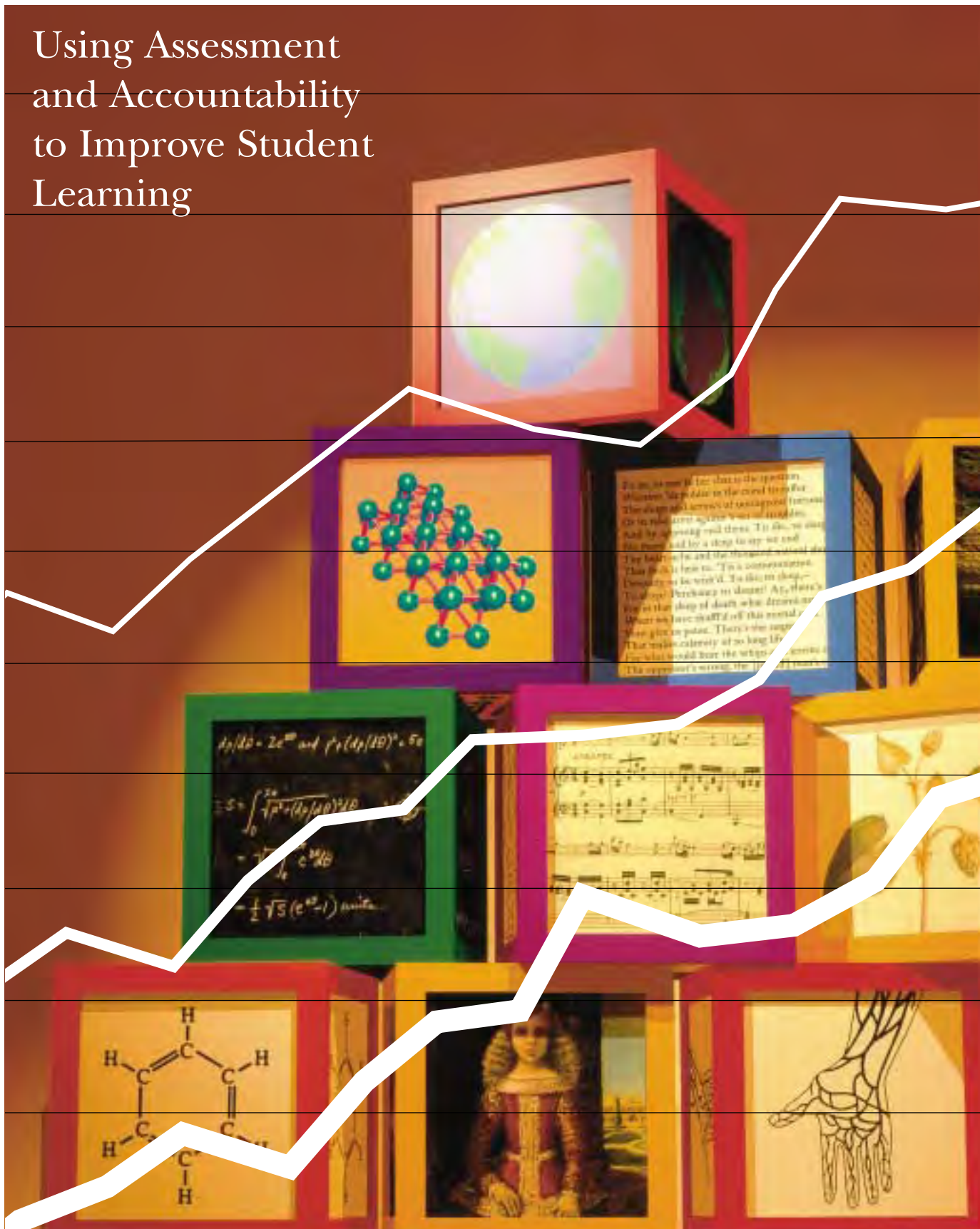


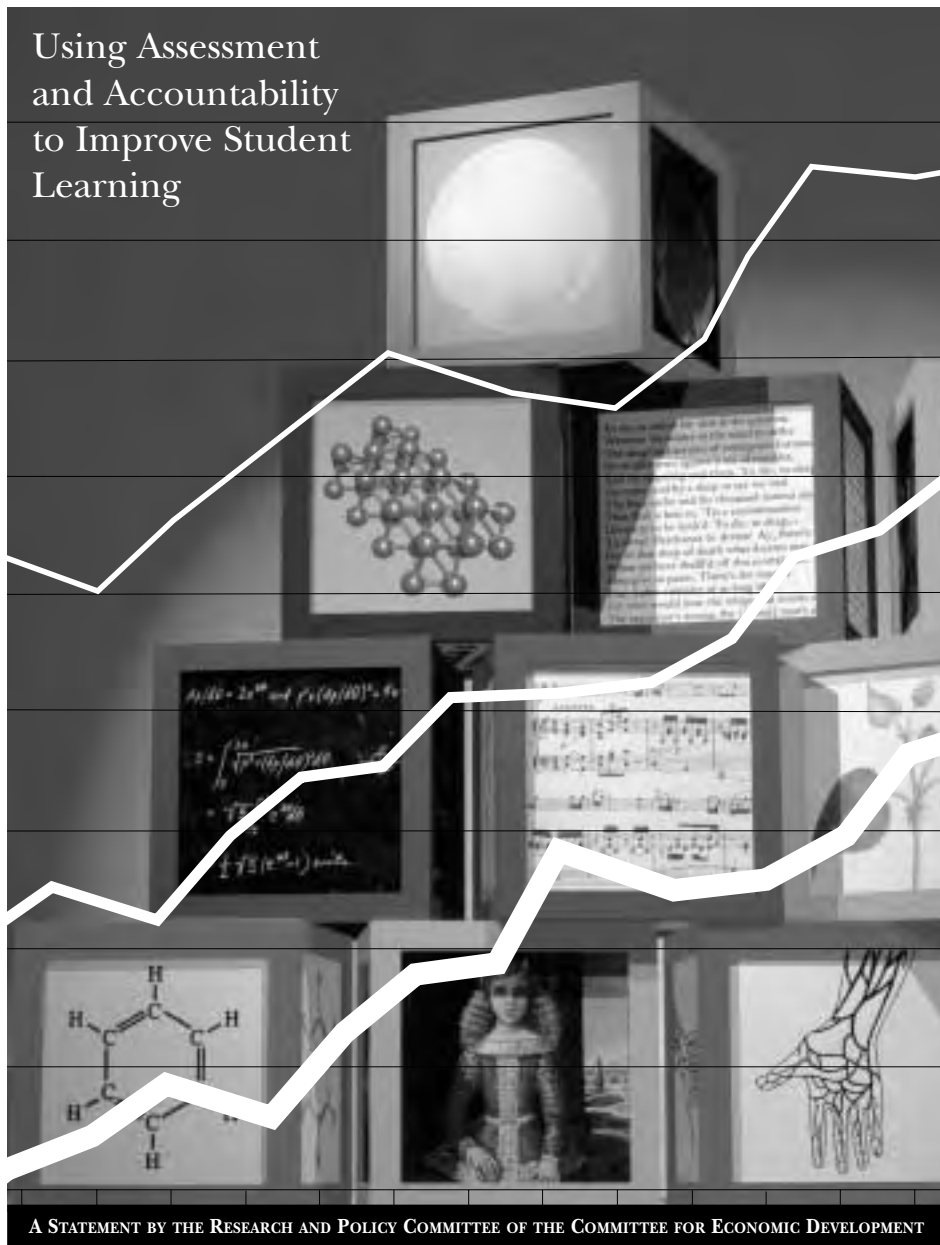
MEASURING WHAT MATTERS

Using Assessment and Accountability to Improve Student Learning



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and Accountability
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Learning



A STATEMENT BY THE RESEARCH AND POLICY COMMITTEE OF THE COMMITTEE FOR ECONOMIC DEVELOPMENT

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RESPONSIBILITY FOR CED STATEMENTS ON NATIONAL POLICY

The Committee for Economic Development is an independent research and policy organization of some 250 business leaders and educators. CED is nonprofit, nonpartisan, and nonpolitical. Its purpose is to propose policies that bring about steady economic growth at high employment and reasonably stable prices, increased productivity and living standards, greater and more equal opportunity for every citizen, and an improved quality of life for all.

All CED policy recommendations must have the approval of trustees on the Research and Policy Committee. This committee is directed under the bylaws, which emphasize that "all research is to be thoroughly objective in character, and the approach in each instance is to be from the standpoint of the general welfare and not from that of any special political or economic group." The committee is aided by a Research Advisory Board of leading social scientists and by a small permanent professional staff.

The Research and Policy Committee does not attempt to pass judgment on any pend-

ing specific legislative proposals; its purpose is to urge careful consideration of the objectives set forth in this statement and of the best means of accomplishing those objectives.

Each statement is preceded by extensive discussions, meetings, and exchange of memoranda. The research is undertaken by a subcommittee, assisted by advisors chosen for their competence in the field under study.

The full Research and Policy Committee participates in the drafting of recommendations. Likewise, the trustees on the drafting subcommittee vote to approve or disapprove a policy statement, and they share with the Research and Policy Committee the privilege of submitting individual comments for publication.

The recommendations presented herein are those of the trustee members of the Research and Policy Committee and the responsible subcommittee. They are not necessarily endorsed by other trustees or by non-trustee subcommittee members, advisors, contributors, staff members, or others associated with CED.

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†Disapproved publication of this statement. See page 42.

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PURPOSE OF THIS STATEMENT

Education has always been important to Americans, but for the last 20 years questions about the quality of the nation's schools have been debated with particular urgency. Policy makers, business leaders, parents, and many educators have argued that major changes are necessary to ensure that our children are prepared for the civic, economic, and social world that lies ahead of them. Key among these changes is *Putting Learning First* (as CED titled its last report on education): setting high academic standards and holding schools accountable for helping students reach these standards.

Schools cannot be re-oriented toward performance, however, unless they know what they are trying to accomplish and can measure progress toward these goals. As this statement argues, measuring student achievement is essential for effective school reform. CED Trustees, accustomed to managing complex organizations, are convinced that we cannot improve what we do not measure. Thus we strongly support efforts underway in virtually every state to specify academic standards and measure improvements in student learning. We welcome the spotlight these efforts shine on how well schools are serving *all* students, including students whose educational needs were too often neglected in the past.

At the same time, we recognize that assessment and accountability systems capable of driving school improvement are still in their formative stages. They are not perfect, and they sometimes have unintended consequences that rightly concern parents and educators. There is more to learn about how best to design and implement such systems. This report aims both to show why testing and accountability are indispensable and to explore their responsible use.

Measuring educational performance is not the same as improving it. The latter requires effort on a host of fronts, many of which are beyond the scope of this statement. As CED has noted in a series of reports dating back to

the mid-1980s, the development and education of all children from the earliest stages of their lives must be a national priority. This requires better preparing children for school, providing a rich curriculum and ensuring that every classroom has a teacher with the preparation and materials to teach it, adopting school governance and management structures that highlight performance and encourage accountability, and giving school-age children the social and health supports that will help them learn in the classroom.

Educational measurement by itself won't improve America's schools. Without it, however, we cannot know how far we've come or how far we have to go to give our children the education they deserve.

ACKNOWLEDGMENTS

We would like to thank the dedicated group of CED Trustees, advisors, and guests who served on the subcommittee that prepared this report (see page vi). Special thanks go to the subcommittee co-chairs, Roy J. Bostock, Chairman of B/com³ Group, Inc., and Edward B. Rust, Jr., Chairman and CEO of State Farm Insurance Companies, who guided the project with skill and insight. We are grateful to B/com³ Group, Inc., the GE Fund, The George Gund Foundation, the Keyspan Foundation, the Smith Richardson Foundation, Inc., and State Farm Insurance Companies for their support of this project. We are also grateful to project director Janet S. Hansen, Vice President and Director of Education Studies at CED, and Van Doorn Ooms, CED's Senior Vice President and Director of Research, for their contributions, and to Seth Turoff for research assistance.

Patrick W. Gross
Bruce K. MacLaury
Co-Chairs
CED Research and Policy Committee

Chapter 1

INTRODUCTION AND SUMMARY



America cannot get the schools it needs without solid measures of academic achievement. The public—vitaly interested in the quality of education available to its children—strongly supports testing. (See Figure 1.) At the same time, there is debate over the increased emphasis being placed on tests and test results. At one extreme, critics allege that tests are harming rather than helping students; some would be happy to eliminate tests. At the other extreme, test advocates sometimes seem too ready to rely uncritically on test scores in making important educational decisions. Our purpose in this policy statement is to show that tests are important and that there are responsible ways to use them.

Public scrutiny of testing is healthy and contributes to improved policies and practices. Amidst “the wonderful cacophony of a free people disagreeing,”¹ however, we must not lose sight of a key fact: *measuring student achievement is an essential element of effective school reform. As business leaders, we know that we can’t improve what we don’t measure. Tests are vital tools for managing and evaluating efforts to ensure that all children receive a high-quality education that prepares them for college, for the workplace, for participation in the nation’s civic life, and for lifelong learning to keep up*

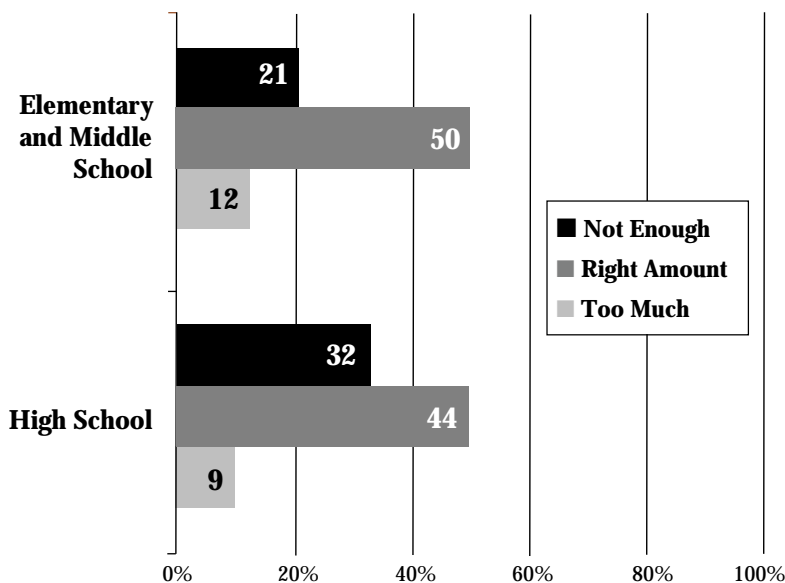
with the rapid pace of change in the 21st century. The debate over testing should not be about whether to rely on tests but about how best to improve and use them to enhance educational outcomes.

In our 1994 policy statement *Putting Learning First: Governing and Managing the Schools for High Achievement*,² CED argued that the primary mission of the public schools should be

Figure 1

The American Public Stands Firmly Behind Tests

Percent of People Who Feel There is Not Enough, Too Much, or Just the Right Amount of Standardized Testing in Their Community*



* The remaining percentage of people either said they don't know or refused to respond to the question.

SOURCE: Belden Russonello & Stewart and Research/Strategy/Management (2000:34).

learning and achievement. We pointed out that there can be no lasting improvement in educational achievement until those who govern the system change the way schools are organized and managed to focus on this mission. Instead of emphasizing compliance with regulations, there should be greater reliance on creating effective incentives for principals, teachers, and students to raise academic achievement. Incentives (with consequences for both successful and unsuccessful performance) should be accompanied by greater flexibility for principals and teachers to choose how they will pursue improved learning. In short, education needs to be transformed into a performance-oriented enterprise, rather than one focused on inputs and rules.

Transforming schools to focus on performance requires the ability to measure what students know and how well schools are succeeding in meeting the goal of improving academic achievement. Schools should solidly ground all students in language and mathematical skills and provide them with a broad base of knowledge in subjects such as literature, science, foreign languages, history, social sciences, and the arts. Students should be able to use and apply this knowledge. Without standards that articulate expectations for students and measures of their performance on the standards, we have no way of gauging the success or failure of our educational system.

Reorienting schools toward performance is occurring through standards-based reform as well as through new governance arrangements like charter and contract schools that require performance data for purposes of public accountability and parental choice. These developments have caused measurement and test use to receive unprecedented attention. Many states and school districts have implemented or are working on new assessment and accountability systems relying on more challenging tests linked to academic standards.

There is still more to learn, though, about how to design and use assessment and test-

based accountability systems most effectively to spur school improvement. Public discussion about tests and test use can be hampered by the fact that educational measurement is complex and sometimes highly technical. This policy statement aims to help the public participate in efforts to improve measurement by presenting key issues, identifying the beneficial purposes measurement can serve and the unintended consequences that can occur, and exploring how undesirable consequences might be avoided.

Our central recommendation is that tests should be used and improved now—rather than resisted until they are perfect—because they provide the best means of charting our progress toward the goal of improved academic achievement.*

We recognize that tests are imperfect and incomplete measures of student learning. We also acknowledge that they do not measure all important aspects of schools' educational missions. In earlier CED reports,³ we have pointed out that both the regular and the "invisible" curriculum of schools should foster traits in addition to achievement that are needed for success in the adult world: good work habits, teamwork, perseverance, honesty, self-reliance, and consideration for others.

We also recognize that tests are not themselves a strategy for improving education. Instead, with thoughtful attention to their strengths and weaknesses, tests serve as vital tools for measuring the paramount outcome of education—academic achievement. They provide information that permits those responsible for governing and managing schools to reflect on the results of the daily interaction between teachers and students in classrooms—where the real *work* of learning occurs—and ask whether the results are satisfactory, what things need changing, and whether changes once made are having their intended effects.

Specifically, educational tests along with other measures of performance can contribute to raising educational achievement in three ways:

*See memorandum by CAROL J. PARRY (page 43).

- *They can help improve teaching and learning, both by guiding day-to-day instruction and by enabling researchers to evaluate the effects of different educational reforms, so that effective ones can be further implemented and ineffective ones discarded.*
- *They can provide a means of holding students and educators accountable for improving educational outcomes, relying on incentives rather than rules to spur achievement. They can contribute to equalizing educational opportunity, by focusing attention on children who have for too long been left behind by America's schools and by creating incentives for finding better ways to teach children for whom traditional approaches have failed. They can counter the tendency toward complacency about the performance of the nation's best students, by providing information on whether these students are standing still or improving and on how they measure up against the top students in other countries.*
- *They can provide a means for monitoring the progress of the educational system and for reporting to the public. They help parents and the public become better "consumers" of their educational systems by helping them determine how well students are learning and whether reforms are making a difference in improving the quality of America's schools.*

Despite these benefits of educational measurement, new assessment and accountability systems have proven controversial. To some extent, this is inevitable. New assessment systems deliver painful information about performance to some teachers and students. Parents don't always welcome the news that their children's academic achievement is weak. Moreover, standardized testing, a key (but not the only) element of educational measurement, has long been a political lightning rod for a small but vocal anti-testing community. Its members argue that tests may be (and indeed in the past sometimes have been) used in ways having the effect of denying educational opportuni-

ties to some groups of children (minorities, students with disabilities, and children who are not native English speakers, for example).

While public support for tests remains strong, it could be undermined by unintended negative consequences of new assessment policies: for example, if test-based accountability systems lead to narrow test-based coaching rather than rich instruction, if they fail to create incentives for improving the performance of *all* students, or if they rely too heavily on tests to make important decisions about individual students and teachers. Parents and teachers could lose faith in education reform itself if new performance measures identify students who need additional help to succeed academically, but then policy makers fail to provide this assistance.

Measuring student achievement will, we believe, contribute importantly to improved learning if policy makers, educators, and the public keep the following in mind:

- *Tests are a means, not an end, in school reform. Real educational improvement requires changing what goes on in classrooms. Policy makers must do more than just identify what students know and can do. They have to tackle the much tougher job of helping educators address inadequacies in student learning and overcome conditions that stand in the way of high academic achievement.*
- *Assessment and accountability systems are works in progress and must be continuously reviewed and improved. Educational standards on which assessment systems are based are not yet uniformly rigorous and substantive. There is more work to do in designing assessment instruments that can measure the rich array of knowledge and skills embedded in rigorous and substantive standards and that can accurately portray the performance of students with special educational needs, such as bilingual students and students with disabilities. As accountability requirements focus schools' attention on measurable student progress, they can have*

unintended consequences such as teachers emphasizing test preparation instead of the broader curriculum. We need to know more about how to design accountability systems and about the impact of specific design features. Standards, assessment, and accountability provisions need to be regularly reviewed, using independent evaluators to help identify problems and best practices and to monitor the intended and unintended consequences of policy changes.

- *A performance-based educational system built on measuring student achievement can't be constructed on the cheap.* Such a system requires good measurements and test administration procedures, information systems that make results available to educators in useful formats, training in how to use performance

data to improve instructional practices, and assistance for students and schools whom tests show to be poor performers. Despite the attention to assessment and accountability in recent years, most states still have a long way to go in implementing standards-based testing systems in all grades and major subjects. Few have either the assessment or data systems that would allow individual students' performance to be tracked over time and their progress measured from year to year. Without greater investments in such systems policy makers will find that state testing systems are not as useful as they could be in helping teachers improve their instructional performance and in holding educators accountable for the performance of students in their charge.*

*See memorandum by CAROL J. PARRY (page 43).

Chapter 2

MEASURING STUDENT ACHIEVEMENT



Tests are not the only way of obtaining information on student and school performance. In the past, student performance was often judged mainly by indirect measures that served (or were thought to serve) as general indicators of academic accomplishment: high school graduation, for example, or enrollment in advanced courses and in college. Similarly, the performance of schools or districts was frequently indicated by indirect measures such as graduation and dropout rates and teacher and student attendance rates.

Transforming education to a performance-oriented system emphasizing academic achievement, however, has vastly increased the interest and attention being given to direct measures of student learning: i.e., tests. Tests, and the accountability systems based on them, are not new and indeed have figured prominently in earlier reform efforts. Never before, however, has the interest in them been so pervasive.⁴

Much of the current attention to testing derives from the standards-based systemic reform movement. Spurred by the first-ever Education Summit between the President and the nation's governors in 1989 which set results-oriented national education goals,⁵ standards-based reform has dominated education policy making at both the state and federal level for roughly a decade. The strategy underlying this approach to school improvement begins with defining standards for student performance that create high expectations for all students. Linking assessments to these standards, it is argued, will then provide a means for parents,

students, educators, and the public to monitor performance against the standards. Holding schools accountable for meeting the standards should create incentives for schools to make instructional changes to boost student performance, while giving educators flexibility to decide for themselves what instructional and structural changes are needed (rather than imposing one-size-fits-all solutions from above).

As background for considering how tests can and should be used to foster educational improvement (as we do in Chapters 3, 4, and 5), it is helpful to identify basic issues in designing measures of student achievement and to outline challenges posed by the new emphasis being given to tests as a reform tool.

ISSUES IN DESIGNING DIRECT MEASURES OF STUDENT LEARNING

Setting standards for learning

Measuring student learning requires defining what students need to know and be able to do. The 1990s saw the first widespread efforts to develop content standards for academic achievement. CED's earlier hope⁶ that rigorous, substantive national standards and related assessments would be the foundation for state and local curriculum and instructional reform has not been realized. The tradition of local control is still strong in education. We underestimated the political potency of local control and the importance of involving many con-

stituencies in a consultative approach to standard-setting. Thus, the standards that are driving reform are the product of state-by-state standard-setting activities involving subject matter experts, educators, and representatives of the public.

The good news is that all states but one (Iowa) have or are developing content standards in some or all of four core academic areas (English, mathematics, science, and social studies or history). (See Figure 2.) An early tendency in many states to create “a dizzying array of fuzzy, nonacademic goals that are overly subjective and highly controversial”⁷ has given way to more focused attention on academic achievement.

This does not mean that standard-setting has become noncontroversial or the results uniform. Education is inherently controversial, because it is “as much concerned with central public values as it is with schools per se, and central values that Americans hold dear may conflict.”⁸ Differences in values are often reflected in raucous debates over standards that can roil a state politically: witness the recent decision by the Kansas State Board of Education to omit mention of evolution and the “big bang” theory of the origin of the universe from the state’s science standards and assessments, leaving local schools free to teach these topics if they wish. (That decision became a major issue in the 2000 election of state board members. As this statement goes to press, the newly-elected board appears ready to reverse the prior board’s action.)

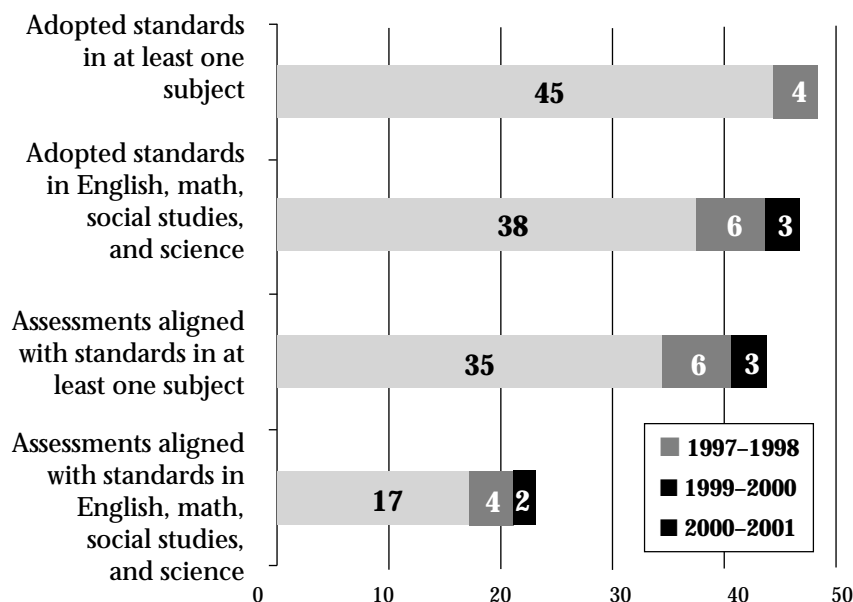
The results of state standard-setting processes vary widely. “Some standards are

highly specific, spelling out in detail the content knowledge students should demonstrate, whereas others are more general—or vague, as critics contend. The degree to which standards are ‘challenging’ also varies, with some states demanding much more of their students than others.”⁹

Standards, therefore, are not yet sufficiently rigorous and substantive. The National Research Council (NRC)¹⁰ has also pointed out that standards differ in the degree to which they guide policy and practice, some being so general that they make it difficult to make valid inferences about student performance or to provide clear guides for instruction. Some standards are so extensive that teachers cannot address them comprehensively, and test designers cannot include them all on assessments. Education researcher Paul Hill argues that many states initially used a “logrolling” process for setting standards, resulting in requirements

Figure 2

Standards and Assessments at the State Level



SOURCE: *Education Week* (2000:64, 2001:94-95).

that reflected the aspirations of advocates for particular academic specialties. Now many are seriously grappling with the question of “what is an externally valid standard (i.e., one that is closely linked to an important life outcome for students).”¹¹

Setting standards on a state-by-state basis is an incremental and slow process. Despite the slow pace, we are optimistic that if policy makers and the public stay the course, rigorous and clear standards can be achieved. **To insure that standards can effectively undergird measurement systems and instructional improvements, we recommend that states (and districts where applicable) periodically review their standards for clarity, focus, rigor, and validity, using independent outside reviewers to help benchmark against other states and against models of good practice. The results of outside reviews should be readily available to the public.** In this way, the process of setting standards will not only improve assessment and instruction but also provide a continuing framework within which citizens can discuss and, if necessary, revise their goals for public schooling.

Designing assessments

Assessments that are intended to measure academic achievement should meet three key criteria: they should be valid, reliable, and fair measures of the student learning they seek to describe. (See box: Criteria for Evaluating Tests: Validity, Reliability, Equity.) Tests that are not valid, reliable, and fair will obviously be inaccurate indicators of the academic achievement of students and can lead to wrong decisions being made about students and schools.

Public discussion about the quality of tests is often hampered by a semantic confusion. Test critics often decry “standardized tests,” alleging that such tests are invalid and unfair—that they are incapable of capturing critical differences in student achievement, reflect rote learning rather than measuring higher-order thinking skills, and lend themselves to being “gamed.” What these critics are actually cri-

CRITERIA FOR EVALUATING TESTS: VALIDITY, RELIABILITY, EQUITY

Tests should be judged by three key criteria:

- Validity: the degree to which a test measures what it was intended to measure.
- Reliability: the consistency and dependability of assessment results.
- Equity: fairness, lack of bias toward any particular group of examinees.

SOURCE: Klein and Hamilton (1999:4).

tiquing are multiple-choice or “fill in the bubble” tests, which they appear to equate with “standardized tests.” In fact, large-scale standardized tests are tests that are administered to students from many schools under uniform conditions, as opposed to “teacher-made tests” administered in individual classrooms. “[E]ven a written examination, one that is scored by teachers or other human judges and not by machine, is considered standardized if all students respond to the same (or nearly the same) questions and take the examination under similar conditions.”¹² Thus, any test intended to measure academic achievement across multiple classrooms and schools will be “standardized” if the results are intended to be comparable.

The often unspoken assumption of standardized-test critics—that teacher-made tests are immune from the weaknesses attributed to standardized and multiple-choice tests—is not borne out by research.¹³ Moreover, for large-scale testing like that required by standards-based reform, the multiple-choice format has some advantages. Multiple-choice tests can be scored by machine more quickly and at lower cost than other forms of assessment (essays, portfolios) which must be graded by hand. They also represent the form of assessment with which experts in assessment and test development have the most experience and the greatest confidence in their ability to make tests that are valid, reliable, and fair. Reliable scores for individual students can be achieved

in shorter amounts of testing time when multiple-choice tests rather than other test formats are used.

Nevertheless, standards-based reform, by requiring measures that can capture the rich array of knowledge and skills embedded in new content standards and that can be used to hold students and educators accountable, has encouraged wider experimentation with new forms of standardized testing. States and districts are increasingly using new test formats, some considered more “authentic” or better aligned with ambitious new goals for education than fill-in-the-blank or multiple-choice questions. (See Figure 3 and box: There is More to Tests Than Multiple-Choice Questions.)

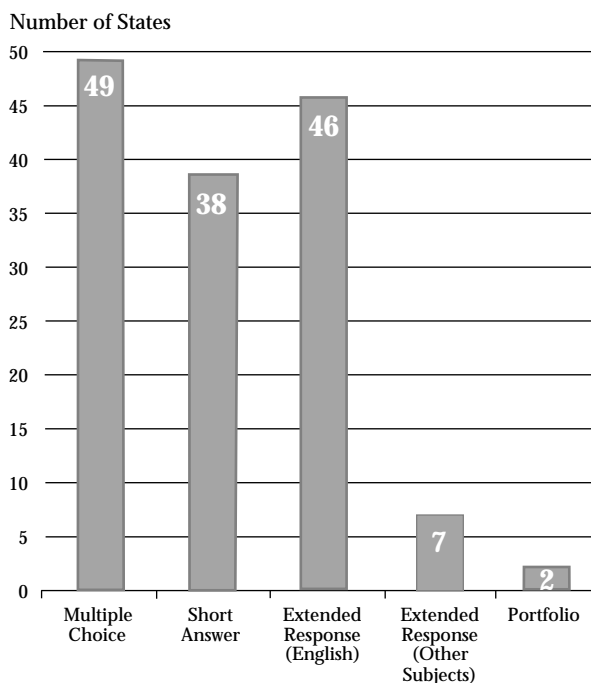
Issues of reliability, validity, fairness, and cost-efficiency still pertain, however; and tradeoffs among these criteria are sometimes

THERE IS MORE TO TESTS THAN MULTIPLE-CHOICE QUESTIONS

Though people tend to equate standardized tests with multiple-choice questions, tests increasingly use other formats as well:

- **Constructed response:** students write their own answers, rather than choose among a handful of pre-selected responses. Constructed response, or open-ended, test items might include essays or mathematical problems in which the student is required to show the steps used in reaching a solution.
- **Hands-on performance tasks:** students are given practical tasks, involving instruments and equipment, and are assessed on their content and procedural knowledge as well as their ability to use that knowledge in reasoning and problem solving. They may be evaluated individually or as part of teams.
- **Portfolios:** students are assessed on the basis of a representative sample of the work they produce during the school year.

Figure 3
Types of Assessment Instruments Used by States, 2000–2001



SOURCE: *Education Week* (2001:94).

necessary. In some cases, tradeoffs can be addressed through policy. For example, if policy makers are willing to trade off cost efficiency in favor of comparatively expensive assessment methods like essay exams or open-ended response items (to allow for richer and more extensive content coverage) and to permit sufficient testing time to ensure reliability, test developers can produce tests including such items.

Sometimes, though, tradeoffs are unavoidable because of the technical limitations of test design. Kentucky and Vermont were leaders in exploring the use of portfolios of student work in an effort to align assessment with instruction and to evaluate students in a way that reflected the breadth of their academic work. Portfolios proved useful to teachers and schools but not suited to use in accountability systems.

Teachers reported that learning to score portfolios had a strong positive influence on instruction.¹⁴ Reliability was significantly lower than with traditional multiple-choice tests, however. Kentucky reintroduced multiple-choice items to its state assessment after outside experts found that the items were needed to ensure content coverage, score reliability, and stability of proficiency standards over time.¹⁵ Vermont, too, uses multiple-choice, short-answer, and extended response items as well as portfolios in its state test system.

An NRC committee reflected the view of many test experts when it found that “policy and public expectations of testing generally exceed the technical capacity of the tests themselves. One of the most common reasons for this gap is that policy makers, under constituent pressure to improve schools, often decide to use existing tests for purposes for which they were neither intended nor adequately validated.”¹⁶ We recognize that there are other signs of strain in the assessment system as well, such as the failure of several testing contractors to provide timely and accurate score reports to states and districts.

These growing pains seem to us inevitable and remediable aspects of transforming a huge, complex enterprise into a performance-oriented endeavor. Like standard-setting itself, building an assessment system capable of meeting the new demands being placed on it will take time, sustained commitment, and money. Nevertheless, **creating an assessment system capable of supporting schools that focus on outcomes and performance is an urgent priority. We urge business leaders, parents, and the public to provide vigorous support for efforts to build assessment systems that support performance-oriented education.** Our recommendations about standard setting apply to assessment as well. **States and districts should periodically review their assessments for reliability, validity, and fairness. They should call on independent outside reviewers to help identify and use the best available testing technologies and should keep the public informed of the results of these evaluations.** Outside review

should also help monitor the intended and unintended consequences of assessment systems, a point we will pursue further in our discussion of accountability.

Reporting scores

Test scores are the most visible aspect of measurement. They can convey information about how students and schools measure up against standards, about whether they are making progress toward meeting standards, and about how they compare to other students and schools. Too often, in our view, the press and the public overemphasize the comparisons. A complex story gets reduced to rankings and a preoccupation with whose scores are highest or lowest, when what matters more for school improvement efforts is what knowledge and skills students have and whether their achievement is improving over time. *Transforming education to an outcome- and performance-based system demands that we look beyond the “horse race” and focus on the information measurement provides that can be used to improve teaching and learning.*

Extracting this information from test scores requires understanding how assessment results are and should be reported.

Traditionally, the results of large-scale testing programs have been reported as norms: how well students perform relative to the performance of a national sample of students who took the same test. They result in familiar percentile or grade-referenced scores. A student may be described as performing at the 75th percentile (that is, better than 75 percent of the national sample). Some percentage of students may be described as scoring at or above a specified grade level, which reflects *not* what students in that grade are expected to know but how these students performed relative to the national sample enrolled in the same grade. Large-scale testing was born from a need to make selection decisions (to make college selection decisions, for example, and to identify students for gifted programs). Norm-referenced scores were designed to assist in selection decisions by spreading out applicants along a score distribution.

Norm-referenced scores are less good at answering today's most pressing question: what do students know? An NRC report cites "a commonly used analogy: norm-referenced scores tell you who is farther up the mountain; they do not tell you how far anyone has climbed."¹⁷ To extend the analogy, they also provide no information about what the climber needed to accomplish to reach the level reported (i.e., was the mountain high or low or particularly steep?). Today in education we want to know more than how students and schools compare. We also want to know what students know about things we believe are important. That is, we need criterion-referenced scores, where the criteria are educational standards.

The distinction between norm-referenced scores (which emphasize comparisons) and criterion-referenced scores (which emphasize performance against standards) is important to keep in mind as we pursue our discussion about using measurement for various purposes. Scores appropriate for one purpose (e.g., norm-referenced scores for informing parents about how their children are performing relative to others) may be quite inappropriate for another (e.g., for holding schools and teachers accountable for improving the performance of their students relative to state standards).

Reporting test scores for groups of students and making inferences from them, especially for purposes of accountability, raise additional considerations. Scores that show average achievement of test takers at one specific time are less useful for gauging how well particular schools are performing than are scores that track changes over time for the same students (or students in the same grade cohort). Comparing scores or score changes across schools and districts without considering differences in the backgrounds of test takers can lead to inaccurate judgments about which schools and districts are really successful at raising student performance, since student backgrounds are known to influence academic achievement. We address these issues in more detail in Chapter 4.

CHALLENGES TO MEASUREMENT PRACTICES

The emphasis currently being given to measurement as a tool of educational reform heightens the importance of using tests appropriately, including all students in assessment programs, and acknowledging that new demands on testing cannot be met on the cheap.

Appropriate test use

Individual tests are not one-size-fits-all. Professional guidelines about the circumstances in which use of a particular test is appropriate have existed since the mid 1950s and have been revised and expanded several times, most recently in 1999.¹⁸ Test experts argue, however, that the standards are insufficiently understood and adhered to by policy makers and test users, especially as they build new test-based accountability systems.¹⁹ **We recommend that policy makers and test users respect professionally-developed testing standards when designing and implementing assessment and accountability systems.** We will touch on a number of these standards here and in the Chapter 4 discussion of test use for accountability purposes.

A key concern of test experts is that policy makers and the public frequently do not understand that the validity and reliability of a test is determined by the use to which it will be put. Tests that are valid and reliable for one purpose (to influence classroom practice, for example) may not be so for another (to hold schools accountable for performance). The temptation is nevertheless strong to use tests for multiple purposes to save money and time. **We recommend, in accordance with professional standards, that tests be used only for purposes for which they have been validated**—that is, where the strengths and limitations of the testing program and the test itself have been evaluated for its intended use.

To be powerful instruments of reform, most tests should be tied to ("aligned with") the specific expectations that states and districts have for their students. Alignment refers to

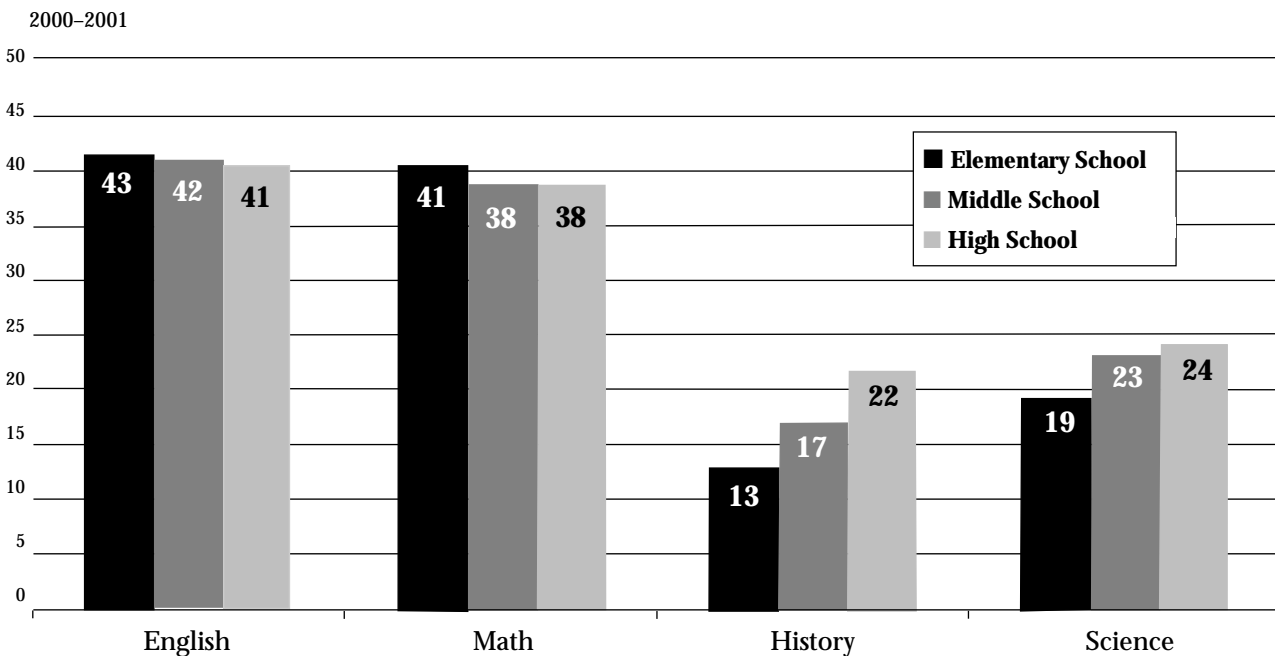
how well an assessment measures the contents and skills laid out in a standard. “Alignment ensures that the tests match the learning goals embodied in the standards. At the same time, aligned assessments enable the public to determine student progress toward the standards.”²⁰ Judgments about the extent to which tests and standards are aligned go deeper than “yes” or “no” evaluations and examine both the content that test items are measuring and the depth of performance that a student is supposed to demonstrate.

Alignment is easier to achieve when states deliberately design tests to measure their standards, though this does not ensure alignment. Tests still may not measure all of the state’s standards, particularly in states where the list of standards is extensive. The ability of tests to measure standards may be further limited by constraints imposed by policy makers, such as testing time and costs.

The barriers to alignment are more serious when states use so-called “off-the-shelf” commercial tests rather than developing their own. Such tests are designed to be used in many states. Given the variety of standards across the states, they are unlikely to line up with the standards in any one state. In a country that has no nationally-agreed upon benchmarks for learning, there is still room for norm-referenced tests that gauge comparative standing and for off-the-shelf and other tests that give general information about subject-matter knowledge.

Nevertheless, the purposes we identified for measurement in the first section of this report are best served by tests that are aligned to standards. (See Figure 4.) Otherwise, teachers get no guidance from test scores about how well their students have mastered the standards, so they do not know whether their instructional programs are working. Accountability

Figure 4
Number of States Using Criterion-Referenced Assessments Aligned to State Standards



SOURCE: *Education Week* (2001:95).

systems that do not make clear what teachers are expected to teach and students expected to learn are unfair and may well be found illegal by the courts.

Using tests for “high stakes” purposes such as denying students promotion or graduation and assigning rewards and sanctions to schools raises the stakes for the tests themselves. When adverse consequences for individuals may result, tests become subject to the possibility of legal challenge on the grounds that the way they are used is discriminatory or otherwise inappropriate. (See Chapter 4.) Some civil rights groups have long opposed the use of tests, at least when tests are used by themselves to make important decisions about students or when students do not have equal access to high-quality instruction.²¹ Their wariness is understandable; history has given them plenty of cause for concern. Early in the 20th century, “[i]n their worst manifestations, the uses [of tests] were racist and xenophobic”: prominent scientists used IQ test results to argue that blacks and immigrants from Southern and Eastern Europe were mentally inferior.²² Southern schools resisting desegregation used tests to resegregate black students into lower tracks. In 1994, publication of *The Bell Curve*²³ sparked a “highly-charged, racist debate” over the authors’ claim that social and economic inequality among racial and ethnic groups can be explained by differences in intelligence as measured by tests. Despite detailed critiques of the book’s methods and analysis, it provided a rationale for those desiring to limit education and social welfare policies aimed at reducing inequalities.²⁴

If attention is given to using tests that are valid, reliable, and fair, however, we believe that measures of academic performance can be powerful instruments of educational opportunity because of the spotlight they shine on students whose needs have too often been neglected in the past. As the Citizens’ Commission on Civil Rights has noted, “without an accurate means of measuring what students know and can do, responsible school authorities have no way of gauging whether

students are reaching high standards. And without such an accurate gauge, schools and school districts cannot be held accountable for results. Accurate assessment tools, then, are the glue that holds the reform effort together.”²⁵

Testing all students

Test programs must include all students if they are to contribute to improving education for all. In the past, many testing programs exempted students with disabilities and students who are not yet fluent in English from testing or did not include the scores of such students in public reports on district and school performance. Testing these special needs students and accurately interpreting their scores raises a variety of technical challenges. Nevertheless, **special needs students should be included in testing programs to the maximum extent possible, and district and school performance reports should always include information on any exceptions to this policy.**

Special needs students represent a significant proportion of the school population. In 1996-97, almost 13 percent of elementary and secondary school students were served by federal programs for children with disabilities.²⁶ Seven percent participated in bilingual education or English as a second language programs.²⁷ Excluding these students from testing sends signals that such students don’t matter or can’t be expected to meet high standards and that schools aren’t responsible for their academic progress. Since these students are not distributed uniformly across schools and districts, the validity of test score comparisons is compromised when nonstandard policies are used to exempt students from regular assessment programs and when schools and districts fail to provide data about the proportion of special needs students included in their scores.

Federal law now requires that all students be included in assessment and accountability mechanisms and that appropriate accommodations and modifications be made if necessary.²⁸ For example, a braille version of a test might be provided for a blind student or the

test read aloud to him or her, or a student with a reading disability might be given extra time to complete a test. A student not yet proficient in English might be given tests (in subjects other than English itself) in his or her native language.

States face major challenges in implementing the law. There is little research on the effects of testing accommodations on the validity and reliability of test score information for either students with disabilities or for English-language learners. It is not clear whether different versions of tests in different languages in fact measure the same thing.²⁹ Indeed, states report that the assessment of special populations is among the greatest challenges they face in developing assessment systems.³⁰

Including all students in assessments is an important goal, but one which makes unprecedented demands on testing expertise. It is essential that users of test scores understand the complexity of the inclusion issue and utilize information about who is and isn't yet covered by testing programs in their interpretation of performance data. **States and districts should develop clear guidelines for accommodations that permit special needs students to participate in testing. They should also describe the methods they use to screen students for accommodations and should report how often students receive accommodations or are still excluded altogether. Meanwhile, government and foundation funding agencies should support research aimed at addressing gaps in our knowledge about the validity and reliability of different accommodations and alternate assessment practices that can accurately gauge the academic achievement of those special needs students for whom standard testing approaches are unsuited.**

Cost implications

Shifting to a performance-based education system and developing the measurement tools to assess performance requires new investment; it cannot be constructed on the cheap. We have already described two major new demands on testing systems: (1)

creating assessment instruments that are aligned with standards and that can measure a range of skills and (2) including all children in assessment programs. Measuring academic achievement and using the results to improve performance demands other new investments as well: for example, enhanced test security measures for accountability tests; more frequent testing so that improvement and not just current status can be assessed; linked data systems to support public reporting; and (most critical of all) appropriate remediation for low-performing students and assistance for schools and teachers to improve their capacity to assist all students in meeting high academic standards.

There is already evidence that the inability or unwillingness to make the necessary investments affects how educational performance is measured and the results used. Few states have implemented standards-based testing systems that cover all grades and major subjects; the norm is to use standards-based tests at selected grades in selected subjects. Few have as yet developed student information systems that enable comparison with matched sets of schools or student level data bases that allow students' performance to be tracked over time so performance changes can be identified. Many report that they are unable to provide the follow-up assistance to schools that test results suggest is needed. (See box: States Lack the Capacity to Serve All Schools in Need of Improvement.) The Maryland State Board of Education recently delayed the date at which its high school graduation tests will be used to deny diplomas after the governor and state legislature failed to supply full funding for an academic support program the board believed was needed to help students who are behind their peers prior to entering high school.³¹

We urge supporters of a truly performance-based educational enterprise to acknowledge the costs involved and to advocate the necessary funds to build and implement measurement systems that support and hold schools accountable for instructional improvement.

STATES LACK THE CAPACITY TO SERVE ALL SCHOOLS IN NEED OF IMPROVEMENT

A 1998 Department of Education Survey examined states' capacity to follow up on information about low school performance:

- Only 9 states reported that they could provide support to at least half the schools in need of improvement in their states.
- 12 states reported that they served less than half of the schools in need of improvement.
- 24 states said they had more schools in need of support services than they had the resources to provide.

SOURCE: U.S. Department of Education (1999b:64).

Reallocation of dollars from lesser priority activities and more efficient uses of resources may address part of the need but are highly unlikely to supply all of the investment required.

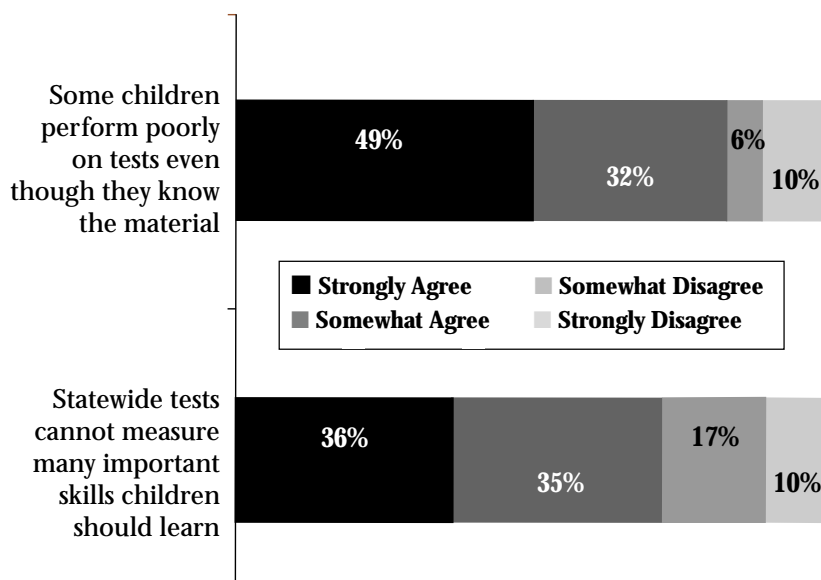
LIMITATIONS OF TESTS AS MEASURES OF STUDENT LEARNING

Although Americans strongly support testing, they do have some concerns about relying on statewide tests in public schools. Two major concerns relate to the limits of tests in accurately measuring learning: that some children perform poorly on tests and that statewide tests cannot measure many important skills that children should learn.³² (See Figure 5.) Of course, the public is right to recognize these limitations. Tests are not perfect measures of individual students' knowledge,

nor do they reflect the full range of a rich educational program. *The issue for policy is not whether tests are perfect but whether they help in efforts to improve the performance of students and schools and whether they contribute positively to decisions (like promotion and graduation) that are going to be made whether tests exist or not. We strongly believe that they do.*

Figure 5

Public Concerns About the Limits of Tests



NOTE: Percentages do not add to 100 due to rounding.

SOURCE: Belden Russonello & Stewart and Research/Strategy/Management (2000:44).

Chapter 3

USING ACHIEVEMENT MEASURES TO IMPROVE TEACHING AND LEARNING



All aspects of a performance-based educational system, including the measurement system itself, should ultimately be judged by their contribution to teaching and learning.

The growing use of tests for accountability purposes has led to charges that new assessment systems hurt educational quality. Critics argue that overemphasis on tests results in curricular “compression” (slighting subjects that are not tested) and in “teaching to the test” (for example, spending class time on worksheets and test-prep material that imitate test questions rather than on richer forms of instruction). Such unintended consequences do occur, and when they occur they are indeed worrisome. *We do not think that curricular compression and teaching to the test are inevitable results of testing, and we believe that with thoughtful attention they can be avoided.*

Moreover, the evidence is mounting that measurement systems designed to enhance instruction, when accompanied by efforts to give teachers the capacity to use the results, can be powerful levers for instructional improvement. Assessment is assisting educators in identifying and helping students who in earlier periods would have been left behind by schools that had no clear idea about how to measure progress toward their objectives, if indeed they had any. **However, assessments should be accompanied by greater efforts to develop the teacher capacity necessary to make full use of new information about student learning and translate it into improved instruction.**

MEASUREMENT THAT ENHANCES INSTRUCTION

Data can be powerful catalysts for instructional change. Creative superintendents and principals use the information provided by assessments to spur teachers to identify the strengths and weaknesses of individual students and make plans for addressing problems. Teachers are stimulated to work together on new curricular models that align lesson plans to content standards and that encourage curricula to flow from subject to subject and from grade to grade within schools.³³ Good teachers use test results to help them learn how better to teach the curriculum, not to teach to the test itself.

State assessments are being used by many schools to motivate instructional improvement, but these tests are actually not necessarily the preferred form of measurement for purposes of affecting the everyday interactions between teachers and students. Teacher-made tests, diagnostic tests, and other forms of local assessment are better suited to provide some kinds of information crucial for enhancing teaching. Tests used for accountability and monitoring purposes are designed to provide a range of information about students’ mastery of a given subject at a given grade level. They are usually administered once a year. They provide too little information too infrequently to allow teachers to adjust their instruction to reflect changing student needs during the course of the academic year.

Local assessments can compensate for these shortcomings. Because they can be given often and aren't used for accountability or to reflect content coverage comprehensively, they can go into specific topics in depth and cover subjects that may not be on state assessments. They can more easily make use of test formats (essays, open-ended questions, hands-on activities, portfolios) that give students a variety of ways to demonstrate their knowledge and that are better suited than multiple-choice items for classroom instruction.

Districts that understand the potential benefits of measurement can creatively blend local and state assessments to improve instruction. A National Research Council (NRC) report cites two examples of districts pursuing standards-based reform that have fashioned "a mosaic of assessment information that includes frequent assessment of individual student progress at the classroom level; portfolios and grade conferences on student work at the school level;

performance assessments at the district level; and standards-referenced tests at the state level. All of these are compiled into reports that show important constituencies what they need to know about student performance."³⁴ (See box: How Two Districts Blend Local and State Assessments to Improve Instruction.)

States, districts, and schools can work together to address concerns over inappropriate teaching to the test, cheating, and other test misuses that can distort instruction. Encouraging careful monitoring of test use by independent organizations (see Chapter 5) is one approach. Another is continued improvement of tests themselves, so that they become something worth teaching to. Meanwhile, researcher Richard Phelps argues that the state testing directors, who are technically proficient and independent of test publishers, can "deploy a number of relatively simple solutions" to combat test misuse: "not revealing the contents of tests beforehand; not using the same test twice;

HOW TWO DISTRICTS BLEND LOCAL AND STATE ASSESSMENTS TO IMPROVE INSTRUCTION

Community District 2 in New York City began its reform effort by changing the curriculum, rather than the assessments. The district administers a citywide mathematics and reading test, and a state test as well. Each year, the district reviews the results, school by school, with principals and the board, setting specific goals for raising performance, especially among the lowest-performing students. In addition, schools also administer additional assessments that they found are aligned with the curriculum. In that way, the intensive staff development around curriculum, which the district has made its hallmark, and the professional development the district provided on the assessment, produce the same result: teachers with significantly enhanced knowledge and skills about how to teach students toward challenging standards.

Schools in Boston also use a multifaceted approach to assessment. The state of Massachu-

setts has developed its own test, and the district uses a commercial test. In addition, schools have developed parallel assessments. One elementary school, for example, begins each September by assessing every student, from early childhood to grade 5, using a variety of methods: observation for young children (through grade 2), running records, writing samples. They repeat the running records and writing samples every four to six weeks. They examine the data in January and again in June to determine the children's progress. In that way, every teacher can tell you how her students are doing at any point. Teachers can adjust their instructional practices accordingly, and principals have a clear picture of how each classroom is performing. The district and state tests, meanwhile, provide an estimate of each school's performance for policy makers.

SOURCE: National Research Council (1999d:49-50).

requiring that non-tested subjects also get taught (or testing them, too); and maintaining strict precautions against cheating during test administrations.”³⁵ Keeping test content secure and not using the same test twice make it futile to try to teach to specific test items. However, these steps drive up the cost of testing, requiring that publishers prepare more forms of each test, that districts purchase a new form for each test administration, and that policies be implemented to discourage cheating.³⁶

We are not naïve in thinking either that such good test practices are followed everywhere or that some teachers and schools will not respond to the “horse race” mentality about test scores found in the media and among the public by focusing instruction in some instances too narrowly on tests. *We (business leaders, our colleagues, and our fellow citizens) contribute to test misuse when we focus our own attention too narrowly or uncritically on test scores as the sole indicator of school and student performance. We can be part of the solution by being informed consumers of test results. We should pay attention to how tests are linked to standards and instruction, interpret test scores carefully, focus on the progress of schools and students rather than on winners and losers in the “horse race” game, and support building the capacity of school-level educators to use test data well for instructional improvement.*

TEACHER CAPACITY

*Assessments will only contribute to improved teaching and learning if educators know how to interpret and use test results and how to change their instructional practices to make them more effective. There is a growing realization that along with the standards, assessment, and accountability pieces of standards-based reform, more attention needs to be given to foster teachers’ capacity to change what they do in the classroom.*³⁷

Standards-based reform makes unprecedented demands on teachers. It calls on them to learn about rigorous new standards that require them to teach very different material, to understand and often participate in the devel-

opment of new curricula to implement the standards, and to change the way they interact with students. New findings from research in the science of learning³⁸ underscore the need for teachers to develop teaching practices that are adapted to the diverse learning needs of their increasingly heterogeneous students: practices that reflect the prior knowledge, as well as the skills, attitudes, and beliefs that individual learners bring to school and that are sensitive to the cultural and language practices of students and the effects of those practices on classroom learning. Finally, teachers are being given unprecedented amounts of data about the achievement of their students from district and state tests and are being asked to use information on student outcomes to improve their teaching.³⁹

All of these new expectations assume that teachers know how to do these things. Standards-based reform further assumes that teachers would institute effective practices if they had the freedom and motivation to do so. An NRC study committee concluded, however, that these assumptions might be “overoptimistic” and that “knowledge about how to implement effective instructional strategies to help all students learn to challenging standards is also largely unknown.”⁴⁰ Teachers feel unprepared (1) to implement new curriculum and performance standards and teaching methods, (2) to address the special needs of students with disabilities or limited English proficiency and those from diverse cultural backgrounds, and (3) to integrate educational technology into their instruction.⁴¹

Part of the solution is better preparation of future teachers, especially more emphasis on subject-matter knowledge. Teachers already in schools, though, will have to be helped through professional development. **We recommend that policy makers and educators recognize, as businesses do, that staff development and workforce retooling are important investments in the future.** As we pointed out in our 1994 report, in education these activities have typically been less well funded than in the private

sector and have been among the first to be cut when resources are lean.⁴²

Investments in professional development, though, must result in change in the classroom. As much as possible, professional development activities should be designed to meet the needs of the personnel in individual schools. Too often now, professional development varies widely in quality and consists of short district-sponsored workshops, which are not linked to specific teacher needs or to school improvement plans.

Teachers also need more help to understand and use measurement as a tool of instructional improvement. The NRC found that teacher preparation programs provide little emphasis on measurement and that teachers feel inadequately prepared in assessment.⁴³ Thus teachers may not know how to take full advantage of the data on student outcomes being provided by state and local assessment systems and by their own classroom tests. Assisted by business leaders, several states have developed programs that help teachers and principals learn how to use data to improve instruction. (See box: Helping Teachers Get and Use Performance Data.)

If capacity issues are ignored, test experts warn that a predictable pattern will develop: test scores, which generally start off at a low level, will “rise quickly for a couple of years, level off for a few more, and then gradually drop over time.”⁴⁴ In addition to helping current teachers improve their instructional practice, the necessary changes may involve other, costly reforms such as class size reductions, after-school and summer school programs for students having academic difficulties, universal pre-school for those who want it, and redesigned teacher training programs as well as policies that address health and other problems that interfere with some children’s ability to learn. *Assessments are no magic solution to the challenge of real educational improvement. They serve as an essential thermometer but cannot by themselves make teaching and learning better. Policy makers and educators must attend to the whole range of*

factors that affect teachers’ ability to provide effective instruction and students’ ability to achieve to high standards.

HELPING TEACHERS GET AND USE PERFORMANCE DATA

In **Texas**, Just for the Kids (JFTK) was founded in 1995 to provide community support for school improvement efforts. JFTK uses data from the state education agency to calculate (for each elementary school in the state) an “opportunity gap”: a measure of how the school compares to the most successful schools serving equally or more disadvantaged student populations. JFTK offers regional training sessions where principals and community leaders are trained on how to present data and lead public discussions and provides training sessions for educators on how to use the data. Since October 1998, JFTK has trained more than 1000 campus leadership teams representing over 250 school districts throughout Texas in how to use the JFTK data to increase student achievement on their campus. JFTK plans to extend its data analysis to middle and high schools. Internet site: www.just4kids.org.

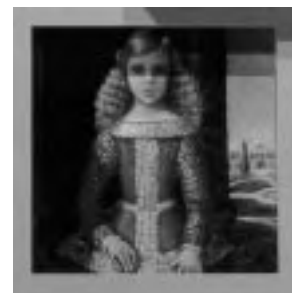
In **Maryland**, the Maryland Business Roundtable for Education, in collaboration with the Maryland State Department of Education, created a “decision support system” web site, which allows schools (and others) to access and analyze state test data, compare performance with other schools, and identify effective practices for improving student learning. The web site links state standards, data analysis, school improvement planning processes, and resources for instructional enhancement. Internet site: www.mdk12.org.

The **Illinois** Business Roundtable has collaborated with the Illinois State Board of Education and the National Central Regional Education Laboratory to launch a similar effort in July 2000. Internet site: www.ilsi.isbe.net.

Wisconsin unveiled the Wisconsin Information Network for Successful Schools in September 2000. Internet site: www.dpi.state.wi.us.

Chapter 4

USING ACHIEVEMENT MEASURES TO HOLD STUDENTS AND EDUCATORS ACCOUNTABLE



A key link in the chain of standards-based reform is accountability, which provides a badly-needed incentive for students and educators to meet the standards. Without meaningful consequences for performance, the instructional utility of tests is unlikely to be realized. Accountability also provides the mechanism for freeing schools from requirements to follow rules and procedures and instead making them responsible for results in the form of improved student learning.

Students and educators can be held accountable for their performance in various ways. Publishing school-level test results and providing data on individual students to parents use the incentive of information (and perhaps public recognition for high achievement or public embarrassment over poor performance) to spur improvement. Higher stakes accompany accountability when tests—or tests and some combination of other measures—have more direct consequences; when, for example, they are used to deny low-performing students promotion to the next grade or a high school diploma or when schools and their staffs are given financial rewards for high or improving student achievement or threatened with state takeovers or “reconstitution” if student achievement is unacceptably low.

While it can reasonably be argued that “accountability for results is more talk than action” at this point, especially for the adults in the education system, there is no question but that accountability is “in vogue.”⁴⁵ More and more students now face or soon will face new requirements that they pass tests to be pro-

moted from grade to grade or to graduate from high school. Principals and teachers face growing pressures to accept contracts tying continued employment or pay to the academic achievement of their students. Policy makers have “jumped aboard the standards-and-accountability train,” even if many have been slower to impose real consequences on schools and the teachers and principals who work in them.⁴⁶

Accountability systems in most states are too new to evaluate their effect on student achievement. Evidence from two of the pioneering states—North Carolina and Texas—is very encouraging about the positive effects of accountability systems accompanied by consequences for results that are implemented as part of a coordinated set of reform strategies. (See box: North Carolina and Texas Show Improvement Using a Coordinated Array of Reform Strategies.)

Accountability however, exacerbates concerns about unintended negative consequences of measurement which are less likely to occur when tests are used for purposes with more indirect consequences for individuals (such as improving instruction and monitoring the educational system). When applied unequally (e.g., to students only and not to educators, or vice versa) accountability raises concerns about fairness.⁴⁷ Some critics argue that the negative consequences of testing (grade retention, denial of diplomas) are being felt much more by students, while rewards rather than sanctions are more often applied to teachers.

NORTH CAROLINA AND TEXAS SHOW IMPROVEMENT USING A COORDINATED ARRAY OF REFORM STRATEGIES

The National Education Goals Panel, a bipartisan and intergovernmental body of federal and state officials, was founded after the 1989 Education Summit to track state and national progress toward meeting the national education goals.

In 1997, the panel reported that two states, North Carolina and Texas, stood out from other states in the extent to which they were achieving these objectives. The panel commissioned an outside review to confirm the findings and seek to identify the factors that could and could not account for these states' success.

The analysis confirmed that the gains in academic achievement in both states were significant and sustained. North Carolina and Texas posted the largest average gains in student scores on tests of the National Assessment of Educational Progress (NAEP) administered from 1990 to 1997. The results were mirrored in state assessments administered during the same period, and there was evidence that the scores of disadvantaged students improved more than those of advantaged students.

The study concluded that the most plausible explanation for the test score gains were to be found in the policy environment established in each state. Both states pursued a similar set of policies which were consistent with each other and sustained over time. The main elements included:

- State-wide standards by grade for clear teaching objectives
- Holding all students to the same standards
- State-wide assessments closely linked to academic standards
- Accountability systems with consequences for results
- Increasing local control and flexibility for administrators and teachers
- Computerized feedback systems and data for continuous improvement
- Shifting resources to schools with more disadvantaged students

SOURCE: Grissmer and Flanagan (1998).

The more direct the consequences for individual students and schools, the more critical become questions about the technical quality and fairness of accountability models. How much margin for error is there in students' test scores and how should this so-called "measurement error" affect decisions about promotion and graduation that are based on test scores? Do test-based accountability formulas distinguish high and low performing schools accurately and consistently? Would different methods of calculating accountability ratings result in different "winners" and "losers" in accountability systems that reward the top performers and sanction the lowest?

More critical, too, becomes the political reasonableness of the results. Performance expectations set so high that most students or schools initially fail to reach them may cause

the public to question the usefulness of assessments and accountability programs and weaken political support. Virginia was forced to address this issue after only 2 percent of its schools showed satisfactory performance on the first administration of the Standards of Learning exams, on which school accreditation will eventually be based. Setting high standards for student learning is not incompatible with a strategy of setting the initial standards at a lower level and then gradually ratcheting them up over time, as Texas is doing. Both strategies can get us where we need to go, if political support remains strong and thoughtful adaptations are made as experience is gained. In Texas, this has meant introducing a more rigorous set of standards and tests over time. In Virginia, it has meant keeping the Standards of Learning in place but delaying by several years the date

when sanctions for poor-performing schools (loss of accreditation) will kick in. Both states have shown large increases in the number of students passing state standards-based exams since they were first introduced.

Designers of test-based accountability systems must address a series of issues that affect students and educators, respectively.

USING PERFORMANCE MEASURES TO REWARD AND SANCTION STUDENTS

Probably the best-known use of tests is to make decisions affecting students: “ending social promotion” by employing test scores to determine readiness for promotion to the next grade and developing “high school exit tests” on which to base the awarding or withholding of high school diplomas. (See box: States Using Tests for Promotion Decisions and box: States Using Tests For Graduation Decisions.) These are highly sensitive decisions, so it is important to consider how test scores should be used in making them, whether appropriate

| STATES USING TESTS FOR PROMOTION DECISIONS | |
|--|--|
| States that have or will have promotion policies based, at least in-part, on performance on state assessments | |
| Arkansas | |
| California | |
| Delaware | |
| District of Columbia | |
| Florida | |
| Illinois | |
| Louisiana | |
| North Carolina | |
| Ohio | |
| South Carolina | |
| Texas | |
| Virginia | |
| Wisconsin | |
| TOTAL = 13 | |

SOURCE: Glidden (1999).

instruction and assistance are available for individuals who are denied promotion or graduation, and whether specific steps should be taken to motivate students to do their best on tests rather than just score well enough to get promoted or to graduate.

Using multiple measures

Even the best test is imprecise to some degree. Student scores are expected to vary across different versions of tests, reflecting both the specific sample of questions asked and transitory factors, such as the student’s health on the

| STATES USING TESTS FOR GRADUATION DECISIONS | |
|--|--|
| STATE | Students must pass tests covering 10th grade standards to graduate |
| Alabama | Yes |
| Alaska | Class of 2002 |
| Arizona | Class of 2002 |
| California | Class of 2004 |
| Florida | Class of 2003 |
| Georgia | Yes |
| Louisiana | Class of 2003 |
| Maryland | Class of 2007 |
| Massachusetts | Class of 2003 |
| Mississippi | Class of 2003 |
| Nevada | Yes |
| New Jersey | Class of 2003 |
| New Mexico | Yes |
| New York | Yes |
| North Carolina | Class of 2003 |
| Ohio | Class of 2005 |
| South Carolina | Class of 2005 |
| Tennessee | Class of 2005 |
| Texas | Class of 2005 |
| Virginia | Class of 2004 |
| Washington | Class of 2008 |
| TOTAL | 21 |

SOURCE: *Education Week* (2001:79).

day of a test. Moreover, no single test can fully reflect what a student knows and can do. For these reasons, a fundamental precept of good test practice is that “an educational decision that will have a major impact on a test taker should not be made solely or automatically on the basis of a single test score. Other relevant information about the student’s knowledge and skills should also be taken into account.”⁴⁸ Professional standards and virtually all test publishers warn against relying on tests alone to make important educational decisions.

Such warnings are not always heeded, however. Test scores offer an easy way to make decisions about large numbers of students in a short period of time, while case-by-case evaluations incorporating multiple measures like grades and teacher evaluations are more time-consuming and prone to special pleading by students and parents. To the extent that promotion or graduation is heavily influenced by judgmental considerations rather than a more “objective” criterion, the meaning of the underlying educational standard students are being asked to meet becomes harder to convey to the public.

We believe confusion over the underlying standard is especially problematic for decisions to require satisfactory performance on high school exit tests as a condition for receiving a diploma. One of the major complaints that colleges and employers have is that they no longer know what a high school diploma signifies in terms of what a graduate knows and can do. (See Figure 6.) Standards-based graduation exams hold promise for remedying this situation.

The issue, though, isn’t as simple as whether or not to deny a diploma to a student who fails graduation test requirements.

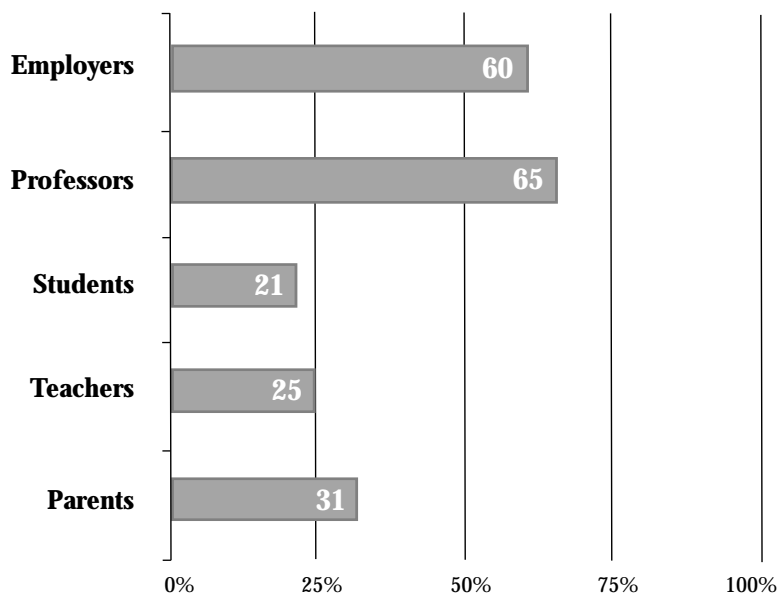
Some states are considering the use of differentiated diplomas, not only to indicate who has and hasn’t passed the exams but also to recognize exceptionally strong performance, thus giving students an added incentive to do well and not just “get by.”⁴⁹ Differentiated diplomas might also provide a way to signal that a student has shown the persistence and discipline (traits employers value) to finish school, even if he or she hasn’t been able to pass the tests. While these are worthy goals, we fear that the tradeoff will be a proliferation of credentials, varying by state, that will be hard for colleges and employers to interpret.

We acknowledge that there may need to be a transition period, as new standards and requirements come into being, but **we urge that policy makers move toward diplomas that tell colleges and employers that their holders have at minimum passed any required high school**

Figure 6

Uncertainty Over the Meaning of a High School Diploma

Percent of Respondents Saying That a Diploma is No Guarantee That the Typical High School Student Has Learned the Basics



SOURCE: Public Agenda (2000b).

exit tests. There are practices that can be implemented to avoid too heavy a reliance on a single test for awarding the diploma. One is to ensure that all students have multiple opportunities to take the tests. Another is to offer tests in a number of subjects and require that many, but not all, be passed in order to graduate.

We think that the arguments for using multiple measures in addition to tests are stronger for promotion and retention decisions. Here, the primary concern is not sending a signal to the outside world about the student's level of accomplishment, but trying to place the student in the most appropriate educational setting to support his or her learning. **We urge that promotion decisions include advice from teachers who know the student and the educational opportunities available in the school and district.** We note that Chicago changed its promotion rules in August 2000 to allow teachers to determine whether students should be promoted based on considerations of class grades, other test scores, attendance, and behavior in addition to scores on the Iowa Test of Basic Skills, which had previously been the only factor taken into account. The burden of adding additional considerations to promotion decisions could be minimized by bringing in multiple measures only for students whose scores put them within some specified distance from the cut-off score for promotion.*

Availability of appropriate instruction and assistance

We urge policy makers to recognize that the use of tests for promotion or graduation decisions faces political hurdles and risks legal challenge unless students are provided with adequate academic preparation for the tests and with intensive instruction for those who fail.

Some educators and parents fear that holding children back academically will result in greater numbers of school dropouts. As test-based promotion and graduation policies spread, this is certainly a possible consequence to be monitored. However, the consequences

of holding children back must be weighed against the consequences of promoting them into grades or colleges or workplaces where they are woefully unprepared to do the work. One crucial key to making new policies beneficial for students who fail promotion and graduation tests is to provide them with instruction that will help them catch up. One reason holding students back led to higher dropout rates in the past⁵⁰ is that unsuccessful test-takers were usually recycled through the same educational experiences that had proven unsuccessful for them. It is encouraging to see that today some policy makers are addressing the need for innovative and intensive instructional investments to help students who have failed or who are at risk of failing "high-stakes" tests. Chicago offers one example of a multi-pronged approach to "ending social promotion," coupling tests with a variety of new instructional strategies. (See box: Chicago's Multi-Pronged Approach to "Ending Social Promotion.")

Such an approach will help protect test-based promotion and graduation policies against court challenges or sanctions imposed by the U.S. Department of Education's Office for Civil Rights (OCR). To avoid challenges and sanctions, assessment policies must conform to many rules about test use that are rooted in the U.S. Constitution, federal civil rights statutes, and judicial decisions, as well as in state law.

Because of the protections offered by these rules, the National Commission on Testing and Public Policy found that "the most common way to challenge important tests is through the courts."⁵¹ High-school graduation tests have been the subject of a number of lawsuits. Recently Louisiana's test-based promotion policy was unsuccessfully challenged by a parents' group in federal court; the OCR has received complaints from Louisiana and four other states over promotion policies.⁵²

Promotion and graduation tests are most likely to be challenged on two grounds: that they are discriminatory (having disproportionate impact on poor and minority children) or

*See memorandum by CAROL J. PARRY (page 43).

CHICAGO'S MULTI-PRONGED APPROACH TO "ENDING SOCIAL PROMOTION"

In the Chicago Public Schools (CPS), students in the third, sixth, and eighth grades must meet minimum test scores on the Iowa Tests of Basic Skills (ITBS) in reading and mathematics in order to be promoted to the next grade level. Chicago's initiative to "end social promotion" goes beyond testing to provide progressively targeted intervention, aimed at improving the achievement of students with the lowest skills.

In the year before promotion, the CPS policy aims to focus teacher attention on those students who are not mastering the material. In addition, students who are at risk of not meeting the minimum scores are given extended instructional time during the school year through Lighthouse, an after-school program where students engage in a centrally developed curriculum focused on reading and mathematics.

Should students fail to meet minimum test scores at the end of the school year, they are required to participate in a six-week Summer Bridge Program. This second major component of the CPS initiative offers smaller classes and a centrally mandated curriculum aligned with the format and content of the ITBS. A decision is made at the end of the summer about whether to promote or retain students who again fail to achieve minimum test scores in one or both subjects.

The third component of the initiative focuses on those students who are retained. Schools with high proportions of retained students are given extra teachers, both to reduce class size and to give extra support to retained students. Retained students are also required to participate in the Lighthouse after-school program.

SOURCES: Roderick et al. (1999); Roderick et al. (2000).

that they violate students' due process rights (by failing to give them adequate notice about new test policies or by testing knowledge and skills they have not been taught). Tests appear most likely to withstand legal challenge when their use is judged to be "educationally necessary" (following professional test standards helps defendants meet their burden of proof here), when students are given sufficient advance notice of high-stakes test requirements, when tests are judged to be fair measures of what has been taught, and when there are educational supports in place for students who struggle with the exams.⁵³

While policy makers and educators must recognize that tests can and will be challenged if they are used inappropriately, it is also important to note that the courts and OCR have generally not found reason to overturn new test-based promotion and graduation policies. In a widely-watched case, a federal court in Texas in January 2000 rejected a challenge to the state's use of the Texas Assessment of Academic Skills as a requirement for high school graduation.⁵⁴ OCR has reached agreements with

the four states against which claims had been filed about promotion tests, permitting the states to use the tests if they took steps to provide things like summer school and accelerated programs to struggling students.⁵⁵ (The fifth complaint, recently filed against Louisiana, is pending as this report is being written.)

Motivating students to do their best

As *Education Week* recently asked, "what if the schools gave a test and nobody—or at least not many of the students taking it—cared?"⁵⁶ Without consequences based on test results, older students in particular may not bother to try very hard on new state assessments. Since how students perform on these assessments has growing consequences for principals and teachers (see the next section), the question has implications for school as well as student accountability. Unmotivated student test takers may produce results that do not accurately reflect the quality of education at their schools, complicating efforts to hold educators accountable for results.

Policies linking graduation to passing state

tests, of course, do provide students with some motivation to perform at least satisfactorily. If all that matters, however, is whether the student passes or not, students still have little reason to try to do their best, so that test scores will not accurately reflect their own and their school's performance.

We urge businesses and colleges to signal that they care about how students perform on standards-based tests, as well as in academic work more generally, by asking that test scores be included on high school transcripts and by using the results of these tests along with student grades and judgments about the rigor of courses taken in hiring and admission decisions. We encourage businesses to participate in the Making Academics Count project, through which companies pledge to use evidence of students' academic achievement in their entry-level hiring decisions. (See box: Making Academics Count.) We encourage states and colleges to consider how standards-based testing and college admissions requirements might be linked, as is currently being explored in Illinois. (See box: The Prairie State Achievement Examination.)

MAKING ACADEMICS COUNT

Since 1997, the National Alliance of Business, the Business Roundtable, and the U.S. Chamber of Commerce have led a business-sponsored nationwide effort to reinforce the connection between school performance and workplace success. The campaign, *Making Academics Count*, intends to raise student achievement by encouraging employers to ask for student records when hiring entry-level employees. By doing so, employers can send the message to students that "yes, school counts."

The initial goal of the campaign was to have at least 10,000 companies of all sizes asking for school records and other profiles of academic performance as part of the hiring process. The campaign has surpassed that goal. Its sponsors have vowed to increase their efforts and continue raising that number.

SOURCE: National Alliance of Business (2000).

USING PERFORMANCE MEASURES TO REWARD AND SANCTION EDUCATORS

Forty-five states and a number of large city school districts have established school accountability systems to report on or rate school performance. Test scores are the most frequently measured outcome, sometimes accompanied by attendance and/or dropout/graduation rates and other information.⁵⁷ Most accountability systems rely on making information on student outcomes widely available to generate pressure for school improvement. A few offer financial rewards to educators in schools that are performing well; some apply sanctions to those that are performing poorly. (See box: Accountability Systems Featuring Financial Rewards.) Sanctions range from additional oversight by district and state education authorities to penalties such as "reconstitution": removing the existing principal and staff and essentially reconstructing the school from scratch. Authorities have been given the power to reconstitute schools in a number of states and districts and have exercised it in such places as San Francisco and Baltimore. Florida has taken another route to sanctioning failing schools: providing students with vouchers to attend nonpublic schools if they wish.

Accountability systems for educators can focus on individual teachers and principals or on the school as a whole. At present, most focus on schools.

Accountability for individual teachers

New performance-based accountability systems for educators generally avoid singling out individual teachers. The preference for group, or school-based, accountability reflects a history of unsuccessful attempts to implement individual incentives such as "merit pay" in education. While teacher unions (about four-fifths of American teachers are unionized) continue to oppose linking job performance to pay,⁵⁸ some innovative experiments involving

THE PRAIRIE STATE ACHIEVEMENT EXAMINATION

Illinois is working with ACT to “wrap” standards-based test components around the ACT college entrance exam (and components of its Work Keys battery) for multi-score reporting. The Illinois State Board of Education (ISBE) designed the Prairie State Achievement Examination (PSAE) to contain a set of existing tests that measure the Illinois Learning Standards, including tests used for college admissions and for measuring workplace skills so students could receive the results of these tests as a bonus. To that end, the PSAE incorporates three separate test components: (1) ISBE developed writing, science, and social science assessments; (2) the ACT Assessment, which includes English, mathematics, reading, and science reasoning tests; and (3) two Work Keys (WK) assessments, Reading for Information and Applied Mathematics. The components are combined as shown below:

| Component Tests | PSAE Test Scores |
|--------------------------------------|-----------------------|
| ACT Reading + WK Reading | = PSAE Reading |
| ACT English + ISBE Writing | = PSAE Writing |
| ACT Mathematics + WK Mathematics | = PSAE Mathematics |
| ACT Science Reasoning + ISBE Science | = PSAE Science |
| ISBE Social Science | = PSAE Social Science |

PSAE scale scores and performance levels are reported for each of the five subjects. In addition, the PSAE generates an ACT Assessment Composite Score, ACT Subject Scores (4 subject scores, 7 sub-scores), and 2 Work Keys Scores. Illinois has worked hard to ensure that colleges will accept ACT Assessment scores achieved through PSAE state-required testing. The Illinois Student Assistance Commission has confirmed that it will recognize ACT Assessment scores achieved through PSAE testing for use in awarding state scholarships. Colleges and universities have indicated willingness to accept and use ACT Assessment scores reported from “state” testing (as opposed to the national ACT Assessment test).

SOURCES: Illinois (1999); Illinois State Board of Education (2000).

local union cooperation are underway around the country.

Merit pay, in the generic sense, is a pay system that links teacher pay to some measure of performance rather than to the prevailing single salary schedule. Typically, teachers are now paid according to a state or district schedule that gives higher pay to teachers with more experience and with advanced degrees.

Districts have experimented with various forms of merit pay for individual teachers for a long time, but seldom have stuck with them for long. Merit pay programs have been unpopular with teachers and have also suffered from high costs and administrative burdens. Districts and states often failed to provide stable funding for the programs. Where merit pay programs did survive (generally in wealthier

districts) they tended to evolve from true merit pay plans, where teachers are rewarded for better work, to plans in which teachers are rewarded for taking on more tasks.⁵⁹ Instead of true pay for performance plans, some districts have recently adopted compensation plans that link pay not to students’ academic achievement but to the acquisition of specific knowledge and skills. Such training, like that evidenced by advanced certification by the National Board for Professional Teaching Standards, is typically aligned with the requirements of standards-based reform and is thought to be effective in promoting student learning.⁶⁰

Pay for knowledge and skills is an improvement on the single salary schedule and may be a necessary first step in many places toward pay for performance. It does not, however,

ACCOUNTABILITY SYSTEMS FEATURING FINANCIAL REWARDS

Some states and districts provide financial rewards to schools and teachers that are tied directly to student performance. For example:

North Carolina establishes student performance goals for each school and gives \$750 rewards to all the teachers at schools that meet their goals. Teachers at schools exceeding their goals by 10 percent or more receive \$1,500 each.

Dallas rewards its most effective schools on the basis of a statistically-sophisticated School Effectiveness Index that adjusts test scores and other school performance measures to take explicit account of differences among students and among schools. Adjusted index scores are compared across schools, with the top schools (the specific number dependent on fund availability) receiving rewards. All professional staff in selected schools receive awards of \$1,000, with support staff receiving \$500 and the school receiving \$2,000 for its activity fund.

California enacted a law in July 1999 that provides a one-time performance bonus award of up to \$25,000 per teacher in underachieving schools that improve their Academic Performance Index (API) by at least 2 times the school's annual growth target. The California Certificated Staff Performance Incentive Act provides bonuses of \$25,000 to 1,000 teachers in schools with the largest absolute API gain, \$10,000 to 3,750 teachers in schools with the second-largest gain, and \$5,000 to 7,500 teachers in schools with the third-largest gain. Bonus distribution is determined by negotiation between the local governing board and the teachers' union.

Denver teachers agreed in late 1999 to a four-year pilot program that will investigate three

different approaches to linking individual teachers' compensation to student performance. Schools can participate in the pilot if 85 percent of their teachers approve. Teachers are eligible for up to \$1,500 in bonuses. Three different ways of measuring teacher performance will be tested: increases in student performance on standardized tests; increases in student performance on teacher-developed assessments; and increases in teachers' skills and knowledge.

Lansdale, PA (Colonial School District) began implementing an achievement award program in school year 1999-2000 that rewards both individual teachers and groups of teachers within a school. Individual teachers are ranked on how their students' academic achievement compares to those of a comparison group of teachers. Group achievement awards are granted based on the success of schools in meeting agreed-upon annual goals. Individual awards range from \$1,389 to \$2,778, while the maximum award an individual teacher can receive under the group award program is \$2,500.

Maryland began offering monetary bonuses in 1996 to schools showing significant and sustained improvement on the state assessment. Schools that show two years of statistically significant progress on a School Performance Index may be eligible for the reward. School Improvement Teams are the recipients of the awards and must use them on educational programs, but not on staff salary or bonuses. The amount of each school's award depends on the number of schools qualifying for the awards and the enrollment of each school receiving an award. In 2000, the average financial award was \$49,000 per school.

create accountability for individual teachers, which we believe should be the ultimate objective.

We encourage districts to undertake more aggressive experimentation with new pay and bonus plans that link individual teachers' compensation directly with their ability to foster student learning and that engage teachers co-

operatively in designing and evaluating these new arrangements. Teacher engagement is important, for both substantive and political reasons. But we believe teachers must become more receptive to these plans than has historically been the case. Their concerns about possible negative effects are not unfounded, but neither are they unique to merit pay arrange-

ments in educational settings. Moreover, pay for most workers outside education is based at least in part on merit considerations. Teachers cannot in our view continue to exempt themselves from accountability for outcomes and expect public understanding and support.*

We acknowledge, though, that there is still much to learn about how to design performance-based compensation plans for individual teachers and about their effects. Merit pay plans have tended to come and go rather quickly and have not been carefully evaluated.⁶¹ While some states (such as Florida and Delaware) have mandated pay for performance, they have often left the details to be worked out through processes that have not yet taken place. Only a few districts have adopted or are experimenting with performance-based compensation systems. Linking teacher performance to student performance requires state and district systems that both measure student achievement and link students to the teachers who have taught them. As we've already seen, most schools cannot now make such linkages for teachers in many grade levels and subjects. Therefore, **we believe that careful experimentation and evaluation rather than a head-long rush to adopt new pay-for-performance programs for individual teachers is the right approach at this stage.**

Accountability for schools

The growing popularity of school-based accountability marks an important step on the road to a performance-based education system. Holding the educators in a school collectively responsible for students' academic achievement and its growth emphasizes outcomes, not inputs, and puts the locus of accountability at the school level for the first time. Historically, very little information was collected about individual schools; most of what we knew about education was based on district or state-level data.

Moving accountability to the school level is important because it directly affects those who actually interact every day with students in class-

rooms. If used effectively, school-level accountability can motivate changes in teaching more directly than accountability diffused across many schools or districts. It should make it easier to see which schools are performing well and which are not.

Using tests to hold schools accountable, however, heightens the importance of the issues regarding the use of tests we have discussed in earlier chapters, especially issues of fairness that are politically and technically complex. How should accountability systems deal with the well-established fact that many factors besides school influence a student's academic performance at any given time: factors such as prior educational experiences, family background, and nonschool educational opportunities? Are there differences in the stability and reliability of different measures of school performance? How should the fact that student performance varies more within individual schools than it does among schools affect the design of accountability ratings and rankings?

Accountability systems today typically rely on average test scores or percentage pass rates to measure school performance. Many analysts are critical of this approach, because such "status" indicators reflect many factors affecting achievement other than those controlled by the school. Such indicators can therefore be misleading about what the school contributes to student achievement, failing to show how well the school actually educates its students. The path-breaking Texas accountability system partially addresses these concerns by basing its school ratings not just on the average test pass rate in each school, but also on the pass rates of selected subgroups. (See box: The Texas Approach to Accountability.) The state also issues a "comparative improvement" report that shows each school how much year-to-year improvement its students have achieved compared to 40 other schools serving similar populations.

More elaborate "value-added" accountability models based on improvements in student performance are sometimes used to avoid the problems caused by using average or status

*See memorandum by CAROL J. PARRY (page 44).

THE TEXAS APPROACH TO ACCOUNTABILITY

The Texas Education Agency rates every district and every school within a district as either Exemplary, Recognized, Academically Acceptable/Acceptable, or Academically Unacceptable/Low-Performing, based on three indicators: (1) student scores on the Texas Assessment of Academic Skills (TAAS) tests in reading, writing, and mathematics, (2) student dropout rates, and (3) student attendance rates. To assign ratings, the agency breaks down each district and school into four student subgroups – African American, Hispanic, white, and economically disadvantaged. For a school or district to receive a specific rating, not only must the school/district as a whole meet the specified criteria, so too must each of the four student subgroups. For example, to receive a rating of Exemplary:

- At least 90% of all students must pass each TAAS subject area test, and at least 90% of each subgroup of students must also pass the tests.
- The dropout rate cannot exceed 1% for all students, or 1% for any student subgroup.
- There must be at least a 94% attendance rate for all students and for all student subgroups.

To be rated at a specific level, each student subgroup as well as the total student population must meet the minimum criteria for that level. A school or district can only be ranked as high as its lowest performing subgroup of students would be ranked.

SOURCE: Texas Education Agency (1999).

scores in school accountability programs.⁶² They report scores in terms of the growth in student achievement rather than the absolute level of achievement and attempt to identify the amount of improvement for which the school is responsible. Ideally, statistical procedures would be used to eliminate the effects of (1) nonschool factors that contribute to the growth in achievement and (2) differences among

schools, such as financial resources, that are not under the school's control. Unfortunately, the information needed to make these adjustments is not typically available. States and districts instead have developed less complete models that use prior test scores in various ways to determine how much of the change in student performance should be attributed to the school's efforts.⁶³ While not widely used, such value-added accountability systems have been tried in several states—North and South Carolina and Tennessee—and districts—Dallas and Minneapolis.

An ideal scoring system designed to gauge educational improvement would measure the progress made by individual students over time. Often, however, states and districts do not have administrative systems that can link individual students and their test scores from year to year and must use other approaches. For example, they may look at the gains achieved by the same cohort of students over time, even though the population in the cohort is not exactly the same (because of student mobility, for example).

Different measures of school performance may give very different results. A recent study compared nine different measures developed from the scores of fifth graders in South Carolina schools, all based on their standardized test scores.⁶⁴ These measures included several variants of average scores and value-added scores, some adjusting for nonschool factors such as socioeconomic status and race and others not. There were substantial differences in rankings depending on the measure employed. Schools with more white and relatively affluent students tended to score highly using average scores, but this advantage almost disappeared in most cases when value-added scores were used.

There are important tradeoffs to be considered in deciding how much information to include in accountability systems. Value-added measurements that track individual students and provide information on student progress that can be linked back to individual teachers

and classrooms demand costly new commitments by districts and states. They require that tests be given more frequently than is now typically the case: every year or every other year instead of in just three or four grades. They also require new data systems that combine student test scores with information on student, family, and community characteristics and that link students and their teachers.⁶⁵ To keep costs down, administrators may be tempted to re-use tests rather than develop new ones and use inexpensive tests that are less effective than those envisioned by standards-based reformers.⁶⁶

Because test-based accountability is intended to create incentives for schools to improve their performance, it is important to get the incentives right. Even the most sophisticated of the value-added accountability models currently in use cannot definitively identify the effects on achievement that are under the control of the educators in the school. These models are nevertheless useful because they provide important information to parents, citizens, and policy makers. Poor performance draws attention to schools where changes are required to make them more effective.

When test-based accountability is used as the basis for rewards and sanctions for specific schools and their personnel, however, the accuracy and reliability of these models become far more important. A model that incorrectly labels a school as “low-performing” for example, could lead high-quality principals and teachers to shun employment there in favor of “high-performing” schools that promise better rewards.

There is evidence urging caution in this regard. Recent research examined accountability models in North Carolina, which rated schools serving students with high average scores as also more effective in improving annual performance than schools serving students with low scores.⁶⁸ Detailed analysis indicated that correcting for measurement error and (and to a lesser extent, for a misspecified model)

substantially changed school rankings. These corrections raised the effectiveness measure for many schools with low average test scores and reduced it for many schools with high average scores.

Another study used the North Carolina data from a five-year period to determine the stability of school rankings over time.⁶⁹ It found that schools at both the top *and* the bottom of the annual relative rankings tended to be small schools, even though the average performance of small and large schools was similar. It appears that the annual rankings of schools over time are quite unstable and that the measured annual differences may not indicate real differences in school performance.⁷⁰

These studies indicate that the design of accountability systems is critical to their effectiveness and credibility and underscore the need for improved understanding of the effects of specific design features.

*Continuous improvement is essential to make accountability work. The higher the stakes attached to accountability, the more crucial it is that measurement systems be reliable, valid, fair, and comprehensible. We have much to learn about designing accountability systems that accomplish our goals. **To this end, we urge accountability supporters to promote investment in research on and analysis of such systems.***

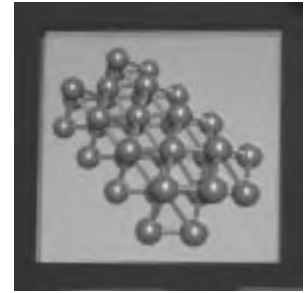
GUIDELINES FOR GOOD PRACTICE

Robert Linn, one of the country’s foremost experts on testing and assessment, has recently offered seven suggestions for “enhancing the validity, credibility, and positive impact of assessment and accountability systems while minimizing their negative effects.”⁷¹ They capture well the implications of our discussion of using achievement measures to hold students and educators accountable. **We commend the following suggestions to business leaders and other citizens as guidelines to good practice. We should insist that accountability systems:**

- 1. Provide safeguards against the selective exclusion of students from assessments; e.g., by including all students in accountability calculations.⁷²**
- 2. Utilize new high-quality assessments each year that are statistically equated to those of previous years.**
- 3. Not put all of the weight on a single test; instead, seek multiple indicators.**
- 4. Place more emphasis on comparisons of school performance from year to year than from school to school. This allows for differences in starting points while maintaining an expectation of improvement for all.**
- 5. Consider both value added and status in the system. Value added provides schools that start out far from the mark a reasonable chance to show improvement while status guards against institutionalizing low expectations for those same students and schools.**
- 6. Recognize, evaluate, and report the degree of uncertainty in the reported results.**
- 7. Put in place a system for evaluating the effects of the system: positive and negative, intended and unintended.**

Chapter 5

MONITORING EDUCATIONAL PROGRESS AND THE MEASUREMENT SYSTEM ITSELF



Besides helping improve instruction for individual students and providing a means for holding students and educators accountable, measurement of academic performance also provides information about the status of the education system. Shifting our focus from instructional improvement and accountability to monitoring raises three additional issues that should be part of the discussion of educational measurement: (1) the importance of continuing support for national and international assessments to provide some common metrics in our otherwise fragmented assessment system; (2) the need to expand and improve efforts to make information about the performance of the education system available to the public; and (3) the desirability, given the growing consequences of testing, to build institutions capable of monitoring the assessment system itself.

NATIONAL AND INTERNATIONAL ASSESSMENTS

Though we applaud the progress that has been made over the last decade by states and school districts in developing standards, assessments, and accountability systems, we also observe that this decentralized approach to standards-based reform does not provide data with which to compare performance across states, nor does it provide an overall picture of the health of the American educational system. Some have hoped that it would be possible to link different state and commercial

tests to each other. However, the National Research Council studied this issue in response to a congressional mandate and concluded that creating linkages that would permit multiple commercial and state achievement tests to be compared to one another is not feasible.⁷³

Thus, the growth in state and district testing does not diminish the importance of continuing support for the National Assessment of Educational Progress (NAEP) and for American participation in international assessments.

For 30 years NAEP has served as “the nation’s report card,” providing a continuing measure of student achievement in key subject areas. NAEP periodically tests a sample of students in three grades, one each in elementary, middle, and high school. For two decades, scores were reported on a national basis only. For the last ten years, scores have also been reported on a statewide basis for those states that choose to participate. NAEP thus serves not only as a national barometer of educational progress, but also as a check on states’ progress as measured by their own assessments.

State participation in NAEP is voluntary. Forty-eight of the fifty states signed agreements to participate in the NAEP 2000 mathematics and science assessments, up from 37 participating states when the state assessment program began in 1990. With the growth in other testing programs, however, schools are apparently finding it increasingly difficult to allocate the time and resources to participate in NAEP. Eight of the states that originally committed to NAEP 2000 had to drop out because too few

schools agreed to participate to meet statistical sampling requirements. Participation in state NAEP requires significant commitments of time, resources, and effort at both the district and local levels.

Over the next few months, the NAEP governing board will be considering recommendations⁷⁴ from an Ad Hoc Committee on NAEP Participation to create incentives for schools to participate. Some would involve new costs (e.g., using paid contractors rather than school administrators to administer the versions of NAEP that result in state-specific scores, as is already done in the version of NAEP that results in national scores), and some would require congressional action (e.g., providing school-specific scores for schools who want them). **We urge the NAEP board to adopt policies aimed at improving school participation and urge Congress to approve these changes, including budgetary increases if necessary.**

International assessments such as the Third International Mathematics and Science Study (TIMSS—conducted in the mid-1990s and recently updated) supplement NAEP by providing additional benchmarks against which to measure the performance of American students. TIMSS taught the United States important and sometimes sobering lessons, such as that even the best of our high school seniors do not perform as well in math and science as their counterparts in other countries. The federal government has been a key supporter of international assessments, funding U.S. participation and providing essential financial assistance and design advice to the international coordinating agencies. Future international testing depends on this kind of support, along with the continued willingness of schools to participate. **We urge Congress to provide sufficient funding to the National Center for Education Statistics to support international assessments of student achievement, and we encourage American schools to accept when invited to participate.**

REPORTING TO THE PUBLIC

Though 45 states reported in 2000 that they planned to issue report cards on schools, only 32 percent of parents reported that such report cards were available.⁷⁵ This discrepancy suggests that *there is still much to do to get performance data into the public's hands and help parents and others learn how to use it.*

Earlier in this report we talked about putting performance data into the hands of educators so that data become tools of instructional improvement. Data for parents and the public serve different needs: monitoring the performance of schools and (where school choice is permitted) providing information upon which parents can decide where to enroll their children.

In this report we cannot give adequate attention to the full range of issues, including how to select and format information to meet public demands as well as to reflect school performance accurately, that must be addressed in the design of school report cards.⁷⁶ As potential consumers, however, **we recommend that report cards include the following features:**

- **Common formats across districts.** While states may require districts to prepare school report cards and may specify the information that must be included, they do not necessarily require that the information be reported in common formats. Different formats make it hard to pull some useful information from report cards, such as whether schools in different districts are equally successful in the rate at which their students are meeting academic standards. School report cards should include comparable information about the number of students who have been excluded from the testing program or whose scores have been omitted from accountability calculations.
- **Contextual information.** Most school report cards still present test score averages, which

reflect what students know but not necessarily how well schools are performing.⁷⁷ As we explained in Chapter 4, test scores are highly correlated with students' socioeconomic and ethnic status and reflect out-of-school as well as in-school experiences. It is therefore helpful in interpreting individual school results to have background information about the students enrolled. Other kinds of contextual information can also be useful: e.g., student mobility rates (in some urban schools, a majority of students move in or out in the course of a single year), school and class size, per-pupil spending, and the number of children who are English-language learners. While focus group research has suggested that the public rates demographic data low on its list of desirable information about schools,⁷⁸ we support the inclusion of this information and urge the public to make use of the more nuanced picture of school performance it provides.

- **Disaggregated data.** Whether achievement data are reported as averages or as some measure of improvement, it will be more informative if they are disaggregated for particular groups of students and not just reported as school totals. Since the goal of standards-based reform is to have *all* children achieving at high levels, it is important to know whether schools are boosting the performance of all their students. Reporting results for different subjects and different grade levels by student groups (e.g., African Americans, Hispanics, white, and economically-disadvantaged students as is done in Texas) may be too cumbersome for summary report cards routinely distributed to all parents. The data should be readily available to anyone who wants them, however, and should be considered by the press and others who report on school performance. Since subgroup reporting reduces the number of students in each group, relative to the school as a whole, measurement error becomes more significant; so reports should include information on the margins of error associated with the data.
- **Explanations of measures.** To make academic achievement data more meaningful to parents and others, numerical scores are often given labels that represent levels of accomplishment: e.g., basic, novice, proficient, and advanced. The labels applied to different tests may sound similar when in fact they might mean quite different things. The solution is to include clear explanations of these labels on report cards.
- **“School success” and school environment data.** The point of report cards is that they be used. In this regard, it is significant that the public may have different views about what information should be included in report cards than other groups for whom such reports are designed. For example, research in two cities (Greensboro, NC and Sacramento, CA) found that school board members differed from parents in their information priorities. Standardized test scores were far more important for school board members than for parents, who preferred school success and school environment data (graduation and promotion rates being examples of the former, school safety and parental involvement indicators being examples of the latter).⁷⁹ While we believe that parents should pay attention to direct measures of academic achievement and should have ready access to this information, we also think it important to acknowledge other parental concerns and include them in school reports.
- **Review and continuous improvement.** Like standards and assessments, school “report cards” should periodically be reviewed and improved based on experience with their usefulness to the public and on any unexpected effects on parent or school behavior. For example, Maryland State Superintendent Nancy S. Grasmick reports that state-wide groups met for months in 1990 to

hammer out the details of a public reporting mechanism that would include test results. From an initial listing of 100 possible report card measures, 13 were initially chosen for inclusion, along with data to provide the context for viewing the accountability measure. A five-year review cycle was established. After the 1995 review, the indicator for student promotion rate was pulled from the report because reviewers found it had become a compelling incentive for social promotion.⁸⁰

MONITORING THE MEASUREMENT SYSTEM

Independent organizations that stand outside the everyday fray of education politics and policy making can make important contributions to improving the design and use of assessment and accountability systems. They can monitor and report on the quality of educational standards and assessments, on the intended and unintended consequences of accountability systems, and on the meaning of test scores and test score changes over time. Such groups, which may choose to focus on national, state-wide, or district issues, can serve a tremendously useful function in keeping policy makers and educators honest about what education reform efforts are accomplishing.

We encourage support from foundations, businesses, and other funding sources for such organizations. We recommend that policy makers seek out the services of these groups and help create them where they do not exist. We urge the public to expect policy makers to subject assessment and accountability systems to independent evaluation. The following organizations currently provide the kind of services we envision; the state and local ones can serve as models for replication.

- *The American Federation of Teachers, the Council for Basic Education, and the Thomas B. Fordham Foundation*—these organizations provide independent evalua-

tions of state standards. They use different criteria, so that their ratings vary. By making their criteria transparent, however, they foster informed discussion about the content of standards and whether they are measuring what the public believes to be important.

- *Achieve, Inc.*—was founded by governors and business leaders after the 1996 Education Summit to promote standards, assessments, and accountability as means to school improvement. Achieve provides information on state standards and on state progress in implementing standards-based reform. At state request, Achieve conducts independent evaluations of state standards and tests. Achieve and 10 states have established the Mathematics Achievement Partnership to develop an internationally-benchmarked 8th grade math assessment which will give participating states a common metric for comparing the performance of their students.
- *Consortium on Chicago School Research*—conducts research activities designed to advance school improvement in Chicago's public schools and to assess the progress of school reform. It is an independent, university-based organization sponsored jointly by the city's foundations and the public school system central office. The central office provides test scores and access to the schools for consortium surveys, but the researchers conduct their analyses according to professional standards and make the ultimate decisions about what will be published and when.
- *Maryland Assessment Research Center for Educational Success*—a research arm of the University of Maryland Department of Measurement, Statistics, and Evaluation, the center conducts basic and applied research to enhance the quality of assessment practice and knowledge. The state Department of Education has contracted with the center to provide assessment support for the Mary-

land State Performance Assessment Program.

- *Dallas Accountability Task Force*—the Dallas Public School System has created its own accountability program operating on top of the Texas state accountability system. Dallas employs a statistically-sophisticated value-added model for calculating school effectiveness and allocating performance-based awards. The district established an Accountability Task Force, including teachers, administrators, members of the school board, and community representatives, to oversee the design of the system and to review and revise it as needed. The task force helps make difficult technical deci-

sions aimed at building a fair system and helps legitimate the resulting system (whose complex inner workings are “less than transparent”⁸¹ to outsiders) in the eyes of parents, teachers, and the public.

These and similar groups help spur the continuous improvement of assessment and accountability systems that we call for in this statement. They also serve as safeguards against the possibility that undesirable effects of these systems will go unrecognized or unaddressed. The information they put into the hands of the public better equips all of us to engage in our democratic society’s constant debate over the goals of American education and how best to reach them.

ENDNOTES

1. This felicitous phrase was used by Judge Lynn N. Hughes, who cited “the buffeting of letters, press conferences, speeches, meetings, and the rest of the wonderful cacophony of a free people disagreeing” in rejecting a complaint that the Houston (TX) Independent School District board had denied segments of the community the right to speak before selecting a new school superintendent. Quoted in McAdams (2000:120).
2. Committee for Economic Development (1994).
3. Committee for Economic Development (1985, 1987).
4. Linn (2000).
5. The national education goals, as adopted at the 1989 Education Summit and later modified by Congress, essentially state that by the year 2000:
 - All children will start school ready to learn.
 - The high school graduation rate will increase to at least 90 percent.
 - All students will become competent in challenging subject matter.
 - Teachers will have the knowledge and skills that they need.
 - U.S. students will be first in the world in mathematics and science achievement.
 - Every adult American will be literate.
 - Schools will be safe, disciplined, and free of guns, drugs, and alcohol.
 - Schools will promote parental involvement and participation.
6. Expressed in Committee for Economic Development (1994).
7. Committee for Economic Development (1994:37).
8. National Research Council (1999c:22).
9. National Research Council (1999d:25).
10. National Research Council (1999d:25).
11. Hill (2000:3).
12. National Research Council (1999a:29).
13. Phelps (1999:25).
14. Two RAND studies, cited in National Research Council (1999d:81).
15. Klein and Hamilton (1999:13).
16. National Research Council (1999a:30).
17. National Research Council (1999d:66).
18. American Psychological Association (1999). The standards are developed jointly by the American Educational Research Association, the American Psychological Association, and the National Council on Measurement in Education. They address professional and technical issues of test development and use in education, psychology, and employment.
19. National Research Council (1999a:250).
20. National Research Council (1999d:43-4).
21. National Research Council (1999a:45).
22. National Research Council (1999a:32).
23. Herrnstein and Murray (1994).
24. National Research Council (1999a:32).
25. Citizens' Commission on Civil Rights (1998:10).
26. U.S. Department of Education (1999a:Table 53).
27. U.S. Department of Education (1999a:Table 59).
28. Improving America's Schools Act of 1994, Public Law 103-382; Individuals with Disabilities Education Act Amendments of 1997, Public Law 105-17.
29. National Research Council (1999d).
30. U.S. Department of Education (1999b:46).
31. Maryland State Department of Education (2000).
32. Belden Russonello & Stewart and Research/Policy/Management (2000).
33. Duggan and Holmes (2000:4-5).
34. National Research Council (1999d:49).
35. Phelps (1999:24).
36. Koretz (1996:186).
37. See, for example, Goertz (2000:79) and National Research Council (1999d).
38. National Research Council (1999b).
39. Goertz (2000:68).
40. National Research Council (1999d:19-20).
41. National Center for Education Statistics (1999:51).
42. Committee for Economic Development (1994:14).
43. National Research Council (1999d:81). A new survey of teachers by *Education Week* provides additional evidence that teachers receive little training on understanding and using academic standards and test results. See *Education Week* (2001:45).
44. Hoff (2000).
45. Finn et al. (1999:46).
46. Finn et al. (1999:44).

47. Porter (2000).
48. National Research Council (1999a:3).
49. Olson (2000).
50. Research on the connection between grade retention and drop-out rates is summarized in National Research Council (1999a:128-132).
51. National Commission on Testing and Public Policy, *From GATEKEEPER to GATEWAY: Transforming Testing in America*, 1990, quoted in National Research Council (1999a:251).
52. Robelen (2000:14).
53. National Research Council (1999a:Chapter 3); Robelen (2000:14).
54. *GI Forum v. Texas Education Agency*, 87 F.Supp.2d 667, 142 Ed. Law Rep. 907 (D. TX 2000).
55. Robelen (2000:14). The Office for Civil Rights has just published a resource guide to help educators and policy makers develop and implement test-use policies consistent with legal requirements. See Office for Civil Rights (2000).
56. Keller (2000).
57. *Education Week* (2001:80-81).
58. For example, at their 2000 convention, National Education Association members rejected a plan to use job performance evaluations in paying wage bonuses. See Archer (2000).
59. Research on merit pay plans is summarized in National Research Council (1999c:177).
60. Odden and Kelley (1997).
61. Hanushek (1996:131).
62. Clotfelter and Ladd (1996); Meyer (1996, 2000).
63. Ladd and Walsh (forthcoming).
64. Clotfelter and Ladd (1996:37).
65. Meyer (2000:4).
66. Linn (2000:13).
67. Ladd and Walsh (forthcoming).
68. The South Carolina findings are based on the accountability system that was put in place in the mid-1980s and may not reflect the state's current system.
69. Kane (n.d.:1-2).
70. Other research does suggest that small schools are more effective than large ones. The study under discussion was not designed to investigate this point, but rather to explain why the highest and lowest ranked schools in North Carolina were virtually all small schools.
71. Linn (2000:15).
72. The one exception is that it is appropriate to exclude from a school-based accountability system students who have not spent some minimum number of days in the school.
73. National Research Council (1999e).
74. Ad Hoc Committee on NAEP Participation (2000).
75. See *Education Week* (2001) for state responses; Public Agenda (2000a) for parental responses.
76. Gormley and Weimer (1999).
77. Gormley and Weimer (1999).
78. A-Plus Communications (1999:5-6).
79. Jaeger, Richard, Barbara Gorney, Robert Johnson, Sarah Putnam, and Gary Williamson, *A Consumer Report on School Report Cards*. Greensboro, NC: Center for Educational Research and Evaluation, University of North Carolina at Greensboro (1994), cited in Gormley and Weimer (1999:107).
80. Grasmick (2000:54).
81. Mendro et al. (1999).

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MEMORANDA OF COMMENT, RESERVATION, OR DISSENT

On the report as a whole, WILLIAM E. BROCK, with which ALAN BELZER and PATRICK W. GROSS have asked to be associated

This report is an outstanding contribution to our continuing national conversation on the subject of using assessment and accountability to improve learning.

I remain concerned, however, that these discussions have not adequately incorporated much of the modern research on learning.

Children come to schools today with a host of learning challenges. The factors range from genetic, to nutritional, to environmental, but they impose a huge burden on student and teacher alike.

It is long past time we used assessments as a diagnostic tool, allowing schools and parents to identify the cause of learning struggles and remedy them to the extent possible before the damage is done. This can be done and is being done today—but all too rarely.

On the report as a whole, ROBERT C. WAGGONER, with which JAMES Q. RIORDAN has asked to be associated

I have voted to disapprove this report because I am concerned that improved testing and assessment, and greater accountability in the existing public school system do not address the essential failing of public K-12 education, which is systemic.

The public school system, as it is currently structured, is devoid of effective choice for all except those who can afford to opt out and pay tuition. If our biggest public policy failing is

our neglect of poor children's schooling in inner cities, and if our K-12 schools in general do not measure up to the standard of international competition, we must broaden our view of solutions to encompass a redefinition of public education which includes all schools that educate the public at public expense, provided they are subject to public accountability and curricular standards.

Market-based mechanisms work in every other sphere and yet have not been tried in the delivery of our most expensive publicly-financed service, K-12 education. We have, arguably, the best university system in the world—one based completely on free choice—where there is no compulsion to attend a college or university based on residence, and yet we do not offer the same in K-12 where our failings are egregious and scandalous.

I believe CED should support a full multi-year test of a scholarship-type voucher system in several American cities, allowing parents to opt out of the present government-run schools, and use stipends to attend private, parochial, or for-profit schools at their own option, provided that these schools adhere to state-approved curricular standards, do not practice discrimination, and offer open admission, with lotteries to determine entry if there is an excess of applicants over vacancies.

I believe a full test of choice will show its capacity to deliver superior K-12 education, probably at lower cost than at present. The opponents of choice are blocking even a test of the concept because they fear its success. America's children and the greater public are suffering the results.

Page 2, CAROL J. PARRY, with which FLETCHER L. BYROM has asked to be associated

The report may give the impression that testing is the most important reform or change. Understanding that the purpose of the report is to discuss testing, we have to be wary of the report being used by those that advocate testing above all other changes. I believe (as mentioned at several points in the report) that a number of changes are equally critical: enhancing the profession of teaching through appropriate compensation, on-going training and education, and changing the public perception of teachers so that they are well respected in our society; improving the physical school facilities that children attend so that they are clean, safe and have appropriate space for students to learn; creating an environment in the public schools of discipline and respect so that teachers that want to teach and students that want to learn can do so without disruption from those that do not share these goals; involving parents in both the educational process and in governance of the schools their children attend; developing programs and mechanisms so that parents, teachers and administrators work as a team to improve the schools and enhance a child's educational experience. I am sure there are many more.

I also question whether standardized multiple-choice tests can really test the ability to think and reason. The report recognizes that testing has its limitations. However, it also proposes that standardized tests (which at least now are primarily of the multiple-choice variety) be used to make decisions about school performance, teacher performance, and student performance and advancement. Over the years, I have been involved in many efforts to improve the public schools. The most exciting have not involved testing but creative teaching—teaching that goes way beyond things you can measure in a test: teaching children to be responsible members of society; teaching chil-

dren to think on their feet; teaching children to solve problems that exist in their communities, not just in their text books; teaching children to appreciate art and music.

Page 4, CAROL J. PARRY, with which FLETCHER L. BYROM has asked to be associated

The report recognizes that creating the “perfect” test will be very difficult, expensive, and time consuming. If we are serious about creating excellent measurement and assessment tools that are fully comparable across states, then we need a national project, under the direction of the federal government, but with the input and cooperation of states to make this happen in a quality way. Unfortunately, this may offend those who believe in local control of schools.

Page 23, CAROL J. PARRY, with which FLETCHER L. BYROM has asked to be associated

In recommending that standardized tests be used to determine if students get promoted, we risk creating a self-fulfilling prophecy and a permanent underclass of students. When schools and teachers are evaluated based on test results, they are motivated not only to improve the quality of the schools so that children will get better scores, but also to weed out those that cannot make it on these tests so that overall school scores will rise. The report does recommend that individual improvement in student scores be part of the evaluation of the school and the teacher, but it also suggests that students that cannot make it to the next level may drop out—only exacerbating the problem we have today. The report does provide suggestions on how to assist these students, but these solutions take resources, specially trained teachers, and special teaching environments. It is naïve of us to think that these opportunities for weaker students will exist everywhere. It is

important that the evaluation of a school or district should not only depend on the test scores but also on the school's ability to prevent dropouts.

Page 28, CAROL J. PARRY, with which FLETCHER L. BYROM has asked to be associated

If we tie teacher evaluations and compensation as well as funding for the school to test results, teachers will feel they must teach the test. The report suggests that changing the test every year, not giving out questions in advance, etc. can prevent this. But just as there are very successful tutoring programs for SAT's (tests that are supposedly kept top secret), schools and teachers will develop ways to teach what they presume will be on the tests, based on the curriculum and established local or state standards.

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