

Standards, Information, and the Demand for Student Achievement

Richard J. Murnane and Frank Levy

Over the last eighteen years, changes in the American economy have dramatically increased the skills workers need to earn a middle-class living. However, almost half of American students now leave high school without the requisite skills. The mismatch between the growing skill demands of employers and the skills of graduating students creates a need for dramatic school improvement. Yet improvements have been slow in coming. The question is why?

In this paper, we argue that a major obstacle to higher student achievement is a lack of good information comparing achievement levels to labor market requirements—the kind of information that can come through academic standards and assessments. Without

this information, parents are unable to assess accurately the quality of their children's education.

To appreciate a parent's situation, consider the precise nature of the nation's achievement problem. When the media report that U.S. schools are in serious need of improvement, parents reasonably infer that the stories refer to U.S. schools that have collapsed. While schools in some big cities have collapsed, this is not the general pattern. The average math and reading scores of white seventeen-year-old Americans are slightly higher today than they were in the early 1970s, and the average scores of black and Hispanic seventeen-year-olds are considerably higher (see table).¹ The nation has an achievement problem not because achievement levels have fallen but because job requirements are rising much faster than achievement levels have improved.

If parents had the information to compare their children's achievement with the economy's requirements, they could see this problem and push schools for more rigorous curricula, just as they now push for anti-drug and

Richard J. Murnane is a professor at the Graduate School of Education, Harvard University; Frank Levy is the Daniel Rose Professor of Urban Economics, Department of Urban Studies and Planning, Massachusetts Institute of Technology.

TRENDS IN AVERAGE SCALE SCORES IN READING AND MATHEMATICS, BY RACE AND ETHNICITY

	Reading		Mathematics	
	1971	1994	1973	1994
Nation	285	288	304	306
White	291	296	310	312
Black	239	266	270	286
Hispanic	252	263	277	291

Source: Campbell et al. (1996).

anti-alcohol education. But without this information most parents are forced to judge schools by other standards. One such standard is the set of international test score comparisons showing that American students score lower on achievement tests than do students in many other countries. These scores appear consistent with media stories about the need for school reform. Another standard is the perception of parents—correct, in most cases—that their children are learning as much in school as they themselves did twenty-five years ago.

Taken together, the media stories and other information sources have made parents schizophrenic about the achievement problem. In the 1997 Phi Delta Kappa/Gallup poll, only 25 percent of public school parents gave the *nation's* schools a grade of A or B, yet 64 percent of parents gave the public school attended by their oldest child a grade of A or B. Parents believe that U.S. schools have problems, but the problems exist in other children's schools—a belief that has existed for more than a decade. When parents are truly satisfied with their own children's skills, major gains in national achievement are hard to imagine. To see why, consider what school reform entails.

PRINCIPLES FOR IMPROVING SCHOOL PERFORMANCE

As we describe in Murnane and Levy (1996), organizations, including schools, that are successful in continually improving their performance recognize that the people who do the work—a group we call frontline workers—are critical resources whose skills and energies must be

engaged. Successful organizations do this by embracing five principles:

- set clear goals that all frontline workers support;
- design jobs so that frontline workers have incentives to contribute to the organization's goals and have opportunities to do so;
- provide ongoing training so that frontline workers develop the skills needed to make contributions;
- monitor progress toward goals on a regular basis; and
- persevere, even in the face of adversity, and recognize that there are no magic bullets.

Embracing these principles is difficult in any organization. It is particularly difficult in schools, because their frontline workers include not only teachers, who are on the payroll, but also students and parents, who are not. Parents and students must be drawn into any consensus on goals without resorting to the leverage that a paycheck provides. Developing consensus on the primacy of improving student achievement and on the importance of doing the hard work to achieve this goal is difficult when parents do not see these as the most urgent priorities. But how can parents understand the need for dramatic upgrading of student skills without clear evidence that their children's skills do not meet the standards needed to thrive in a changing economy?

Well-designed academic standards and assessments are not a "solution" to the achievement problem. Rather, they are a first step that makes the achievement problem concrete and visible to parents, teachers, and students. Once the problem is visible, there remains the hard, day-to-day work of making a school better.

But if standards and assessments are not sufficient for higher student achievement, they are necessary. Without the focus on achievement that they bring, other reforms—for example, charter schools, parental choice, parental involvement and professional development programs—are unlikely to have a large-scale impact. We can see both the virtues and limitations of academic standards by considering the case of the Alliance Schools Network of Texas.

THE BENEFITS AND DILEMMAS OF EXTERNAL STANDARDS: A CASE STUDY

Zavala Elementary School serves 450 children from low-income families in East Austin, Texas. Almost all of the children are Hispanic and 95 percent qualify for the free lunch program. In 1990, Zavala ranked sixty-second in student test scores out of Austin's sixty-three elementary schools. Few parents were aware of their children's low skill levels because their children received grades of A and B. Teachers gave high grades for poor work because they thought the children were not capable of better work. The situation was typical of many inner-city schools.

Texas is a state that does have mandatory tests of student achievement: the Texas Assessment of Academic Skills (TAAS). In 1991, a courageous new principal at Zavala asked a parent to stand up at a PTA meeting and explain to the assembled parents that Zavala students were scoring extremely poorly on the TAAS. When parents learned of their children's poor performance, they were outraged. Teachers were stunned; parents at Zavala had never previously questioned the quality of their children's education. The comparative test score information aroused parents, and left many of Zavala's teachers frightened.

Fortunately, Zavala had help in translating the anger generated by the test score information into productive channels. Community organizers from Texas Interfaith helped parents and teachers to build a school community committed to improving children's test scores. And the scores did improve: in 1993, 26 percent of Zavala students passed the TAAS; in 1996, 70 percent passed.

Zavala is not just the story of an outstanding principal. Parents and teachers have been able to change the culture from one of apathy to one of focused determination. When Zavala's principal was transferred to a troubled Austin middle school in 1996, the parents and teachers insisted on choosing their new principal, and selected a woman committed to continuing Zavala's strategy for meeting its goals. The school has also survived the loss of three outstanding teachers, recruited to be administrators in other Austin schools. In 1996, the percentage of Zavala

students who passed all sections of the TAAS was higher than the district average and the state average, even though the median income of Zavala families continued to be exceedingly low.

Zavala is not the only school where Texas Interfaith organizers sought to build coalitions of parents and teachers committed to improving student achievement. It is one of a growing number of schools that belong to the Alliance Schools Network: learning communities of families and school faculties committed to improving children's achievement. In the first years of the network, a critical goal was to improve the students' scores on the TAAS. For most schools in the network, this goal has been reached—a remarkable accomplishment, given the history of low educational achievement for minority group students in Texas.

The TAAS initially helped Zavala and the other Alliance Schools to embrace three of the five principles for school improvement identified earlier:

- *Set clear goals:* The information uncovered on the children's low scores provided the impetus for parent action. Improving scores on the TAAS was a well-defined goal to rally around.
- *Provide ongoing training:* For the Alliance Schools, teachers' need to raise student TAAS scores gave an urgency and focus to in-service training. This contrasts with the typical situation, in which professional development has little impact on the work teachers do with students.
- *Monitor progress:* Each year's round of test score information provided evidence of each school's success in achieving its goal.

Mastering the TAAS has been a critical step forward for the Alliance Schools. It has given the network credibility in the region and has demonstrated to participating parents and teachers that their children can learn more in school. But mastery of the TAAS has only been a first step. Members of the Alliance Schools Network are coming to understand that preparing students to succeed on the TAAS does not prepare the students to thrive in a changing economy. The TAAS can only be regarded as a minimum competency test, not a test benchmarked to the skills required to gain access to middle-class jobs.

To prepare students for success, the Alliance Schools need to set higher achievement standards and measure students' progress toward meeting these standards. However, this is a difficult task for the schools to accomplish by themselves. The efforts of the Alliance Schools would be furthered by a set of external standards benchmarked to the demands of the economy and by assessments that provide information on students' progress toward meeting these standards. This, in a nutshell, is the case for an external system of high academic standards and high-quality assessments of students' achievement.

CRITICAL SKILLS THAT SHOULD BE PART OF ACHIEVEMENT STANDARDS

To throw light on the skills that are important for students to acquire before graduating from high school, we contrast the skills used in two jobs: one paying \$7.00 per hour, the other paying close to \$20.00 per hour. Neither position requires a post-secondary-school education.²

Pickers at Sports Plus

Sports Plus is a sporting goods wholesaler that packages products made primarily in southeast Asia and distributes them to large retail stores. Pickers are the employees who package customer orders. They must know how to read and do elementary arithmetic. For instance, if Kmart orders ninety balls, and balls are packed six to each master carton, the picker must be able to figure out that fifteen master cartons are needed to fill the order. Pickers work by themselves and are expected to do just what they are asked. There are few surprises in a picker's workday. Wages start at \$6.35 per hour and extend to \$7.35.

Production Associates at Honda of America

Honda of America's Marysville, Ohio, plant manufactures Honda Accords. Production associates work in teams to assemble particular parts of the cars passing by them on assembly lines. They are expected to notice production problems and devise and implement strategies to correct them. In 1990, production associates responsible for installing heaters and blowers found that they were experiencing difficulties attaching the nuts securely to the studs

that held the blowers in place. Four associates decided to form a quality circle to diagnose and solve the problem. They wrote a brief proposal describing the problem, and management approved their working as a group on company time to solve it. The members labeled their group the Sharpshooters.

The Sharpshooters created cause-and-effect diagrams to identify possible causes, then collected data to test the various possible explanations. Using Pareto charts and histograms, they concluded that the problem stemmed from an excess accumulation of paint on the studs when the chassis passed through the paint shop.

They then pursued the source of the problem, eventually finding that it arose from the introduction of a longer stud several months ago, an engineering change made to solve another problem. Now the Sharpshooters turned to solving their original problem. They began by developing a list of possible solutions and then obtained the cooperation of the paint shop to test their solutions. Eight months after they began their work, the Sharpshooters found that their sixth proposed solution—covering the studs with masking tape before they went through the paint shop—solved the problem. The group ended its project by giving an eighteen-minute presentation to management describing how they tackled and solved the stopped blower nut problem and providing evidence supporting their solution.

Honda of America expects all of its production associates to tackle problems, just as the Sharpshooters did. The requisite skills include the ability to devise a problem-solving strategy, to develop and test hypotheses, to organize and analyze data, and to draw conclusions from the analysis. Other critical skills include the ability to communicate effectively—both orally and in writing—and to work productively in groups with people from different backgrounds. Production associates at Honda of America earn almost \$20.00 per hour in addition to an attractive health care package and other fringe benefits.

The "New Basic Skills"

Efforts by states to set standards for student achievement and to establish systems for assessing whether students

meet the standards have been plagued by controversy. A common criticism of ambitious standard-setting efforts is that states should stick to measuring the basics. But what are the basics? If the basics are the skills needed to earn \$7.00 per hour, then multiple-choice tests measuring elementary reading comprehension and the ability to divide whole numbers are sufficient. But if the basics are the skills needed to obtain and thrive in modern automobile plants and in other high-wage organizations committed to product improvement, then the list is quite different. It includes not only strong reading and math skills, but also the ability to devise and carry out problem-solving strategies, the ability to communicate effectively—both orally and in writing—and the ability to work productively in groups. These are all part of the “new basic skills” needed to thrive in today’s economy. These skills should be incorporated in the standards that all American high school graduates are expected to meet.

SOLVING THE POLITICAL AND TECHNICAL PROBLEMS

High standards for student achievement and accurate assessments of students’ progress toward meeting these standards can help schools to embrace the five principles identified earlier. If parents and teachers endorse the standards, meeting them is likely to become the chief school goal (the first principle). Assessments based on the standards can provide information on progress toward the school’s goals (the fourth principle). If it is important to teachers that students meet the standards, then the standards create incentives for teachers to focus instruction on the skills measured in the assessments (the second principle), and incentives for professional development efforts focusing on helping teachers learn to teach the critical skills (the third principle). If employers offer attractive jobs to students who meet the high standards, students have incentives to work at developing the requisite skills (the second principle). The promise of high standards is great.

Reaching agreement on academic standards, however, is difficult in a heterogeneous society. Perceptions of the skills that are important or even appropriate for

students differ. Yet the progress of states such as Kentucky, Maryland, and Vermont in setting standards shows that the challenge can be met.

The challenges of designing assessments to measure students’ progress toward high standards are also great. Aligning assessments with curriculum frameworks—the substance of what teachers are supposed to teach—is difficult. Yet close alignment is essential to getting the incentives right for teachers and students. Assessments cannot be exclusively multiple-choice tests because many critical skills—for example, writing—cannot be measured by these tests. Tests allowing open-ended responses are difficult to score reliably, as are student writing samples. Skill in one type of writing—for instance, short stories—does not accurately predict skill in another type of writing—for example, nonfictional narratives. Measuring speaking skills requires yet a different assessment methodology, as does effectiveness in working productively in groups.

While these technical problems are daunting, they are not insurmountable. The College Board has made enormous progress in developing strategies to score student writing reliably. The National Assessment of Educational Progress now incorporates many questions that require open-ended responses. In addition, technology such as video equipment offers new methods for recording and assessing student performance.

The New Standards Project, a collaboration of the Learning Research and Development Center at the University of Pittsburgh and the National Center on Education and the Economy, is a particularly promising initiative. Working with more than a dozen states and several large school districts, New Standards is building an assessment system to measure student skills in English language arts, mathematics, science, and applied learning against standards that are internationally benchmarked. The work of the New Standards group and its partners demonstrates that with sufficient resources and perseverance, great progress can be made toward developing assessments that are closely aligned with curriculum frameworks and that accurately measure students’ mastery of the skills needed to thrive in a changing economy.³

WILL TEACHING TO THE TEST BE THE ACHILLES' HEEL OF THE STANDARDS MOVEMENT?

Many teachers are opposed to standardized testing because they see conflict between the type of instruction that best educates their students and the type of instruction that produces high test scores. Teachers often use the expression "drill and kill" to describe instruction that focuses almost exclusively on preparing children to do well on particular multiple-choice tests. They argue that such instruction does little to develop useful skills.

There will always be tension between the incentives embedded in external assessments and the incentives for many teachers to do their most effective teaching. These tensions matter because external standards and assessments will contribute to improving the nation's schools only if they are palatable to effective teachers.

Evidence from Vermont and other states that are part of the New Standards Project suggests that the tensions are manageable. Teachers in these states do not like the idea of their competence being judged by their students' scores on external assessments. They point out that the students' scores depend not only on what happens in their classrooms, but also on the circumstances of children's lives outside of school. At the same time, many teachers in Vermont and other New Standards states have come to understand that preparing students to do well on the open-ended tasks included in New Standards assessments is consistent with their evolving views of good teaching. One reason New Standards assessments are gaining a following among teachers is that teachers are being involved in their design. A second reason is that the standards are relatively parsimonious; they are not a laundry list of everything a child should learn. The parsimony gives teachers considerable discretion in designing strategies to prepare students for the assessments.

NATIONAL STANDARDS OR STATE STANDARDS?

A current focus of debate is whether there should be one set of national standards and assessments or fifty state sets. There are advantages to national standards and assessments.

Most notably, they would permit parents to compare their children's skills not only with those of students in other schools in their state, but also with those of students in other states. In a country in which a great many families move from state to state, there is value in a system in which instruction throughout the country is geared toward preparing students to meet the same high standards.

There are also arguments on the other side of the ledger. Many states have made considerable progress in setting high standards and developing appropriate student assessment systems. Their efforts provide new ideas for how to measure critical student skills. Given the technical challenges of developing high-quality assessments, proponents of state standards contend that it is useful to let fifty, if not a thousand, flowers bloom.

A political argument in favor of state standards can also be made. In much of the country, states' rights and local control are highly valued, and there is considerable opposition to national standards of student achievement. Negotiations to reach agreement on a set of national standards and assessments might succeed only through a process of compromise that made the standards more like those appropriate for obtaining a job at Sports Plus than at Honda of America. This would be an enormous disservice to America's children. The evidence is not yet in on the question of whether it is possible to reach agreement on a set of national standards and assessments, but compromising on quality to achieve consensus is ill advised.

FAMILY CHOICE OR STANDARDS? A FALSE DICHOTOMY

Recent congressional debates on educational policy have evolved into a simple contest: the President's program of national tests versus the House Republicans' emphasis on school choice. This is a poor way to frame the issue.

To see why, consider the recent choice programs in Milwaukee, Cleveland, and New York City that provide low-income minority group families with opportunities to send their children to private schools. These programs demonstrate that many low-income parents want alternatives to existing urban public schools for their children. Evaluations show that many parents are more satisfied with

the private schools their children now attend under the choice programs than they were with urban public schools.

To date, evidence on the academic achievement of low-income children in choice programs is extremely limited. The most intensively studied program is the Milwaukee choice program. The math achievement scores of children who remained in the Milwaukee private schools for several years increased more—by 1 or 2 percentage points per year—than the math achievement scores of comparable students in Milwaukee public schools. There were no statistically significant differences in the rates of growth in reading achievement (Rouse forthcoming).

It is easy to understand the satisfaction of parents who see their children learning more than they did in urban public schools. Indeed, this comparison with public school student performance provides a rationale for further experimentation with choice programs for low-income

families. Yet it is important to keep in mind that by the standard of the skills needed to earn a middle-class income in a changing economy, the achievement of children in the Milwaukee choice schools is extremely low. Without dramatic improvements in achievement, children participating in the choice schools—even though they may leave school with higher achievement levels than children graduating from Milwaukee public schools—will still lack the skills to thrive in a changing economy.

Parents need to know this. A system of high standards and periodic assessments measuring whether children meet these standards would provide parents with information they need. For this reason, standards and assessments complement choice programs just as they complement the Alliance Schools Network initiative and other programs aimed at improving the academic achievement of American children.

ENDNOTES

1. The writing scores of American white and black (but not Hispanic) seventeen-year-olds were slightly lower on average in 1994 than in 1984 (the first year writing skills were measured by the National Assessment of Educational Progress) and the science scores of white (but not black or Hispanic) seventeen-year-olds were slightly lower in 1994 than in 1969.
2. Jobs at Sports Plus and Honda of America, as well as at service-sector firms, are described in detail in Murnane and Levy (1996).
3. For information on the New Standards assessments, see New Standards (1997).

REFERENCES

Campbell, Jay R., et al. 1996. REPORTS IN BRIEF: NAEP TRENDS IN ACADEMIC PROGRESS. U.S. Department of Education, National Center for Educational Statistics. October.

Murnane, Richard J., and Frank Levy. 1996. TEACHING THE NEW BASIC SKILLS. New York: Free Press.

Rouse, Cecilia Elena. Forthcoming. "Private School Vouchers and Student Achievement: An Evaluation of the Milwaukee Parental Choice Program." QUARTERLY JOURNAL OF ECONOMICS.

The views expressed in this article are those of the authors and do not necessarily reflect the position of the Federal Reserve Bank of New York or the Federal Reserve System. The Federal Reserve Bank of New York provides no warranty, express or implied, as to the accuracy, timeliness, completeness, merchantability, or fitness for any particular purpose of any information contained in documents produced and provided by the Federal Reserve Bank of New York in any form or manner whatsoever.