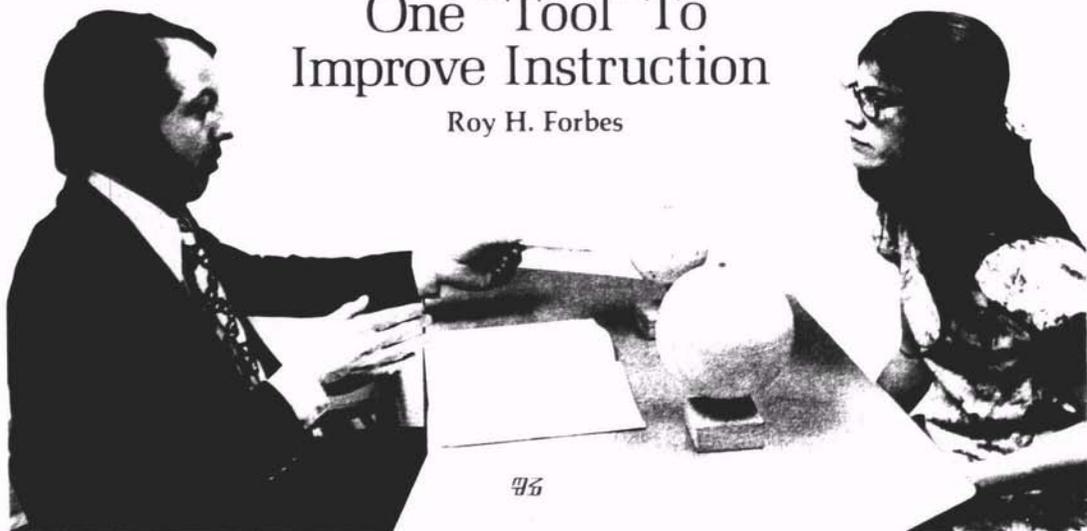


NAEP: One "Tool" To Improve Instruction

Roy H. Forbes



Science assessment, 17-year-olds. Photo: NAEP.

The Director of the National Assessment of Educational Progress describes how Nebraska, Connecticut, Maine, and other states are using the methods and materials of NAEP as a tool to improve their educational systems.

The first meetings to discuss the nationwide education evaluation plan that became the National Assessment of Educational Progress (NAEP) were called in 1963. Since then the average yearly per-pupil expenditure in American public elementary and secondary schools has nearly tripled, rising from approximately \$430 in 1963 to almost \$1,300 in 1975. During the same period, federal, state, and local governments' contribution to the support of education has increased threefold—from \$15.6 billion to \$53.2 billion.

These staggering numbers suggest how critically important it is to gather national-level data about educational achievement and to monitor changes in achievement over the years. Since 1969, National Assessment has been the only national organization to undertake this dual responsibility. The information it has gathered thus far offers to all who are interested in edu-

cation an unprecedented opportunity to examine achievement in many areas, to spot changes in levels of achievement over the years, and to apply the implications of those changes to national education policy.

Although National Assessment was designed to be a long-term project whose major impact would come only after it had reassessed several learning areas, it has already proven useful to many different audiences:

- Its data are integral to the yearly reports on the condition of education that are mandated by federal law;
- Thirty-six states have drawn upon the assessment materials or methodology for the establishment of their own education assessment programs;
- Assessment data have been used to document education inequities and to secure money for their remediation;
- Professional educators have interpreted the results and discussed their implications for curricula, textbooks, and classroom instruction;
- Countless districts, schools, and individuals have used National Assessment objectives as

starting points for the creation of personal or local teaching objectives.

This is an impressive beginning for a vital program whose most promising years still lie ahead.

NAEP: Past and Future

When the U.S. Office of Education was founded in 1867, one charge set before its commissioner was to determine the nation's progress in education. That century-old charge is only recently being answered in a systematic way—by NAEP.

During the first seven years of its endeavors, National Assessment interviewed or assessed more than 550,000 young Americans. These individuals were selected in a representative manner so that, by projecting the levels of achievement to the entire student population, a statistical picture of achievement of the nation's youths began to emerge.

Participants were selected from four age levels—9, 13, 17, and 26 through 35—which correspond with four key stages in the education of most individuals: the end of primary school, junior high school, high school, and a few years past the end of formal, post-secondary schooling. To provide additional demographic information, the assessment respondents were also classified according to region of the country, sex, race, level of parental education, and size and type of community.

Findings from the many NAEP assessments are delineating a portrait of our nation's education—both its strengths and its weaknesses. With data such as that provided by National Assessment, it is hoped that scholars, educators, legislators, teachers, parents, and the public can make more informed decisions about issues that affect the future of American education.

But, education assessment is only one instrument to be used in evaluating scholastic programs. It is necessary to go beyond the results of any type of test or survey and determine needs, diagnostic problems, and prescribe alternative measures appropriate to each school system.

However, any type of testing instrument does not reveal everything about the quality of the education students are receiving. Information

such as that reported by National Assessment must be viewed in the proper perspective; it is useful for group diagnostic purposes and useful in checking the progress of various groups of students toward achieving certain education goals.

Using the Information

The ultimate success of National Assessment depends upon the actual use of assessment results as guides in education decision making. It is not NAEP's task to improve curriculum, but the project is an invaluable tool to be used in the continuing improvement of our education system.

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Following are some examples of how National Assessment data and techniques have been used to evaluate and improve instructional programs.

Improving Writing and Citizenship in Nebraska

Lincoln (Nebraska) Public School officials are looking to National Assessment for the "tools" to gauge their students' educational achievement in certain learning areas.

About four years ago, Lincoln educators borrowed from NAEP materials and methods to assess their students both in writing skills and in citizenship. The writing exercises and scoring procedures were modified to meet local needs, then used during the 1974-75 school year for an 11-school pilot study of writing abilities.

That pilot program was so successful that a systemwide writing assessment of 4th, 7th, and 10th grade youth was set up to begin last spring. Out of the new study will come revised curriculum materials and teacher-training techniques to improve the writing skills of Lincoln pupils.

Educators took NAEP objectives, which they felt were representative of the current views of scholars of social studies and citizenship programs, and developed two major teaching goals



Photo: NAEP.

for those areas: (a) the goal of basic education (that is, the things that all students should have the opportunity to achieve), and (b) the goal of developing individual talents and interests.

The link between the Lincoln assessments and NAEP continues to grow stronger as Nebraska undertakes a study of social studies and citizenship program planning.

Using Televised Instruction in Maine

Another example of assessments based upon NAEP models and materials is found in Maine. In its fifth year of operation, the Maine Assessment of Educational Progress is concentrating on increased use of assessment information by Maine educators.

Using data from state reading and science assessments, the Maine Public Broadcasting Network obtained federal funds to produce a Franco-American television series. The prime objective of the series is to improve the educational achievement of the state's large French American popu-

lation. Assessment data established the need for an educational program aimed at improving the self-concept and educational incentive of French American youth in Maine and other New England states.

The program is geared to preschool and kindergarten-through-second-grade audiences, since these are formative years during which behavior can be modified significantly. Television was selected as the most appealing, effective, and economical means of reaching the intended audience and of overcoming geographical barriers.

Results of the mathematics assessment of 13- and 17-year-olds were released last fall, with interpretation of the results expected this winter. The state is beginning to interpret results from the most recent assessment of career and occupational development. Citizenship and writing have also been assessed in recent years.

An interpretation committee is established for each study. Composed of local school personnel, the group reviews assessment results, formulates findings, and makes recommendations that are published in booklet form. The booklets are then used by schools for in-service training and to check their students' achievements against the achievement of other students across the state.

The state recently established a study committee to review the results of the first four years of assessments in writing, citizenship, reading, and science and to make recommendations to the state on determining areas of need. Where it can, the committee will make specific recommendations.

The study committee includes educators, state legislators, subject-matter specialists from the local level, members of the state board of education, and citizens. The preliminary report is expected this winter.

Assessing Science Education in Connecticut

In Connecticut, science teachers are taking a critical look at their students' achievements and attitudes following a statewide assessment in science made during the 1974-75 school year.

The study is an adaptation of National Assessment in its basic goals, design, and instrumentation. By comparing survey results with both regional and national findings of National



Art assessment, 13-year-olds. Photo: NAEP.

Assessment, state educators hope to determine the status of science education in Connecticut, pinpoint problem areas, then seek ways to strengthen those weaknesses.

The state's science teachers have formed small research groups to analyze data that deal specifically with each of the three age levels (9-, 13-, and 17-year-olds). The teachers' initial perspectives and suggestions for curricula improvements were included with the full statewide science assessment report presented recently at a general meeting of Connecticut science teachers.

Mark R. Shedd, Connecticut's Commissioner of Education, pointed out that results of the state science assessment "can be used by Connecticut citizens and educators in making decisions about Connecticut science curricula instruction and teacher education."

The Connecticut science assessment represents another major step in the state's continuing

effort to plan and evaluate its education system. Five years ago the Connecticut General Assembly passed legislation requiring the state board of education to measure "the adequacy and efficiency" of the state education programs.

The first statewide assessment was made in 1972. It was in reading—and it, too, drew from National Assessment. The study showed deficiencies in the reading skills of youths from Connecticut's largest cities, while students from small communities were found to be performing consistently above national achievement levels. State educators zeroed in on the problem and moved to improve reading programs in their state's five largest cities.

The state's initial assessment in mathematics is already in high gear. Borrowing heavily from National Assessment methods and items, the survey is providing statewide data for comparison with NAEP's three school-age levels.

Local districts have the option of "piggybacking" (that is, administering their own assessment at the same time as the state's). The state is assuming the costs of assessment booklets and training of administrators; the districts pay only for analysis of their own data.

Other Innovative Programs

Many other states, school districts, and individuals have used NAEP materials to help improve the quality of education.

- Faced with a problem many school districts would like to have—that of students' doing very well on standardized tests—the Cheyenne Mountain Schools in Colorado Springs, Colorado, gave a new twist to assessment by surveying 9-year-olds from parallel socioeconomic backgrounds. But also faced with a problem common to many districts—that of limited resources for research and evaluation—this district sought to conduct a high-quality assessment without great expenditure.

By reproducing its own booklets and paced audio-tapes, and using volunteer mothers to score the booklets, the district was able to conduct its assessment for less than \$200 in out-of-pocket expenditures.

The results of the assessment allowed the district to identify strengths and weaknesses in its mathematics program and to alter curriculum emphases accordingly. The use of mothers as scorers had the added benefit of creating public interest and support for the program.

- Louisiana's assessment program, already several years old, is closely modeled after National Assessment. The state has made assessments in four learning areas: reading, mathematics, career

and occupational development, and social studies. Last winter, the Louisiana Department of Education released findings from the state's mathematics assessment.

As a result of the survey, the Louisiana Mathematics Assessment Advisory Council has prepared a list of recommendations to strengthen math instruction throughout the state.

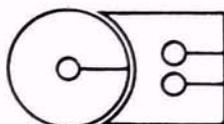
Recommended changes include heavier emphasis on elementary mathematical skills, such as working with fractions, carrying and borrowing, and recognizing the properties of zero. Suggestions also urged are: (a) teaching of the metric system, (b) establishing minimum competencies to be achieved by the end of the eighth grade, and (c) requiring more college hours of mathematics in order to strengthen the certification requirements of elementary and junior high teachers.

- A National Assessment pilot project that allows classroom comparison of a 9-year-old's reading skills with those of other 9-year-olds across the country has been praised by participating teachers and administrators.

CHECKIT's are compact black-and-white checkerboard boxes filled with exercises and pertinent data from the first NAEP assessment of reading. The kits contain: (a) released exercises and national results from the 1970-71 reading survey as these related to the 9-year-old age level, (b) instructions for teachers on how to adapt the materials to their own needs, and (c) general information about National Assessment and an evaluation questionnaire.

Reactions to the CHECKIT as a classroom appraisal and instruction aid have been positive. Many educators evaluating the pilot kit have expressed hope that the idea can be expanded to

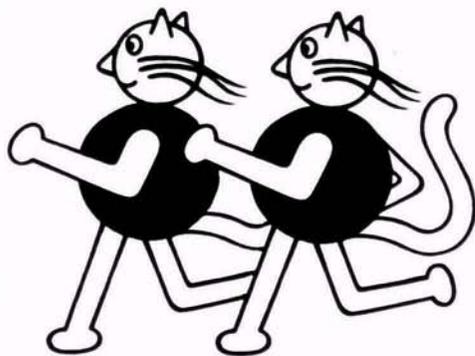
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include other age levels and learning areas studied by National Assessment.

- The National Council of Teachers of Mathematics (NCTM) sponsored a task force that spent several months studying National Assessment data on the mathematics achievement of 9-, 13-, and 17-year-olds and young adults. Results of the study of the two younger groups were published in *The Arithmetic Teacher*. A similar report on 13- and 17-year-olds was published in *The Mathematics Teacher*.

The articles discussed selected results from the NAEP mathematics assessment and implications for curriculum and teaching.

- Researchers at the University of Colorado in Boulder have analyzed NAEP writing results and created a classroom diagnostic procedure that takes only 10-15 minutes to administer. The researchers are also creating a remedial package for use following diagnosis.

- The Association for Measurement, Evaluation, and Guidance is examining National

Assessment data on career and occupational development. Several articles, written for use by classroom teachers and to stimulate curriculum change, are being prepared for publication in vocational education journals by June 1977.

- Among the enterprising researchers who are adapting National Assessment data for classroom benefit is Alan Brenner of Wooster, Ohio. He has developed a program to help teachers to identify students who need remedial help in writing. Teachers obtain their own students' writing samples, score them by using NAEP's national results as guidelines, then determine whether or not their students need special attention in writing skills.

Only the Beginning

The examples given here are intended to illustrate the innumerable areas in which National Assessment results may prove to have considerable utility. Searching for what assessment data will tell us and determining what we should do about the findings are only beginning. NAEP is making significant contributions; but data alone cannot improve the quality of education. That depends on the data being *used* thoughtfully by education decision makers.

The role of National Assessment should not be limited to information production only, nor should the NAEP staff prescribe remedies for the ailments of American education. The NAEP program could be a catalyst—its staff members seeing that interpretation and implementation do take place, but not performing these services themselves. Never before has American education had within its grasp a tool with so much good potential: a tool of information. Learning how to use it, and then doing so, are among the great challenges of the 1970's. [E]



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