In This Issue ...

The public's call for credible information about educational quality and the emphasis President Bush and the governors of the fifty states have placed on information and assessment issues point to the increasingly prominent role that educational indicators will play in mobilizing educational reform. The risk in not responding to such concerns is high: If the education community fails to advance a responsible national agenda for quality indicators, America's standing in the world economy could be impaired and national pride could suffer.

This concern impelled CRESST to sponsor an international conference, "Educational Quality Indicators: Taking Stock." The theme of the conference emphasized the notion of "taking stock" of the development and use of indicator systems at the local, state, national, and international levels. The conference brought together policy makers, practitioners, and researchers to address these issues in a forum designed to encourage an exchange of ideas among the participants. This volume of Evaluation Comment presents the proceedings of the conference, which was held on the UCLA campus on October 12 and 13, 1989.

Emerson Elliott, Director of the National Center for Education Statistics, opened the conference; his address introduced many of the issues that participants discussed during the two days of plenary and working group sessions. Dr. Elliott's address is presented below; highlights of the plenary sessions follow.

Conference participants also responded to a questionnaire that asked them to specify the benefits and dangers of indicator systems and to identify implications for policy, practice, and research. A summary of their responses follows the plenary session synopses.

Leigh Burstein
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CRESST

ACCOUNTABILITY IN THE POST-CHARLOTTESVILLE ERA

Emerson J. Elliott
Acting Commissioner
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INTRODUCTION

On September 27 and 28 President Bush convened an historic education summit with the Nation's Governors at the University of Virginia in Charlottesville. This was only the third time in our 200-year history that a president had called such a summit with the governors and the first time such a conference was a call to action in the education arena.

In his concluding remarks President Bush stated, "...we unanimously agree that there is a need for the first time in this nation's history to have specific results-oriented goals. We recognize the need for...accountability for outcome-related results." This serves as the backdrop for my remarks to you today and, indeed, for the whole of this CRESST conference on education quality indicators.

Again, Not Anew

Last May, our national scribe for state government activities in education, Chris Pipho, was already telling us that education accountability was coming not anew, but again (Phi Delta Kappan, May 1989). Chris said that it was here before, in the 1970s, when some 31 states had enacted legislation dealing with accountability and more than one-third of those states were using a systems approaches: "The specific topics covered by this early legislation included: assessment of student achievement, evaluation of programs, setting goals for education, specifying objectives for learners, PPBS (planning, programming, budgeting system), MBO (management by objectives), MIS (management information systems), uniform accounting systems, and performance accreditation systems."

Does this sound like 1989? There was a difference, Chris reminds us. Accountability in the 1970s was aimed at "more bang for the buck...the application of the tools of business management to education...[promising]...a new era of efficiency."

Focus on Achievement

Moving on to the present, Chris states, "Most of the legislation enacted during these early years is still on the books, but state
policy makers seem to be moving toward a new brand of accountability that is more closely tied to instruction. Measuring student performance (or the lack of it) and assigning responsibility for improving the situation seem to best describe the goals of the new model.

This focus on achievement was also reflected in a recent Gallop Poll in which 70% of Americans questioned favored requiring schools "to conform to national standards and goals." And, Ernest L. Boyer has observed: "I think we’ve gone about as far as we can go in the current reform movement dealing with procedural issues." By establishing national academic standards and exams, schools "would be held accountable for outcomes rather than the current situation of heavy state regulation that 'nibbles' them to death over procedures."

Thus, the focus has moved from a system where an individual, or institution, is accountable for procedural or process standards to one demanded by parents and other taxpayers where accountability is expressed in terms of student achievement and outcomes.

A NEW WAVE OF REFORM

In the last few months, we have seen reports in the pages of our newspapers and trade journals about what one state and then another is doing to "reform" education and to make it more "accountable":

- Thirty state legislatures scheduled discussions of educational accountability for their 1989 sessions (Chris Pipher, Phi Delta Kappan).
- New Jersey is monitoring school districts for performance in several areas, including such outcomes as student performance in basic skills, attendance, and school-community relations. The state also plans to issue an annual "School Report Card" to publicize progress and achievements in each individual school. Both actions are intended to reward good performance and expose poor performance. For failing districts, the state is using its authority to declare educational bankruptcy and take over in cases of particularly severe problems (i.e., Jersey City).
- Governor's commissions in Kansas and Maryland have proposed accreditation systems that would measure student outcomes rather than rely solely on measures of educational input.
- In Iowa, the chief state school officer and the governor are proposing exit tests for all high school seniors that would measure knowledge and skills, including problem-solving skills, in mathematics, science, and writing.
- California is developing a report card that will track indicators of school-level performance in a dozen areas, including achievement, dropout rates, teaching loads, systems for teacher evaluation and training, quality of textbooks, and several others.

These are merely examples. A healthy majority of states can cite recent policy initiatives that, in one way or another, try to hold schools accountable for the quality of instructional processes and outcomes.

Changes in the Reform Movement

One remarkable thing about these reforms is the continuing momentum that comes from state political leadership. The reforms of the 1980s—unlike ones that were put into place during the 1970s—have engaged governors and legislators to an unprecedented degree. Indeed, many political futures have been, or are, on the line for improvements in education. There has been a ceaseless agitation and action in the states at least since the 1983 A Nation at Risk report. There are few topics on the political agenda that have shown such lasting power. This is a measure of the importance the U.S. public attaches to education as the role of education in our economy becomes increasingly evident.

A second remarkable aspect of these school reforms is a shift in approach since 1983. The first wave of reform emphasized many elements that educators had talked about for years—higher teacher pay, merit pay, tougher certification requirements, tougher graduation requirements. We find that teacher pay, in constant dollars, had passed its 1973 peak by the 1987-88 school year. Per pupil expenditures nearly quadrupled in constant dollars between 1949-50 and 1986-87. And, states are paying a bigger share of the bill, now about 50% annually. Yet, an ever impatient public, not about to wait a generation for better results, points to stubbornly disappointing achievement.

The more recent interventions, such as the examples I cited previously, are varied (showing that Federalism is very much alive) but place greater emphasis—as did the Charlottesville conference—on what political leaders want students to accomplish.

A third element of the new wave of reforms—dare we say it—is that education researchers have had more influence: current reforms place more emphasis on content of the curriculum, learning exposure time, higher order thinking skills, the site of decision making (at the school level), and the role of teachers.

And, a fourth element, one I cannot pass up, is that the reform movement has sparked an interest in comparable data that has turned into a conflagration at the National Center for Education Statistics!

"REFORM" AND NCES

With the Council of Chief State School Officers (CCSSO), the National Center for Education Statistics (NCES) has studied common terms and definitions and is working to standardize them. We have a new state/federal cooperative statistics program intended to help make state data more comparable and uniform. Congress has asked us to convene an advisory panel to make recommendations for education indicators. In preparing these remarks, I have drawn on the background papers written for that panel. (In this regard, I'd especially like to acknowledge the work of Brenda Turnbull, from Policy Studies Associates in Washington, and John Ralph of the NCES staff.)

The Congress has also requested new annual national data collections and an annual report on school dropout. In addition, they have added state-representative reports, on a pilot basis, to the National Assessment of Educational Progress.

NCES appropriations are now three times what they were in fiscal 1986, so that new data collections are possible in such areas as schools and staffing, the eighth-grade longitudinal cohort, state assessments under NAEP, college faculty, and student financial aid. Our activities in the international arena have expanded as well, with international assessments in science and mathematics, literacy, and an OECD indicators project.

Indicators Used by NCES

NCES's most direct involvement in accountability and quality indicators has been in recent editions of its annual publication, the Condition of Education. I'm proud of this work and pleased to note
many of you have advised us on the contents of that volume at one time or another.

This year's report displays thirty simple measures and data relationships at the elementary and secondary level showing changes over time; comparing or contrasting subpopulations, regions, or states; or describing characteristics of students from different backgrounds. We assert, I think with reason, that these indicators are the most valid and representative education statistics available in America today for the subjects and issues they portray.

However, I always feel that some statement is required to explain NCES's professional role in making the selection of data to be displayed there. This year's report includes a statement that indicators "represent a consensus of professional judgment on the most significant national measures of the condition and progress of education at this time, but tempered, necessarily, by the availability of current and valid information."

We have many debates at NCES about what kinds of data analysis are appropriate for a statistical agency to do. Where do analysis of data and relationships within the data spill over into policy advocacy or bias? Strangely, we don't have debates of that sort about the indicators we have selected to display, and yet each one implies that the relationship being described has an important value in education. For example:

- There are seven measures of student performance in reading, mathematics, science, history and literature, and computer competence.
- There is an indicator on the proportion of high school graduates who have taken the "new basics" courses advocated in A Nation at Risk.
- There is a measure of unemployment rates that compares 20- to 24-year-olds who have graduated from high school compared with those who have dropped out.
- Expenditures per pupil over time are displayed.
- There is an index of financial "effort" that relates per pupil expenditures to per capita wealth.

I'll agree that there is a difference between values and specific goals. Still, I have thought these indicators activities were probing the limits of appropriate NCES activity and I have eagerly anticipated the work of the indicators panel to sanction them or devise different ones.

THE PRESIDENT AND THE GOVERNORS

All of that was before Charlottesville. It seems like a different era now, even though the summit was just "yesterday."

For more than the three decades I have been in Washington, the government's role in education has been bounded by statutory language meant to limit federal activity that would "control" curriculum. In fact, the U.S. Department of Education organization act includes language that prohibits offices of the department from exercising:

any direction, supervision, or control over the curricu- lum, program of instruction, administration, or personnel of any educational institution, school, or school system, over any accrediting agency or association, or over the selection or content of library resources, textbooks, or other instructional materials by any educational institution or school system, except to the extent authorized by law.

And, while no one has rescinded this prohibition, nor is anyone about to, it reflects a different sort of Federalism from the one that appeared to prevail in Charlottesville.

Setting National Goals and Assigning Accountability

In the Jeffersonian Compact issued by President Bush and the governors, a new context is described. It includes these statements:

- Education has always been important, but never this important because the stakes have changed: Our competitors for opportunity are also working to educate their people. As they continue to improve, they make the future a moving target.

The Compact goes on to make an assertion no one could have predicted a few months—even a few weeks ago:

We believe that the time has come, for the first time in U.S. history, to establish clear, national performance goals, goals that will make us internationally competitive.

The goals themselves are to be formulated through joint action of the National Governors Association and the U.S. Federal Government and are to engage teachers, parents, administrators, school board members, elected officials, business, labor, and the general public. They are to deal with:

- Readiness of children to start school.
- Performance on international achievement tests, especially math and science.
- Improvement in academic performance.
- Reduced dropout rates.
- Functional literacy of adults.
- Training level for a "competitive" workforce.
- Supply of qualified teachers.
- Supply of up-to-date technology.
- Safe, disciplined, drug-free schools.

The Compact describes a "Federal-State Partnership" and the U.S. Federal Government's role, including—not surprisingly—the provision of: "...good information on the real performance of students, schools and states..."

It concludes with another ground-breaking assertion:

As elected chief executives, we expect to be held accountable for progress in meeting the new national goals and we expect to hold others accountable as well. When goals are set and strategies for achieving them are adopted, we must establish clear measures of performance and then issue annual Report Cards on the progress of students, schools, the states, and the Federal Government.

Measuring Progress

In his own remarks, President Bush said, "To get results, we will need a new...report card...we need to know just how much progress we're making. We've always measured our progress against our past performance. We must now evaluate ourselves on a tougher grading curve—one that includes the other major industrial nations." What a challenge for the participants in this conference!

The calls for "better" data—more descriptive, more quickly produced, more detailed—will be loud and insistent. The visibility of reporting systems will be heightened. The press will eagerly await each new report and will spread columns of words and charts throughout our newspapers.

There will be countless spots on the evening TV news and numerous authorities will be interviewed on PBS and network programs. There will be still more panels, commissions, probably even more money—maybe CRESST will even have more to do.
Certainly, its advice will be sought. And so, whatever Eva’s reasons were for scheduling this conference, “quality indicators”—as we have found with NAEP’s taking on a state dimension—are now transformed into a “high stakes” national issue.

The numbers will matter. They will matter, of course, to the governors and to President Bush, who have set themselves on such a bold path and will be judged by their accomplishments. They will matter to educators who will be expected to find successful ways to reach new performance goals. They will matter to students, parents, and taxpayers who have vital stakes in what American education accomplishes.

They will matter to our panel on education indicators who well may question what their role can be in such a changed environment. But, if the numbers matter so much, then the shortcomings inherent in the development and implementation of indicator systems for accountability matter all the more.

These shortcomings were as visible as Central Park when you fly over Manhattan—it is there clearly enough, but it is a little remote. Now they have the added attributes of a walk through Times Square—immediate, bright, brassy, full of light and life, magnetic, sometimes frightening, and even dangerous. Therefore, those challenges must now be a direct subject of this conference and an abiding concern of those of us who work with education information. It is our role to be introspective about appropriate uses of indicators and about the pitfalls of misapplications. It is our duty to ensure in every way we can that data are clearly explained and that the public and policy maker are made aware of inappropriate uses.

**ISSUES RELATED TO ACCOUNTABILITY AND INDICATOR SYSTEMS**

I would like to describe four issues that are especially problematic for accountability systems in a “high stakes” environment. They are: corruptibility, consequences, controls, and content.

**Corruptibility**

Corruptibility has two facets. One facet is measurement that pervades the very process it is supposed to report on and improve. There are often unintended consequences of measurements that have sanctions attached to them. For example, if we place a priority on reducing the grade-level retention of students, we will undoubtedly see fewer failing grades and, in all likelihood, more social promotion. The effects on students could be negative, if there are any effects at all. Sometimes multiple measures can help avoid this particular problem.

A second facet of corruptibility is measurement that is deliberately misleading. The work of Dr. John Cannell has effectively advanced the claim that some schools cheat on tests. Officials at the state level have known for years that schools sometimes either selectively suppress the lowest individual scores or, even worse, allow answers to fall into students’ hands.

The lesson here is that researchers and policy makers need to direct more attention to maintaining the integrity of testing and assessment procedures. This matter is of major and continuing attention to NAEP, where we have acted to acquire valid and comparable data through:

- Consensus process to develop common procedures.
- Specific quality control requirements in sampling, security, and other areas.
- Monitoring and evaluation of actual administration of the assessments.

**Consequences**

A second issue has to do with the consequences embedded in accountability systems. Too often, I fear, political leaders have not been aware of the consequences of particular reforms or have glossed over conflicting purposes. This creates a potential for indicators to report results quite different from the proponents’ intent.

The current debate in Ohio over a four-tiered system of diplomas nicely illustrates this problem. Beginning with the class of 1994, the system would use tests to determine whether each student would receive a “certificate of attendance” or one of three types of diplomas, ranging upward to a “diploma of distinction.” An advocate of the proposed system, State Senator Eugene Watts, says, “What we’re doing is driving curriculum. We are demanding accountability.” (That is—holding schools accountable.)

His chief opponent, Representative Ron Gerberry, counters with an argument at the individual level: “I don’t think this is the proper time to stigmatize students. Students who are average or a little bit better than average will never graduate with distinction or commendation, but that doesn’t make them less able to achieve a bachelor’s degree and be successful.”

The opposition is prevailing in the House of Representatives, which has voted, 97 to 1, to repeal the law.

This is an example—at least as viewed from Washington—of legislative failure to be clear as to who is being held accountable for what. If the student is being held responsible for a school failure, then there is a problem with the accountability system. Still, for the student not to be informed about his or her level of achievement is a consequence too.

Somewhat surprisingly, the lively debates over the initial design of accountability systems do not necessarily foreshadow equally lively debates over the actual consequences.

In a CRESST study of state and local programs of competency testing, Mary Catherine Ellwine, Gene Glass, and Mary Lee Smith found that officials focused little or no attention on the ultimate passing rates on those tests. While initial failing rates did attract policy attention, the eventual, cumulative passing rate was seldom made public. When it was, the purpose was simply to hail it as evidence of the test’s benefits. Moreover, these researchers found that the research and evaluation community has done little to examine the longer-run effects of testing programs on individuals or school systems.

**Controls**

A third issue is controlling for student background in reporting results. We call this “fair comparisons” in NAEP. When or whether to “adjust” is the issue here and it has been a perplexing one for the National Assessment Governing Board.

One dimension of this question concerns instrument sensitivity. Rather than simply reporting on which schools are meeting uniform goals and which are not, we must measure progress towards goals. This requires taking into account where the school began or what its educational needs are.

Drawing on the experience of the states that already adjust their measurement or reporting, we need to gather information on the effects of different ways of “comparing likes to likes.” South Carolina, for example, compares school performance with an expected score calculated on the basis of each school’s past performance and the current performance of other, similar schools.

The student level, though, is a second dimension of comparison. Although it is appropriate to hold schools to flexible stan-
EDUCATIONAL QUALITY INDICATORS: TAKING STOCK

Summaries of Plenary Sessions

Each of the six plenary sessions was designed to focus on an important issue related to the development and use of educational quality indicators. Session topics were chosen to reflect the fact that all levels of the education system—local, state, national, and international—are involved with these issues. Because all groups in the education community must be involved in the dialogue about the status and improvement of indicator systems, each panel of speakers included policy makers, practitioners, and researchers.

In the session summaries that follow, an introduction to the session topic precedes the highlights of speakers' remarks.

NATIONAL AND STATE ISSUES: THE ROLE OF NAEP

NAEP has been given a new charge: to examine the viability of providing achievement data that can be compared at the state level. The National Assessment Governing Board (NAGB) and the National Center for Education Statistics (NCES), who are responsible for overseeing the implementation and conduct of

AGENDA FOR THE FUTURE

These issues give us a solid agenda of tasks for researchers and policy makers in this post-Charlottesville, Jeffersonian Compact era. The issues I've described—corruptibility, consequences, controls, and content—must be central to the research community. Policy makers can't work these out alone. Such confusion as the Ohio example illustrates is not good public policy. Together, we need to:

- Reduce the corruptibility of indicators by attending to their unintended consequences and to the mechanics of measurement.
- Address the dilemma of appropriate consequences by thinking through the appropriate rewards and sanctions for both individuals and bureaucracies. Be clear as to who is accountable for what.
- In a similar vein, strive for a balance between rewarding progress fairly and holding all students and schools to high standards.
- Continue to broaden and refine our measures of performance and process.

We also need to fill gaps in the stock of available indicators. For example, we need to direct attention to school readiness and student transitions (home to school and school to work and/or college).

Ironically, the same educational system that easily and routinely grades student performance shows very mixed feelings about grading itself. But President Bush and governors have set us on that course. When we address the challenges responsibly, accountability can only benefit the system, the students, and the nation.

President Bush and the governors concluded their compact with the following: "The time for rhetoric is past; the time for performance is now." The challenge is to us.
NAEP, have placed considerable emphasis on ensuring that the state trials planned for 1990 and 1992 will afford full opportunities to determine the feasibility and viability of obtaining comparable data. The operational contract for state NAEP has been awarded to the Educational Testing Service; the evaluation of state NAEP has been awarded to the National Academy of Education.

Various organizations including the Council of Chief State School Officers (CCSSO) have supported efforts to produce and report such state-level data, and public and corporate support has been expressed as well. Pockets of policy analysts and educational practitioners also have indicated that they would back this effort.

However, resistance to state-level NAEP has been voiced by many members of the education community. Their concerns relate to the technical soundness of the proposed assessment, the burden of additional time and money that the assessment would require, and the ultimate usefulness of the information collected.

Panelists were asked to comment on these issues.

Gordon Ambach, Council of Chief State School Officers

As recently as five years ago, a conference like the CRESST conference on educational indicators would have focused primarily upon minimum competency testing. The changes that have occurred since then have arisen as a result of state and local efforts and may be characterized by an emphasis on accountability linked with a need for increased resources.

- NAEP data is becoming an increasingly high-stakes issue for executives, but because it does not have direct consequences for the students who take NAEP tests, it is a low stakes issue for them. If motivation is low, validity follows suit.

- Integration of national, state, and local assessment systems is imperative. Multiple levels of assessment may overheat the system.

- Because cross-national comparisons may ultimately prove even more important to NAEP’s work than state comparisons, the design of appropriate instrumentation must be undertaken.

Chester E. Finn, Jr., National Assessment Governing Board

The essential responsibilities of the NAGB are to decide what will be assessed by NAEP and to establish goals for each subject and grade level. NAEP’s approach to assessment is characterized by several important limitations as well as strengths. Among NAEP’s limitations:

- Testing is limited to cognitive outcomes and, with only a few exceptions, is restricted to a multiple-choice format.

- It omits foreign language, art, and music.

- It provides no information on important subsets of the population tested, such as the handicapped, the gifted, or students in private schools.

- It is costly in terms of dollars and time.

NAEP is forbidden by law to make its test items available for use directly by requesting states.

Among its advantages:

- It is increasingly anchored to scales that can remain fixed over time.

- It provides information that the SAT does not, and it tests everyone.

- It yields data useful for formative evaluation and diagnostic purposes as well as summative evaluation.

- It presents its findings in a straightforward manner that is easily understood.

Judith Billings, Washington State Department of Education

Washington is one of many states that opted not to participate in NAEP’s early state-by-state trials. The state has been supportive of meaningful assessment efforts for many years and has participated in several large-scale assessments, including regular NAEP testing. The decision to not participate was based partly on the feeling that some basic policy issues remain unresolved. Among them are:

- What purpose will be served by the substantial funding required? What information will be provided that we don’t already have?

- Will the states that are involved be denied access to raw data? If so, why?

- Has the meaning of state-by-state comparisons been thought through? Meaningful comparison must take into account such variables as state differences in funding, legislation, student demographics, and teacher certification.

- Are we moving toward a national curriculum? Doesn’t this contradict the movement toward local control, decentralization, and site-based decision making?

Dan Koretz, The RAND Corporation

NAEP, despite its extraordinary importance in American education, is being asked to carry too much freight, to serve too many masters. Asking NAEP to serve an accountability role has negative effects:

- Funds channeled to state-by-state NAEP might be used instead to develop assessments with broader scope and improved sampling.

- Teachers may begin to teach to the test, which leads to the degradation of instruction. At the extreme, some schools may not teach the subjects not tested.

- Test items must be held secret to preserve validity, but, as a result, researchers cannot use the results effectively.

- Assessment systems can be designed to be used for information purposes or as a bullwhip—but not both.
STATE AND DISTRICT ISSUES:
THE ROLE OF INDICATORS AND ASSESSMENT IN
SCHOOL REFORM AND SCHOOL RESTRUCTURING

Many states have launched accountability systems to monitor the effects of their educational reform policies. These systems appear as new student and teacher assessment programs, school report cards, and reports of educational quality indicators. In some states these systems report findings for the state as a whole; in other states, district- and school-level monitoring and reporting is the standard practice. Some systems incorporate specific rewards and sanctions for districts, schools, teachers, and students. In other systems, the only consequences are those that result from the publication of indicator and assessment information.

Panelists were asked to comment on the viability of using indicator systems in school reform and restructuring.

Lorraine McDonnell, The RAND Corporation

The role of indicators in school reform and restructuring is understood best in the context of a "horse trade" between states, who agree to regulate less, and districts, who promise better performance. Implicit in this arrangement is that no restructuring is possible without accountability. This linkage presents a sound basis for reform, but presents obstacles:

- Although accountability systems are becoming more complex and refined, existing systems are still too dependent on test achievement data.
- Indicators are employed not merely for descriptive purposes but also to reward and punish schools through the allocation of resources and technical assistance, and thus are powerful instruments for changing the behavior of principals and teachers.
- Each proposal for restructuring embodies its own accountability strategy, a situation that presents technical and political barriers. For instance, the decentralization associated with school-based management conflicts with the tendency to centralize curriculum to accord with large-scale assessments.

Roy Truby, National Assessment Governing Board

The role of NAGB is not only to provide descriptive information regarding school achievement, but also to prescribe standards for achievement.

- The prescription of standards requires that achievement and prescription be placed in a common context.
- The actual standards that are set may be less important than is the commitment to achieve those goals.
- Polls indicate that the American public is ready for a national curriculum; however, although this may seem in theory to be a good idea, in practice it may not be desirable or feasible.

Virginia Rosen, Dade County Public Schools

Multilevel indicator systems developed by the Dade County Public Schools collect information that is useful to many people, including educators at the school level:

- Indicators assess some 12 to 15 aspects of school performance.
- Indicators are standardized over time—not based on definitions that may shift from year to year. Variables such as dropout rates, participation in upper-level classes, and performance on Advanced Placement exams are monitored.
- State and national assessment programs may be based on indicators that are important for a political reason alone. If indicators are going to be useful, they must be able to be used effectively at the school site.

Sharon Robinson, National Education Association

The National Education Association works with groups of teachers to identify positive instructional changes that they can implement in their classrooms. The program addresses issues of process and content.

- Teachers should share a common educational vision with their colleagues rather than working in isolation.
- Successful change is evolutionary and is engendered through planning and assessment.
- Teachers must have access to information in order to make sound decisions; this issue is one of the most stubborn and important issues facing proponents of school restructuring.
- Quality indicators must measure input into the educational system, input that includes time, money, staff development, and teachers' access to support. In this regard, the rhetoric of quality indicators far outpaces the reality.

NATIONAL AND STATE ISSUES:
THE IMPACT OF COMMERCIAL ACHIEVEMENT TESTS

States have expanded their use of commercial achievement tests in recent years as part of their state testing programs, and districts continue to rely heavily on such tests for program evaluation and monitoring and reporting of test results.

Criticism of the use of commercial tests in these testing programs has been considerable, however, focusing primarily on misleading interpretations of test results, such as those that report that all students are above the national average, as noted in 1987 by John J. Cannell.

Panelists were asked to consider the present role of commercial achievement tests and the impact that these tests have on assessment efforts, and to suggest changes that would maintain or improve their utility in indicator systems.

Robert Linn, CRESST, University of Colorado

A 1989 CRESST survey of test reports from a number of states and school districts showed that more than 50% of students were described as being above the national median. However, several cautions should be noted in conjunction with this finding:
- Norm-referenced tests are administered up to 6 or 7 years past their reference year, and successive re-normings have raised the level of difficulty that the norm represents. As a result, older tests show student performance that is generally above the norm.

- Adjustment for the test's reference year accounts for much of the improvement reported in student achievement. Focus should be shifted from norms to the actual performance levels that test scores represent.

- The pressures of accountability have implications for test administration. The context of administration must be understood in full, especially who is tested and who is not.

John Keene, National Computer Systems, Inc.

The proper use of norm-referenced tests must incorporate an understanding of the structure and processing of the tests:

- Several key "control points" have a bearing on the proper use of tests: (a) the method used to report results, in terms of the descriptive measures used and standards of comparison; (b) the selection of test content; (c) aspects of test administration, including the selection of the reference year; (d) sampling procedures used in constructing the norm; and (e) proper interpretation of results.

- Norm-referenced tests have "liquid standards"; that is, such tests are sensitive to instruction and thus are affected easily by instruction that is directed toward test content.

- Test results can be and often are misinterpreted easily.

Floraine Stevens, Los Angeles Unified School District

Although there are problems involved in interpreting the results of commercial norm-referenced achievement tests, they can serve a positive function in a school district such as Los Angeles Unified if they are used properly:

- Contextual factors, such as adverse social factors and high proportions of inexperienced teachers, must be taken into account when test results are discussed.

- Test results can be used to revise curriculum, improve instruction, and determine resource allocation.

- The results from norm-referenced tests can provide important indicators of individual student progress, staff allocation priorities, and students' opportunities to learn important subject matter within individual classrooms.

- Teacher training can encourage teachers to take responsibility for test results and to develop strategies for improving student achievement.

Stanley Bernknoft, Georgia Department of Education

Commercially produced norm-referenced tests have made an impact on Georgia schools in several areas.

- A significant amount of money is allocated to programs on the basis of test results. Tests exert an influence on the curriculum that rivals the influence of state-mandated curricular objectives.

- Achievement outcomes have become an important campaign component for state and local offices, and tests have become a cornerstone of legislation aimed at increasing accountability. The pressures arising from reform and accountability policies threaten the state's assessment system's utility for diagnosis and improvement of instruction at the school and classroom levels.

- A two-track system of evaluation may develop, with one set of tests used for accountability purposes and the other used by school personnel.

PERFORMANCE ASSESSMENT: IMPLICATIONS FOR LARGE-SCALE ASSESSMENT AND INDICATORS

Recent proposals for the inclusion of performance assessment activities in testing programs represent a major new force in educational assessment. The development of performance assessment has been spurred by renewed interest in higher order reasoning and problem-solving skills; many educators believe that performance assessment can better reflect those skills—what they think students ought to be learning—than can multiple-choice, pencil-and-paper tests.

Several states, including California, Connecticut, and Michigan, are taking the lead in developing methods for incorporating performance assessment as central features of their testing programs. Panelists were asked to recount their experiences with alternative assessment approaches and to speculate on their possible integration into large-scale assessment programs and their potential use as educational quality indicators.

Richard Shavelson, University of California, Santa Barbara

Researchers at UC Santa Barbara are developing testing methods for math and science that focus on performance assessment; if successful, the method will enable better understanding of instructional methodology in these content areas.

- For science, the testing method is based on the analysis of three laboratory experiments designed for elementary students. Scoring of the experiments was based on an expert-novice benchmarking procedure. This testing method incorporates computer simulation, modified multiple-choice items, and conventional multiple-choice tests (CTBS).

- For math, a test was developed that asks students to generate mathematical problems with a given set of criteria.

Eva Baker, CRESST, University of California, Los Angeles

Researchers at CRESST are developing a method of assessing higher order thinking in history through performance measures.

- Because thinking about a subject such as history requires active construction, elaboration, and integration of prior knowledge, a performance measure was judged to be the best vehicle for assessment.
• The measure includes a test of prior knowledge, text from primary historical source material, a reading comprehension test, an essay question, a measure of student anxiety, and debriefing questions.

• During assessment, students are asked to read the text of a speech and then write an essay, incorporating their prior knowledge about the topic. Essay raters consider the organization of the essay (whether it is organized by a premise or problem), use of prior knowledge, use of text-based knowledge, use of interrelationships, absence of misconceptions, and overall quality of content.

• In field tests, interrater reliability was found to be extremely high. Validity was determined by comparing students’ scores to teachers’ expectations of student performance and scores on standardized instruments.

Judith Torney-Purta, University of Maryland

Researchers at the University of Maryland are using performance assessment to measure teenagers’ understanding of foreign policy. Performance tests are being used to elucidate the cognitive structures of student knowledge.

• If tests assess cognitive structures, or maps, and teachers gear their instruction toward maximizing student performance on these tests, the entire teaching-learning process will benefit. Multiple-choice tests are limited because, in general, they do not tap students’ cognitive structure.

• A computer simulation is used to assess teenagers’ understanding of foreign policy. Through role play, students attempt to solve dilemmas posed in the test. Pre- and posttest interviews are administered to ascertain qualitative differences in student thinking after the role play.

• In pilot tests, students with complex cognitive structures were those who could: (a) suggest multiple solutions; (b) see constraints on proposed solutions; (c) see the implications of action and how they could affect development of alternatives; and (d) rank countries along a complex set of dimensions, including economic status, type of economy, and presence of natural resources.

Ed Roeber, Michigan Department of Education

Performance assessment should be a vital part of large-scale assessment programs and indicator systems, whether at the national, state, or local level. Performance measures can give an entire assessment an added aura of content validity.

• Performance assessment is not a new idea. In 1971, teachers in areas such as physical education, health education, and music were at the fore in calling for performance testing; the teachers of public speaking, writing, and communication followed suit. However, after initial forays were made with small samples of students, state officials realized that testing every student in this manner was costly.

• Performance assessment can be used to determine whether students can in fact demonstrate the critical skills that we want them to learn.

• Today, data on student achievement is used not only to assess students, but to evaluate education systems and implemented program changes. Because so much weight is given to test results, the tests that are used must be accurate indicators of what students can do. In this, the need for performance measures is clear.

Dale Carlson, California State Department of Education

Is testing helping or hurting schools that are in trouble?

• Educators are doing a good job of testing only if they believe that students should be learning by rote or completing multiple-choice tests. If thinking were a skill, it could be taught and learned through rote methods and tested using current methods.

• Students learn through their senses, so testing should mirror the process of learning as well as the content that is learned; other testing methods should supplant multiple-choice tests. Students can demonstrate competence in an old-fashioned, sensible way: through oral assessment, which can catch the way students learn.

• Salient issues in testing today include: internal versus external control of tests, test reliability, use of portfolios, and testing on demand.

Pascal Forgione, Connecticut State Department of Education

Connecticut currently is introducing into its high schools a new generation of math and science tests, an action that is a response to the realization that current practices are inadequate for education systems that are planning for the 21st Century. The time has come to engage in a longitudinal testing program where much more time is spent assessing each student.

• Performance testing must integrate three often isolated elements—a common core of learning, preparation for life, and a global perspective—and draw from the fields of research, instruction, and assessment.

• A successful assessment program must contain tests that students consider essential, authentic, rich, engaging, active, and feasible.

• The basic model in Connecticut’s program is that students will think while performing tasks. The observable tasks will indicate the level of thinking in which students are engaged.

ACCOUNTABILITY AND AT-RISK STUDENTS

The architects of many of the first reform policies did not consider the impact that their initiatives would have on students considered to be at risk. Although these policies usually were launched with the intent of raising the quality of education for all students, considerable evidence shows that these policies often further discourage at-risk students and act to push them out of the school system.

Recent attention to long-term demographic trends and their future impact on the nation’s workforce has generated fresh concern about the consequences of reform. At the same time, members of the education community have questioned the use of
commercial tests to assess the achievement of at-risk students. They are concerned that testing bias may work against at-risk students, that a narrow focus on highly specific knowledge and basic skills may lead to instructional practices that are particularly harmful for the progress of these students, and that new methods of assessment also may have repercussions.

Panelists were asked to comment on the possible consequences connected to existing accountability systems for at-risk students and the longer term consequences connected to the implementation of expanded assessment systems and reporting practices.

Jeannie Oaks, University of California, Los Angeles

Educators and policy makers must create indicator systems that can be used to improve the educational situation of students who are historically at risk.

- Educational data on these students must be reported in such a way that their achievement is represented fairly. However, controlling and adjusting for background factors raise a variety of logistical and technical problems.

- Background variables must not be used to institutionalize lower expectations for certain schools.

Ruben Carriedo, San Diego Unified School District

Test scores from norm-referenced tests are used to evaluate many aspects of education in the San Diego schools.

- Although many of the district's parents, board members, and educators think that there currently is too much testing, other constituents are reluctant to accept new ways of assessing student performance. In particular, the minority community is suspicious of new measurement approaches, thinking that new measures may sidestep the issue of how their children are really doing.

- Constituents need to be educated about alternatives to norm-referenced testing.

- San Diego plans to replace CTBS with a shorter, norm-referenced test developed by the district. Portfolio assessment is planned for senior high social studies and middle school English and math.

Harriet Doss Willis, Southwest Regional Laboratory

In what sense can the term “minority” be considered a useful designation? Lumping students into one group can generate problems.

- Assessment tends to treat all students the same, regardless of their background or the actual instruction they receive. Students may be identified as underachievers as a result of monolingual instruction or individual learning styles.

- Aspects of a student’s background—race, socio-economic status, family background—that might be used to adjust achievement results should not be made into excuses for failure to teach or learn, but should be used to develop new strategies for instruction and assessment.

Jerome Jones, St. Louis Public Schools

In the St. Louis school system, the issue of accountability does not center on testing, but on expectations: Teachers are encouraged to believe that all students can learn and that all teachers can teach.

- The St. Louis school system stresses traditional achievement measures in the belief that they create an equitable standard against which performance can be gauged.

- Continuing problems arise from an absence of commitment, a curriculum that was developed without reference to socioeconomic conditions, and social agencies that are isolated from the education system.

Robert Rueda, University of Southern California

Current research at USC on literacy implies some of the pitfalls of using top-down indicators to address the problems of at-risk students.

- Outcome measures don’t reflect the process of learning or how students interpret tasks. More local indicators should be used.

- Indicators must be tied to a theory of teaching, and pupil progress must be monitored. If indicators do not measure the important aspects of literacy, underestimation of students’ abilities can result; if indicators measure the wrong aspects, overestimation can result.

- A student who is allowed to write in his native language or on authentic topics may show more ability or more potential than is indicated through top-down assessment.

James Catterall, CRESST, University of California, Los Angeles

Projects underway at CRESST are attempting to show the effects of recent reform policies on students who are considered at risk.

- A study that is examining tests required for graduation in four states indicates that the treatment of student failures varies widely, ranging from the humiliation of students to placing them in remedial programs.

- In the School Reform Assessment project, CRESST researchers are using interviews, student surveys, and examination of student transcripts to look at the consequences of increased course-taking requirements, particularly for students who are at the lower end of the achievement spectrum.

INTERNATIONAL EDUCATIONAL INDICATORS: THEIR INTERNATIONAL AND NATIONAL ROLES

Public concern for the quality of American education has been heightened by results from cross-national studies of educational achievement. The same type of concern is evident in other major industrial nations, where educators and policy makers are feeling pressure to improve their education systems. In addition, the pending formation of the European Community is fostering interest in enhancing the quality and comparability of international
educational systems.

To address these concerns and interests, the Organization for Economic and Cultural Development (OECD) is completing a project on the feasibility of developing an international educational indicator system and is proposing a two-year conceptualization and development phase. NCES is one of the American agencies that is interested in the development of such a system. OECD’s effort is touching on many of the issues that arise in discussions about the development of state, district, and school-level indicator and reporting systems in the U.S.

Panelists were asked to examine current and anticipated development and use of international educational indicators.

Norberto Bottani, OECD

In May of 1988, OECD decided to implement an international program to identify educational indicators that will aid the evaluation of the quality of educational performance. Twenty-four countries are participating in the program.

- The majority of developing countries invest at least 5% of their GNP in education, yet do not have a systematic way of describing and evaluating their educational system.

- During the exploratory phase of the OECD program, each of five networks, or working groups, investigated an aspect of the topic: student flows, student achievement, school functioning, school facilities and resources, and the attitudes and expectations of teachers and students. Participating countries could be involved in any or all of the five networks.

- Conceptual problems have hindered the identification of indicators. Many European countries make little use of objective testing, and, thus, results from their exams may not be compatible with U.S. scores, which are based almost exclusively on multiple-choice or other objective test formats.

- At present, it is impossible to produce a single indicator that applies to all 24 countries or that is acceptable to all participants.

Jeanne Griffith, National Center for Education Statistics

The idea of an international indicators project was first advanced by the U.S. An international system such as that being developed by OECD can tell us how the U.S. is doing in light of what is going on around the world.

- Three technical issues bedevil the development of indicator systems: Development of standards for comparison; how the information should be reported (data would be sufficiently detailed to inform decision makers, but not so overwhelming that it will defy simple reporting of findings); and how higher order thinking skills and subtopics should be measured.

- Issues of accountability should not be allowed to drive the composition of indicators. Indicators that are more difficult to measure and report should not be put aside in favor of indicators that can be measured easily.

- NCES has initiated research on educational indicators in the U.S. The Center’s annual report on indicators, Condition of Education, is similar to the system being proposed by OECD, although the point of reference changes from time to time. In contrast, OECD will have a stable set of indicators over time.

Dean Jamison, University of California, Los Angeles

The World Bank has commissioned the development of indicators that relate to the health of sub-Saharan Africans. It is somewhat difficult for education to replicate the quantitative nature of many health indicators, but the system developed by the World Bank has many features that can be generalized to all indicators projects.

- In any indicator system it is necessary to “organize” the personnel involved. Different people will be interested in different types of indicators: Technicians and psychometricians favor well-proven, relatively easily provided indicators, while political leaders want different information. Whatever data are produced will be used regardless of the desires of politicians.

- At present, U.S. economic productivity has not been adversely affected by poor educational performance, but this is predicted to change over the next few decades. Some researchers have proposed that economic indicators be used to aggregate the potential cost of the U.S.’s educational inferiority to other nations.

- Few studies have linked educational indicators to economic output in OECD countries; such studies are needed in order to quantify the effect of education on economic activity.

William Schmidt, Michigan State University

The results of cross-national achievement should be placed in the context of national educational environments, or the results will be useless for providing sound policy direction.

- The alignment of data to requests for information often is incompatible, or, at best, an imperfect match. Any useful results must be content-specific and must be interpreted in light of concomitant covariates. The inclusion of Opportunity to Learn (OTL) indicators is crucial if the results of cross-national studies are to be used for policy reform.

- Recent IEA studies of math and science offer some clear findings in regard to U.S. education. These findings indicate that achievement in these areas is in proportion to the stress placed on studying the topics.

- In the IEA study of math, researchers found that in most countries the eighth-grade math curriculum is devoted mainly to algebra. Seventy percent of content in Japanese eighth-grade math classes is focused on algebra, compared to 7% in U.S. math classes.

- In the IEA study of science, U.S. achievement levels were the lowest of all countries assessed. Sixty-eight percent of U.S. schools did not have a ninth-grade science requirement.
Summary of Questionnaire Responses

Damian Murchan
CRESST Fellow, Cornell University

Working group sessions, held on the afternoon of October 13, were designed to generate input from conference participants. These sessions focused on the issues that structured the conference agenda and that arose during conference proceedings.

To encourage and facilitate participant contributions to the working group sessions, participants were asked to complete a questionnaire prior to the sessions. Questionnaire items dealt with the development and use of educational quality indicators. Participants were asked to give specific consideration to implications for policy and policy makers, for practice and technical assistance, and for research and development. Session leaders used participants' responses to guide group discussion during the working group sessions.

Respondents included state agency heads, directors of state evaluation and assessment programs, local program evaluators, school board members, university faculty, education analysts, and research and development personnel.

The following summary systematically examines the questions posed and provides an overview of the written responses.

Potential Benefits of Indicator Systems

The first question asked participants to identify benefits that could be gained from the development and use of educational quality indicators and to note the levels of the education system that would benefit.

Two themes dominated respondents' thinking in this regard: accountability and providing information to policy makers. Accountability was seen as a primary benefit of indicator systems. Many respondents wrote that the demand for accountability is increasing and that indicator systems could provide a way of satisfying the demand. Some saw accountability as relating not to students or teachers, but to the educational programs themselves, implying that the designers of the program are under scrutiny. One person thought that an indicator system should be used to direct the operation of the education system to achieve agreed-upon goals.

Many respondents noted that indicators could be used to inform stakeholders. Routine assessment of indicators could generate interest and concern in public education and the multiple expectations and outcomes of schooling. Indicators could also indicate trends over time, thus providing data to policy makers that would facilitate implementation of remedial action. A clearly understandable set of indicators would maximize the chance that the public would be willing to spend the additional monies necessary to remediate deficient areas of the education system.

Fewer respondents thought that an indicator system would have immediate impact on classroom practices. Rather, the function of indicators was seen as aiding decisions at higher levels, such as in state legislatures and state evaluation agencies. Particularly, respondents indicated that indicator systems could be used to identify differential educational opportunity, which might lead to the improvement of educational outcomes for all students, especially the less fortunate. However, several respondents thought that indicator systems would produce more political benefits than benefits at the school or class level. One respondent noted that tangible gains could be made at the classroom level if performance measures were included in indicator systems.

Potential Dangers of Indicator Systems

The second question asked respondents to list potential dangers associated with the development and use of educational quality indicators.

The overriding concern among respondents was that the indicator system would be too narrow in scope and that the indicators included in the system would become the sole focus of educational efforts. Specifically, respondents alluded to the danger of an overemphasis on cognitive outcome measures, thereby leading to what one person called a “perversion of the educational purpose.” Respondents felt that tried and tested measures would dominate the indicator system at the expense of equally important but more elusive process measures. Even within the confines of measuring cognitive outcomes, some people thought that it would be imperative to include performance measures if the system were to be credible.

Another concern centered on the danger that the data generated by indicators would be misinterpreted by politicians, the media, and parents. Many of the respondents warned that the data might be misused, precipitating crises in the education system: “Teachers’ professional authority could be undermined; students and teachers could be stigmatized and punished.”

Some respondents felt that the very existence of the indicators might serve functions opposite to those intended, regardless of whether the data were used correctly. Conceivably, an indicator system could create a scenario where the losers would lose all. Any system of indicators should, according to several of the respondents, take into account the context of the school. Showing the education system to be lacking in terms of input and output might precipitate either of two general responses from the public: a movement to remedy deficiencies, or a lessening of support for educational improvement.

Methodological concerns also arose. Some dealt with test format: Responses suggested that no single-item format is sufficient and that if a mixed format is used, measures must necessarily be more complex. Other concerns were related to test administration: If site personnel are required to implement parts of the assessment, how will insufficient training be countered? One respondent was bothered by what he termed “normative reference group bias”; another questioned the probability of obtaining sufficient sample sizes to give the necessary level of detail. Many of these methodological concerns could become quite serious if measures are not continually updated and evaluated to ensure that they remain appropriate over time.

Improving the Quality of Education

The third question asked respondents to identify indicators that should be given priority in assessing and improving the quality of education.

The many indicators mentioned can be divided into categories relating to cognitive and social development, school and class environment, resource allocation and input, instructional practice,
and leading indicators used to predict outcomes. Respondents
gave particular emphasis to assessing literacy, math, and sci-
ence. Slightly less emphasis was given to measures of students'
higher order reasoning and measures such as performance tests.
Respondents indicated that the indicators linked to cognitive
measures should give some indication of the requirements con-
ected to the indicators; for example, if course grades are
reported, the expected performance level in each course should
be provided as well. In addition, indicators of excellence should
be reported routinely for units such as schools and states;
examples might be AP scores or performance on other advanced
tests. Such scores could provide national bench marks that local
systems could use to evaluate their own education systems.

Students' social development emerged as another area that
merits attention. Respondents felt that indicators should measure
maturity, adult functioning, and ability to cooperate in groups to
achieve desired ends. Other similar measures mentioned by re-
spondents were motivation level of the class, safety of the school
environment, attendance, dropout rates, proportion of students
graduating from high school, and proportion of students seeking
further education.

Resources were seen to play an important role in determining
school effectiveness. Respondents stressed that costs allocated
to education, pupil-teacher ratio, and teacher workload and
expectations should be among the factors assessed, since out-
come measures alone cannot adequately describe functioning
educational systems.

Measures of process variables and other related variables
were also deemed useful for inclusion, according to respondents.
One respondent pointed out that measures of opportunity to learn
are vital for a proper assessment of cognitive outcomes. In
general, respondents indicated that data should be sought that
will help improve instruction; one example cited was the instruc-
tional time spent on specific tasks. Other factors that are known
to correlate with achievement, such as the organizational struc-
ture of school and classroom, might also prove valuable in
evaluating outcome scores and concomitant variables.

A few people indicated the desirability of including leading
indices—variables that would enable the prediction of future
educational quality—in indicator systems. Such indicators could
pinpoint instructional practices or environmental variables that
are associated with eventual dropout or identify course enroll-
ment patterns associated with desired learning outcomes. Allied
to this was a perceived need to look at students' performance after
finishing or leaving school (as indicated by employment records),
the proportion of students proceeding to post-secondary educa-
tion, and the attitudes and expectations of teachers and students.
The incorporation of such indicators might well necessitate the
gathering of qualitative, ethnographic data.

Priorities at National, State, and Local Levels

Question four asked participants to determine differences in
priorities at national, state, and local levels.

Respondents perceived a need at the national level for gross
indicators of educational functioning that would serve two goals:
aid in formulating policy and facilitating accountability. Policy
indicators could provide data that would aid the optimum appro-
priation of funding to different structures, such as teacher training,
if a deficit were unearthed in this area. Indicators could also help
policy makers appraise the broad curricula being implemented in
schools by surveying central tendencies and ranges of perform-
ance by geographic region. In addition, indicators gathered at a
cross-national level could be useful in formulating curricular or
other innovations in light of normative information from other sys-
tems. Respondents felt that international comparisons would be
useful in measuring the performance of all students, a desirable
function since these students will be crucial in providing future
scientific and technological leadership and their abilities will have
obvious implications for economic competitiveness.

One priority identified at the state level was the use of
indicator systems to compare states and districts within states.
State education personnel interested in comparisons with other
states would find the data useful for policy formulation if the
indicators were constructed in enough detail to suggest solutions
for the deficiencies that indicators would identify, whether in terms
of input or student performance. Accountability also was men-
tioned as a priority at the state level.

Many respondents thought that highly specific indicators
would be needed at the local level as well; such indicators could
facilitate on-the-spot remedial action by teachers. These respon-
dents wanted to see the development of "improvement-oriented"
indicators that would simplify the task of figuring out what to do
with the information generated by the indicator system. Indicators
of local teacher and administrator performance would fall into this
category.

Four of the respondents reported that priorities should be the
same at every level, pointing out the need at all levels for core
skills. They indicated that the goals of education seem to be
similar at all levels; thus, because many indicators depend on
goals, no differences in priorities should occur.

Indicators with a Strong Foundation

The fifth question asked respondents to list indicators that
have a strong foundation and that generate reliable data and
reports.

The indicator cited most frequently was standardized achieve-
ment tests, particularly in the basic content areas, though the
caveat was added that educators tend to fail in ensuring that the
scores are interpreted correctly. Other responses regarded:
school data on enrollment, dropout, retention, absenteeism, and
staffing; indicators that track expenditure on education; aptitude
data as measured by the SAT and ACT; indicators of opportunity
to learn; and local descriptive indicators. Some respondents
reported that no indicators presently have a sound foundation.

One person indicated that the education community should
be wary in congratulating themselves on what seem to be valid
and accurate indicators and gave as an example per-pupil expen-
ditures: A dollar figure means different things depending on the
context of the school. The same amount of money will not go as
far in a cold climate as in a moderate climate because heating and
maintenance costs will probably be higher where temperatures
are colder. Thus, the per-pupil expenditure, which is usually
calculated by dividing the school budget by the number of stu-
dents served, fails to tell the full story.

Indicators That Need Better Methodology

The sixth question asked respondents to list indicators that
need better methodology for collection, reporting, and use.

Most people thought that indicators relating to pupil achieve-
ment need critical attention. Those mentioned were: perform-
ance assessment in mathematics, science, and social studies;
measures of higher order thinking; portfolio assessment for lan-
guage arts; appropriate measures of fine art and music; and a
better measure of overall grade point average than is presently offered in survey research. In addition, one person thought that it would be useful to concentrate on developing better indicators of the number of advanced courses taken by students.

Measures of student persistence and participation in school were also deemed to require sound methodology. Some respondents perceived a need to clarify exactly what characterizes a dropout: Should information on the number of dropouts who then complete GED requirements be included? Similar indicators that were listed related to student attitudes, social and personal development, and career orientation.

Some process variables such as teacher performance, the performance of administrators, and the performance of units at the state and local levels were mentioned, as was measuring teacher professionalism.

Indicators That Need To Be Rethought

Respondents were asked next to identify indicators that need reconceptualization.

These, in the order of the frequency with which they were mentioned, were: student performance in basic subjects, social studies, the fine arts, and philosophy; problem-solving skills and applying concepts; leading indicators that would help predict future achievement and identify at-risk students; and drop-out tabulation. Also cited were teaching strategies and other process variables, motivation, discipline, time spent on learning-related activities outside school, and the "wall chart."

Barriers to Responsible Use

Question eight related to barriers to the appropriate and responsible use of indicators..

Respondents saw technical and methodological constraints as the dominant threat to the proper use of indicators. Respondents identified problems such as a deficient research base, inadequate conceptualization and resultant ambiguity of the measures, failure to see that indicators need to serve different functions at different levels, unreliable measurement, and insufficient attention paid to interpretation of results. Respondents indicated that many of these problems might be alleviated if sufficient resources were expended designing the indicator system. But several respondents suspected a general unwillingness to spend the money necessary to resolve the technical problems and mentioned that state legislators and other politicians extol the education community to use less costly (and possibly less valid) indicators. This perceived pressure to come up with quick solutions was a source of concern to six of the respondents.

Resistance from teachers was thought to be a potential barrier by some respondents, particularly resistance connected to the possibility that the use of indicators would become a high-stakes venture for schools whose funding or student enrollment could be adversely affected by negative findings. Several of the respondents noted the difficulty of obtaining consensus as to what the indicators should be. Respondents also pointed out that many people believe that test scores are comprehensive and accurate indicators of educational effectiveness; convincing them to look beyond a limited set of cognitive outcome scores to a set of indicators that incorporate input and process-oriented factors could be a difficult task. One respondent wrote, "As long as people, especially educationalists, believe that aptitude is a static quality and that learning is a piecemeal, fragmented, sequential process, we'll continue to count the equivalent of bumps on students' skulls. Even for educational practitioners, the job won't necessarily end when "scores" are determined for any set of indicators that has been developed. Some, if not many, of these indicators will not be accompanied by solutions or instructions for improvement. Thus, the experience and adaptability of users to make use of findings may be an important element in the ultimate worth of an indicator system.

Implications for the Education Community

The final question asked participants to determine the implications of educational quality indicators for (a) policy and policy makers, (b) practice and technical assistance, and (c) research and development.

The overriding issue in regard to policy and policy makers was that policy makers should be cognizant of the potential consequences, positive and negative, of implementing any indicator system. Respondents perceived a need to realize the power of the information yielded by the indicators. Several respondents stressed that this information, when interpreted correctly, could lead to improvements in the way children are educated; misunderstood, it could be highly detrimental for the system as a whole. Particular attention should be paid to the consequences of an accountability use of indicators for low-achieving and at-risk students. One respondent held that overemphasis on the findings, with consequent stress on the education system, might actually invalidate their use altogether.

On a more positive note, a few respondents thought that the information yielded could prove useful in appraising teacher education and bringing about an increased emphasis on training teachers to develop students' thinking skills. Indicators could also provide additional data for the formulation of appropriate standards and expectations.

Several respondents noted that the dissemination of information was crucial to ensure the success of an indicator system. In addition, the need to implement a process to develop follow-up procedures was mentioned. However, if schools are forced to act on findings, initial teacher support for indicators could turn into indifference, if not outright opposition. On a less ominous note, another respondent wrote in favor of indicator systems, mentioning their value for school restructuring and the development of better curricula. When used at the national level, a comprehensive set of valid indicators would necessitate a dramatic broadening in the definition of national assessment, which would demonstrate clearly to policy makers that no one test will answer all the relevant questions and that there is no simple answer to the questions they pose.

In regard to practice and technical assistance, respondents identified two main issues. First and foremost, respondents felt that the designers of indicators must explain the results. It would not be acceptable to leave their interpretation in the hands of policy makers, chief state school officers, school superintendents, or teachers. Rather, educational improvement can be attained only through careful explanation of the data. Some respondents maintained that the resulting data bases should be easily accessible so that the research community may examine the data freely, which would ensure that the interpretation given to practitioners would stand up to professional scrutiny. Although ultimately it is up to individuals at the classroom level to implement change, the direction and support for change should be embedded in the indicator system itself by means of careful explanation of findings.
Providing such an array of indicators to education practitioners must be accompanied by the implementation of more appropriate content in teacher education courses and the provision of in-service courses for practicing teachers. These courses could prepare the practitioners for work in an environment where data would be routinely gathered; these courses would train teachers to utilize the data to improve their teaching strategies.

An indicator system, according to the respondents, would only be successful if it could provide feedback on effective practices to teachers and policy makers. Indicators could illuminate model systems and explain the relationships between certain input and process variables and subsequent outcomes. Over time, “before and after” analyses of school systems could be developed, whereby the interpretation of data would be provided in relation to a system before and after modifications were made on the basis of initial data. Such models would complement the policy of explaining and interpreting results.

In terms of research and development, respondents reported that the whole process of developing indicators needs considerable attention. Many recommended that the development of indicator systems should involve more school personnel from the outset, so that the systems will reflect the realities of the school and classroom situation—such a system might encourage teachers to collect their own data. In addition, respondents perceived a need to ascertain what parents and business want in terms of measuring a quality education. Specifying and quantifying information from varied sources would do much to ensure the adoption and ultimate success of indicator systems.

Many of the issues raised during the conference suggested that students' learning styles should be considered in the design of indicators. Thus, a foray should be made into cognitive and educational psychology in order to increase the research base on which the indicators will ultimately rest. Most respondents stated that broader indicators of student performance should be developed. These indicators should include not only performance measures, but measures that highlight student attitude, motivation, and interest. Though one respondent suggested exploration of a composite indicator that would do for education “what GNP does” for economic analyses, most envisaged an indicator system as a web-like structure that would be all encompassing but would not be expressible in some tidy coefficient such as an education version of GNP. Most respondents noted that each and every indicator should be constantly updated in response to ongoing research.

Several respondents pointed out that research and development efforts depend on open access to data. They argued that access is imperative if the research community is to ensure that the measures developed are psychometrically pure and relevant to the purposes for which they are designed. The whole issue of test or instrument development should be one that especially concerns the measurement community, a community who seem increasingly committed to solving the problems associated with moving away from traditional pencil-and-paper test formats.

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