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RAND WORK IN ELEMENTARY & SECONDARY EDUCATION: A REPRESENTATIVE SELECTION

STEPHEN J. CARROLL, GEORGE R. HALL, JOHN PINCUS, DANIEL WEILER

R-1052 JUNE 1972
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Rand
Preface

Rand has been working on problems of education on a substantial scale since 1969. This report summarizes the nature and aims of one aspect of that work—studies of elementary and secondary education—and also describes in some detail three representative Rand analyses in this field.

Educational vouchers and performance contracting are two innovative approaches to educational reform. Rand is playing a major role in evaluating how well they will be able to improve educational effectiveness and enhance parents' and children's satisfaction with their schools.

The attempt to introduce new methods in the schools has been associated with re-evaluation, in many quarters, of what the schools are accomplishing now. A Rand study for the President's Commission on School Finance has assayed what we know about educational effectiveness and pointed out possible directions for public policy.

In the three studies described here, as in its other work, Rand brings certain points of view and an interdisciplinary approach to public policy questions. These viewpoints and methods are also described in the following pages. This report describes only a part of current Rand work in education and human resources.1

The program as of May 1972 included some 15 projects, involving the research efforts of about 40 staff members, full or part time.

This report attempts to give the flavor of our work on the public schools. It may therefore be of interest to federal, state, and local officials; educational researchers; and educational professional organizations.

1 For a more complete description, see John Pincus, Policy Studies at Rand: Education and Human Resources, P-4721, The Rand Corporation, October 1971.
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I. Rand's Approach to Issues in Public Education

John Pincus

Rand's interests in educational research range from the determinants of educational effectiveness through performance contracting and educational vouchers—from a review of the existing state of knowledge to analysis of bold attempts at restructuring the governance of American education. Rand's approach to the conduct of educational research has three distinctive characteristics: a focus on policy-relevant issues, a genuinely interdisciplinary interest, and a deliberate effort to work at federal, state, and local levels.

1. The Policy Focus. A great deal of research is being done in education and in other fields that attempts to cast light on current problems. But very few other institutions work on educational policy problems as seen by the policymakers—a Federal Commissioner of Education, a chief state school officer, members of a school board, a superintendent of schools, a school principal, a school teacher. Each in his own domain, overlapping with those of others, makes policy. Levels of governance vary. The common themes are clear enough: How does present knowledge relate to the issues? How does one judge the merits of alternatives? The policy problems facing public education today include:

- What should be the aims of education for various groups of the population, various regions of the country, and various social and ethnic groups in light of the greatly differing aims and aspirations that might be advanced?
- How can education be made more effective for these diverse groups in terms of these various aims and the inevitable conflicts among them?
- How can the cost of education be kept at levels that are consistent with
both the attainment of aims and the willingness of the public to pay?

- How can education be governed in ways that satisfy the public, the students, the teachers, and the educational establishment?

- How can education be financed in ways that are equitable and promote the efficiency of the education system?

The list could go on indefinitely. These are simply examples.

2. **The Interdisciplinary Approach.** Most educational research is conducted in isolation from other disciplines and therefore from the insights of other disciplines. Rand consciously aims at combining insights from different disciplines, particularly those that previously have not addressed themselves to educational policy, such as economics, statistics, sociology, political science, mathematics, and cost analysis.

We have found that this interaction produces both fresh insights and greater rigor. For example:

- For Los Angeles City Schools, we have recently completed an information system study aimed at promoting accountability and program budgeting. This study, managed by information scientist John Farquhar, utilized half a dozen different disciplines, ranging from computer science through educational psychology, cost analysis, economics, and demography.

- Under the leadership of applied mathematician Roger Levien, our study for planning a new National Institute of Education utilized the insights of over a dozen disciplines ranging from fine arts to mathematics.

- We are currently conducting a study for the Department of Health, Education and Welfare, with operations researcher James Kaskalik as principal investigator, that will aim at a comprehensive analysis of government programs for handicapped youth, with special emphasis on visual and hearing handicaps. This study, which will continue through August 1973, will help HEW plan the various government programs for handicapped youth in light of the existing mix of federal, state, and local services now being provided. Like the other two projects cited above, this one uses the services of many disciplines—economics, political science, operations research, physics, cost analysis—to help create more effective social policies.
3. The Inter-level Approach. The U.S. educational system is highly decentralized. It has 17,500 local school districts operating under the authority of 50 state education codes, with sporadic and frequently important interventions from federal agencies. Furthermore, a large network of trade associations and unions exert influence at all levels of government. Finally, there are complex systems of local influence, including parent-teacher associations, chambers of commerce, ethnic organizations, local industrial interests, taxpayers’ groups, and many more.

Working at all levels is a complicated process, but we feel that it is necessary if we are to understand the system. Some specific cases in point may serve to indicate the range of current Rand activities. During one month, Rand undertook the following activities, among others:

- A group of Rand staff members went to Sacramento and successively briefed the Governor’s Office, the State Department of Education, and a group of legislators on performance contracting in education and its policy implications.

- In Sacramento a week later, at the request of the legislative group, a project leader spent a day discussing the implications of Rand studies for state educational policy.

- At the same time, two Rand analysts were working with San Jose City Schools to develop methods for evaluating a key innovative program in that city.

- A group of Rand staff members briefed the Assistant Commissioner of Education on the progress of our study of the Educational Resources Information Center (ERIC), which is designed to reorganize the operations of that large-scale national educational information dissemination system for greater effectiveness.

- The leader of our L.A. City Schools information system project briefed both the Board of Education and the Superintendent of Schools on the nature and implications of that system. As a result of those briefings, the schools have decided in principle to adopt the new system.

Research in education is very different from other work that has traditionally been conducted at Rand. First of all, in education it is necessary to stay very close to the ground in order to see broad educational policy issues
clearly, in order to see national considerations in terms of how they apply to local communities, and to see how national policies filter down through a complex network to the communities where the students, parents, teachers, and school administrators live and work.

Second, national policy in education is not like national policy in defense or foreign affairs. It is reserved to the states, and in practice to the localities. It is closer to the basic values of home, family, and religion than anything else policy researchers usually work on. It is more resistant to change, perhaps rightfully so. Therefore, in order to help the policymaker, Rand must work with the decisionmaker wherever he is, recognizing the complex world he operates in.

Rand work in elementary and secondary education is aimed at improving the efficiency and effectiveness of the public schools, and at improving the methodology of educational research and development. These themes are appropriately pursued through a number of channels. Therefore, a moderate level of diversification in support of research is desirable.

The three papers that follow illustrate the range of current work. Stephen Carroll’s paper discusses Rand’s review of current knowledge about educational effectiveness, as well as its implications for future research and for educational finance. George Hall’s paper summarizes the Rand/HEW performance contracting study, which systematically examines an innovative relationship between business and government. This relationship was established in response to widespread dissatisfaction with the schools’ performance in teaching disadvantaged children. Both of these studies were briefed to a subcommittee of the House of Representatives Education and Labor Committee, which visited Rand in the summer of 1971. In the third paper Daniel Weiler describes a radical form of educational innovation—the educational voucher demonstration now being planned by the Office of Economic Opportunity, which Rand is currently working on. John Pincus’ paper briefly outlines Rand plans for future work in education at the elementary and secondary level.
II. The Determinants of Educational Effectiveness

Stephen J. Carroll

INTRODUCTION

Rand has just completed an analysis of the determinants of educational effectiveness under a contract with the President's Commission on School Finance.\(^1\) The Commission is charged with the responsibility for making recommendations to the President regarding the appropriate role of the federal government in the finance of elementary and secondary education. It wished to make its recommendations in light of the knowledge accumulated by educational researchers. However, every year literally thousands of educational research efforts are reported, many of them employing very sophisticated analytical techniques. Moreover, the results of various studies are often conflicting or inconsistent. The Commission requested our help in analyzing and summarizing the relevant parts of this vast body of data.

The objective of our study was to assess the current state of knowledge regarding the determinants of educational effectiveness. We therefore conducted a critical survey of educational research. The word critical emphasizes the most important aspect of our efforts. Throughout our analysis we have attempted to examine the validity and credibility of research results. In the case of each research effort reviewed we tried to discover whether the study was internally valid (Did the researcher pursue proper methods for the questions asked?), and, if it was, were the results credible in the light of accumulated knowledge (Were the findings consistent with those of other

studies in the area?). What follows, then, is not a classical survey of research listing findings without much evaluation of the results. Rather, it is our answer to the question, "What does the research tell us about educational effectiveness?"

FIVE RESEARCH APPROACHES

The body of research on educational effectiveness is very large. We found it useful to organize our analysis according to the basic research approaches used by researchers—that is, according to the aspect of education being studied, the question being asked, and the methods deemed appropriate to answer that question. We identified five basic research approaches used in educational research: the input-output, the process, the organizational, the evaluation, and the experiential approaches.

The input-output approach assumes that students’ educational outcomes are determined by the quantities and qualities of the educational resources they receive. The Equality of Educational Opportunity—popularly known as the Coleman Report after its principal author, James Coleman—is the best known example of this approach to educational research, which is most often used by educational economists.

The process approach includes most of the work done by educational psychologists. These studies attempt to examine what goes on inside the classroom. The processes and methods by which resources are applied to students are the central concern of this kind of research.

The third approach to educational research consists of studies that assume what is done in the school is not the result of a rational search for effective inputs or processes but a reflection of history, social demands, and organizational change and rigidity. This organizational approach consists of case studies of school systems, often by political scientists or sociologists, and focuses on the ways in which the factors that influence or impinge on the various decisionmakers in the school system affect the behavior of the system.

Studies of relatively large-scale interventions in school systems are included in the evaluation approach. The evaluations of compensatory educa-
tion programs for the disadvantaged, funded by Title 1 of the Elementary and Secondary Education Act (1965), and the evaluations of Head Start Programs are examples. The central issue in these studies is whether broad-based interventions affect students' outcomes.

Finally, the experiential approach includes the so-called "reform" literature—books and articles, often written by teachers, that describe how the school system works and what it does to those, particularly students, on the inside. These studies share the view that what happens to the student in school is an end in itself rather than a means toward some further end, such as the acquisition of specific skills.

Space does not permit an extensive discussion of the studies found in each of these approaches, but we can offer some perspective on the magnitude of our analysis. The input-output approach has been reviewed twice by other analysts. Each of these reviews contains substantive errors; each of them is incomplete. The process approach contains many excellent review articles, but they tend to focus on relatively narrow issues. The only survey that covers the entire spectrum of studies in this area is the encyclopedic Handbook of Research on Teaching, which summarizes research efforts without offering overall conclusions as to what is now known about educational effectiveness. To our knowledge, there has been no previous attempt to make a systematic assessment of the results of studies in the organizational approach as they relate to educational effectiveness. Evaluations of interventions in school systems have tended to focus on the efficacy of one or another particular program and not upon obtaining generalized information as to what has been proved to be effective and what has not been effective. The experiential approach, finally, is not even generally recognized as being an area of research. Although individual books have been reviewed, no previous attempt has brought together the results of the many studies of this sort.

PROCEDURE

The formal procedure we used in our analysis is outlined in Figure 1. We examined the individual studies in an approach one by one and attempted to determine whether they were internally valid. Did the researcher use methods appropriate to the problem he addressed? Did he interpret his results
correctly in view of the advantages and limitations of the analytical techniques he used? We discarded those studies that did not satisfy minimum requirements of internal validity. We also made the maximum possible use of previous reviews. However, with particularly important studies we returned to the original source, even though the studies had been included in one or more reviews.

The next step was to bring together the results of the individual studies
and of the previous reviews in the approach. We attempted to derive general conclusions as to what were the overall results of the many research efforts. Our primary criterion here was interstudy consistency. Did the results tend to support one another? To reinforce one another? Or did we find that roughly similar studies, asking basically the same question and using basically the same methods, yielded substantively different results? This procedure was followed for each of the five approaches.

Finally, we combined these five sets of results to derive overall conclusions as to what is now known about educational effectiveness. It was from these conclusions that we drew our policy implications.

LIMITATIONS OF AVAILABLE RESEARCH

Before we present our conclusions, we must emphasize that in assessing the results of research on educational effectiveness, we discovered that the research is subject to many limitations. The results can be properly assessed only with these limitations clearly in mind. Each approach is subject to analytical problems peculiar to the techniques commonly used in it. More important, four substantive problems are encountered in virtually every area of educational research.

First, the data used by researchers are, at best, crude measures of what is really happening. Education is an extremely complex and subtle phenomenon. Researchers in education are plagued by the impossibility of measuring those aspects of education they wish to study. For example, a student’s affective development is now measured by a variety of test and observation methods, but different people interpret the results differently.

Second, educational outcomes are almost exclusively measured by cognitive achievement. Although no one would deny that outcomes in the affective domain and social outcomes beyond the individual student level are of major importance, research efforts that focus on these outcomes are sparse and largely inconclusive. Consequently, research offers little guidance with respect to what is effective in these areas. In general, then, when we refer to “educational outcome” throughout the discussion, we are talking about the student’s cognitive ability as measured by standardized achievement tests.
Third, no one has examined the cost implications of research results, making it very difficult to translate research results into policy-relevant statements. The importance of this limitation will be demonstrated below.

Finally, few studies maintain adequate controls over what actually goes on in the classroom as it relates to achievement. Researchers' data may well be affected by circumstances unrecognised in their analyses. For example, it is not unusual to find a researcher attempting to discover whether instructional method A is more effective than instructional method B. In attempting to answer this question, he might train one group of teachers in the use of method A and another in the use of method B. At some later point, he might measure the cognitive skills of the students who were taught by teachers in the former group and compare them with the cognitive skills of the students whose teachers were in the latter group. The validity of the results generated in such a study, of course, would depend upon whether the teachers did in fact use the methods A or B in their classrooms.

WHERE WE ARE NOW

With the limitations of research clearly in mind, we return to the basic issue of educational effectiveness. The current status of research in this area can be described as follows:

Research has not identified a variant of the existing system that is consistently related to educational outcomes.

The term "a variant of the existing system" is used to describe a broad range of alternative interventions in the existing system. We include here school resources, processes, and aggregate levels of funding. More specifically, school resources include the physical characteristics of the school (laboratory facilities, library books, building size and age, and so on) and its staff (teachers' experience and salary, student/teacher ratio or class size, and so on). The research provides no evidence that any of these physical characteristics are systematically and unambiguously related to student achievement.

Processes include teachers' characteristics (attributes or skills), instructional methods, presentation of material, and the like. Again, the research provides no evidence that any of these factors are systematically and unambiguously related to student achievement.

Finally, evaluations of the numerous compensatory education programs that have been attempted in the past few years suggest that even relatively
large increases in funding levels concentrated on specific groups of students have not systematically improved their educational outcomes.

We are not suggesting that nothing makes a difference, or that nothing "works." Rather, we are saying that research has found nothing that consistently and unambiguously makes a difference in students' outcomes. The literature contains numerous examples of educational practices that seem to have significantly affected students' outcomes. But invariably, other studies, similar in approach and method, find the same educational practice to be ineffective; and we have no clear idea of why a practice that seems to be effective in one case is apparently ineffective in another. In short, research has not discovered any educational practice (or set of practices) that seems to offer a high probability of success over time and place.

Neither are we saying that school has no effect on students' outcomes. We have no knowledge of what American students' outcomes would be were they not to attend school at all. Educational research focuses on variants of the existing system and tells us nothing about where we might be in the absence of the system.

In summary, then, we can view ourselves as being in a "flat" area. Movements in various directions from our current position do not seem to affect our altitude. We simply do not know whether this flat spot is at the bottom of a well, on a broad plain, or atop a tall plateau.

The research contains some evidence supporting a second major finding:

Research suggests that innovation, responsiveness, and adaptation in school systems decrease with size of the system and depend upon exogenous shocks to it.

In other words, large systems are less likely to be innovative, responsive, or adaptive than are small systems. Further, whatever the size of the system, innovation is not apt to come from within. The community or the federal government is likely to provide outside pressure. Relatively little research has been directed toward these issues; hence, this finding must be viewed as tentative.

WHERE THIS IS LEADING US

The findings discussed above imply that research has not discovered an approach to education that promises significant improvement in educational
outcomes across the board. They raise an obvious question: Where do we go from here? The research suggests three important hypotheses.

First, "non-school" factors may be more important determinants of educational outcomes than are "school" factors. There is good reason to ask whether our educational problems are, in fact, school problems. The most profitable line of attack on these educational problems may not be through the schools.

Second, there is some (weak) evidence that the impact of an educational practice may be conditional on other aspects of the situation. Simply stated, this hypothesis argues that teacher, student, instructional method, and, perhaps, other aspects of the educational process interact with each other. Thus, a teacher who works well (is effective) using one method with one type of student might be a dismal failure using another method or working with another student having different characteristics. Accordingly, the effectiveness of a teacher, or method, or whatever, varies from one situation to another.

Finally, perhaps substantial improvement in educational outcomes can be obtained only through vastly different forms of education. Voucher systems, open schools, performance contracting, and the like have been suggested. We emphasize, however, that the research tells us nothing about how effective these different forms might be. And there is certainly a possibility that they may be less effective than the current system. At this point we can only say that the research has not identified a method by which we can obtain significant improvements in educational outcomes within the current system.

POLICY IMPLICATIONS OF THE RESEARCH

Our review of the research suggests two major implications for school finance:

- Increasing expenditures on traditional educational practices is not likely to improve educational outcomes substantially;

and,
there seem to be potential opportunities for significant redi-
rections, and in some cases reductions, in educational expen-
ditures without deterioration in educational outcomes.

The first of these follows directly from the previous discussion.
The second implication is also based on the above discussion, but more
indirectly. Researchers have examined many variants of the existing educa-
tional system. As we indicated above, none of these variants has been shown
to improve educational outcomes significantly. A fact often overlooked is that
none has been shown to degrade outcomes significantly either. Consequently,
there is a long list of equally effective variants of the existing system. And
if these variants are not all equally expensive, there is a potential for reducing
costs without also reducing effectiveness by choosing the least expensive
variant. We emphasize the word potential. One of the major limitations of
educational research is the absence of cost considerations. The research now
available does not indicate which of the apparently equally effective variants
is least expensive.

IMPLICATIONS FOR EDUCATIONAL RESEARCH

Despite the volume of educational research that has been conducted, there
are still many major gaps in our understanding of the educational process. We
have identified five major issues toward which we believe educational re-
search could profitably be directed. First, we must examine educational out-
comes over time and on many dimensions. Second, research must examine the
extent to which, and under what conditions, learning takes place outside the
school. Third, the approaches must be merged. Each offers insights not avail-
able to those who work in the others; each has blind spots. Surprisingly seldom
have the strengths of one approach been used to overcome the weaknesses
of another. Fourth, the concept of interactions must be more deeply investi-
gated. And finally, analyses must recognize the cost implications of their
results.
III. The Rand/HEW Study of Performance Contracting in Education: A Brief Summary of Findings

George R. Hall

INTRODUCTION

For the past three years, several school districts have been experimenting with performance contracting, in which commercial firms provide instruction to public school students. The firm’s pay is at least in part a function of the achievement gains of the students.

For the past three years, several school districts have been experimenting with performance contracting, in which commercial firms provide instruction to public school students. The firm’s pay is at least in part a function of the achievement gains of the students.

Achievement gain or cognitive growth is usually measured by such standardized norm-referenced tests as the Stanford Achievement Test or the Iowa Test of Basic Skills. At the start of a performance contracting program, a student is given one of these standardized tests; at the end of the program, he is given another form of the same test. The difference between the two scores is called the gain, and it is used to determine the contractor’s fee. Some programs have experimented with other types of achievement measures for

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1 The work described in this paper was sponsored by the Assistant Secretary for Planning and Evaluation, Department of Health, Education and Welfare, under Contract HEW-08-70-156.
part of the contractor's payment—for example, criterion-referenced tests. Adequate alternatives to standardized norm-referenced tests have yet to be found, however, and all programs utilize such tests at least partly, and often exclusively.

A performance contractor sets up an instruction program in a school, usually to teach reading, sometimes mathematics, and occasionally vocational subjects. He uses new materials and techniques and sometimes new equipment. He usually diagnoses each student's weaknesses and strengths and provides individually tailored materials.

Frequently the classroom environment is changed. Carrels with cassette tape recorders may replace desks. The teacher usually, but not always, remains on the school payroll and may be assisted by a paraprofessional. The teacher operates more as a diagnostican and manager and less as a conveyer of instruction, compared with conventional classroom teachers.

Local school officials have expressed the need for materials to assist them in deciding about performance contracting programs. The U.S. Department of Health, Education and Welfare decided to sponsor the preparation of a guide and requested Rand to undertake the project. In addition to the guide, Rand has published a theoretical analysis of this new economic arrangement and a six-volume report detailing and analyzing our field studies of a diverse sample of performance contracting programs.

Rand has been studying about 20 programs. The eight programs in five cities that have been investigated in detail are listed in Table I. Performance contracting began with programs in two cities in 1969-70. During the 1970-71 school year, the Office of Economic Opportunity sponsored a 20-project structured demonstration costing about $6 million. Various sources funded at least 50 or 60 other programs.

The OEO demonstration is a good example of the large social interven-

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Table 1

Features of the Eight Programs

<table>
<thead>
<tr>
<th>City</th>
<th>Contractor</th>
<th>Subjects</th>
<th>Students</th>
<th>Grades</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gary, Ind</td>
<td>Behavioral Research Laboratories</td>
<td>All</td>
<td>850</td>
<td>K-6</td>
</tr>
<tr>
<td>Gilroy, Calif.</td>
<td>Westinghouse Learning Corporation</td>
<td>Reading,</td>
<td>100</td>
<td>2-4</td>
</tr>
<tr>
<td></td>
<td></td>
<td>math</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grand Rapids,</td>
<td>Alpha Learning Systems Company</td>
<td>Reading,</td>
<td>600</td>
<td>1-3, 7</td>
</tr>
<tr>
<td>Mich.</td>
<td></td>
<td>math</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Combined Motivation Education Systems, Inc.</td>
<td>Reading,</td>
<td>600</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>math</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Westinghouse Learning Corporation</td>
<td>Reading,</td>
<td>400</td>
<td>1-6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>math</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Norfolk, Va.</td>
<td>Learning Research Associates</td>
<td>Reading,</td>
<td>250</td>
<td>4-6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>math</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Texarkana, Ark.</td>
<td>Dorsett Educational Systems, Inc.</td>
<td>Reading,</td>
<td>350</td>
<td>7-12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>math</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Educational Development Laboratories, Inc. (McGraw-Hill)</td>
<td>Reading,</td>
<td>285</td>
<td>7-12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>math</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

tions or quasi-experiments that are more and more being used in educational research. The non-OEO programs do not exhibit as much experimental control or design, but they may be more typical of future programs.

The sudden popularity of performance contracting stems, I believe, from hopes that it might address one or more of three current educational policy concerns:

1. How to improve the achievement results in compensatory or remedial education programs.

2. How to develop outcome educational accountability—that is, accountability for results as well as inputs.
3. How to overcome the barriers to technological innovation in the public schools.

EFFECTS ON ACHIEVEMENT

The greatest hope for performance contracting was that it would eliminate the differences between achievement test scores of students from privileged backgrounds and those of students from homes with fewer advantages. The difference, or gain, between tests at the start and end of the program is usually expressed in achievement years. If a student goes into the fifth grade reading at the average level for students at the start of fifth grade and at the end of the year he is reading at the average level of students at the start of sixth grade, he has gained one achievement year in one school year. The students in the programs in the Rand sample, however, were generally below average with respect to achievement growth. By definition, the average student gains a year's achievement growth for each school year. The students in these programs, however, typically gained about half a year's achievement growth per school year.

Table 2 shows average achievement gains for the eight programs in the Rand sample. For example, in the first grade in Gary the students gained, on average, 1.7 achievement years per year in reading and math. In the other grades the achievement was, on average, 0.7 of a year in reading and 1.2 in math. Overall, some groups of students did better than comparable groups (Gilroy, for example); some did no better (Norfolk seventh grade); and some did worse (Texarkana and Norfolk fifth grades). Performance contracting shows no large, consistent advantage over other types of instruction.

This conclusion from the Rand sample is supported by the results of the OEO program. The achievement gains realized in the 18 programs are shown in Table 3. A comparison of the gains in the experimental program with gains by control groups revealed no consistent edge for performance contracting.

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5 The Gary results were somewhat better than some of the other programs. Perhaps the better results reflect the fact that Behavioral Research Laboratories managed the entire Banneker School whereas the other contractors had only a class within the normal school environment. However, it would be inappropriate to put much weight on one year's outcome in one grade, particularly in the first grade where it is hard to interpret pretest results.
Table 2
Mean Gains on Standardized Tests

<table>
<thead>
<tr>
<th>City</th>
<th>Contractor</th>
<th>Mean Gains</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gary, Ind</td>
<td>Behavioral Research Laboratories</td>
<td>1.7/1.7</td>
<td>Reading/math/1st grade</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.7/1.2</td>
<td>Reading/math/grades 2-6</td>
</tr>
<tr>
<td>Gilroy, Calif.</td>
<td>Westinghouse Learning Corporation</td>
<td>0.6/0.8</td>
<td>Reading/math</td>
</tr>
<tr>
<td>Grand Rapids,</td>
<td>Alpha Learning Systems Company</td>
<td>0.7/0.5</td>
<td>Reading/math/grades 2-3,</td>
</tr>
<tr>
<td>Mich.</td>
<td>Combined Motivation Education Systems, Inc.</td>
<td>1.2/1.0</td>
<td>7-9</td>
</tr>
<tr>
<td></td>
<td>Westinghouse Learning Corporation</td>
<td>0.7/0.6</td>
<td>Reading/math</td>
</tr>
<tr>
<td>Norfolk, Va</td>
<td>Learning Research Associates</td>
<td>0.1</td>
<td>Reading/5th grade</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.5</td>
<td>Reading/7th grade</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.5</td>
<td>Reading/9th grade</td>
</tr>
<tr>
<td>Texarkana,</td>
<td>Dorsett Educational Systems, Inc.</td>
<td>NR&lt;sup&gt;a&lt;/sup&gt;</td>
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<tr>
<td>Ark.</td>
<td>Educational Development Laboratories, Inc.</td>
<td>0.5/0.3</td>
<td>Reading/math/grades 6-12</td>
</tr>
<tr>
<td></td>
<td>(McGraw-Hill)</td>
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<sup>a</sup> NR = data not released.

OEO concluded that performance contracting made no unusual contribution to compensatory education.<sup>56</sup>

These results are not sufficiently impressive to warrant expecting performance contracting to close the gap between advantaged and disadvantaged students.

We computed the instructional costs (not the total costs) for various remedial programs on a comparable cost basis, standardizing factor costs and

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<th>Grade</th>
<th>Experimental Gain</th>
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<th>Difference</th>
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<td>Reading</td>
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<td>NA</td>
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assuming operation of the program by the school systems themselves. Our estimates indicated that a performance contracting program in the Rand sample would cost in the neighborhood of $125 to $200 per student per subject. A conventional remedial program, estimated in the same fashion, would cost around $200-$300 because such programs tend to be more labor-intensive. Performance contracting programs tend to substitute paraprofessional labor and materials for certified teachers, compared with the usual remedial education programs.
ACCOUNTABILITY

The dispute between the contractor and the State of Virginia provides a helpful illustration on the problem of educational accountability. The 0.1 result in the fifth grade at Norfolk implies that no learning took place. The contractor had promised Norfolk an average of 1.7 grade-equivalent gain per student per year. When he gave the pretests for the fifth grade, however, he found that the students were functional illiterates. He started to teach the students word-attack skills—how to listen to sounds and recognize them on the printed page. Each student was assigned learning objectives. The independent evaluator from the University of Virginia, using a so-called learning mastery test, tested the students and found that most students mastered 80 to 90 percent of the objectives according to this test.

For contract payment purposes, however, the students were administered the vocabulary and comprehension sections of a standardized norm-referenced test, on which they showed no gain. The State of Virginia, the program sponsor, concluded that the contractor failed because the fifth-grade students’ reading skills did not improve. The contractor claimed the score was low because the norm-referenced test didn’t reflect the content of the program. He cited the high scores on the learning mastery tests as evidence he had been successful. The State of Virginia suggested that perhaps the students had mastered the objectives before the program started.

The standardized tests that are used to evaluate these and other innovative programs were not designed to measure output or instructional effectiveness. They were designed to predict academic success so students could be classified and assigned. Using these tests for accountability purposes poses severe statistical problems. More important, we run into questions of whether the items tested on the standardized norm-referenced tests match what we want to have included in our curricula. On the other hand, criterion-referenced tests have not been sufficiently standardized to provide the objective measures that school districts desire. Criterion-referenced tests not only are difficult to interpret when used as a performance measure, they also create serious problems for test design and administration. The OEO programs, as well as those in Virginia and Texarkana, encountered serious difficulties in trying to implement criterion-referenced testing programs.
In short, the performance contracting experience indicates that considerable development work is required before we will have tests and measurements adequate to achieve the policy goal of educational accountability.

TECHNOLOGICAL CHANGE

Technological change appears to be where performance contracting may make its most important contribution. In the programs we have observed, even those where the achievement results have been unspectacular, the new materials and techniques have created interest and seem to be leading to some further applications. The introduction of outside programs may be a catalyst for getting more individualized instruction into the schools. In some cases outsiders can better overcome inertia and attract more attention than insiders working within the established rules.

Performance contracting by itself has not been lucrative. Westinghouse Learning Corporation, which had two of the programs we studied and three OEO programs, and CMES, the contractor for another project in the Rand sample, have gone out of the performance contracting business. Several firms involved in the OEO experiment have also left the industry. In some cases, however, performance contracting has led to follow-on business. Also, it has enabled a number of new firms to break into the educational materials and services market that has been dominated by old-line textbook publishers. School districts are willing to try out new firms if they will give performance guarantees. This is one reason for our belief that performance contracting may be around for awhile.

THE FUTURE OF PERFORMANCE CONTRACTING

The 1970-71 experience dashed the hopes of those who believed that performance contracting would be an easy and dramatic solution to America's compensatory education problem. Clearly, problems of obtaining valid and reliable measures of instructional success remain. Thus, it is unlikely that performance contracting will regain its past popularity.

Performance contracting, however, might play a limited educational role.
As a means of facilitating curriculum innovation and as a way for new firms to share some of the risks involved in new materials or procedures, it has some attractive features. Moreover, some of the learning systems used by performance contractors may have modest cost advantages relative to conventional approaches to remedial education. If so, even if achievement gains do not increase substantially, these modest cost advantages might be converted into modest improvements in instructional cost-effectiveness. Such conclusions must be tentative since all the 1970-71 programs involved extensive start-up costs as well as major development efforts, and it is difficult to extrapolate to some future "steady-state" period. In short, although performance contracting is no panacea for America's educational problems in general and its compensatory education problem in particular, it may make a modest contribution.
IV. The OEO Elementary Education Voucher Demonstration

Daniel Weiler

Rand was awarded a contract in April 1972 by the Office of Economic Opportunity to evaluate the first stage of its education voucher experiment. This paper describes the main features of this planned experiment and its modest first stage, summarizes Rand staff views about important issues that will be raised by this demonstration, and explains the nature of Rand interest in programs of this kind.

VOUCHER PLANS

Under a voucher system, tax funds would be provided to parents to purchase schooling for their children. Instead of public monies being given directly to school boards, the funds would be divided into a fair share for every school child, and parents would receive vouchers, or scrip, that would enable them to pay for their children's education at schools of their own choice, whether public or private. The schools would present these vouchers to a governing authority (the Educational Voucher Authority, or EVA), which would redeem them for cash.

This arrangement has two essential objectives—better and more diversified educational opportunities for all children, especially the poor, and greater parental satisfaction with and control over education. Vouchers aim at providing two related mechanisms for achieving these ends:
1. Opportunities for new or existing private (profit or non-profit) educa
tional entrepreneurs to compete with the public schools for public tax dollars, leading perhaps to new and diverse educational programs from the private sector and thereby for the public at large.

2. New incentives for public school officials to improve and diversify their own programs in order to compete with private schools and with one another for student vouchers.

ORIGINS AND VARIANTS

The origins of the voucher idea are obscure, but its intellectual genesis can be traced at least as far back as Adam Smith, who argued in *Wealth of Nations* that the public would do best for the poor by establishing in every parish or district a little school, where children may be taught for a reward so moderate, that even a common laborer may afford it; the master being partly, but not wholly paid by the public; because, if he was wholly, or even principally paid by it, he would soon learn to neglect his business.

In 1962, the American economist Milton Friedman suggested (in *Capitalism and Freedom*) the basic variant of the voucher plan—the so-called unregulated market model. Since then, alternative versions have been suggested by various authors as ways of overcoming the objection most often posed to Friedman’s model: Its principal beneficiaries would be wealthy and middle-class parents, and its consequences would be a further aggravation of segregation by income. In late 1969, the Office of Economic Opportunity asked the Harvard Center for the Study of Public Policy to examine alternative voucher plans and propose a model that would be suitable as the basis for a national demonstration of the voucher principle.¹ The Center looked at the following variants:

1. **Unregulated Market Model:** The value of the voucher is the same for each child. Schools are permitted to charge whatever additional tuition they wish.

2. **Unregulated Compensatory Model:** The value of the voucher is higher for poor children. Schools are permitted to charge whatever additional tuition they wish.

3. **Compulsory Private Scholarship Model:** Schools may charge as much tuition as they like, provided they give scholarships to those children unable to pay full tuition. Eligibility and size of scholarships are determined by the EVA, which establishes a formula showing how much families with certain incomes can be charged.

4. **The Effort Voucher:** Several different possible levels of per pupil expenditure are established and a school may choose its own level. Parents who choose high-expenditure schools are then charged more tuition (or tax) than parents who choose low-expenditure schools. Tuition (or tax) is also related to income. In theory the "effort" demanded of a low-income family attending a high-expenditure school is the same as the "effort" demanded of a high-income family in the same school.

5. **"Egalitarian" Model:** The value of the voucher is the same for each child. No school is permitted to charge any additional tuition.

6. **Achievement Model:** The value of the voucher is based on the progress made by the child during the year.

We need not dwell on the details of these plans, except to note that in the view of the Harvard analysts, versions 2 through 6 would each "deteriorate" in practice to version 1, the unregulated market model, which they rejected because the principal beneficiary would be the middle class. Their problem was to find a model that would maintain freedom of choice for parents and still advance the interests of poor children. They argued that without admissions regulations and the provision of special economic incentives to teach the disadvantaged, the poorest and hardest to teach students would inevitably end up in the worst schools. Thus, they endorsed selected features from some of the rejected models, and added some new features of their own, to create the regulated compensatory model, which was proposed by the Center and accepted by OEO as the basis for a national demonstration.
7. **Regulated Compensatory Model**: Schools may not charge tuition beyond the value of the voucher. They may "earn" extra funds by accepting the higher valued "compensatory" vouchers that EVA makes available to children from poor families or educationally disadvantaged children. (A variant of this model permits privately managed voucher schools to charge affluent families according to their ability to pay.)

**THE OEO DEMONSTRATION**

- No school may charge tuition beyond the value of the voucher.
- The vouchers of poor or educationally disadvantaged children are worth more than a "standard" voucher (probably according to some sliding scale).
- Under-applied schools must accept all applicants.
- Over-applied schools may accept half of their students by criteria of their own choice, as long as they do not "invidiously discriminate" against any class of applicant; the other half of their students must be admitted by means of a lottery among all remaining applicants.
- The demonstration will be managed by a new public body, The Educational Voucher Authority, whose precise makeup is not yet clear.

A comprehensive information system will enable parents to have some basis for informed judgments about the schools of their choice. All public and private (including parochial) schools are eligible to participate in the demonstration. The demonstration will last from five to seven years and involve up to 100 schools; 30,000 children in grades K-6; and four school districts.

As of May 1972, the fate of these plans was still uncertain. Legislation permitting a demonstration made some progress through the California Legislature in 1970-71, although it failed to pass the State Senate. It was reintroduced in the 1971-72 session of the Legislature. The Governor has said he will sign any reasonable bill that emerges. Permissive legislation has recently been signed into law in Connecticut, but it is still too soon for any school district to have chosen the system. Considerably less progress has been
made in the State of Washington. With OEO support, a number of school districts have completed feasibility studies of voucher demonstrations with schools in their districts, but a full-scale demonstration will await both state legislation and local agreement.

In the interim, a modest start will be made in the Alum Rock elementary school district, in San Jose, California, beginning in the fall of 1972. The Alum Rock demonstration will retain most of the administrative design features of the planned larger experiment, but it will be limited to six public schools serving approximately 4,000 children. If this comparatively small demonstration is judged successful, Alum Rock may expand the voucher program to the balance of its schools (18 more schools serving an additional 10,000 children) in the fall of 1973. If legislation permitting the full-blown voucher model becomes law, Alum Rock, and possibly other school districts as well, may participate as early as the fall of 1973. The present demonstration is therefore perceived as the first stage of a much larger social experiment.

The Rand evaluation team will monitor and describe the Alum Rock Union Elementary School District voucher demonstration in each of the areas where some impact may be expected: political and social change, changes in educational resource allocations and economics, and changes in educational outcomes for students. The attitudes, perceptions, and behavior of parents, community members, teachers, administrators, and students will be studied with a variety of instruments and measurement techniques, including surveys, field observations, interviews, and analysis of record data. The impact of the demonstration will be charted over the course of the school year. In addition, Rand staff will provide assistance to OEO in planning for possible expansions of the demonstration to include private and parochial schools, at one or more additional sites, and will provide the government with an analysis of the national policy implications of the demonstration outcomes.

ISSUES RAISED BY THE VOUCHER PLAN

The voucher plan assumes that educational improvements (especially for the disadvantaged) are available and accessible at the price represented by the combined vouchers (educational purchasing power) of a school's student population. This assumption may bear further examination. Furthermore,
educational practitioners are at present either insufficiently motivated or too constrained by conflicting interests to provide these improvements, but they can be motivated if parents have the power to choose their children’s schools.

If it can indeed be shown that vouchers have provided major and effective incentives for educational improvement, the public policy inference may well be that permanent and fundamental changes in the relationship of educational suppliers to consumers are necessary and desirable. Alternatively, if the educational effects should be neutral, mixed, or negative, alternative approaches to educational reform may be implied.

The voucher mechanism is also designed to give parents more control over, and satisfaction with, their children’s education. These two design goals are intimately connected. Increased parental control (the ability to choose educational suppliers) is relied on as the principal device for making educational decisionmakers more responsive to children’s needs and sufficiently motivated to improve the effectiveness of their educational programs. Increased effectiveness is expected in turn to lead to greater parental satisfaction. This reasoning assumes that the kind of parental control over education that flows from the ability to choose educational suppliers will in fact lead to better educational performance on the part of educational decisionmakers, through the operation of new incentives. Furthermore, increased parental satisfaction will result if parents can choose educational suppliers rather than have more direct influence over day-to-day policy decisions in their children’s present schools.

If it can be shown that parental ability to choose educational suppliers does motivate educators to diversify and improve their programs, then it may be inferred that some institutionalized form of direct parent control over the educational marketplace, whether through vouchers or some other mechanism, is advisable. What the system may need in order to improve is some kind of exogenous shock. Alternatively, if vouchers do not affect the motivations of educators, we may have to rely on other mechanisms, not based primarily on changing the structure of the educational marketplace, for this purpose. Similarly, if parental satisfaction with the schools increases as a function of their degree of choice among educational suppliers, something like the voucher mechanism may be desirable. But if parents do not attach much importance to freedom of choice as a measure of control over education,
or as a source of satisfaction with the schools, then some other device or devices may be more in order.

The voucher plan also assumes that success in providing more parental control and greater responsiveness from the schools will lead to schooling that meets the interests and needs of children, the real clients of the educational system. However, if parents' and children's interests and needs are not largely congruent, and if this works against the interest of improved education, the demonstration could have the anomalous result of being a "success" on its own terms but a failure in terms of its impact on the real needs of children.

The proposed demonstration has already raised far-reaching questions about the role and authority of all who are involved in the structure and process of education: citizens' groups, parents, students, teachers and their unions, school administrators, private schools, boards of education, and state and federal government agencies. Traditional and familiar lines of authority are potentially challenged or obscured by the voucher process, traditional prerogatives may be cast in doubt, and established and customary procedures and relationships may no longer be practical or viable.

These questions, yet to be resolved, go to the heart of everything that has until now been taken for granted about the necessary and proper relationship of citizens, the clients of the educational system, to government authorities, the system managers. A voucher demonstration that is counted as a "success" may well cast these traditional relationships aside permanently, and it could do so whether or not it has any significant positive effect on measurable educational outcomes. It raises questions beyond the immediate voucher issue about the relations between citizens and public agencies, questions that concern the proper role of the individual and the state in modern society.

RAND INTEREST AND APPROACH

Rand is particularly interested in the voucher demonstration because it typifies the large-scale social intervention that will characterize many future efforts to reform and understand American education and other fields of social policy. Many of the questions and issues raised by vouchers are interesting in themselves, but the methodological issues associated with this
demonstration are of special interest. They raise challenging questions about the relationship of research conclusions to public policy decisions. How does one infer causality in complex program demonstrations, where unknown antecedent conditions and intervening variables affect the outcomes? How does one relate specific research conclusions to more general public policy implications? The latter question is a familiar difficulty and one with which Rand has had long experience.

*The key feature of Rand's approach is analysis for public policy decision-making.* We will not only perform the technical evaluation work—tests and measurements, surveys, on-site observations, and the rest—but will make a substantial effort to relate the results of our analysis to a range of potential policy decisions (federal, state, and local) that could be suggested by the outcome of the voucher demonstration.

**CONCLUSION**

We believe that the Rand work will be of major interest to OEO. It should make useful contributions to the methodology of evaluation of social experiments. The issues to be resolved and the hypotheses to be tested are matters of urgent social concern. The analytical techniques developed at Rand and elsewhere in the past 25 years will be of value. But it is also our aim to add to the body of knowledge in this field.
V. Future Rand Work

John Pincus

INTRODUCTION

In these papers we have tried to show how Rand has built a basis for work in public education, starting from a review of current knowledge and working toward increasingly novel alternatives. Space did not permit a discussion of other aspects of Rand work in elementary and secondary education, notably on improving the effectiveness of management and resource use at the school district and state educational agency levels. These are described in *Policy Studies at Rand: Education and Human Resources*, P-4721, October 1971.

Our exploration indicates that existing research shows serious deficiencies in methodology—in measurement, in cost analysis, in hypothesis formulation and testing. In particular, the development of large-scale social experiments or demonstrations—such as vouchers, performance contracting, experimental schools, welfare reform experiments, and so on—requires new methods of analysis. These methods must determine what really happened in a complex and fluid social situation. Existing experimental design methods are not able to cope with the complexities of these issues. We require new methods of analysis that will allow us to determine the general significance of particular outcomes; that is, to generalize nationally or regionally from demonstrations that are tried out on a single city or on a single social or economic group.

Our experience reveals that the educational system is complex, highly decentralized, and singularly resistant to change. This reflects not only social and cultural factors, but also the marginal and inconclusive nature of most changes to date, which have led policymakers to be skeptical about the merits of alternatives to the status quo.
PLANS FOR THE FUTURE

Future work at Rand in the field of public education will consist of four elements: research, technical assistance, training, and dissemination. Our purpose is to find out how the effectiveness of the schools, including preschool education, can be increased. We intend to assist selected state school agencies and school districts, as well as federal agencies, to apply our research findings and to modify them in light of experience in the schools. We plan to bring a group of well-qualified pre-doctoral and post-doctoral interns to Rand for one-year terms, during which they will attend courses at the Rand Graduate Institute, participate in educational policy workshops and seminars, and gain experience as members of Rand interdisciplinary research teams. A regular newsletter on selected educational policy issues will disseminate the results of the work to a broad spectrum of decisionmakers. We plan to supplement the newsletter with annual conferences on major policy topics to be attended by researchers, policymakers, legislators, and others with an interest in educational policy.

The substance of the work will examine the aims of public education, its effectiveness, its governance, and its finance. Rand work will consider the following elements with respect to each of these issues:

- **Aims.** To what extent can or should education be an agent of social reform as compared with a force for social stability? To what extent should education be oriented to vocations, to the building of personalities, to the pursuit of knowledge, to screening people by ability categories? Rand intends to weigh its research approach and policy advice in light of these conflicting goals.

- **Effectiveness.** The schools are all too frequently an irrelevant bore for middle-class children and a failure at transmitting basic skills to poor children. In response to public pressures, the schools have experimented with a variety of changes—compensatory education, process innovations, changes in physical plant, development of experimental schools, introduction of new technologies, and the like. Rand work focuses on improving design and evaluation methodology for educational innovations. In

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1 The Rand Graduate Institute is a program leading to a doctoral degree in policy analysis. It emphasizes techniques and methodologies and their practical application to public policy.
particular, we will devote a substantial effort to: (1) bringing together the approaches of the different research disciplines (which are usually conducted in isolation) toward questions of educational effectiveness; (2) designing and evaluating large-scale innovative experiments—performance contracting, educational voucher systems, and experimental schools; (3) systematically introducing cost considerations into the analysis of educational effectiveness, often neglected in educational research; (4) applying improved technology to the schools; and (5) investigating day care and preschool education as elements in the improvement of education.

- **Governance.** Dissatisfaction with the schools has led to a variety of efforts to modify their governance. *The community* often seeks decentralization and community control; *teachers* in collective bargaining negotiations wish to obtain a role in management; *students* want to exercise more control over school policies; *state government* has tried to improve education through changes in state education codes; and the *federal government*, through compensatory education and desegregation efforts, has tried to structure local school district policies. Rand work in this field will include advising state and local agencies on governance; studying economies of scale in school districts; and helping school districts to manage more efficiently through design of program budgeting and information systems, as well as through improved evaluation methods.

- **Finance.** The public has also been expressing dissatisfaction through refusal to vote additional school funds at the district level, through widespread complaints about the inequities of the existing property tax system as a basis for school finance, and through demands for increased state and federal finance. Perhaps the most revolutionary policy decision affecting the schools since the Supreme Court 1954 school integration decision is the 1971 decision of the California Supreme Court (*Serrano v. Priest*), which holds that reliance on local property taxes, resulting in wide disparities in school revenue, violates the equal protection clause of the Fourteenth Amendment. Rand is working at local, state, and federal levels on school finance issues, notably in advising the state of California on school finance alternatives, advising the President’s Commission on School Finance on the
relation of finance to educational effectiveness, and in analyzing the implications of the Serrano v. Priest decision for school finance and governance.

THE CLIENTELE AND THE SETTING

Rand's clientele for the many projects it conducts on problems of the public schools is in some sense the public at large. Future work will be financed by educational decisionmakers at federal, state, and local levels; by foundations seeking to promote the effectiveness of the public schools; and by Rand's own corporate funds. Public education affects and is affected by government at every level and by the public at large. Rand's policy of working at every level is necessary if we are to achieve long-run changes in education.

In practice, the major engines of reform are likely to be judicial rulings, large-scale and sustained pilot efforts (for example, performance contracting, voucher demonstrations, experimental schools, televised educational programs such as Sesame Street), and systematic research and development efforts. Our work will take all three elements into account, and we shall continue to participate directly in both the pilot programs and the promotion of improved educational research and development.

Finally, there is the question of what are the effects of education on people's lives, in early childhood, as students in the public schools, and after completion of school. These issues are now being studied by several research groups, most notably the Center for Educational Policy Research at Harvard. The issues are hotly disputed in part because of data problems and in part because of questions of interpretation. Despite these difficulties, no comprehensive policy analysis of the public schools can be complete without a better understanding of the actual and potential relations between school experience and other elements of people's lives. Yet for these issues, as well as for the apparently simpler ones of evaluating cognitive achievement in the schools, major methodological barriers arise. It may well turn out that we will be able to offer systematic policy guidance only to the extent that we improve the methodology of educational research—in particular, methods of test and
measurement, which currently offer but a shaky foundation for arriving at judgments about the effects of education.

Clearly, the work described here represents only a first step toward more effective public policy on education and human resources. But the general framework, combining shorter-run assistance to policymakers at every level of governance with sustained work on selected major issues of methodology and policy, is well established in the current work program.

ORGANIZATION

Rand plans also involve some restructuring of our current work program and include relating our work in education more closely to our work in human resources in order to follow up the effects of education on people's lives and work.

We also plan to subject our work more closely to scrutiny and advice from a distinguished advisory group of researchers and policymakers. This group will not simply review quality of existing work but also will give advice and recommendations for major foci of future Rand research.