

Educational Indicators in the United States: The Need for Analysis

Educational indicator systems have become a major "business" in the United States. Although its intellectual roots are found in the social indicators movement of the late 1960s and 1970s, its focus today is clearer, its linkages to policy issues are much stronger, and both technicians and policymakers want educational indicator systems to be developed. Educational indicators appear to be something that will remain on the American educational landscape for some time to come.

This article covers five major issues related to educational indicators. First, it makes general comments on what educational indicators are and what indicator systems hope to accomplish. Second, it briefly summarizes the major educational indicator initiatives in the United States. Third, it focuses on indicator strategies in California. Fourth, it discusses several key issues related to indicator development and use. Finally, it outlines alternative strategies for making sense of educational indicators, which seem to be the key missing ingredient in educational indicator systems today—at least in the United States.

Educational Indicator Systems

According to Oakes (1986), an educational indicator "is a statistic about the educational system that reveals something about its performance or health" (p. 1). Smith (1988) adds that an educational indicator "either assesses or is related to a desired outcome of the education system or describes a core feature of that system" (p. 487). Further, Smith adds, an educational indicator should provide information or data that is technically feasible to collect and is valid and useful for making policy deci-

sions. Put more succinctly, the recent Rand report on educational indicators argues that an educational indicator is an "individual or composite statistic that relates to a basic construct in education and is useful in a policy context" (Shavelson, McDonnell, & Oakes, 1989, p. 5).

However, single indicators or even large numbers of indicators cannot by themselves indicate something about the complexity of the schooling processes of an education system. An indicator *system*, in other words, is more than just a collection of statistics. An indicator system seeks to provide measures of various components of the educational system as well as information about how those components work together to produce the condition of the system and changes in the condition of the system over time.

Further, an educational indicator system is far more than a time series of outcome measures, such as student achievement, postsecondary attendance rates, drop out rates, and lifetime earnings. Monitoring outcomes alone does not provide enough information to determine why changes in outcomes occur over time. Indeed, one imminent danger in the United States is that in the near future, some student achievement trend lines, which are now rising, will level off or even decrease. At that time, the policy community will want to know why. Their present hope is that student performance will continue to rise indefinitely on all measures and they want to know what policy levers they can pull in order to improve student performance; but unless the indicator systems that are developed and used provide information far beyond just out-

come measures, we will be unable to say why achievement trends rise, fall, and plateau. We will be unable to make sound suggestions for new policies to shift trends into desired directions.

So the goals of educational indicator systems are quite grandiose; it is safe to say that we want educational indicator systems to accomplish objectives beyond our current knowledge base. We do not know, at least in the United States, how all the critical components of the education system work to produce outcomes, yet we are engaged in the process of developing indicator systems that must be designed to do just that. Thus, as we develop and use indicator systems, we will need a considerable amount of research both on how to produce better individual indicators, such as measures of students' performance at thinking and problem-solving tasks, and research on how the core components of the educational system work together to produce system conditions.

An educational indicator system needs to provide information about core educational inputs, processes, and outcomes as well as have some sense of how these variables interact. To accomplish this goal, the recent Rand report (Shavelson, McDonnell, & Oakes, 1989) suggests that a national or state indicator system should include information in the following domains.

ALLAN ODDEN is Professor of Education and Director of Policy Analysis for California Education at the School of Education, University of Southern California, Los Angeles, California 90089-0031.

Educational Inputs:

- fiscal, material, and other resources
- teacher quality
- student background

Educational Processes:

- school context and organization
- curriculum
- teaching quality
- instructional quality

Educational Outputs:

- student achievement
- participation
- attitudes and aspirations

The Rand report goes beyond these categories and develops a model, as shown in Figure 1, of how these variables interact to produce educational outputs. Although bold in their attempt to portray a model, the authors are humble in not claiming causality or predictive powers for this model. Nevertheless, they argue that, at minimum, the model serves as a logical linkage among the core elements of the education system, and the overall report synthesizes research that supports correlational linkages among these components. Clearly, one aspect of ongoing indicator-related research is to further clarify and document the linkages among the central elements of the educational system.

The Rand report also identifies eight objectives that should drive development of an educational indicator system (Shavelson, McDonnell, & Oakes, 1989). The Rand study uses these eight criteria, and their model, to design an educational indicator system to assess the health of United States mathematics and science education. Rand argues that an indicator system should:

1. Reflect central or core features of the educational system.
2. Provide information pertinent to current or potential problems.
3. Measure factors that policy can influence.
4. Measure observed behavior rather than perceptions.
5. Use reliable and valid measures.
6. Provide analytic linkages among the indicators.
7. Be feasible to implement, that is, use indicators that can be collected.
8. Address a broad range of audiences.

Although all eight guidelines are important and require effort to implement, the sixth guideline—to provide analytic link-

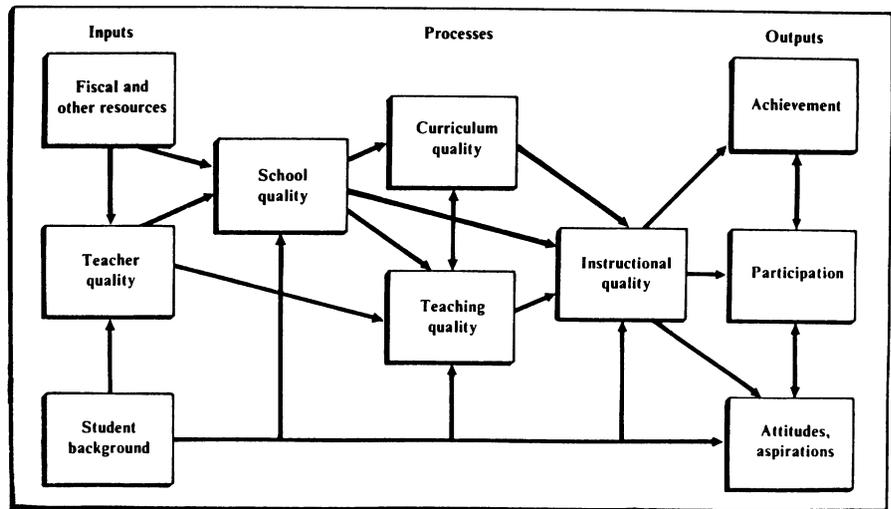


Figure 1. Linkages Among Elements of the Education System (from *Indicators for Monitoring Mathematics and Science Education*, Rand Corporation, 1989).

ages among the indicators, that is, to make sense of the indicators—is having difficulty in being implemented in the United States.

United States Educational Indicator Developments

Although the United States does not yet have an indicator system for mathematics and science (let alone the entire educational system) as outlined in the Rand report, several indicator initiatives have been inaugurated. United States educational indicator interest dates back to the “wall chart” produced by the U.S. Department of Education about a year after the release of the United States educational reform report, *A Nation at Risk* (National Commission on Excellence in Education, 1983). The intent of the wall chart was to provide comparative data that indicated key features—inputs and outputs—of each of the 50 state educational systems in the United States.

For each state, the wall chart included the following output, or student performance, indicators.

- average score on the American College Testing (ACT) test and percentage of seniors taking the test (28 states)
- average score on the Scholastic Aptitude Test (SAT) and percentage of seniors taking the test (22 states)
- high school graduation rate

The wall chart also included the following resource input indicators.

- average teacher salary
- pupil/teacher ratio
- pupil/total staff ratio
- federal funds as a percent of school revenues
- current expenditures per pupil
- expenditures as a percentage of income per capita

Simple production of the chart caused strong negative reactions for at least three reasons.

First, the United States had never before directly compared educational outcomes on a state-by-state basis. Indeed, one of the political “deals” that had been made in order to implement the country’s nationwide testing program, the National Assessment of Educational Progress (NAEP), was that state-by-state comparisons would not be made. The wall chart broke that deal and helped stimulate a process to produce not only state-by-state NAEP data, but also many other indicators of each state’s educational system.

Second, state political and educational leaders were not centrally involved in developing the categories of data that would be included in the wall chart. Although that was not necessarily a critical technical or substantive flaw, it did produce a degree of negative response. The thought was that if state-by-state comparisons were going to be made, key state education and political leaders should have at least been involved in designing the categories of data that would be used.

Third, good data, that is, reliable and valid data, were not available to make

comparisons. Indeed, especially for outcome measures, data did not exist to allow accurate student achievement comparisons across the states. Nevertheless, the wall chart included such outcome information as dropout rates and average scores on the SAT and ACT program, as well as other outcome data which technically did not meet minimum requirements for cross-state comparability.

Negative reaction to the wall chart has continued over the years. Initially criticism centered on the poor outcome measures, acknowledged as being non-comparable across states, and the fact of state-by-state comparisons. Many in the research community also believe that such comparative data per se serve no useful purpose; too few data and a shallow set of indicators are worse than no indicators at all, they argue. Inappropriate correlations also have been drawn between the outcome data and the data on input expenditures per pupil, providing misleading information about the relationship between inputs and outputs. Further, the chart does not indicate what needs to be done to improve performance.

The wall chart falls far short of being an indicator system on several counts and two stand out. First, it has no process variables and thus excludes several key measures of the country's education system. Second, and more important, it is published each year without an analytic report that seeks to make sense of the data. Although it is released each year at a press conference, at which the Secretary of Education gives political meaning to what he thinks the indicators say, a politicized press release is very different from a neutral, analytic report on the meanings of the indicators.

The wall chart, however, has not died. It has been produced every year since it was first published in 1984. State-by-state comparisons are now accepted. The wall chart still includes the above outcome data, but strategies have been implemented, primarily through a reconstituted National Center for Education Statistics (NCES) in the U.S. Department of Education, to make outcome and other data in the chart more reliable and valid. There has been a nationwide emphasis on "cleaning up" dropout data and next year NAEP will begin collecting data that will provide reliable measures of student achievement on a state-by-state basis. It could be argued that the United States is far-

ther along in producing reliable data across states because the original wall chart was published with poor data, than it would have been if it had waited until reliable data were available before producing such a 50-state comparative chart. Put differently, the wall chart can be viewed more as a strategy for stimulating the development of data for a sound national educational indicator system, perhaps, than as a good example of an educational indicator system itself.

As a partial response to wall chart activity, the Council of Chief State School Officers (the U.S. organization of the chief education official from each of the 50 states), created a State Education Assessment Center with the mission of producing, or causing other federal agencies to produce, reliable and valid data on state education systems. Because it was the chiefs who were part of the original NAEP deal not to produce state-by-state data, this center represents a reversal of a 20-year-old position. Indeed, the center is now at the forefront of producing a wide range of comparable data (including student test-score data) on the educational systems of each of the 50 states, and is causing federal agencies to alter data collection activities to produce new, accurate, and valid information that can be used to compare states. Each year the Assessment Center produces increasingly comprehensive and more accurate reports that provide a wide range of 50-state information (e.g., Council of Chief State School Officers, 1988). In addition, the center has been at the forefront of research issues related to indicator development and use, such as the recent issue of how to present outcome data that appropriately accounts for different sociodemographic state contexts. Because each state's Education Department is the reservoir of nearly all of the educational information that can be collected on a state aggregated basis, the Assessment Center is a critical element in the ongoing national movement to develop indicator systems useful for nationwide education policy purposes.

Most recently, the U.S. Secretary of Education has convened an Educational Indicators Panel comprising a wide range of statistical experts, policy analysts, and educational leaders to help further develop a national educational indicator system and an improved wall chart. The 20-member panel, chaired by New Mexico Chief State

School Officer Alan Morgan, is to make recommendations on:

- theoretical models of educational systems
- educational indicators themselves, particularly those that indicate the health of the nation's education system
- new data requirements and collection methods needed for the system
- an indicator development plan that can be implemented by the NCES
- a new design for the major U.S. indicator report, *Condition of Education* (Baker, 1989)

The tasks for this new panel have taken on new importance since the President and the state governors who attended the U.S. Education Summit in October 1989 launched the country (wisely or not) on a journey of developing, implementing, and reporting on national student performance standards. The U.S. has never had such national standards; the strength of local control of education had always prohibited even talking about national education standards. The summit broke that prohibition and, partially as a result, a national educational indicator system assumed new status as a necessary ingredient for monitoring national performance standards. Further, it is possible that the Indicator Panel might design an "education report card" to show progress towards meeting the national goals.

At the state level, indicator activity has also been strong. Kagan and Coley (1989) reviewed recent state progress in developing performance accountability and educational indicator systems. Nearly all states have statewide achievement tests, although states vary as to whether criterion-referenced or norm-referenced tests are used; many states have or are developing full-fledged indicator systems (U.S. Department of Education, 1988). State achievement data to date, however, are not comparable across states. The Kagan and Coley report profiles educational indicator system initiatives in four states that are at the forefront of indicator development: California, Connecticut, New York, and South Carolina. These states are developing quite different versions of educational indicator systems focused on the unique goals, issues, and needs of each state. The diverse systems

represent the range of alternatives that can be created and show why there is no one best indicator system; indicator systems must be connected to the key education problems identified by the policy community.

California Educational Indicator Initiatives

California has been a leader in the United States in education indicator initiatives. Although policy imperatives (showing the effects of its comprehensive 1983 education reform and being mandated to develop school report cards by a 1989 voter-approved constitutional amendment) have been the major factors behind many of its indicator projects, over the years California also has created a data infrastructure that allows it to produce indicator systems. It has a comprehensive school-by-school data system that can provide detailed information on students, teachers, school context, and curriculum, instruction, and student performance. These kinds of data constitute the backbone of a school-based educational indicator system; without these or similar data, an indicator system cannot be created. Few states have a data system as detailed as California and thus are limited in the degree to which they can create an educational indicator system.

California state-initiated indicator projects are threefold: (a) Quality Indicator Reports, (b) an expanded student testing program, and (c) Proposition 98 School Report Cards. Shortly after California enacted its 1983 comprehensive education reform program, Senate Bill 813, its chief state school officer, Bill Honig, created Quality Indicator Reports as a mechanism to report to the legislature and the public on the progress and impacts of that reform program. The reports included the following data:

1. What percentage of students enroll in high school academic courses?
2. What percentage of students meet State Board of Education model graduation requirements?
3. What percentage of students enroll in courses required for admission to the University of California higher education system?
4. What are the reading and mathematics scores from the state testing program (described below)?
5. What percentage of students take

the SAT, what are their verbal and mathematics scores, and what percentage score above 450 in verbal and 500 in mathematics?

6. What are the average ACT scores?
7. What percentage of seniors score 3 or better on Advanced Placement tests?
8. What are dropout and student attendance rates?

For each set of data, the reports included targets for statewide improvement—targets such as increasing student enrollments in academic courses (a major goal of the reform program), improving student achievement, and decreasing dropout rates. The State Department of Education produced a Quality Indicator Report for the state as a whole and one for each district; it recommended that each local district augment the state report with additional indicators and comments, but few local districts did so. The Quality Indicator Reports were bold in identifying targets for system improvement, which incidentally were met or exceeded in nearly all instances, but fell short of representing a full indicator system as several sets of both input and process variables were not included. Nevertheless, it launched the state on a path of reporting not only several key outcomes but also several key process variables ostensibly related to, and perhaps even causing, those outcomes.

The second California initiative was an expanded state testing program. For over 15 years, the California Assessment Program (CAP) had provided criterion-referenced student achievement data on a school, district, and state basis. The CAP covered basic skills in reading and mathematics in Grades 3, 6, and 12. It was and remains a matrix-sample administered test: Students take only a portion of the test, and sampling is designed to provide data valid for schools and districts but not for individual students. The purpose of the CAP is not to provide diagnostic data for classroom teaching, though it can be used for this to some extent. Its primary purpose is to indicate to policymakers at the school, district, and state levels the impact of the system on student performance in key academic areas.

Senate Bill 813 began the process of expanding CAP to include subject areas of history/social studies and science in addition to mathematics and language arts, to include a wider array of skills

such as applications and problem solving, and to include Grade 8 as well as Grades 3, 6, and 12. By the 1990–91 school year, the full battery of CAP tests will be in place and will give California one of the most comprehensive and advanced student-testing programs in the country. These tests will be complemented by a new set of Golden State Examinations, which are academic tests for college preparatory courses in high school. These tests are further complemented by state-mandated, but locally designed and administered, tests of competency in the minimum basic skills. Combined, these tests provide extensive information on student achievement in California. The primary exclusion is information on student performance tests for assessing higher level cognitive processes, and the state is conducting development work in that area.

Finally, schools are now annually required to prepare and disseminate School Accountability Report Cards. This mandate was part of a voter-improved initiative that altered the state constitution to require the state to spend a minimum proportion of its general fund budget on K14 public education, that is, elementary and secondary schools and community colleges. The accountability report card was considered an important component of the proposition to maintain public accountability for the additional funds the proposition likely would target to education. The report card must include an assessment in each of the following 13 areas:

Inputs:

1. What are the estimated expenditures per student, and types of services funded?
2. What constitutes teacher and staff training, and curriculum improvement programs?
3. What is the availability of qualified substitute teachers?
4. What is the availability of qualified personnel to provide counseling and other student support services?

Process:

5. How safe, clean, and adequate are school facilities?
6. What kind of classroom discipline is there and what is the climate for learning?
7. What progress is there toward reducing class sizes and teaching loads?

8. What is the quality and currency of textbooks and other instructional materials?
9. How many teachers are assigned outside their subject areas of competence?
10. How adequate are teacher evaluations and opportunities for professional improvement?
11. What is the quality of instruction and leadership?

Outcomes:

12. What is the student achievement in and progress toward meeting reading, writing, arithmetic, and other academic goals?
13. What is the progress towards reducing dropout rates?

Information for all of these categories of data are currently collected by the state and will be made available to each local school and school district. Although they are not organized as presented above, the categories of data required for this report card are close to the full complement of data variables that Rand suggests should constitute the core variables for a full-fledged educational indicator system. The first school accountability report cards will be produced sometime during the 1989–90 academic year, so currently there is little to report on the California experience in implementing this approach to educational indicators. Potentially, these reports could become penetrating analyses of the education systems in all of California's schools and school districts. Whether the full potential of this analysis is tapped is yet to be seen.

Policy Issues Related to Indicator Development and Use

Developing and using educational indicators raises several important issues and problems. From their study of practices across the 50 states, Kagan and Cooley (1989) concluded that (a) there is a premature pressure to use education indicator results to hold local school systems accountable; (b) there is insufficient investment to insure high quality for all measures that become part of state indicator systems; and (c) there is reluctance to make sense of the indicators, that is, to analyze relationships among inputs, processes, and outcomes for the purpose of recommending policy action.

These are problematic issues because there is a real need to be clear about the

purposes of an educational indicator system and to be sure not to use it for inappropriate purposes. This is because the integrity of an education system is highly dependent on the quality of the data in it, and because use of indicator systems turns on analysis that make sense of the data.

Indicator systems can be developed and used for different purposes, but McDonnell (1989) suggests that three purposes seem most probable: (a) to provide a broad overview of the status of the education system, (b) to serve as an accountability mechanism, and (c) to improve local practice. However, both McDonnell (1989) and Kagan and Cooley (1989) argue that using indicators for accountability is inappropriate because few systems provide enough information to do so and because there is still too much to learn about the linkages among the indicators in order to make accurate conclusions about cause and effect for use in an accountability context. Indicator systems also provide data about the system at levels too far removed from the classroom to be appropriate for improving local practice. These analysts argue that indicator systems are best used to provide broad overviews of the status of the education system, and further, that this function is of greatest interest to policymakers.

The integrity of an education system is highly dependent on the quality of the data in it.

Even for this purpose, however, the indicator system needs to have the highest quality data that can be collected at a reasonable cost. There needs to be analysis among the various components in the system, including education policies themselves, in order to make informed recommendations to the policy community. At the analytic stage, more-

over, managers of indicator systems potentially run into political pressures from a variety of external policy-making arenas to skew or bias the analysis. One major challenge, then, for educational indicator systems is to ensure the independence and neutrality of the technical interpretation and analysis of the indicators. Although the policy-making community may give political meanings to the data and their interpretations (McDonnell, 1989), such as has happened with the U.S. wall chart, the data and their analytic meanings must be separated and protected from this politicization.

Guthrie (1989) identifies several cross-cutting pressures on the important activities that might be undertaken to make sense of data in educational indicator systems. These pressures derive, in part, from the global movements to reform elementary and secondary schools as countries seek to improve their education systems as strategic mechanisms for engaging in international economic competition. Guthrie argues that these movements put education evaluation, what I am calling making sense of information in an education indicator system, under a series of strong new pressures.

He identifies nine pressure areas. First, requests for educational indicator reports will derive from a wide spectrum of popular audiences, in addition to the traditional educational/statistician audiences. Second, data and their analysis will need to be made understandable primarily to generalists (policymakers) and lay persons, not to the technical community. Both of these pressures require analysts to translate technical findings into clear, understandable and unequivocal language. Third, to ensure policy relevance, data analysts will need to interact on an ongoing basis with top level policymakers—governors, presidents, prime ministers, secretaries of education—as data are collected and analyzed. These are skills rarely possessed by technical experts. Fourth, education agencies involved in collecting and analyzing educational data likely will begin to interact more with broader governmental planning agencies because education is a prime mechanism for enhancing economic competitiveness. At the least, this will require a new set of interactions not common today. Fifth, top policymakers may be skeptical of analyses made by educators (who have a self-interest in

education) and may rely more on outside analytic experts. Sixth, there likely will be competing and adversarial analytic findings. Neutral parties might be needed to sort out the differences. Seventh, data analysis and policy recommendation may be initiated by a variety of interest groups, thus producing analytic reports that are politically rather than substantially motivated and supported. Eighth, there will be greater reliance upon eclectic analytic techniques. Making systemic sense of data in an indicator system is unlikely to occur by using pre- and posttest analytic research design formats; the more effective efforts to analyze indicator data will use a combination of quantitative and qualitative techniques and gather data from the "natural laboratory" of the schooling setting. Ninth, there will be student outcome comparisons among local school districts and among states and among countries; comparative data is a reality of the future.

Alternative Strategies for Making Sense of Educational Indicators

Given these cross-cutting pressures, many of which are likely to taint analytic and sense-making conclusions, the critical issue that emerges is how to maintain the integrity, quality, and neutrality of the analysis that needs to accompany education indicator systems, as these are critical ingredients of education indicator reports. Put differently, who can provide high quality, substantively sound and neutral analysis of the relationships among the input, process, and outcome variables in an education indicator system, set those analyses within a policy context, and make recommendations on future policy directions? There is no simple answer to this question.

What is needed, Guthrie (1989) suggests, is an organization or entity that is apolitical, independent of advocacy groups, institutionally credible, knowledgeable of both education and government, methodologically competent, and able to synthesize and broker information among technical specialists, professional educators, government generalists, the media, and the public.

In the United States, Policy Analysis for California Education (PACE) is one organization attempting to fulfill this analytic, policy-relevant function. Based in three major research universities, PACE is provided with an apolitical

base, independence from advocacy groups, and institutional credibility. The university base gives PACE the protections needed to maintain neutrality and objectivity. The organization is funded with private foundation rather than government money, so the funding source also helps maintain PACE's independence. The PACE model has now been adopted, in various forms, in about 20 other states.

An alternative structure is an "independent analysis" unit either within an educational department or separate from an educational department, with a governing board of the key policy actors—policymakers from all political parties and representing all critical branches of the decision-making structure, the business community, educators, parents, and the public. A substantial degree of independence is needed in order for the unit to be seen as a pawn of neither the state department of education, the legislature, the governor's office, nor any other official agency which may have one or other self-interests in the issues. Funding for this type of unit usually derives from public sources and this type of structure helps to ensure independence and neutrality. Wohlstetter (1989) outlines a wider range of accountability mechanisms that states have created to monitor U.S. state education reforms; such mechanisms also might function effectively in the role of making sense of education indicators.

Yet the challenge is clear. The missing ingredient in most education indicator systems is analysis of the data that are included in them. Analysis is critical; it makes sense of the data, explores relations among the inputs, processes, and outputs of the education system, and makes policy recommendations for change. This analysis must be protected: it needs to be policy-relevant, it needs to be substantively sound, and it needs to be able to call the shots as the data and analytic findings suggests. To accomplish this purpose, it needs a strong measure of independence from the cross-currents of political pressures. A university base and experience in working in both university and government contexts provides this protected base in the United States, as does an independent analysis unit created by government. Other structures may also be possible. In the long term, neutral objective analyses of the indicators in an educational indicator system are impor-

tant for giving meaning to the data and for suggesting policy alternatives to political leaders.

References

- Baker, C. O. (Ed.). (1989). *The condition of education* (Vol. 1). Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement.
- State education indicators 1988* (1988). Washington, DC: Council of Chief State School Officers.
- Guthrie, J. W., Hayward, G. C., Kirst, M. W., & Odden, A. R. (1988). *Conditions of education in California 1988*. Berkeley: University of California, Policy Analysis for California Education.
- Guthrie, J. W. (1989, September) *The evolving political economy of education and the implication for educational evaluation*. Paper presented to the British Education Management and Administration Society, Leicester University.
- Kagan, S. S. & Coley, R. (1989). *State education indicators: Measured strides and missing steps*. New Brunswick, NJ: Rutgers University, The Center for Policy Research in Education.
- McDonnell, L. (1989). The policy context. In R. J. Shavelson, L. M. McDonnell, & J. Oakes (Eds.), *Indicators for monitoring mathematics and science education* (pp.241-267). Santa Monica, CA: The Rand Corporation.
- National Commission on Excellence in Education. (1983). *A nation at risk*. Washington, DC: U.S. Department of Education.
- Oakes, J. (1986). *Educational indicators: A guide for policymakers*, New Brunswick, NJ: Rutgers University, Center for Policy Research in Education.
- Shavelson, R. J., McDonnell, L. M., & Oakes, J. (Eds.) (1989). *Indicators for monitoring mathematics and science education*. Santa Monica, CA: The Rand Corporation.
- Smith, M. (1988). Educational indicators. *Phi Delta Kappan*, 69(7), 487-491.
- U.S. Department of Education. (1988). *Creating responsible and responsive accountability systems*. Washington, DC: Office of Educational Research and Improvement.
- Wohlstetter, P. (1989). *Accountability and state education reforms: Some emerging alternatives*. Los Angeles: University of Southern California.

OVERSEAS MEMBERS

If you wish to receive, via air mail, a copy of the registration materials for the 1991 Annual Meeting in Chicago, please send a self-addressed envelope to the attention of the Membership Secretary, AERA Central Office, 1230 17th St., NW, Washington, DC 20036-3078.