngsters have no reason to raise questions, the processes that enable them to learn how to discover intellectual problems go undeveloped.

The ability to raise telling questions is not an automatic consequence of maturation. Do you know what’s the biggest problem that Stanford students have in the course of their doctoral work? It is not getting good grades in courses; they all get good grades in courses. Their biggest obstacle is in framing a dissertation problem. We can do something about that before students get to the doctoral level. In a school that is doing well, opportunities for the kind of thinking that yields good questions would be promoted.

What connections are students helped to make between what they study in class and the world outside of school? A major aim of education has to do with what psychologists refer
to as “transfer of learning.” Can students apply what they have learned or what they have learned how to learn? Can they engage in the kind of learning they will need in order to deal with problems and issues outside of the classroom? If what students are learning is simply used as a means to increase their scores on the next test, we may win the battle and lose the war. In such a context, school learning becomes a hurdle to jump over. We need to determine whether students can use what they have learned. But even being able to use what has been learned is no indication that it will be used. There is a difference between what a student can do and what a student will do.

The really important dependent variables in education are not located in classrooms. Nor are they located in schools. The really important dependent variables are located outside schools. Our assessment practices haven’t even begun to scratch that surface. It’s what students do with what they learn when they can do what they want to do that is the real measure of educational achievement.

What opportunities do youngsters have to become literate in the use of different representational forms? By representational forms, I mean the various symbol systems through which humans shape experience and give it meaning. Different forms of human meaning are expressed in different forms of representation. The kinds of meaning one secures from poetry are not the kinds of meaning one secures from propositional signs. The kinds of meanings expressed in music are not the meanings experienced in the visual arts. To be able to secure any of those meanings, you have to know how to “read” them. Seeing is a reading. Hearing is a reading. They are processes of interpreting and construing meaning from the material encountered; reading text is not only a process of decoding, it is also a process of encoding. We make sense of what we read.

What opportunities do students have to formulate their own purposes and to design ways to achieve them? Can a school provide the conditions for youngsters, as they mature, to have increased opportunity to set their own goals and to design ways to realize them? Plato once defined a slave as someone who executes the purposes of another. I would say that, in a free democratic state, at least a part of the role of education is to help youngsters learn how to define their own purposes.

What opportunities do students have to work cooperatively to address problems that they believe to be important? Can we design schools so that we create communities of learners who know how to work with one another? Can we design schools and classrooms in which cooperating with others is part of what it means to be a student?

Do students have the opportunity to serve the community in ways that are not limited to their own personal interests? Can we define a part of the school’s role as establishing or helping students establish projects in which they do something beyond their own self-interest? I want to know that in order to know how well a school is doing.

To what extent are students given the opportunity to work in depth in domains that relate to their aptitudes? Is personal talent cultivated? Can we arrange the time for youngsters to work together on the basis of interest rather than on the basis of age grading? Youngsters who are interested in ceramics might work in depth in ceramics; those interested in science might work in depth in science. To make these possibilities a reality, we would need, of course, to address the practical problems of allocating time and responsibility. But without a conception of what is important, we will never even ask questions about allocating time. A vision of what is educationally important must come first.
Do students participate in the assessment of their own work? If so, how? It is important for teachers to understand what students themselves think of their own work. Can we design assessment practices in which students can help us?

To what degree are students genuinely engaged in what they do in school? Do they find satisfaction in the intellectual journey? How many students come to school early and how many would like to stay late? The motives for such choices have to do with the “locus of satisfactions.” Satisfactions generate reasons for doing something. Basically, there are three reasons for doing anything. One reason for doing something is that you like what it feels like and you like who you are when you do it. Sex, play, and art fall into this category. They are intrinsically satisfying activities.

A second reason for doing something is not because you like doing it, but because you like the results of having done it. You might like a clean kitchen, but you might not enjoy cleaning your kitchen. The process is not a source of enjoyment, but the outcome is.

A third reason for doing something is not because you like the process or even the outcome, but because you like the rewards. You like the grades you earn. You like the paycheck you receive. That’s what Hannah Arendt described as labor. There is too much labor in our schools—and not enough work. Work is effort from which you derive satisfaction. We ought to be paying attention to the joy of the journey. This is easy to say but difficult and challenging to do. Nevertheless, we ought to keep our minds focused on it as a goal.

Are teachers given the time to observe and work with one another? To what degree is professional discourse an important aspect of what being a teacher means in the school? Is the school a resource, a center for the teacher’s own development? Is the school a center for teacher education?

The center for teacher education is not the university; it is the school in which the teacher works. Professional growth should be promoted during the 25 years that a teacher works in a school—not just during the year and a half that he or she spends in a teacher education program. Can we create schools that take the professional development of teachers seriously? And what would they look like? Schools will not be better for students than they are for the professionals who work in them.

All of us who teach develop repertoires. We all have routines. We all get by. We get by without serious problems, but getting by is not good enough. We need to get better. And to get better, we have to think about school in ways that address teachers’ real needs. And when I say, “addressing teachers’ real needs,” I don’t mean sending them out every 6,000 miles to get “inserviced” by a stranger.

Are parents helped to understand what their child has accomplished in class? Do they come to understand the educational import of what is going on? Very often children’s artwork is displayed in the school, with the only information provided being the student’s name, the grade, and the teacher’s name, all in the lower right-hand corner. Then the best student work is posted more formally. What we do, in effect, is use a gallery model of exhibition. We take the best work, and we display it. What we need to create is an educationally interpretive exhibition that explains to viewers what problems the youngsters were addressing and how they resolved them. This can be done by looking at prior work and comparing it with present work—that is, by looking at what students have accomplished over time. I am talking about interpretation. I am talking about getting people to focus not so much on what the grade is, but on what process led to the outcome.
What is my point? All my arguments have had to do with creating an educationally informed community. We need to ask better questions.

Can we widen what parents and others believe to be important in judging the quality of our schools? Can we widen and diversity what they think matters? Can those of us who teach think about public education not only as the education of the public in the schools (i.e., our students), but also as the education of the public outside of our schools (i.e., parents and community members)? Can a more substantial and complex understanding of what constitutes good schooling contribute to better, more enlightened support for our schools?

Can a more informed conception of what constitutes quality in education lead to greater equity for students and ultimately for the culture? Educational equity is much more than just allowing students to cross the threshold of the school. It has to do with what students find after they do so. We ought to be providing environments that enable each youngster in our schools to find a place in the educational sun. But when we narrow the program so that there is only a limited array of areas in which assessment occurs and performance is honored, youngsters whose aptitudes and interests lie elsewhere are going to be marginalized in our schools. The more we diversify those opportunities, the more equity we are going to have because we are going to provide wider opportunities for youngsters to find what it is that they are good at.

And that leads me to the observation that, in our push for attaining standards, we have tended to focus on outcomes that are standard for all youngsters. We want youngsters to arrive at the same place at about the same time. I would argue that really good schools increase variance in student performance. Really good schools increase the variance and raise the mean. The reason I say that is because, when youngsters can play to their strengths, those whose aptitudes are in, say, mathematics are going to go faster and further in that area than youngsters whose aptitudes are in some other field. But in those other fields, those youngsters would go faster and further than those whose aptitudes are in math. Merely by conceiving of a system of educational organization that regards productive variance as something to be valued and pursued, we undermine the expectation that everybody should be moving in lockstep through a series of 10-month years in a standardized system and coming out at pretty much the same place by age 18.

Part of our press toward standardization has to do with what is inherent in our age-graded school system. Age-graded systems work on the assumption that children remain more alike than different over time and that we should be teaching within the general expectations for any particular grade. Yet, if you examine reading performance, for example, the average range of reading ability in an ordinary classroom approximates the grade level. Thus at the second grade, there is a two-year spread; at the third grade, a three-year range; at the fourth grade, a four-year range. Consider how various the picture would be if performance in four or five different fields of study were examined. Children become more different as they get older, and we ought to be promoting those differences and at the same time working to escalate the mean.

Does more enlightened grasp of what matters in schools put us in a better position to improve them? I hope so. What I have argued here is intended to divert our focus away from what we normally use to make judgments about the quality of schools and redirect it instead toward the processes, conditions, and culture that are closer to the heart of education. I am unabashedly endorsing the promotion of improvisation, surprise, and diversity of outcomes as educational virtues that we ought to try to realize through our teaching.
The point of the questions I have raised is to provide something better than the blinkered vision of school quality that now gets front-page coverage in our newspapers. Perhaps this vision serves best those in positions of privilege. Perhaps our society needs losers so it can have winners. Whatever the case, I believe that those of us who wish to exercise leadership in education must do more than simply accept the inadequate criteria that are now used to determine how well our schools are doing.

We need a fresh and humane vision of what schools might become because what our schools become has everything to do with what our children and our culture will become. I have suggested some of the features and some of the questions that I believe matter educationally. We need reform efforts that are better than those we now have. The vision of education implicit in what I have described here is just a beginning.

NOTES
2. Donald Schon describes the process of rationalization of behavior as “technical rationality.” See Donald Schon, *The Reflective Practitioner: How Professionals Think in Action* (New York: Basic Books, 1983). Nor is this the first time technically rational approaches to planning and assessment have dominated schooling. The efficiency movement in American schools—from about 1913 to about 1930—is one example. The behavioral objectives and accountability movements of the 1960s and 1970s are two more.
4. One of the foremost philosophical constructivists is John Dewey. The concept of interaction was a central notion in his philosophy of mind and in his conception of the educational process. For a succinct view of his ideas pertaining to education, see John Dewey, *Experience and Education* (New York: Macmillan, 1938).
6. League tables not only affect the priorities of the school, they are a major influence on real estate values. The value of houses is influenced significantly by perceptions of the quality of the schools in a neighborhood, and test scores are the indices used to determine such quality.
8. For an insightful and lucid discussion of the pressures secondary school students experience in the high-stakes environment that we have created in schools, see Denise Pope, "Doing School" (Doctoral dissertation, Stanford University, 1998).