

Improving School Performance While Controlling Costs

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The production of school reform reports is a big business in the United States. The current trend of reform was started by *A Nation at Risk*, the 1983 official government report that detailed the decline of America's schools. Since then, new reports have been published so frequently that it is rare for a major institution not to have its own report and position on reform. Yet, it is startling how little any of the reform reports, and the reform movement itself, draw upon economic principles in formulating new plans.

The movement to reform our schools largely is motivated by economic issues. Concerns about the strength of the United States economy, the incomes of the citizens, and the gaps between standards of living for different racial groups are consistently and forcefully grounded in questions about the quality of our schools. A parallel issue, seldom addressed in the reform reports, is whether the steadily increasing funds being devoted to schools are being used effectively. These economic issues are at the core of

interest and apprehension about the state of the nation's schools.

An underlying theme of this paper is that economic principles are essential to any true reform of the education system. Economists have studied the role that education plays in developing worker skills since before the United States declared its independence, and have learned a great deal on the subject. More recently, economists have considered how schooling affects such diverse things as the character of international trade and the choices families make about investments in their own health. The results of this work have not been adequately incorporated into the nation's thinking and policies toward schools. Most importantly, standard economic principles are seldom applied to policy making or to the administration of schools.

This paper grew out of the efforts of the Panel on the Economics of Education Reform (PEER), a group of American economists who wanted to bring to light a variety of economic thought and various economic approaches as they relate to school reform. These ideas are elaborated in the panel's report: *Making Schools Work: Improving Performance and Controlling Costs*.¹ This paper, however, does not point to a specific program or method for reorganizing schools to solve the problems associated with school reform, in part because we do not believe that there is a single answer. Instead, the paper advocates an overall concentration on strengthening performance incentives and on comparing benefits with costs—a set of decision rules that have proven extremely useful in enhancing business performance but that have been ignored by schools. The paper also emphasizes the need for experimentation and evaluation—items generally missing from today's schools.

Why We Worry About Education

Because the schooling system allows little room for individual preference or competition among alternative suppliers, it is important that the public have some voice in how it is organized. The central questions include: (1) Are we as a nation investing enough in schooling, and (2) Are resources devoted to schooling being used in the best possible way?

Economists tend to focus on the trade-offs between alternative uses of resources. Money spent on schools cannot be used for buying health services, consumer goods, or national defense (and vice versa). Economists devote very little attention to evaluating

choices that individual families make, such as whether to purchase a television or a car, because it is assumed that individuals make informed choices about things that directly affect them. But when government is heavily involved in the decision making, the possibility of under- or over-investing is more likely. If resources are not used effectively, as is more likely when there is little competition, society gives up too many other things in supporting its schools.

Analysis demonstrates clearly that education is valuable to individuals and to society as a whole. Our economy values skilled individuals, which is reflected directly in the high relative labor market earnings and the low relative unemployment rates of educated individuals. These facts on their own justify general investment in schooling, but they are only part of the story. More educated members of society are gener-

ally healthier, they are more likely to become informed citizens who participate in government, they are less likely to be involved in crime, and they are less likely to be dependent on public support. Moreover, the education level of the work force affects the rate of productivity growth in the economy, and thus the future economic well-being of society. These latter factors, while further justifying schooling investments, provide clear reasons for governmental support and finance of education (as opposed to purely private finance).

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Much of the analysis on the effects of education on earnings and the economy relate to the amount of schooling obtained by individuals in the population. As previous growth in educational attainment of the population has virtually stopped, the recent debate has turned from how much schooling students receive to questions about the quality of each year of schooling. In simplest terms, are students learning sufficient amounts during each year of schooling, and what is the impact of learning differences among individuals?

¹ The Panel on the Economics of Education Reform (PEER) met over the period 1990–94. Its final report was published by the Brookings Institution in October 1994 (Hanushek et al. 1994).

The strongest evidence of the effects of school quality relate to individual earnings. Better skills of individuals, which can be directly related to the quality of schooling, are rewarded in the labor market. There also is evidence that such skills are becoming more important over time as an increasingly technical work place searches for individuals to fill jobs. Finally, school quality directly affects the amount of schooling an individual completes, with students from better schools seeking post-secondary education, thus, enjoying the added rewards of increased schooling. Again, these benefits justify investments in school quality.

It is also important to understand some of the macroeconomic implications of schooling investments, because the public debate has been particularly confused about these issues. In the past quarter of a century, as questions have been raised about what is happening in schools, the national economy has experienced extraordinary changes. The rate of increase in the productivity of the labor force, an important determinant of the economic well-being of society, fell dramatically in the 1970s and 1980s. The importance of international trade over this period has dramatically impacted the United States economy, leading some citizens and policymakers to panic about our ability to compete as foreign competitors have taken over markets previously dominated by American firms. And, most recently, the economy has languished with low growth of gross domestic product and higher unemployment rates.

Which of these issues are related to the perceived decline in the quality of schools during this period, and which are likely to be affected by quality improvements? Current research suggests that school quality enters into determining the overall productivity growth of the national economy, although there is considerable uncertainty about the exact magnitude of

the effect. It is, nonetheless, clear that the *past* decreases in productivity could not have been caused by the recent declines in student performance, because these students were not in the labor force in sufficient numbers to have influenced the observed productivity changes (Bishop 1989). Any direct effects of current student quality on national productivity growth will be felt at some time in the future. Moreover, the direct effects of changes in the quality of American schools on the level of trade deficits or on the character of international trade are almost surely very small, since international trade is driven more by other factors of world economies. Finally, there is no reason to believe that business cycles and macroeconomic fluctuations are influenced by the schooling of the labor force. Thus, claims about the effect of schooling, past or future, on overall aggregate performance of the economy appear exaggerated, and these claims do not provide direct justification for significant expansions in public schooling.

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In summary, schooling is important. Investing in more and better schooling has been profitable for individuals and society. However, the case for supporting education is not without bounds. Other investments, such as in more modern plants and equipment, also have distinct pay-offs, so that the potential for schooling investments should be kept in perspective. Benefits must be compared to

costs. Moreover, even a perfectly functioning school system will not solve all of the problems of our society and economy.

What We Know about Schools

A considerable amount of documentation has been gathered about the economics of the education sector. Education is, after all, a sector that is noticeably larger than, say, steel and automobiles, and, as noted, education has strong links to other parts of the

economy. As such, it has received its share of analysis and attention. The results of this economic analysis have been at best ignored, at worst contradicted, in many of the popular versions of school reform.

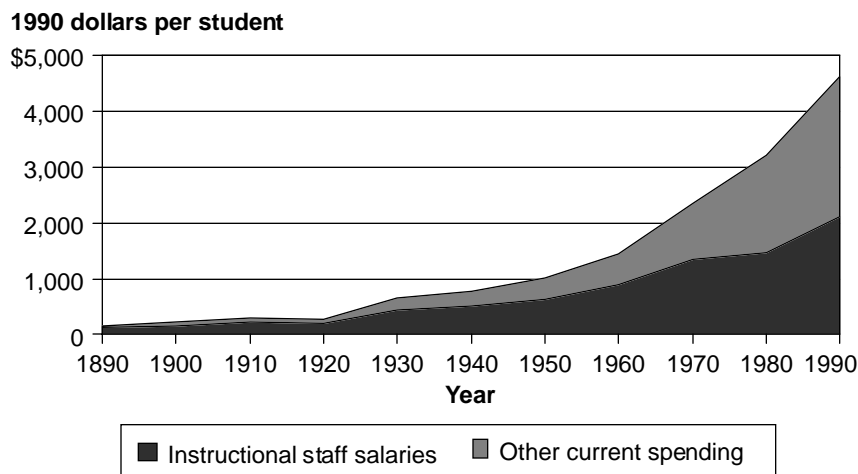
The overall story about what has been happening in schools is clear: the rapid increases in expenditures on schools during the past three decades simply have not been matched by measurable increases in student performance. Moreover, detailed studies of schools have shown a variety of inefficiencies; inefficiencies which, if corrected, could provide funds for a variety of improvement programs.

There was a dramatic rise in real expenditure per pupil between 1890 and 1990. Figure 1 shows that, after allowing for inflation, expenditures per pupil increased at almost 3.5 percent per year for 100 years (Hanushek, Rivkin, and Jamison 1992; Hanushek and Rivkin 1994). This remarkable growth is not explained away by such things as increases in special education or changes in the number of immigrant students in the school population, although those have had a noticeable impact on school expenditures. Figure 1 also shows that expenditures on instructional

staff salaries increased at a noticeably slower rate than expenditures on all other items, particularly between 1970 and 1990.

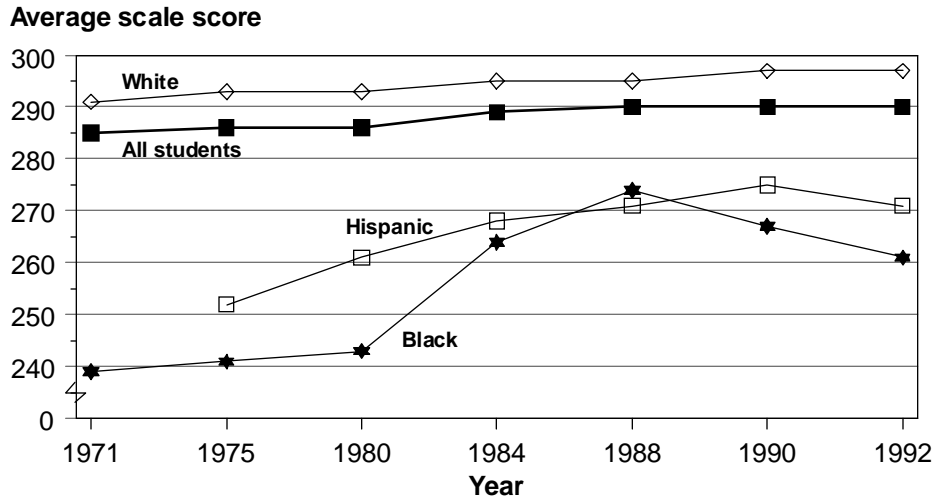
Matched against this growth in spending, student performance has at best stayed constant, and may have fallen. While aggregate performance measures are somewhat imprecise, taken together they indicate no appreciable gains in student performance over time. The path of achievement on reading, mathematics, and science exams, shown in figures 2–4, is representative of the pattern of performance for the population and for racial/ethnic subgroups (Alsalam et al. 1993). These figures show the performance over time of a representative sample of 17-year-olds on the various components of the National Assessment of Educational Progress (NAEP). There also have been a series of embarrassing comparisons with students in other countries. The comparisons of United States and Japanese students in the early 1980s showed, for example, that only five percent of American students surpassed the average Japanese student in mathematics proficiency (McKnight et al. 1987; National Research Council 1989).

Figure 1.—Real expenditure per pupil (in 1990 dollars per student), 1890–1990, by instructional staff salaries and other current spending



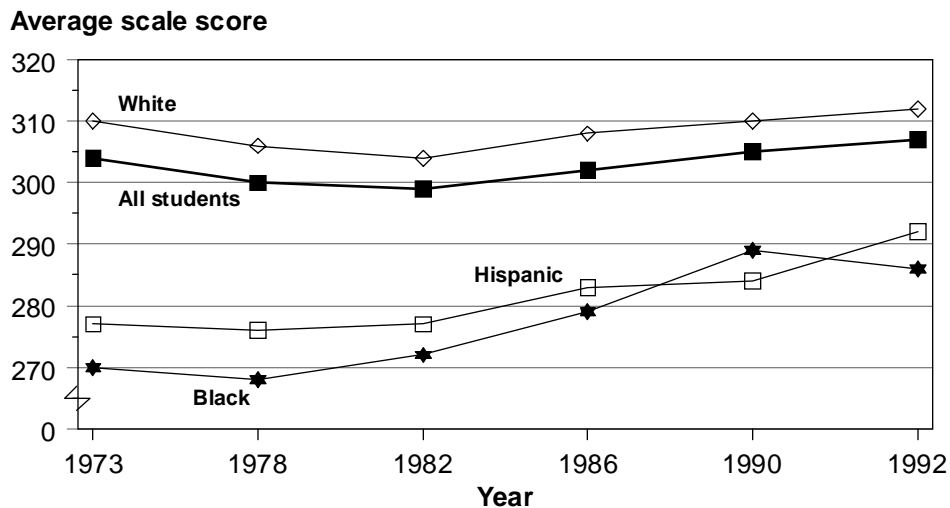
SOURCE: Hanushek and Rivken, 1994.

Figure 2.--Reading achievement of 17-year-olds, by race/ethnicity: 1971-92



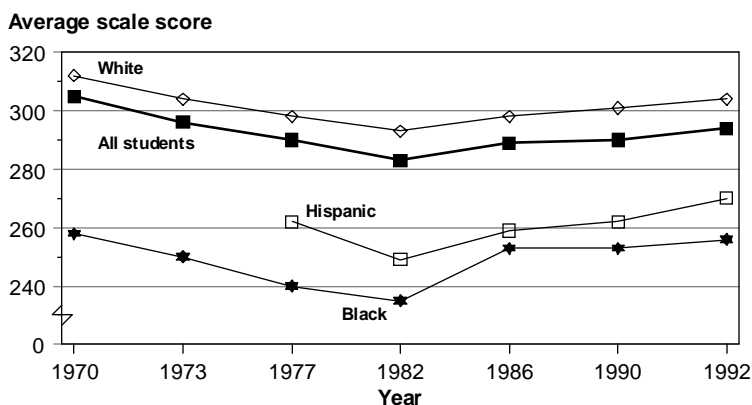
SOURCE: U.S. Department of Education, National Center for Education Statistics, *The Condition of Education*, 1993.

Figure 3.--Mathematics achievement of 17-year-olds, by race/ethnicity: 1973-92



SOURCE: U.S. Department of Education, National Center for Education Statistics, *The Condition of Education*, 1993.

Figure 4.—Science achievement of 17-year-olds, by race/ethnicity: 1970–92



SOURCE: U.S. Department of Education, National Center for Education Statistics, *The Condition of Education*, 1993.

The problems of performance are particularly acute when considered by race or socio-economic status. Even though there has been some narrowing of the differences in performance, the remaining disparities are huge and incompatible with society's goal of equity. The changes in aggregate spending on schools have not been sufficient to eliminate, or even to reduce significantly, the long-standing performance gaps between advantaged and disadvantaged students.

The pattern of spending changes in recent years points to an upcoming fiscal crisis for the nation's schools. During the 1970s and 1980s the American student population fell dramatically. During that time, increases in per-pupil expenditures were offset by decreases in the student population so that aggregate spending on schools rose more slowly than per-pupil expenditures (Hanushek and Rivkin 1994). But the situation is now changing, and the student population is rising again. As rising student populations combine with growth in real spending per student, aggregate spending will increase at a higher rate than it has over the past decade. These prospective expenditure increases are likely to collide with public perceptions that school performance is not rising. If this happens, local taxpayers (who play an important role in American school finance) are likely to resist future expenditure increases with unprecedented insistence, putting schools in a difficult fiscal squeeze.

Moreover, many of the major urban districts face fiscal pressures from competing demands for public revenues, such as welfare or police funding, suggesting that the worst of the fiscal crisis might appear in the already pressured schools of major cities.

The aggregate results, where expenditure increases have not been accompanied by improvements in student performance, are confirmed in more detailed studies of schools and classrooms (Hanushek 1986, 1989). These more detailed studies document a variety of common policies that increase costs but offer no assurances of commensurate improvements in student performance. Perhaps the most dramatic finding of analyses of schools is that smaller class sizes usually have no general impact on student performance, even though they have obvious implications for school costs. While some specific instruction may be enhanced by smaller classes, student performance in most classes is unaffected by variations in class size in the standard range of class sizes between 15 and 40 students. Nevertheless, in the face of high costs which yield no apparent performance benefits, the overall policy of states and local districts has been to reduce class sizes in order to try to increase quality. A second, almost equally dramatic example, is that obtaining an advanced degree does little to insure that teachers do a better job in the classroom. It is just as likely that a teacher with a

bachelor's degree would elicit high performance from students as a teacher with a master's degree. Again, since a teacher's salary invariably increases with the completion of a master's degree, this is an example of increased expenditure yielding no gains in performance. These are just two examples of how increased expenditures do not necessarily lead to increased student performance.

At the same time, while there is no consensus about what specific factors affect student performance, there is overwhelming evidence that some teachers and schools are significantly better than others. The dramatic differences in performance simply are not determined by the training of teachers, the number of students in the classroom, or the overall level of spending. A primary task of school reform is increasing the likelihood that a student ends up in a high quality learning environment.

The current inefficiencies of schools, with too much money spent for the student performance obtained, indicate that they can generally make improvements in their performance at no additional cost. Schools need to use existing resources in more effective ways. These inefficiencies also indicate that continuing the general policies of the past is unlikely to lead to student performance gains, even though cost pressures will continue to mount. While it may be appropriate to increase spending on schools in the future, the first priority is restructuring how existing resources are being used.

What Might Be Done

Any reform program must explicitly consider both the costs and the potential benefits of changes. Virtually all past considerations of school reform have simply ignored costs, or argued that the benefits were large enough to support any proposed increased costs.

The disregard for costs leads to distorted decisions. Overall, this view undoubtedly lowers the likelihood that any proposals will be taken seriously, because policymakers and the public will consider the price tag attached to any major restructuring of schools. As indicated above, however, attention to both costs and benefits should not be restricted just to new programs. Many existing programs are inefficient, and should be replaced by more cost-efficient programs.

Education is, however, a very complicated task that requires the cooperation and ingenuity of individual teachers, principals, and other school personnel. It is, moreover, virtually hopeless to think of running a high quality educational system without the active involvement of students. Finally, many equally effective approaches to learning various subjects and skills seem to exist, differentiated only by how individual teachers and students adapt to specific tactics and techniques. Because there is no single best approach to performing specific educational tasks, it is simply not possible to design policies that are based on full descriptions of what is to be done and how it is to be done in the classroom.

The policy suggestions here differ from most previous school reform reports. We do not recommend a specific program or restructuring of schools. As the PEER

report, *Making Schools Work*, emphasizes, current knowledge simply does not, in our opinion, support specific choices or broad recommendations. Indeed, we have every reason to believe that many different approaches might be simultaneously employed in a revised and effective schooling system. On the other hand, certain strategies in possible reforms are very clearly more beneficial, and it is these that we emphasize. Strategies involving improved incentives, ongoing evaluation, transmission of performance information, and consistent application of rational

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decision rules must be central to any productive reform path.

Incentives based on student outcomes hold the largest hope for improving schools. This idea is radically different from past policy, which has been based on a combination of regulations and central prescription of inputs to schooling—the resources, organization, and structure of schools and classrooms. Little attention has been focused on the results. Improvement is more likely to occur if policies are built on what students actually accomplish and if good performance by students is rewarded. If properly designed, performance incentives will encourage the ingenuity and effort necessary to develop and implement effective programs.

The implementation of performance incentives requires having explicit goals and developing measurements of performance that relate to these goals. Improving schools is currently made very difficult by the lack of generally agreed upon measures of performance. Quite clearly, developing incentive systems must include consensus about how good performance is defined and subsequently rewarded. Nonetheless, we do not see a test-driven management of schools but a reform that incorporates a variety of performance observations.

A wide range of incentive systems offer hope for improving schools (Hanushek et al. 1994). These systems are the subject of much heated debate and frequently bring forth emotional responses. They include charter schools, merit schools, merit pay for teachers and principals, private contracting for services, magnet schools, and broad-based school choice. Each of these systems conceptually focuses attention and incentives on performance, either through school evaluations or through parental involvement. In addition to these incentives directed

at schools, it is important to think of incentives directed at students. Active student participation in schooling is absolutely necessary for high performance, so developing ways to encourage more student (and parent) activity will reinforce any reforms aimed at schools.

These conceptually appealing performance incentives are virtually untested. Few examples of their use are available; and, as with the vast majority of new programs instituted in schools, attempts to introduce these various incentive systems are seldom evaluated in any systematic manner. Therefore, we know neither what forms of incentive systems are best nor what results we might expect from broader use of any specific system.

This lack of knowledge about performance systems calls for a broad program of experimentation and evaluation. Improvement on a large scale will be possible only with the development of a knowledge base of effective approaches. However, this is not an argument for more research on schools as they are currently organized. It is specifically directed at encouraging wider development and use of new incentive structures— incentive structures that have little use in the current schools. Such policies are risky, because some incentive systems will not work as hoped or predicted, but the alternative is retaining the old system that we know does not perform acceptably.

Evaluation is central. We must be able to disseminate and build on good results. Evaluation is itself difficult, because it is essential to disentangle the various influences on student performance. Schools and teachers are two factors that affect student learning. The students themselves and their parents directly influence performance, as do other students and other members of the community. Therefore,

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evaluation must concentrate on extracting the value-added of schools and linking this value-added to the programs and organization of the schools.

Any improved system will have to harness the energy and imagination of the personnel in the local schools. If incentives are instituted to reward performance, school personnel must have the freedom to institute the programs and approaches that will best enhance student performance. As indicated, the specific approach will almost certainly differ across schools and teachers, even if everybody faces the same reward structure for student performance. All of these approaches support the argument for decentralization of decision making. Some form of site-based management is likely to be an important component of new incentive systems.

The current approach to site-based systems, one of the most popular reform approaches in the country today, is not fully consistent with the ideas presented here. Most existing plans, proposals, and uses of site-based management are not directly linked to student performance. Without such links, decentralization of decision making has little general appeal. In short, site-based management is not an end in itself, but a means for implementing other reforms. Moreover, while the concept of decentralizing decision making is very appealing in various incentive schemes, there is little evidence to suggest that sufficient capacity for such decision making currently exists. As with many of the changes suggested here, the implementation will involve a period of learning and of attracting suitable personnel to carry out the program.

The educational problems of the disadvantaged frequently are treated in an entirely different way from more general reform, but we believe that this is largely inappropriate. The disadvantaged population

of this country has undeniably low average performance levels in the schools, and society must follow through on its general commitment to eliminate these disparities. At the same time, the most effective approaches to the education of these students will be based on the same principles espoused here. Careful attention to student outcomes, the development and institution of performance incentives, the evaluation of programs, and attention to both costs and benefits must be central to any plan for improving the education of disadvantaged students. Some of the most promising approaches to the education of the disadvantaged, such as the Accelerated Schools Program, follow the basic principles outlined here, such as having clear objectives and incorporating regular evaluation of student performance into the school structure. Programs for the disadvantaged must, as with other programs, be driven by performance.

Programs for disadvantaged students may differ in the details from programs for more advantaged students—for example, through more attention to how families are involved in the programs—but they still rely on better matching between schools and students and personnel. More attention might also be devoted to early childhood education for the disadvantaged, but should be subject to evaluation in the same manner as other school programs. Finally, programs for the disadvantaged may well involve additional resources, but these resources should be linked to developing and instituting effective programs.

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How to Implement Change

The current system of American schools does not emphasize student performance, so it should not be surprising that performance does not match our hopes and expectations. Most new programs offer few incentives to improve student achievement, and very little experimentation or evaluation is conducted. Each of these needs to be changed, but change also

implies very different roles for the participants in the system. This discussion highlights key issues involved in re-directing the focus of school policy.

The current teacher or principal would be in a very different situation under virtually any incentive system considered here. In many ways, teachers are the most important component of our schooling system, and they must become an active part in the development of improved schools. The teachers who will be best able to work within a new system with enhanced decision making roles may be quite different from the current teachers in terms of experience, training, expectations, etc. Current teachers cannot, however, be ignored in the process. Even though there will be a significant turnover of teachers over the next decade, the current group of teachers will remain a substantial portion of the total teacher force for many years. Implementation of new systems in which teachers would have different responsibilities and rewards might involve two-tier employment contracts. New teachers would receive very different contracts—contracts that would generally involve less tenure guarantees, more risks, and greater flexibility and rewards. Current teachers, on the other hand, would continue under existing employment rules for tenure, pay, and work conditions unless they individually opt for the new-teacher contract. Such a structure is designed to recognize the legitimate contractual arrangements with current teachers while establishing radically different structures and contracts with new teachers that are consistent with the different incentive structures advocated here.

State governments also need to make substantial changes in the role they play in education. The new role of states should be to promote and encourage experimentation and implementation of new incentive systems. The future of school reform depends on

developing new information, and states must actively lead in this effort. The states must first work to remove unproductive “input” regulations and certification standards, which unfortunately form the core of most current state educational programs. Instead, states need to concentrate on establishing performance standards and explicit student outcome goals. An important part of this effort is encouraging experimentation with alternative incentive structures and technologies and providing direct support for evaluation and dissemination of program information. Clearly, however, local districts currently do not have sufficient capacity to develop, implement, and evaluate their own systems. Moreover, states often mistrust individual districts and undoubtedly will resist permitting complete flexibility within local districts. To deal with this problem, states should intervene when local systems fail to perform at acceptable

levels. The form of intervention is important, however. Perhaps the best response involves the assurance to individual students and parents that alternatives will be provided for non-performing local districts, for example by providing extensive choice or voucher opportunities. The opposite approach, pursued now, is either to develop extensive input and process regulations to reduce the range of potentially unacceptable actions by local districts or to threaten to replace existing district personnel with state personnel.

Neither approach provides the right incentives or any real assurance of improvement.

The federal government should take on a primary role in developing outcome goals and standards, developing performance information, supporting broad program evaluation, and disseminating the results of evaluations. The federal government should also be involved in supporting supplemental programs for disadvantaged and minority students. As previously mentioned, programs for disadvantaged students should follow the same guidelines as above, but also

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may involve expansion of earlier childhood education, integration of health and nutrition programs, and other interventions to supplement background disadvantages. Providing these added programs is the proper role for the federal government, which strives to insure equal opportunity for all citizens. These federal roles are consistent with many of their current functions, but are extended to complement the performance emphasis proposed for schools.

Local school districts should take responsibility for making curricular choices, managing teacher and administrative personnel including hiring and firing on a performance basis, and establishing closer links with businesses (particularly for students not continuing on to post-secondary schooling). While none of these responsibilities are qualitatively different from current roles, they would be significantly different in content if states removed many of their restrictions on instruction and organization. Moreover, if major decisions devolved to local schools, new emphasis would be placed on management and leadership, and undoubtedly new decision-making capacity would have to be developed.

Businesses also have new roles. While U.S. businesses have frequently lamented the quality of workers they receive from schools, they have never worked closely with schools in defining the skills and abilities that they are looking for in prospective workers. More direct input to schools, perhaps coupled with long-term hiring relationships, could aid both schools and businesses. Moreover, if businesses insist on high performance in school, showing interest in transcripts and other evidence of scholastic performance, students would have very

different incentives to work hard in school. Finally, the movement of schools into the realm of performance incentives places them more in line with businesses that have traditionally employed such incentives. Businesses could aid in developing systems of performance incentives for school personnel.

A school system that regularly generated and disseminated performance information would provide a greater role for students and parents. Many of the approaches, such as expanded choice or more decentralized decision making, require an active involvement of parents. Currently, parents do not have many ways to interact effectively with schools, but more emphasis and information about performance could alter this relationship dramatically.

An Overriding Perspective

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Most school reform reports begin and end with a plea for additional funding. I have a different view of how reform should proceed. I believe that it is vitally important to concentrate first on incentives and fundamental organizational issues. This focus should precede any substantial changes in funding.

In the long run, the nation may find it appropriate to increase school expenditure. It is difficult to determine at this point what might be appropriate or necessary. But, it is clear that expanding resources first, and looking for reform second, is unlikely to lead to an improved system. A more expensive system, yes. A system with better performance, unlikely.

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