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ABSTRACT

The National Center for Education Statistics (NCES) could provide better information for policy makers by (1) analyzing likely uses of the information it collects and disseminates; (2) launching more detailed investigations of educational inputs and processes; (3) taking some steps to place findings on educational outcomes in context; and (4) continuing to attack the problem of quality control. To study the needs of information users, NCES could classify the concerns expressed by various constituencies, analyze the published indicators of educational quality, and draw analogies to statistical indicators in other fields such as economics. To more fully describe educational inputs and processes, two types of data are important: the simplest demographic statistics, as well as detailed data on the use of educational resources. To measure and report educational outcomes, the tests used should be described, outcomes such as dropout rate and the number of general equivalency degrees earned should be reported, and higher-order cognitive skills should be emphasized. To maintain quality control, NCES should provide quality data from its national surveys, and take a firm stand on the quality and consistency of data received from state education agencies. (GDC)

COMMENTS ON AN ELEMENTARY AND SECONDARY EDUCATION DATA PROGRAM

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The National Center for Education Statistics deserves credit for undertaking a fundamental redesign of its data program in elementary and secondary education. In this paper, I suggest that NCES use this opportunity to (1) analyze likely uses of the information it collects and disseminates, (2) launch more detailed investigations of educational inputs and processes, (3) take some steps to place findings on educational outcomes in context, and (4) continue to attack the problem of quality control.

First, a word about my vantage point is in order. I am a researcher who collects and analyzes information about state and local implementation of programs for special-needs students and for educational quality. I try to draw from this information the types of conclusions that can help policymakers assess and modify programs. Thus I have a bias toward the information that policy audiences will use. I also like to see detailed information about what goes on in schools, which is not always conveyed by gross measures of the resources put into schools. Finally, because my familiarity with NCES is only that of an occasional user of its data, this paper may recommend some procedures that are already standard practice at the agency. If so, please consider those comments endorsements rather than recommendations.

Addressing the Needs of Information Users

Ideally, the collection of data should be driven by a framework of questions that the data will be used to answer. Working backwards from intended uses through projected analyses to the specification of data elements and methods of collecting them would result in an efficient and practical program. In reality, NCES has to live with uncertainty about the questions that will be posed. However, there are some ways of reducing this uncertainty, in addition to soliciting advice through commissioned papers and hearings. Analysis of information needs could include the following approaches:

- Identifying and classifying the concerns about elementary and secondary education recently expressed by important groups such as Congress, governors, state legislators, and the public.

- Doing a content analysis of recent reports and reform proposals, looking for both the indicators that have

convinced their authors of the poor health of the education enterprise and the types of improvements in process and outcomes that they believe their recommendations could produce.

- Drawing analogies in education to the statistics and indexes that are used in other fields, such as the gross national product, measures of housing starts, and the like.

Classifying the concerns of various constituencies

One guide to the future interests of policymakers and the public is what they have said about education in the recent past, since these groups' concerns remain relatively stable over time. The Gallup poll consistently shows that the public is concerned about discipline in their local schools, for example. The members of Congress for whom the educational opportunities of special-needs pupils have been an important concern are not abandoning their interest in these pupils. Governors and state legislatures will remain concerned that their states offer employers a skilled workforce.

All these concerns can be translated into indicators that are worth collecting on a national scale. Citizens' worries about discipline suggest that it would be useful to have data on the frequency of various types of incidents in schools over time. Because the education of special-needs groups remains an issue in federal policy, data on educational resources, processes, and outcomes should be broken down by type of pupils wherever possible. The skills of entry-level workers, besides being a state concern, deserve some analysis on a national scale.

Even some concerns that are primarily local can provide clues to data that are worth collecting nationally. Local administrators routinely collect and often use data on student attendance, the popularity of particular course offerings, and turnover among teachers and aides. Collecting some sort of data on matters such as these might be feasible and worthwhile on a national scale since these topics reflect legitimate concerns about the workings of school systems.

Analyzing the indicators cited in recent reports

What evidence has recently convinced the public and the media that education in the United States is in sad shape (to the extent that the flurry of enthusiasm for reform has been based on evidence)? An analysis of the indicators in which the authors of the reform reports have found cause for gloom and those in which they urge improvement could provide another source of ideas for data collection. The report authors, along with the press and television, succeeded in making a case to the country. The types

of evidence they used might reasonably be expected to make sense for future information users, too, if collected on a continuing basis.

This does not mean that every fact or impression cited in the rush to condemn and uplift the schools deserves to be formalized as part of the Common Core of Data, naturally. One of NCES's responsibilities should be to place the more sensational findings in context. For example, comparisons of achievement in the United States and other nations ought to be viewed alongside other measures that help to balance and explain them, such as data on the proportions of children in various countries who attend college or reach the age of 18 with the qualifications for college admission. The point is that if international comparisons (and other types of evidence on the health of our schools) have persuasive force for the public, then they ought to be drawn and presented in a way that is as technically defensible as possible.

Drawing analogies to indicators in other fields

Although statistics on education are not going to be watched as closely as those on the economy, some ways of collecting and reporting economic data may provide useful models for NCES. For example, the index of leading economic indicators and data on housing starts both provide clues to the health of the economy, and they are especially useful because they provide current data that tend to predict future developments. A concerted effort by NCES to develop and publicize analogous data could serve the worthwhile purpose of giving observers of the education system something to look at besides test scores.

Data exist on the number and characteristics of college freshmen considering careers in teaching, for example. These data could be publicized as an annual signal about coming changes in the teaching force. It might also be possible to aggregate a number of measures of educational achievement and attainment into an index like the gross national product. Such an index would oversimplify matters, of course, but so do the economic indexes in widespread use.

In summary, measures of educational trends that are intuitively easy to understand, that capture changes in several important dimensions at once, or that tend to predict future changes could meet some information needs of the public and policymakers. If they were released with some fanfare and accompanied by clear explanations, they might also help educate people about what goes into educational quality. Analysis of various groups' concerns about education and the data they have found persuasive in the past can also help guide the development of such measures.

Describing Educational Inputs and Processes More Fully

Alfred North Whitehead said, "Seek simplicity, and distrust it." Large-scale data collection is especially useful when it produces descriptive data, and simple descriptions of such things as the demographic characteristics of students and teachers are very useful for researchers, policymakers, and the public. On the other hand, broadly based surveys aimed at describing what goes on in schools run a serious risk of producing bad information. My experience in schools suggests that resources often go unused or are used in unexpected ways. My recommendations, therefore, are twofold:

- Do not underestimate the value of the simplest demographic statistics.
- In the effort to describe more complex educational resources and processes, probe beneath the surface for detailed data on exactly who does what with what resources.

The value of simple statistics

NCES publications already contain the types of simple, factual data that are indispensable in compiling a portrait of the education system. Data on the characteristics of students, teachers, schools, and school systems provide a sense of trends in education and important background variables for analysis of developments at the national and state levels. Time-series data represent a unique resource for research and policy analysis, and the federal government is particularly well qualified, by virtue of its centrality and visibility, to collect such data.

The value of demographic and other descriptive data increases greatly when the data are collected and summarized in a consistent way from year to year. When a measure changes, the trends it is intended to capture can be exaggerated or masked. Therefore, even when there seems to be good reason to tinker with a question or an index, the potential improvement should be carefully weighed against the loss of comparability. Stability in measures should win out in most cases.

The urge to improve on existing data can find a useful outlet in extending data collection to new areas. Early-childhood education and other child-care settings are an example of such an area, where new developments are occurring (and policymakers may eventually see a need to catch up).

Finally, when descriptive data have been collected, they should be published as rapidly as possible. Because delays in publication reduce the usefulness of data, the Department of

Education should expedite whatever steps are needed for clearance and quality control.

Measuring resource use and program characteristics

Over the past fifteen years or so, evaluations and other studies of educational programs have grown far more sophisticated because of the recognition that a program may exist on paper and yet make limited or unpredictable differences in classroom practice. This problem of implementation deserves analysis as it applies to the work of NCES. Although I argued above for some oversimplified indicators that will meet the public's information preferences, I also believe that sometimes a simple measure of educational resources is worse than no measure. Some statistics give a misleading picture of what goes on in schools, and for selected issues the extra care and expense of gathering accurate, detailed information will be worthwhile.

A topic that has received recent attention is that of microcomputer purchases and use in schools. Local news features often report how many schools "have computers" or describe parents' fund-raising efforts to buy one or two microcomputers for a school. The administrators seem to have correctly judged that they would receive as much public credit for buying one machine as fifty. NCES should not fall into this trap, however. The 1984 edition of The Condition of Education usefully reports on how students use microcomputers and how many minutes the average student user spends with them each week. With the addition of some numbers indicating how many students are users, this would be a good summary of the key information about microcomputer use. It might be even more useful if it were supplemented with some data--even anecdotal data--illustrating the types of use summarized. What is covered in courses in computer literacy, for example?

Innovative technology is not the only area in which the details of resource use deserve scrutiny. The number of teachers reportedly present in a district or school may not translate directly into measures of class size or even of the actual teaching force. Not only do some teachers move around the building teaching lessons in music or art, but some of them never instruct students. They are resource teachers, assistant principals (in name or in fact), or managers of categorical programs. I met several of these nonteaching teachers when I did fieldwork on Title I of the Elementary and Secondary Education Act. In setting up the interviews, I had asked to see Title I teachers; several principals arranged for me to meet with people who held teaching certificates and were counted on the building roster as teachers but never worked with students other than to test them.

In addition to gathering more detailed data about the use of particular resources in schools, NCES might probe more deeply into descriptions of curriculum. At the secondary level, we need not only surveys of the courses that students take but also some data (probably from teachers) on the topics that the courses cover, the relative emphasis given to these topics, and the texts used. Elementary teachers can furnish similar information on the content they try to cover and the texts they use. Because such data can be especially useful in conjunction with measures of student achievement, the National Assessment of Educational Progress (NAEP) is one logical vehicle for collecting them.

At a further level of detail, data on instructional processes would be useful if some reasonable level of accuracy is possible. Again, teacher surveys could indicate how time is used during the school day or the class period, how many interruptions occur and what these interruptions are, what is taught in small groups and in whole-class instruction, what disciplinary incidents occur during a typical day, and so on. Naturally, better questions will produce better data, and teachers should take a major role in helping to refine any such surveys.

The analysis and presentation of detailed data on school programs must differ in some ways from the analysis and presentation of the demographic and fiscal data that NCES has most commonly collected. Nationwide aggregates and averages may not mean very much. For example, the data in Indicators of Education Status and Trends on the presence of remedial courses in college undoubtedly obscure massive differences in the level of remediation needed in colleges with different levels of selectivity. Because of the extent of variation in such courses, there can be legitimate debate about whether the nationwide enrollment figures mean anything.

Reports on course content and instructional processes should contain information about the amount of variation found as well as the central tendencies. Breakdowns by type of district (large city, small city, suburban, rural) and, if possible, by state would also be interesting. Finally, data on the educational experiences of particular student groups (for example, girls, boys, students with handicaps, students attending high-poverty schools, low achievers, and those whose native language is not English) could inform the assessment and formulation of federal policy for these groups.

In summary, I would argue for the collection of detailed data on schools' resource use, curriculum content, and instructional processes. The expense of doing such data collection well means that it must be restricted to only a few topics, but even data on selected details of educational practice would be useful. They would supplement the bread and butter of data collection on the simpler characteristics of students,

teachers, and school systems--which should continue with as much consistency over time as possible.

Measuring and Reporting Outcomes

Undoubtedly, most of the attention that citizens and policymakers give to education statistics will continue to center on students' test scores. Perhaps, though, NCES will be able to make marginal contributions to a more complete picture of the outcomes of education. It can do the following:

- Accompanying reports of test scores with more description of what was tested.
- Giving publicity to outcomes such as attainment.
- Seeking, using, and explaining measures of higher-order skills.

Describing the tests

Reports of students' scores on tests should be closely accompanied by descriptions of what the tests covered. The displays of NAEP results in The Condition of Education indicate the general categories of knowledge tested, but putting somewhat more detail on the pages that contain these summary tables and graphs would be even better. Interested readers should also have ready access to comparisons between the NAEP tests' content and the content of the standardized tests that school systems commonly use.

Ideally, the media and state and local school systems would then follow the federal lead and describe what high and low scores mean. In any case, NCES should do so.

Measuring other outcomes

Education professionals know that test scores do not summarize all the interesting outcomes of schooling. NCES and the rest of the Department of Education should not only continue to measure other outcomes but also emphasize them whenever possible. Good measures of dropout rates--and of the number of people who obtain general equivalency degrees--are examples of such outcome measures. The extent of voting among recent high-school graduates is another interesting statistic to have.

Emphasizing higher-order skills

This recommendation reflects my sense that schools are increasingly teaching to the tests devised by test publishers and state governments, that these tests tend to measure rather simple

skills such as decoding and arithmetic operations, and that at some point there may be a backlash from education professionals or even employers who notice that other outcomes are being neglected. Defining higher-order skills is hard, and measuring them is harder, but the attempt would be worthwhile.

Because I have very little technical knowledge about measurement, my recommendations in this area are fairly general. However, as a would-be consumer of data on student outcomes, I can advocate that NCES continue and perhaps intensify its efforts to place test scores in context.

Quality Control

Because all statistics imperfectly represent reality, an agency that collects and disseminates statistics can never do too much to identify their weaknesses, correct the weaknesses it can correct, and explain the ones it cannot. NCES has a further challenge stemming from its reliance on diverse state education agencies (SEAs) to collect and report standard data. Quality control takes different forms for the collection of data from national samples and the aggregation of state-collected data:

- Surveys of national samples will provide the highest-quality data on topics where terms have varying definitions, such as "dropouts," and their quality can be improved if studies of response bias are built in.

- NCES should not hesitate to take a strong stand with SEAs on quality and consistency in the data they provide to the federal level.

Surveys of national samples

National surveys like High School and Beyond perform a unique service to research and policymaking in education. Although expensive, they provide relatively trustworthy data on detailed topics and permit the analysis of a variety of educational issues at the level of the student, the school, or the community. Where inconsistencies arise in state-level data because states define terms in different ways, national surveys using standard definitions can help resolve the resulting questions.

National studies present issues of response bias that are manageable. For example, we know that students tend to have erroneous ideas of their parents' income levels and that household surveys provide better data on this topic. More could be done to identify other sources of faulty data in national surveys so that alternative means of data collection (such as

different respondents or differently worded questions) can be tried.

Aggregation of state data

Some reliance on SEAs to provide data to NCES is sensible and even unavoidable, given the relative amounts of resources available for data collection in education at the state and federal levels. However, the problems resulting from poor quality control in states or inconsistencies across states are not entirely unavoidable. NCES should be willing to take a firm stand on quality control.

The overall objective should be for SEAs to recognize that they are participating in a process that is centrally controlled in order to meet national information needs in a technically defensible way. For example, NCES should check the data received from SEAs against last year's data, look for internal consistency in each state's data, and examine how terms are defined across states. Any questions or problems should be raised with the state, and all states should recognize that they may have to revise their initial submissions. Other quality-control steps will probably be necessary as well.

In this federal system, Washington defers to state authority on many issues. Oddities of data collection and analysis should not be among them, however. I believe that, although the states rightly guard their prerogative to collect their own data in their own ways, they are probably more willing than NCES thinks to go along with a national data program that maintains high standards of professional quality. State officials may grumble about the imposition of tighter central standards, but some friction is inevitable in any intergovernmental endeavor, including the present system of more loosely controlled reporting.

The Council of Chief State School Officers can be a major ally in a nationwide effort to correct the flaws in current data aggregation. Other state-based organizations, such as the National Governors' Association, the National Conference of State Legislatures, and the National Association of State Boards of Education, might also play a role, since their members also have a stake in good national data on education. The current process of generating papers, summarizing their recommendations, and holding hearings can lay the groundwork for specifying action steps that SEAs could take. If SEAs and others are not already engaged in developing such steps, they should begin soon.

In summary, although NCES lacks the political or legal power to compel states to do much about their collection and analysis of data, it can probably muster the professional authority to improve the data it collects from states. Together with the

further refinement of national surveys, this stance on quality control should go far towards correcting the weaknesses currently visible in national education statistics.

Conclusion: Setting Priorities

Internal deliberations at NCES as well as this process of public comment will undoubtedly generate many good ideas. Deciding where to concentrate the agency's efforts will be the next problem. Although NCES staff will soon immerse themselves in numerous detailed design issues, a focus on a few overriding principles will be in order. I would suggest that the highest priority be placed on strengthening the credibility of the data through such means as quality control and consistency in data series. Next in importance would be the principle of addressing information users' concerns about the education system, as best these can be inferred in advance. To the extent possible, NCES might then expand its data collection in areas such as the detailed description of instructional resources and processes. Whatever principles are chosen as the key ones, the important thing is to concentrate on a manageable set of priorities in this ambitious redesign effort.