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ABSTRACT

When gathering and presenting educational statistics, five principles should be considered. (1) The data must be accurate, valid, and complete. Limitations, weaknesses, margins of error, and levels of confidence should be clearly stated. (2) The data must include comparable information, sought in comparable ways, in comparable forms, from comparable sources. (3) Data that do not have immediate utility should be collected such that they may be useful at a later time. (4) Historical statistics should be collected in order to provide the context for interpreting long-term change, the significance of change, and solutions to problems. (5) Data collection procedures should be simple and methods of reporting should be easy to use. The comparability of data concerning educational quality must be improved. The United States Department of Education and the Council of Chief State School Officers should cooperate with state officials to standardize data collection and presentation. Further research is needed in the areas of teachers' qualifications, student dropouts, art and music instruction, and programs to publish research results. (GDC)

REVISING EDUCATIONAL STATISTICS

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It is easy enough, as many have shown, to find serious deficiencies in the gathering and presentation of educational statistics. Yet in reflecting on flaws in existing data and on the consequences of their weakness, we often lose sight of the general principles that should guide any improvements and revisions of them. As a prelude to some specific concerns and at the risk of reviewing some hackneyed themes, I should like to consider these principles, of which in my view there are five.

The first is that of accuracy. The raw data used to construct statistical series must be valid and complete; their weaknesses and limitations must be specified; and probable margins of error and levels of confidence must be stated. Only in this way can faith in the strength of the statistics be raised, their utility increased, and ill-conceived employment of them -- for ideological, propaganda, and other ends -- be curbed.

Second to accuracy in order but not in importance is the principle of comparability. Accurate data to not assure their utility unless comparable information has been sought in comparable ways in comparable forms from comparable sources. The failure to create comparable information subverts all efforts accurately to assess differences and changes in educational circumstances between places and over time and thereby weakens or nullifies policies built upon them.

The third principle is that of potential utility. Educational data should be collected even in the absence of contemporary or immediate needs in policy-making, and they

should be collected in such form that they can be re-formulated for changing uses. Failure to collect data that may seem superfluous for immediate presentation can reduce the effectiveness of future policies by inhibiting their substantiation and the evaluation of their historical significance.

Related to potential utility is a fourth principle, that of history. Too often ignored but essential to the evaluation of the meaning of any changes over time, historical statistics provide the context for the interpretation of long-term change. Without historical statistics, all claims about trends, the significance of data, and the solutions to problems are suspect.

Fifth and final is the modest, but essential, principle of ease. If responses to requests for data become burdensome, or if data, once collected, cannot be easily used or assessed, statistics decline in appeal. Therefore, data reporting must be made simple for those from whom it is solicited, and data samples should be collected in place of statistics on a complete universe whenever possible. Relatedly, data that lend themselves readily to scholarly analysis -- even to such basic and simple uses as correlations -- should be collected so that the function of NCES can remain primarily that of data collection rather than analysis, which should be carried out by others. Furthermore, data should be presented in such a way that local reporting units, be they individual schools or entire school districts, can assess their relative positions in comparison with averages for similar reporting units.

Taken together, these principles, if applied, will help ensure the integrity and applicability of the statistical information upon which we must in part base all general educational policies. Yet they will not at all times be of equal moment. Occasionally, circumstances may require emphasis upon a single one in order to increase confidence in the strength of all data. In my view, now is such a time. What requires immediate attention, in order to secure the utility of what information, however accurate, we now have, is the comparability of educational data. And the Department of Education must take the lead in this effort.

For many reasons, the American public now seeks to be assured of improvements in education at all levels, especially in the primary and secondary schools. And, characteristically,

it wants information that compares present conditions with those of the recent past and conditions in one jurisdiction with those in others. Yet the plain fact of the matter is that the data available to provide such comparisons are embarrassingly weak. The public is being misled by their use. And policies based upon them may therefore be without foundation or desired effect. For these reasons, even before attempts are made to improve the collection of accurate raw data, the data that are solicited must be collected in ways that allow accurate comparisons of educational conditions among jurisdictions and across time. This is not to say that the search for improved accuracy should not proceed. Rather, the public as well as policy-makers must be assured that, even in the absence of reliable data, the nature, direction, and extent of change in American education is accurately represented by the data that we do have. That cannot be done now.

Moreover, the data that are gathered and published must be consistent over time. Too often, the existing data series are presented differently, due both to altered data-gathering methods and changed survey questions, from one year to the next. This renders virtually nugatory all attempts to evaluate changes in educational conditions.

How should the endeavor to improve the comparability of data be undertaken? Despite the sensitivity, as misplaced as it often is, toward the centralization of educational policy, the attempt to collect comparable data should be led by a national agency or organization, if not by the Department of Education then under the auspices of the Council of Chief State School Officers. In any case, both must act in concert with state officials to standardize data collection and presentation.

One problem facing the Department and NCES is the use of proxies for collecting data, as a result of which the government's need for information depends upon the needs of other organizations and agencies and often falls victim to them. This is most visible in data from sample surveys, often undertaken at a third remove -- that is, at the behest of clients of reporting organizations. If adequate and consistent proxy surveys and data cannot be secured, then the Department must try to secure them directly or by contract.

Additions to, and changes in, existing data series will not be of much use in my estimation without speedy attention

to these general and encompassing obstacles that now stand in the way of sound data collection. Nevertheless, some more specific matters also require tending to if the Department's data series are to be made more useful. Omissions in the data, especially those concerning the quality of primary and secondary schooling, must be filled. Although all efforts to measure the quality of education must end in approximations, they must nonetheless be made and the glaring lacunae in existing data closed.

For instance, despite the intensive debate regarding the preparation and qualifications of school teachers, we have no adequate current or long-term information to that effect. Data series, by state, about teachers' levels of education (bachelor, master, and doctoral degrees and credit hours beyond certification), permanent and temporary certification, the ratio of those teaching with and without certification in their field of instruction, the percentage of those who have switched teaching fields, the percentage of those teaching subjects in which they were not initially trained, student-teacher ratios by fields, the results of newly-instituted competency tests, and similar matters should be maintained and presented historically. Similarly, we should have measures of scores on the College Board and other advanced placement and achievement tests, broken out by states and public and private schools. Efforts to measure changes in college entrance requirements should be endeavored too, as well as changes in the relative proportion of advanced and AP courses and general courses and in the number and proportion of students taking each.

In many cases, data are unwisely aggregated or aggregated in forms that reduce their usefulness. Despite jurisdictional realities, a better unit for comparison of much data is probably the standard metropolitan area rather than the state, at least for urban schools. Analogously, data regarding public and private schools should be distinguished. Much of the data fail to reflect the dual system of American education at all levels; and even those few efforts to distinguish between different kinds of private and religious schools are not carried out consistently in the series now published.

Discontinuities in students' school experiences are not adequately assessed either. Measures of dropping out, notoriously weak as they may be, fail to distinguish

between chosen interruptions in schooling ("stopping out") and involuntary interruptions (such as moving from one school to another). These data could be collected via sample surveys and with the assistance of the Bureau of the Census. In fact, one measure of the stability of schools might be a simple ratio of new to returning students per jurisdiction.

Of the curricular information that should be added to existing data series, that concerning the state of art and music should have high priority. The omission of these subjects from consideration by authors of the recent flood of national reports on schooling was egregious. By contrast, already collected data on so-called remedial courses are probably the weakest that are published, given the wide differences in definitions of remediation by school districts and individual, especially private, schools. Such data could be omitted.

Finally, some attention should be given to publishing revised data as better information is collected or errors in previously published data are discovered -- as, for example, the Treasury Department routinely does with its periodic economic statistics. For example, it is exceedingly unlikely that the percentage of 18-19 year olds graduating from high school rose by 5.4 per cent between 1975 and 1976 and then dropped 3.3 per cent the next year. Chances are that the data for 1976 are suspect. Such evident abnormalities should be carefully checked; and if the data are found to be erroneous, they should be revised in all subsequent publications.

In all of these modest ways, and in others that will be proposed, the foundations of knowledge about American education will be greatly strengthened.