

# Chapter 1

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## Moving Beyond Money: The Variety of Educational Resources

DESPITE THE demands of generations of reformers for more funding, there are too many puzzles in the myth of money to ignore. The substantial increases in spending throughout the last century have neither reduced the need for reforms nor eliminated many inequalities in resources and outcomes. States and districts have poured substantial sums into reforms, but some of these funds have accomplished little; some expensive initiatives have been ineffective, and sustaining real reform has been difficult. A long series of efforts to demonstrate the effects of conventional resources—smaller class size, greater teacher experience, more overall spending per pupil—have generated ambiguous results, sometimes leading to the facile conclusion that money and school resources do not make a difference. Arguing again for more money might lead simply to more spending increases without the resolution of underlying problems.

So it is inadequate merely to debate the level and distribution of funding, as the “old” school finance has usually done. Instead it is necessary to develop an *improved* approach to school resources—including not just money but all of the conditions, practices, and personnel within schools that might enhance outcomes—as well as an improved approach to judging the effectiveness of school resources.<sup>1</sup> To do this, I first review in this chapter the dominant literatures examining resources and their effectiveness. Next I turn to more practice-based and anecdotal evidence about waste in schools to develop a conception of why waste seems so pervasive, particularly (it seems) in urban schools.

I then examine how we might conceptualize the effective use of re-

sources, introducing a set of precepts or conditions quite different from the assumptions of the “old school finance. With these precepts in mind, I distinguish between funding—expenditures per pupil, for example—and resources, or those inputs to schooling that dollars can only *potentially* buy. Furthermore, I distinguish among *simple* resources (like class size), *compound* resources (like class size reduction plus staff development), *complex* resources (like pedagogical approaches), and *abstract* resources (like school climate and stability). A final precept is that students are themselves resources and that several of their characteristics contribute to their own and their peers’ learning.

The idea of expanding the conception of educational resources well beyond funding is based partly on the conceptions about the causality of resource effects that are discussed in the third section of this chapter. The purpose is to reframe old questions in new ways and to establish a revised perspective that leads to different kinds of research, practice, and policy. While some of them are not particularly novel, the extent of these perspectives has been limited.<sup>2</sup> Most analyses of school resources still concentrate on dollars spent rather than on how resources are used, even when they attempt to determine *how* money matters (see, for example, Ladd, Chalk, and Hansen 1999). Principals and other school leaders seem to pay little attention to the educational efficacy of their spending decisions (Boyd and Hartman 1988), and leadership preparation programs include very little about how to spend money effectively. Some popular reforms like class size reduction cost huge sums but pay little attention to how changes might affect student learning; as a result, they often fail to accomplish anything. So it is worth continuing to define effective resources and clarifying the links (often tenuous to nonexistent) between spending and effective resources, since improved approaches to school resources will dominate only when most educators, policymakers, and researchers embrace them.

Few educators like to think much about money. It is dross, or straw, or filthy lucre that impedes thinking about loftier goals like educating all children to the limits of their potential. But money is also necessary if we are to produce the educational results that educators and parents and policymakers want; no one can build a schoolhouse or hire a teacher or buy a textbook without money. The provision of the bare minimum resources to create schools is no longer the issue, as it was in the nineteenth century; greater effectiveness and equity are now more important. The conversion of revenues into educational outcomes should not be magical, like Rumpelstiltskin helping the miller’s daughter spin straw into gold. Rethinking school resources requires moving away from alchemy toward a clearer understanding of the requirements for effective school spending.

## CONVERTING RESOURCES TO RESULTS: OPENING THE BLACK BOX

Several areas of research have wrestled with the effectiveness of school resources, particularly attempting to link education outcomes to inputs. Like production functions in economics, educational production functions are an effort to describe this connection, both conceptually and empirically—at least since the Coleman Report of 1966 linked educational outcomes (reading scores) to inputs—but without being precise about the process of “production,” that is, about the nature of teaching and learning.

The most common production function can be simply represented as a simple equation:

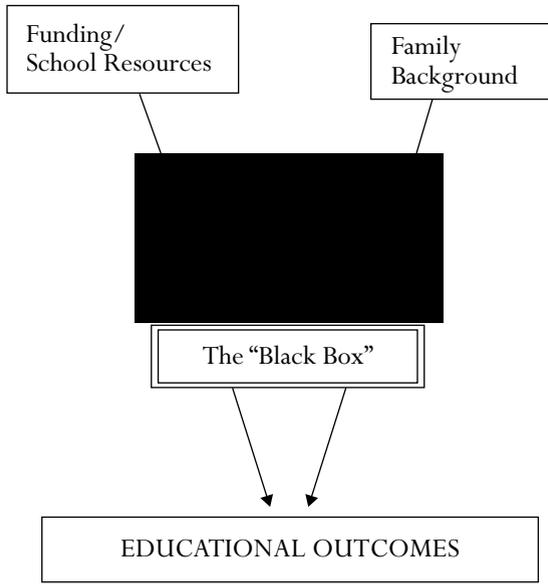
$$\text{schooling outcomes} = f(\text{school resources, family background}) + u \quad (1.1)$$

where schooling outcomes potentially include more than test scores, school resources includes expenditures per pupil but potentially many other kinds of simple, compound, complex, and abstract resources, family background reflects the myriad effects of families and communities,  $f$  represents a function (usually linear) linking school resources and family background to outcomes, and  $u$  is an error term representing what is unexplained by school resources and family background. This particular model of schooling does little to describe what happens within schools; as many have noted, it leaves the learning process as a black box with various external influences on it—as in figure 1.1. Resources are those that can be readily measured—spending per pupil, pupil-teacher ratios, teacher experience, sometimes teacher “ability” or knowledge as measured through test scores, and other school resources like library books and science labs. Outcomes have invariably been measured only by test scores. Such equations have been estimated with many different data sources, and a large literature for developing countries reproduces many of the American conclusions.<sup>3</sup>

The finding that the effects of resources are statistically insignificant more often than not has often been interpreted crudely as showing that “school resources don’t make a difference.” After various technical debates, the upshot has been the relatively weak statement that money and other resources might matter under some conditions (Hanushek 1997; Hanushek et al. 1994). This suggests that the challenge in developing alternative approaches is to specify the conditions that make resources effective—and by extension, that some resources (including money) may be necessary but not sufficient (NBNS).

However, a careful rereading of Hanushek’s summary results suggests

Figure 1.1 The “Black Box”: Conventional Production Functions



Source: Author’s compilation.

why so many studies have found simple school resources to be ineffective. If instructors continue to teach the same way in smaller classes, then class size reduction may have no effect; indeed, a random-assignment study of smaller classes in Toronto found that few teachers changed their behavior (Shapson et al. 1980), reinforcing the findings of Richard Murnane and Frank Levy (1996), who examined fifteen classrooms in Austin, Texas. Similarly, if some experienced teachers become skilled while others are burned out and are detrimental to students’ learning (Henry et al. 2008)—a common problem facing principals with an aging teacher workforce—then without ascertaining the practices among experienced teachers, experience may have no effect on average. If teacher education is concerned with content knowledge but fails to improve pedagogical practices, as has been a special problem for high school teachers oriented toward their disciplines (Cuban 1993), then it might not influence the quality of instruction. So resources are likely to be NBNS, and the conditions for sufficiency can be examined only by looking *inside classrooms* to determine the nature of instruction—to see whether experienced teachers seem burned out or sophisticated and whether or not

teachers in smaller classes teach in different ways to encourage improved participation from students. The *a priori* reasons for thinking that these simple resources are effective turn out to be weak once we recognize the complexities of schools and classrooms.

A second problem is that even those studies that find resources to be effective cannot tell *why* resources might make a difference. For example, Ronald Ferguson's analysis of Texas districts found that having teachers with high scores on a test of general knowledge led to higher test scores among their students, but the author acknowledged that "we can only speculate what teachers with high scores do differently from teachers with low scores" (1991, 477). Possible explanations for the success of smaller classes in a Tennessee experiment have included greater teacher morale, more teacher-student interaction, more student participation, greater effectiveness of small classes in socializing young children to school, and improvements in student engagement (Finn, Pannozzo, and Achilles 2003). The reason behind success matters a great deal. For example, if smaller classes enable teachers to socialize their students better, then resources should be concentrated in the early grades. If instead small classes create more student engagement, then middle and high school grades—when motivation and engagement flag for many students—might benefit more from smaller classes.

Overall, then, the approach of simple production functions, embedded in equation 1.1 and figure 1.1, has generated a number of puzzles and few clues about why some school resources might not matter. But both the conceptual approach to the effectiveness of resources and the resulting empirical research need to be elaborated before we can understand much more about what creates effective schools.

## THE POLITICAL ECONOMY OF WASTE: IMPLICATIONS FOR RESOURCE USE

Contrary to the assumptions of most reformers and to the myth of money that additional spending automatically leads to improved outcomes, other insights emerge from observations about the ways in which education funds are misspent. Many forms of waste come up routinely in discussions among teachers, principals, and reformers, though not in most school finance literature.<sup>4</sup> Here are some examples:

1. Funds can be embezzled or spent to hire incompetent friends and relatives.

2. Funds can be spent on inputs that have no effect—sometimes for incompetent teachers and other staff (a problem in every organization), sometimes for what economists call rents (like increases in salaries that do not call forth greater teacher effort or reduce turnover), and sometimes for

worthless inputs like textbooks, supplies, or computers that remain unused by teachers who did not want them.

3. Resources can be used without changing practices—as when weak and old-fashioned forms of staff development fail to change how teachers teach, or when reforms fail to change long-established practice.

4. Funds can be spent on purely symbolic practices, for public relations value rather than for effectiveness. For example, a new retention program may be established or a new superintendent hired simply to assure parents that everything possible is being done, not because these practices are effective.

5. Resources can be spent on well-intentioned but ineffective practices—adopting simple-minded forms of “technology,” for instance, or following the reform du jour which turns out to have no effect on learning. Alternatively, resources may be spent on practices with the potential for improvement, but the schools neglect the crucial features that make them effective. For example, after-school and tutoring programs are likely to be effective when instructors are well trained, where there is a coherent vision of their purpose, when the programs are connected to regular classrooms, and when they use motivating approaches to teaching—but not when schools throw students who are lagging in classrooms together with untrained high school graduates who have no instructional plans and no connections to regular classrooms. An after-school program turns out to be a compound and complex resource rather than a simple practice of hiring a few aides and tutors.

6. Resources may be spent on changes with potential long-run benefits—like improving school climate, changing the approach to instruction within a school, or developing committed teacher-leaders. Then, if other changes take place—a new principal or superintendent is hired, a different reform du jour is adopted, turnover occurs among teachers, the state shifts its priorities—the resources spent earlier are effectively wasted. This implies that, with changes that take some time to develop, the stability of personnel and reforms is itself a resource, though one that is usually overlooked. Indeed, instability breeds more instability, since teachers and principals are likely to burn out at schools with too much commotion; stability is therefore a precarious resource.

7. Spending resources piecemeal may fail to lead to coherent change. This happens, for example, when schools spend money without an overall plan, when they have to spend money quickly at the end of the year, when categorical grants are used for peripheral changes that do not improve a school’s core teaching or further a central vision, or when materials or staff development funds are allocated to individual teachers to spend independently rather than to a schoolwide priority.

8. Resources may be spent on changes that are necessary but not by themselves sufficient—purchasing computers without providing teacher training

and maintenance, alleviating chaos (or creating a positive school climate) without improving teaching, reducing class sizes without sufficiently training teachers, or hiring instructional aides without putting them to good use.

9. All too often, it seems, principals and other school leaders (like school-site councils) are ignorant of the resources they have, of the funds over which they have control, and of ways of thinking about money, resources, and the relationships between the two. Their preparation programs usually neglect any broad ways of thinking about resources and treat finance and budgeting (if they are treated at all) as technical issues of what budget codes to use and how to use various spreadsheets.<sup>5</sup> Many districts provide little discretionary funding to schools, so principals have few incentives to invest time in learning about their budgets and resource alternatives. Even when they instigate school-based budgeting (SBB), districts usually train principals in the spreadsheets and computer tools necessary for submitting their budgets, not in how to think about which resources are effective and how to enhance them. Many urban principals are overwhelmed by discipline issues, angry parents, and district demands and too distracted to pay much attention to resources (or to instruction, for that matter); an appalling number of them unload budgeting chores onto administrative assistants.<sup>6</sup> But it is hard to know how to eliminate waste, how to identify ways of reallocating resources to more effective uses, or how to institute reforms that require additional resources if principals are ignorant about the resources in their schools.

10. Particularly in urban schools, including the schools that are trying to narrow inequality, a good deal of spending at the margin represents second-chance efforts, that is, programs to teach students the academic capacities they failed to learn the first time around. On the one hand, the existence of so many second-chance programs in the United States is heartening because they provide individuals with several chances to succeed—another dimension of the American Dream. However, second-chance programs almost by definition operate under difficult circumstances. Some students have experienced mistreatment or failure in earlier schooling that makes them resistant to “more of the same.” Peer effects work in counterproductive ways, since second-chance programs bring together groups of students who have not done well, rather than mixing them with more successful and higher-performing students. And for high schools, teaching basic academic, conceptual, and personal skills in short periods of time to students who have not learned them in eight years of regular schooling is self-evidently difficult: such programs are often asked to make many years of gains in one year or less. So it is not surprising to find that many second-chance efforts are ineffective despite the amount of money involved; the review of such school efforts in chapter 8 only reinforces this point. As educators, we can only be ambivalent about second chances; the best alternative would be not to need them.

The reasons for waste surely vary among schools and districts, but they generally fall into four groups. First, in the first three categories described here, spending money leads to no change; second, in the next five categories, practices change, but the changes are in the end ineffective, for reasons varying from a choice of the wrong reform to lack of planning to expenditures that are NBNS. In the case of principal ignorance about budgets and resources, these administrators lack the technical competence to reallocate resources from conventional practices, from the historic or “default” uses of money to more effective uses. And the ambiguity of second-chance solutions is simply a structural feature of schools that are trying hard (if often unsuccessfully) to “leave no child behind.” The challenge is to use funding *both* to change practices *and* to make the kinds of changes that matter to outcomes.

Third, in positing a simple relationship between revenues and schooling outcomes, as in figure 1.1, there are special problems with non-instructional expenditures. Some of these (for transportation and safety measures) are necessary but can never enhance learning. The goals they promote (student safety, for example, or simply getting students to school) are crucial to parents and children but are rarely included among educational outcomes. Other goals (like improving the physical conditions of schools) can lead to increased learning if students have been bothered by heat, cold, noise, poor lighting, disgusting bathrooms, or crumbling buildings (Corley 2002; Sandel 2002) or if instructors have been constrained by inadequate space or inadequate lab equipment. But beyond some point, increasing these expenditures is unlikely to further increase learning. Administrative spending is widely excoriated as “bloat,” necessarily wasteful, but some administrative spending is necessary to keep schools functioning. Furthermore, under special conditions (NBNS, once again), more administrative resources can enhance effectiveness; for example, multiple principals at a school may increase attention to instruction and to student support services (Grubb and Flessa 2006). The frequent calls for principals to become instructional leaders also imply that increased spending for administration may, if used in particular ways, improve learning and motivation. Some non-instructional resources, including extracurricular activities and certain student support services, are intended to strengthen motivation and progress through high school (see Marsh and Kleitman 2002; National Research Council 2004, ch. 6), but they do not affect learning and may therefore be viewed as ineffective in research limited to test scores. So some non-instructional resources are necessary, and others under the right conditions enhance student engagement, but they may also become forms of waste. An obvious implication is that measures of outcomes other than test scores may be critical, since some resources may affect outcomes like motivation, persistence, and progress rather than test scores.

Finally, there are problems about short-run versus long-run effects that are both difficult to detect and may lead in the end to waste. Usually reformers believe that their innovations have long-run effects—for example, that a tutoring program for third-graders or coaching for fifth-grade teachers or Reading Recovery (as its name implies) has permanent effects. But long-term research is expensive, especially for random-assignment research, so we know very little about long-run effects. If a reform has only short-run effects, *and* if there are no follow-up reforms, then funds spent on it are wasted over the long run. I return to this problem in chapter 6 when I examine the question of short-run versus long-run effects on learning trajectories and dynamic inequality (see especially figure 6.3).

What is troubling about public schools is not that they occasionally mispend resources, as every institution and every family does, but that they seem structured to do so. The sources of waste identified here arise not primarily from venality or stupidity or carelessness (though these characteristics may be found in any organization), but from several structural features of public education.

First, public education (like most public activities) is driven by conventional interest group politics—a struggle for scarce public resources based on the power of interest groups rather than on the rightness of the cause. The constituency for jobs is often more powerful than that for improved educational performance, and so battles over the level and distribution of spending (on teachers, for example) rather than over the promotion of learning often dominate educational politics—the kind of problem that causes participants to comment that education ought to be above politics. (Unions are often considered to be special culprits here.) In addition, education seems especially prone to symbolic politics, like the state and federal policy rhetoric around holding schools accountable, the practices of “naming and shaming” low-performing school, and the rhetoric in the federal No Child Left Behind (NCLB) Act that “all children can learn.” These tactics cannot by themselves improve educational outcomes; they are instead designed to show taxpayers—and especially the anti-taxers expressing “hide-bound conservatism and niggardly parsimony”—that policymakers are demanding more of schools and students. Ironically, symbolic policies may themselves waste resources and degrade effectiveness—for example, when students who are retained fail to learn any more the second time in a grade and end up dropping out, or when state and federal accountability measures undermine learning, or when the general expansion of state, federal, and court mandates makes it impossible for schools to operate as effectively as they could (Wise 1979).

Second, some characteristics of schools as organizations make it difficult to impose changes on schools and teachers. Loose coupling, or the ability of teachers to pursue their own agendas when the classroom door is closed,

makes it difficult to require or mandate reform. The relative independence of teachers means that the curriculum and instruction and methods vary from class to class, from school to school, from district to district. As students move through the system, they find themselves in inconsistent classrooms, often repeating material from earlier grades or lacking the prerequisites for what they are supposed to be learning. Of course, state standards are supposed to eliminate such variation, but they often fail to do so—creating not only inconsistency and waste but also greater inequalities over time. Reforms that require jointly necessary changes, rather than piecemeal reform, are particularly difficult under the conditions in many schools where disagreements over goals and pedagogies, instability in personnel, and inconsistencies in conceptions of roles may prevent making a series of coordinated decisions. The potential lack of agreement leads in turn to inconsistency or misalignment as different participants stress different aspects of reform or try to use resources in different ways. And organizational inertia, or the difficulty in changing organizations with long-standing practices and conservative cultures, means that a great deal of energy and many resources are necessary to change schools. In the current fiscal climate, the lack of slack resources—time and energy for teachers to reexamine their own practices or for school leaders to institute reforms rather than just respond to daily crises—inhibits teachers and administrators from changing practices. Ironically, then, especially low levels of resources may lead to *less* effective schools not only by reducing the resources (like teachers, staff development, or materials) that money can buy but also by reducing the “invisible” or abstract resource of cooperation—a resource that proves crucial to reforming instruction in schools. The inertia of all institutions constrains even the best-designed reforms.

Third, the pedagogical complexity of schooling can lead to a different inconsistency or misalignment within classrooms. For example, teachers skilled in more constructivist or “balanced” teaching methods are not effective if students have been prepared only in behaviorist classrooms. As another example, students who think of their education in highly instrumental and vocationalist terms may themselves thwart the efforts of instructors to develop deeper understanding (see Cox 2004; Pope 2001). If there needs to be an equilibrium between teachers’ approaches and students’ expectations, then neither is effective without the other. More generally, where there are differences among the four basic elements of the classroom—teacher practices; student understanding of schooling and pedagogy; the curriculum, including elements coming from outside the classroom; and the larger institution, including school-level administrators and also district, state, and federal pressures—instruction is compromised in one way or another.<sup>7</sup> This is another version of NBNS: imposing a new curriculum without preparing

teachers, or shifting pedagogy without resocializing students, is unlikely to be effective.

Fourth, the history of schools imposes its own weight. Most revenues (more than 80 percent of total expenditures) are locked up in salaries and benefits covered by contracts and cannot be changed at all in the short run; even in the long run, changes cannot take place without bitter political battles (especially battles with unions). Other resources that are embedded in school buildings and land are difficult and expensive to reconfigure. The dominant conceptions of “school” limit the abilities of reformers to shift resources too wildly; this is a problem even in charter schools, where nonstandard practices may cause resistance from parents accustomed to more conventional conceptions of school. Furthermore, without continuous effort, reforms are likely to collapse back to the default model of schooling, as has happened with proposals to experiment radically with deschooling or experiential education. In practice, then, incremental budgeting reigns, with only marginal changes from year to year. Many reforms end up being more of the same, and if the old configurations of resources were not particularly effective, the new ones will not be either.

Finally, school finance litigation, which has been such a powerful attempt to alter spending patterns, is necessarily a crude instrument of policy. Courts can forbid practices but often cannot (or will not) specify what *should* take place. The remedies that legislatures have developed in response usually reallocate dollars through changes in finance formulas—the minutiae of school reform—without providing much direction about finding effective uses of these dollars. This has reinforced a tendency to see the problem as one of spending levels and redistribution—consistent with the money myth—rather than as one of effectively using the resources that exist. To be sure, a few states have responded to school finance lawsuits by revising state policy substantially rather than just by changing spending patterns, and such efforts might help districts and schools to spend money wisely. But only with the recent *Williams* case in California have litigation remedies been stated in terms of potentially effective *resources* rather than *dollars*.

## The Special Case of Urban and Low-Income Districts

So it is easy to develop a conception of resource use that identifies the deeply rooted structural conditions—political, organizational, pedagogical, historical, and legal—that undermine the effective use of funding. Furthermore, my working hypothesis—meriting much more investigation, to be sure—is that these conditions are worse in urban and low-income districts. The issue is not one of simple funding levels, since urban districts on the whole have slightly higher expenditures per pupil than do suburban districts. In

2003–2004, for example, central-city schools spent \$7,812 per pupil compared to \$7,542 in suburban schools (and \$7,268 in all public schools). At the same time, this slightly higher level of spending did not lead to more real resources: central-city schools had higher numbers of students per teacher (15.0 versus 14.6), lower teacher salaries (\$45,400 versus \$46,100), a higher proportion of schools with temporary buildings (37.7 percent versus 34.4 percent), and a higher proportion of schools using common spaces for instruction (21.3 percent versus 19 percent).<sup>8</sup>

Rather than overall inadequacy of funding, urban districts suffer from multiple problems that make it more likely that they will waste resources and fail to translate the funding they do have into effective resources. One includes the sharper political disagreements and lack of consensus about supporting public schools that Clarence Stone (2001) has labeled the lack of civic capacity. The many battles over mayoral control of schools provide obvious examples of reforms simply stopping while basic governance issues are resolved. Political disagreements often take racial forms because different racial and ethnic groups compete for resources and attention, a less serious problem in more homogeneous suburban and rural areas, and greater numbers of advocacy groups contend for influence over urban schools compared to suburban and rural areas. Resource-starved communities in low-income central cities are more likely to view schools as sources of employment; this perspective undermines the commitment to learning as the sole purpose of schooling and then leads to calls to “put schools above politics.” Union conflicts seem to be especially bitter in urban communities, perhaps because bread-and-butter unionism focused on salaries and employment conditions predominates over professional unionism, which is focused more on professional issues like instruction.<sup>9</sup> Symbolic politics is likely to be especially acute because the depth of problems and racial conflicts make real solutions difficult and symbolism attractive. Instability and turnover—of teachers and principals and district administrators and policies as well as of students—make institutional change more difficult. The lack of consensus within schools, tense personal relationships (see, for example, Ballou 1998; Payne 1997; Payne and Kaba 2001), and the absence of slack resources appear to be worse than in suburban or rural schools. The pedagogical issues in teaching low-income students, as well as large numbers of immigrant and special education students, are especially difficult, while teachers are more likely to lack experience and credentials.

The problem is not only that funding and other resources are inadequate to the educational and non-educational needs of urban students, but also that structural conditions may make urban districts unable to do as much with the resources they have. These are conditions under which more funding might well be ineffective and the reform of structural conditions may be necessary before money can be spent effectively.

## AN IMPROVED APPROACH: MOVING AWAY FROM INEFFECTIVE SPENDING

There are several ways out of the dilemma of ineffective spending, including both research-based and practice-based possibilities. If we knew with some certainty what practices are effective, then we could concentrate funds on specific uses and reforms. This is the impulse behind the enormous and growing literature on “what works,” starting with the Obey-Porter Comprehensive School Reform Demonstration legislation of 1997, which provided federal funds for “proven practices,” and continuing with the What Works Clearinghouse of the Institute of Education “Sciences” (IES). This logic also motivates the allocation of categorical funds for specific (and presumably effective) practices ranging from Head Start to school lunches; the efforts of foundations to replicate successful models; and the creation by reformers of networks of schools that move their promising practices to scale, from Comer schools, which provide a variety of community supports, to “Accelerated Schools” to small schools. It is also the impulse underlying the research I report in this book, since the school resources identified in chapters 2 and 7 as effective then lead to recommendations for school, district, state, and federal policy in part 3.

But coming up with a list of “proven practices” has been both difficult and contentious. One effort to identify what works—the inventory of the American Institutes for Research (AIR 1999) of twenty-four schoolwide reforms—reported “substantial” evidence of success for only three of these school reforms. Of those three, one (“High Schools That Work”) had no comparative research; another (“Direct Instruction”) was evaluated only by standardized tests well suited to its emphasis on specific skills and has since been challenged by other research; and a third (“Success for All”) has had highly contentious evaluations. The effectiveness of the major federal programs—particularly Chapter I and bilingual education—has been extremely controversial, the latter for political as well as technical reasons. The methodology of evaluations involves endless debates, and the current efforts of the Institute of Education “Sciences” to promote random-assignment research over other quantitative and qualitative methods have been controversial. At the same time, because controlled experiments in education are so difficult and have always been resisted (Cook 2000), hard-nosed analysts can always claim that some aspect of student or school selection is responsible for any positive results. The networks of reforming schools all acknowledge that the fidelity of reform varies enormously, making it difficult to distinguish the effectiveness of the reform idea from the quality of its implementation. Finally, the need for “proven practices” raises the unavoidable question of what we want education to be. Do we want to measure outcomes

with standardized tests of grammar facts and decontextualized math problems, or with analytic writing and problem-solving abilities? Do we want to concentrate on a sparse set of cognitive outcomes—reading and math—or do we want schools to develop a range of competencies or “intelligences” (Gardner [1983]1993)? The notion of “proven practices” cannot be disentangled from discussions about what education is all about; indeed, the need to cast “proof” in quantitative terms requires unambiguous outcome variables. So the search for “what works” will surely continue, but it is hard to imagine marshaling universally accepted proof.

In the absence of “proof,” we have usually placed resources in the hands of people who might know what is effective. Conventionally, school boards have been given this power, though they usually delegate authority to superintendents. Sometimes, in site-based budgeting, the decisionmakers are principals, or principals with school-site councils. In other cases, as in vouchers and choice mechanisms, parents are given more control, if only through choice and exit. Recently states have played more active roles, with state tests for students or teachers, state standards and curriculum guides, staff development and pre-service education requirements. The federal government has resources too, and in some legislation Congress has expressed its conception of effective resource use—the Obey-Porter legislation, or the requirement to integrate academic and vocational education in vocational education, or the Reading First program in No Child Left Behind, or the What Works Clearinghouse with its insistence on experimental or quasi-experimental evidence. Courts often intervene, particularly in desegregation cases and special education. But each of these implicit decisions about who can best decide the effective use of resources has its own limitations. Principals, school-site councils, school boards, superintendents, districts, and state and federal policymakers are all distracted from instructional concerns by other political and administrative issues (Cuban 1988); they may have limited information about instructional alternatives, they may hold on dearly to simple and favorite solutions (class size reduction, instructional aides) despite contrary evidence; or they may have different priorities for outcomes, returning us to the structural problems identified in the theory of waste. And the implicit delegation of power to so many levels of government as well as the courts has led to the “bureaucratization of the American classroom” (Wise 1979): no one has complete authority, and the search for effective resources is often drowned in other agendas.

So neither the research-based approach to finding “what works” nor the practice-based approach of identifying who might make the best resource decisions can extract us from the structural problems associated with spending money effectively. A Deweyan distaste for either/or solutions might suggest that some synthesis is preferable to either alternative—for example, a search for varied evidence about what works under what conditions, to-

gether with resource decisions by those at the school level who are most familiar with the conditions of students and their communities. Such an approach might also allow educators to confront both the central questions of improved approaches to school resources: how resources are spent at the school and classroom levels and whether they are spent on effective practices. But in searching for some way forward, there is no substitute for confronting the reasons why resources often go for naught.

## PRECEPTS FOR AN IMPROVED APPROACH TO SCHOOL RESOURCES

Earlier sections of this chapter, based on interpretations of research and on the implications of practice, provide a number of guidelines for an improved approach to school finance and the use of resources. We can usefully break these into four primary precepts:

1. *Understanding how effectively or ineffectively resources are used requires observation in the classroom.* One obvious conclusion is that it is necessary to enter the classroom and the school—through classroom observation and measurement—in order to see how resources are used. Otherwise, it is impossible to distinguish a skilled and experienced teacher from a burned-out and experienced teacher; to see what changes in instruction have been caused by class size reduction, or staff development, or new standards, or a new curriculum, or any other change; or to see whether resources that are not easily measured—strong leadership, for example, or consistency of pedagogical approaches—are present.

2. *Funding must result in changes that affect outcomes of interest.* A second conclusion is that effective spending requires a two-stage process. Contrary to the forms of waste identified in the previous section, funding must first result in changes, and *then* those changes, to avoid being ineffective, must affect outcomes of interest. The decision for any school, then, is to first ascertain those practices within schools and classrooms that enhance learning or educational progress, and then to allocate resources (including but not limited to money) to ensure that these practices are carried out, rather than using resources in ways that are ineffective or fail to change practice.

3. *Many resources are necessary but not sufficient.* A third conclusion is that many resources are necessary but not sufficient (NBNS). Class size reduction requires an adequate supply of able teachers, computer use requires the professional development of teachers, changes in teacher practices should be accompanied by changes in student conceptions of learning, and so on.

This conclusion leads in turn to thinking of resources in four categories. *Simple* resources are components of expenditure per pupil and can usually be recognized from the simple identity:

$$\text{Expenditure per pupil} \equiv (\text{teachers/pupils}) (\text{average teacher salary}) + \text{admin}\$/\text{pupil} + \text{materials}\$/\text{pupil} + \text{capital outlays}/\text{pupil} + \dots \quad (1.2)$$

where expenditure per pupil is disaggregated into components like the teacher-pupil ratio  $T/P$ , the average teacher salary (itself a function of credentials and experience), and other expenditures like administrative costs per pupil, materials costs per pupil, capital outlays per pupil, and so on. Conventional production functions like equation 1.1 usually include only simple resources defined in this way. Often schools try to introduce changes based on simple resources—smaller classes, better-credentialed teachers, specific curriculum materials for a new program, more computers, or multimedia resource centers (the replacements for libraries). Some of these reforms then run into trouble when it turns out that a simple resource by itself is inadequate to enhance learning—for example, when reducing class size or adopting a new curriculum or introducing a multimedia center requires professional development to enable teachers to take full advantage of these resources. The failure to recognize the need for a compound rather than a simple resource not only wastes resources but also makes the process of reform suspect if teachers are subjected to “reforming again and again and again.” If certain resources are NBNS, then it becomes necessary to identify *compound* resources.

Some resources, which I call *complex*, are difficult to introduce into a school and cannot be readily bought, as simple resources can be. These include such practices as the strong leadership of the effective schools literature or the shift to more constructivist or “balanced” pedagogies. These resources are complex not only because they cannot be simply bought, but also because the mechanisms necessary to create them are lengthy and complex, like improving the quality of instruction using classroom observation and feedback (Tharp and Gallimore 1988, ch. 10).

Finally, *abstract* resources may be particularly hard to detect and measure, and their relationship to funding is uncertain. For example, it is hard to know how to buy stability, and while curricular coherence might benefit from staff development, it surely requires much more than money can buy. Similarly, the quality of relationships between teachers and students, a constant refrain of teachers, surely influences the quality of learning (confirmed for early childhood programs by Mashburn et al. 2008), but it requires careful teacher selection, preparation, attention to school climate, perhaps classroom observation and feedback—and none of these is easily bought. Abstract resources are often embedded in the web of relationships within schools and thus require the cooperation of many participants; like complex resources, they may require some funding, but money is not the key resource. Many kinds of abstract resources have been mentioned by reformers, including school climate, coherence of curriculum (Newmann et al.

2001), trust (Bryk and Schneider 2002), pedagogical consistency, alignment of views about reform, and the stability among students, teachers, school leaders, and district administrators and their policies. When I return in chapter 9 to a more collective approach to schools, this feature of abstract resources will emerge as an important characteristic.

4. *Students themselves can be classroom resources.* A fourth conclusion, starting from the observation that teacher and student expectations about instruction may not be consistent, is that students are themselves resources in the classroom (also emphasized by Cohen, Raudenbush, and Ball 2003). Students come to school with different personal and intellectual resources, reflecting differences in their prior cognitive preparation (at home or in previous schooling); in their motivation and engagement; in their approaches to discipline and schoolwork; in their conceptions of what constitutes learning; in the distractions of work, television, and other forms of contemporary culture; and in their peers. We might call this resource “student connectedness to schooling,” or SCS, since there is a substantial literature on different dimensions of connectedness (Libbey 2004; Nasir, Jones, and McLaughlin forthcoming), though closely related labels include “motivation and engagement,” or the phrase I used in earlier writing, “student ability to benefit from instruction.” Connectedness to schooling is, of course, an abstract resource, often embedded in the relationships between students and school personnel (especially teachers), though it can be measured in various ways—as in table 1.1 and in chapter 5.

Family background surely influences student connectedness to schooling, though student motivation can also be enhanced by early childhood programs, the efforts of teachers to socialize children in the early grades, the quality of prior schooling, family literacy and parent participation, efforts to institute instructional practices (like constructivist and conceptual teaching), and organizational forms (like small schools) that enhance motivation and engagement through guidance and counseling, school services, and the like (National Research Council 2004). Conversely, student connectedness may be undermined by the impersonal conditions prevalent in many high schools; the mistreatment of students (especially black and Latino students); conditions leading to student resistance (Willis 1977); black students’ notions that school success is “white” and therefore reprehensible (Fordham and Ogbu 1986); preferences for fun and games or adolescent mating rituals during high school; or more serious health and mental health conditions like drug and alcohol abuse, pregnancy, or depression. And instructional conditions may respond to a student’s connectedness to schooling. For example, teachers may respond positively to motivated students and negatively to those who are disruptive; they may give up on students with poor attendance or those who do not do their homework; and they may have little patience for those employed a great deal, even if family circumstances re-

Table 1.1 Variation in Resources

Variable	Coefficient of Variation
Financial resources	
Current expenditures per pupil (adjusted)	.234
Instructional expenditures per pupil (adjusted)	.244
Percent state revenue	.415
Percent federal revenue	1.107
Parental contributions per pupil (adjusted)	3.190
Simple resources	
Pupil-teacher ratio	.427
Low teacher salary	.159
High teacher salary	.213
Teacher certified	.366
Teacher education	.321
Compound resources	
Teacher experience in secondary education	.545
Teacher teaching in field of preparation	.294
Planning time	.370
Staff development	.530
Student in general education	1.416
Student in vocational education	2.886
Student in remedial education	1.717
Complex resources	
Teacher time use	.765
Conventional teaching	.239
Innovative teaching	.497
Teacher control	.183
Teacher sense of efficacy	.194
Teacher innovation	.951
Conventional math teaching	.255
Innovative math teaching	.421
Abstract resources	
Positive school climate	.234
Negative events	1.483
College pressure	.244
Staff responsibility	.193
Principal control	.221
School attendance rate	.059
Percent school lunch	1.037
School problems (administration-reported)	.523

Table 1.1 *Continued*

Variable	Coefficient of Variation
Family background	
Mother's education less than high school	2.899
Mother's education college	1.511
Mother's occupation low-status	1.480
Mother's occupation professional	1.288
Income per dependent (unadjusted)	.993
Income per dependent (adjusted)	.758
College savings	1.651
Parental aspirations low	2.024
Parental aspirations high	1.229
Family changes	2.859
Student changed school	2.571
Student language not English	2.995
Student connectedness	
Homework	.737
Television	.606
Use of counselor	.940
Attendance problems	.996
Total absences	.824
Behavior problems	4.169
Hours of employment	.999
Extracurricular activities	1.163
Outside activities	1.400
College-oriented peers	.332
Dropout-oriented peers	4.266
Gang activities	2.799

Source: NELS88, second follow-up, senior year. See appendix A for variable definitions and sources. Adjusted variables are corrected for cross-section price differences.

quire it. Student-centered teachers adjust their instruction to students with varying backgrounds and interests.<sup>10</sup> As I review in chapter 4, middle-class parents are more likely to instill in their children the attitudes and behaviors—*independence, initiative, facility in speaking with adults, “interpersonal competence”*—that teachers prize, at least in college-bound tracks. Schools provide different levels of resources through tracking or teacher assignments to students with lower levels of preparation—sometimes allocating more compensatory resources for struggling students and sometimes more resources for high-performing students (Brown 1988; Gamoran 1988).

As a working hypothesis, it seems likely that many of these resources are more unequally distributed among schools and among students than are expenditures per pupil, and that compound resources are more unequally distributed than are simple resources.<sup>11</sup> While the existing literature contains a smattering of evidence confirming this hypothesis (see, for example, Alexander 2003; Lankford and Wyckoff 1995), table 1.1 presents more complete results based on the National Educational Longitudinal Survey of the Class of 1988 (NELS88) data. These figures describe the variation among individual students in many resources, as measured by the coefficient of variation (the standard deviation divided by the mean). The resources included in this table are largely those included in the analyses of chapters 2 and 3, and therefore the school resources described are only those found to be effective in enhancing one outcome or another. The coefficient of .234 for expenditure per student—the most enduring target of equity reformers—is among the lowest levels of inequality in the table, and the variation in instructional spending per pupil is about the same. Not surprisingly, parental contributions per student are much more unequal than are total expenditures per pupil, as high-income parents are better able to contribute to school foundations. Inequality in both low and high teacher salaries is about the same as inequality in spending, but other simple resources—the pupil-teacher ratio, teacher certification, and teacher education levels—are more unequal.

When we shift our attention to compound, complex, and abstract resources, inequalities are (with the exception of the school attendance rate) much higher still. In particular, the resources linked to innovative instruction—teacher use of time, overall innovative teaching, innovative math teaching (and innovative science teaching as well), teacher innovation as noted by the principal—are highly unequal, at least as compared to the distribution of spending per pupil. Some abstract resources are about as unequal as spending (like the existence of college pressure, positive school climate, and the extent of staff responsibility), but negative events in school, school problems as reported by the principal, and the proportion of the student body who receive free or reduced-price school lunch—a reflection of overall student socioeconomic status—are all highly unequal. So to understand the inequality of school resources, it is necessary to consider a much wider range of resources than has been customary.

When we turn to nonschool resources, inequalities are markedly higher. Every dimension of family background is much more unequally distributed than virtually any school resource. The coefficient of variation for family income per dependent (adjusted for cross-sectional cost differences), often used as a summary measure of inequality, is .758, much more than the inequality in school spending per pupil, but the other dimensions of family background are more unequally distributed than income—coefficients are

well above one and sometimes above two for measures of parental education, aspirations for children, college savings, and occupational status. These results confirm the notion that the variation across families and across the elements of family background that affect schooling outcomes is much greater than the variation in school resources, however measured (see also Downey, von Hippel, and Broh 2004). Finally, the measures of students as resources—the measures of their connectedness to schooling—are more unequally distributed than most school resources, in part because they are linked to unequal family backgrounds.

From an equity standpoint, then, it is inadequate to consider just spending patterns and simple resources. The largest inequalities among students prove to be found in other school and nonschool resources, clarifying the importance of an improved approach to resources. And so concern with the inequities in schooling inputs, including compound, complex, and abstract resources, needs to go well beyond the concern with simple resources that has dominated school finance discussions.

## REVISING THE MODEL OF SCHOOLING “PRODUCTION”

Based on these precepts, then, a revision of the simple model of school “production,” as in equation 1.1, is necessary. While conventional production functions treat the educational process as a black box, an improved approach should start to examine the ways in which resources are used and open up the black box. The simplest approach is to specify a two-step process in which revenues influence instructional conditions and school resources, including simple, compound, complex, and abstract resources within classrooms and schools, and these instructional conditions in turn enhance learning and other outcomes of various kinds. They might include both instructional resources related to teaching and non-instructional conditions like extracurricular activities that keep students in school (Marsh and Kleitman 2002), student support services like health and mental health services, and different forms of guidance and counseling (NRC 2004, ch. 6). Slightly more formally,

$$\text{School resources} = g(\text{expenditures/pupil, . . .}) + e \quad (1.3)$$

$$\text{Schooling outcomes} = h(\text{school resources, family background}) + u \quad (1.4)$$

where  $e$  and  $u$  are error terms, reflecting the fact that the independent variables on the right-hand side of each equation are unlikely to explain all of the variation in the dependent variables. The first of these equations describes the way in which expenditures are (or are not) translated into classroom and

school conditions related to learning. The second describes the effects of instructional and non-instructional conditions on valued outcomes, both cognitive and noncognitive. The conventional production function (equation 1.1) is a reduced-form version of equations 1.3 and 1.4 in which equation 1.3 is substituted into equation 1.4 to yield equation 1.1, conflating two different causal processes.

A further elaboration is to introduce the role of student connectedness to schooling. This may be influenced by family background, as well as by instructional school resources that enhance motivation and engagement, or

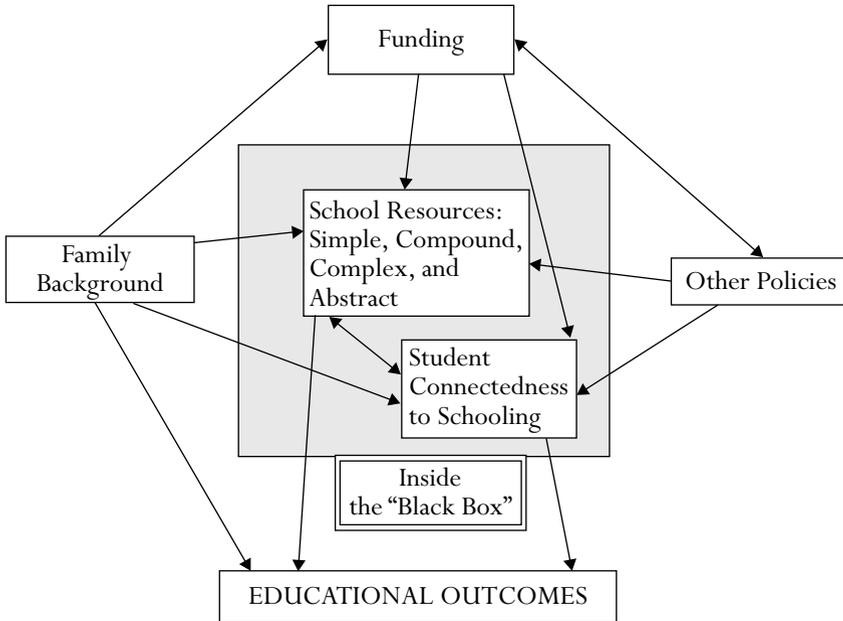
$$\text{Student connectedness} = j(\text{school resources, family background, . . .}) + v \quad (1.5)$$

where  $v$  is another error term. Because student connectedness to schooling and instructional conditions may influence one another, the growing system of equations now includes a simultaneous relationship between school resources and student commitment. Finally, we might include state and federal policies related to instructional standards, assessment, exit requirements, and other school operations intended to affect instructional conditions and therefore outcomes. Now the model looks like figure 1.2, in contrast to the simple production function of figure 1.1. The final equation describes the effects on outcomes of all these resources: a variety of school resources (simple, compound, complex, and abstract); many dimensions of family background; measures of student connectedness to schooling; and other external policies.<sup>12</sup>

$$\text{School outcomes} = k(\text{school resources, family background, student commitment, other external policies}) + w \quad (1.6)$$

Now the school is no longer a black box, since figure 1.2 allows us to specify any number of causal processes that operate inside schools. School revenues affect outcomes only indirectly, through their *potential* influences on school resources, as well as their *potential* effects on student connectedness to schooling. The effects of family background are still exogenous, or external to the conception of how schools work, though family effects operate in three distinct ways—directly on schooling outcomes, through mechanisms I explore in chapter 4; indirectly through their influence on their children’s commitment to schooling, examined in chapter 5; and potentially through their effects on school resources, if parents or voters pressure schools to invest in certain resources.<sup>13</sup> The reduced-form equation corresponding to equations 1.3, 1.4, 1.5, and 1.6 is still equation 1.1, indicating how many different causal processes are conflated in the conventional production function.

Figure 1.2 The Black Box Exposed: How Resources Impact Student Achievement



Source: Author's compilation.

Finally, this approach moves well past the emphasis on school finance formulas and the other minutiae of the old school finance and considers instead a wide variety of the most important educational issues. Funding formulas and both the adequacy and equity of funding are still important, of course, but many other issues of causality and effectiveness within the black box are just as important.

Particularly since this model of schooling is more complex than the simple input-output relationships of figure 1.1, there are some inevitable problems with causality. One is that the relationship between school resources and student connectedness to schooling is a reciprocal interaction. However, for purposes of estimating equations that describe educational outcomes, this complication is irrelevant since both student connectedness to schooling and school resources are strictly exogenous to outcomes. Second, Dan Goldhaber and Dominic Brewer (1997) have raised the possibility that the variables describing the schooling process that are unavoidably omitted

might bias the effects of the variables included, though their results imply that such bias does not exist.<sup>14</sup> In addition, I have included many more measures of school resources than are used by them or others estimating production functions, further minimizing the danger of bias.

Finally, some researchers have cautioned against a causal ambiguity that no one has resolved: it is possible that some outcomes determine resources rather than resources determining outcomes. In many cases, however, there is an ample literature clarifying the nature of the causal effects in figure 1.2. For example, the effects of family background have been the subject of enormous amounts of ethnographic literature, and the effects of approaches to instruction are the subject of research showing the importance of balanced instruction (see introduction, note 15). In other cases, however, this kind of “wrong-way” causality is more plausible. For example, if experienced teachers are able to pick the classes they teach, then experienced and innovative teachers may choose to teach high-performing students headed for college so that student performance determines pedagogical approaches rather than the other way around. If teachers believe (incorrectly) that low-performing and unmotivated students need drill-based pedagogical approaches, then low performance will lead to conventional teaching practices. For many school resources, this kind of causality is ruled out by the other variables included, particularly the tenth-grade test scores incorporated into some of the equations reported in chapters 2, 4, and 5. For example, the negative effects of different track placements in general and vocational tracks persist even when low performance on tenth-grade tests and measures of connectedness to schooling are included, implying that tracking causes outcomes, not that outcomes—including earlier test scores and motivation—cause track placement. In the absence of any better ways to disentangle causal mechanisms,<sup>15</sup> I include a wide array of explanatory variables to strengthen the assumption that every other researcher has made—that resources determine outcomes rather than the other way around.

Many problems with data can make estimating equations that correspond to figure 1.2 and equation 1.6 difficult. Measures of multiple school resources and student connectedness to schooling are often unavailable. Almost all studies of educational outcomes have relied on test scores only, though the effects of school resources on *different* school outcomes is an important issue, requiring data on many outcomes. In addition, the logic of resources being necessary but not sufficient requires a more careful specification of the interactions among variables and of compound and abstract resources rather than simple resources. The effects of non-instructional conditions are particularly complex: some (like guidance and counseling) are intended to enhance student connectedness to schooling, while others (like efforts to enhance the school climate) are intended to improve instructional conditions in the schools—again asking for data with multiple outcomes.

Finally, improved approaches to school resources—which ask us to be more precise about the mechanisms by which multiple resources affect schooling outcomes—require more careful thought about exactly how family background affects the processes internal to schools. Family background is often crudely measured (by free or reduced-price school lunch eligibility, for example); I will instead examine many different dimensions of family background or class in chapter 4. For example, family background might reflect the financial resources of middle-income students, the cognitive benefits of growing up with well-educated parents, or the expectations and motivation provided by professional parents, and each of these describes a different causal mechanism. So the model of figure 1.2 is useful in several ways: as a process of conceptualizing the varied causal mechanisms underlying outcomes; as encouragement to focus the attention of researchers and educators on the array of important school resources; and finally, as a model for statistical analysis.

## NEW RESEARCH AND NEW NARRATIVES FOR SCHOOLING

An improved approach to school resources can be useful only if it leads to different kinds of empirical research to ascertain what resources are most effective and how to mobilize such resources—or conversely to determine how schools and districts make decisions about resources, whether effective or ineffective. Several avenues for research follow from this approach. One is to examine “natural experiments,” when schools receive substantial infusions of money, to see how these funds are used to enhance certain resources over others. This has happened, for example, when states have responded to lawsuits by increasing their aid to districts, as in Kentucky, New Jersey, and Texas (Yinger 2004); in state pilot projects designed to increase funding and other resources to low-performing schools, as in California’s Immediate Intervention/Underperforming Schools Program (II/USP) grants and more recently in the High Priority Schools Grant Program; and in some individual districts, for example, in the Chicago schools in 1990 as part of the Chicago School Reform Act (Hess 1999). I review some evaluations of such “natural experiments” in chapter 10, where I examine state and district policies, and in chapter 11, where I analyze the effectiveness of school finance litigation. These natural experiments and self-conscious reforms provide opportunities to see how additional resources are spent and then to ask whether these changes might improve learning and other schooling outcomes or whether they are dissipated or wasted. They provide additional empirical evidence about waste, corresponding to the conceptual categories of waste developed earlier in this chapter.

In addition, the method of effective schools research—that is, examining

the practices of schools judged to be unusually effective—remains attractive. As one example, Karen Miles and Linda Darling-Hammond (1998) used the measure of above-average and improving student performance to search for effective schools that also enhanced the ability of teachers to work with one another and to know their students well, particularly by replacing nonclassroom aides and specialists with classroom teachers to reduce class size. After observing classrooms to see the instructional effects of these changes, they concluded that the particular use of time, not just the amount of time on task, is important. Unfortunately, the effective schools research method has generally failed to examine funding, and so this line of research currently provides little insight into the relationship between funding and resources.<sup>16</sup> However, researchers might examine schools with higher than expected outcomes to see how resources are used differently within those classrooms and schools—essentially the approach Alfred Hess (1999) takes in examining Chicago schools.

Yet another research approach—the tactic followed in this book—is to estimate equations like those represented in figure 1.2 to replace the standard educational production function in equation 1.1 and figure 1.1. Some research has already done this. Stephen Raudenbush, Randall Fotiu, and Yuk Fai Cheong (1998) used National Assessment of Educational Progress (NAEP) data to determine that four dimensions of instructional conditions enhance math scores: the school's disciplinary climate, advanced course offerings, the preparation of math teachers in mathematics, and the emphasis on math reasoning. Although they did not estimate versions of equation 1.3 to examine the effects of revenues on instructional conditions, they did examine the variation in these resources and found differences by parental income and race. Similarly, Goldhaber and Brewer (1997) used NELS88 data to estimate the effects of teacher characteristics like experience and certification—all simple resources—as well as teachers' college majors, their classroom practices (or instructional conditions) like control over discipline and teaching techniques, and the use of small groups, questioning, and problem-solving. Although some teacher practices led to higher math scores, teacher characteristics like education and experience proved to be unrelated to higher scores, implying that buying expensive characteristics does not generally lead to more effective practices. Marta Elliott (1998) also used NELS88 data with a model similar to equations 1.3 and 1.4 to examine the effects of spending on “opportunities to learn,” measured by teacher qualifications, pedagogical strategies, and classroom resources like science and computer equipment. Expenditures affected math and science scores both directly and indirectly, through their effects on increasing the likelihood of having educated teachers using effective pedagogies—a compound resource.

Efforts to move beyond simple production functions have not been common, however, partly because the data necessary for expanded measures of

resources, as well as for outcomes beyond test scores, are usually unavailable. However, NELS88, used in the research of Goldhaber and Brewer (1997) and Elliott (1998), has a particularly rich set of variables drawing on questionnaires given to teachers, students, administrators, and parents. In chapter 2, I introduce the NELS88 data and present the results of estimating equations like equation 1.6, which allow me to ascertain which of the many school and nonschool resources affect schooling outcomes. Chapter 3 turns to equations like equation 1.3 to describe the effects of revenue and expenditure patterns on instructional conditions, specifically on those instructional conditions known to be effective in enhancing outcomes. Chapter 4 examines the effects of family background in greater detail, and chapter 5 analyzes students as resources, as measured by dimensions of students' connectedness to schooling.

One hope of an improved approach to school resources is that the dominant money myth—that more money is usually more effective than less money, and that the solution to any educational problem requires increased spending—might be replaced with a more accurate if more complex vision. The improved school finance is at least a candidate to replace the older myth of money and the old school finance. Without abandoning the importance of spending levels and equity, it emphasizes effectiveness in a manner consistent with current interest in accountability and with what works. It responds to the historical concern about efficiency (see, for example, Callahan 1967), since it explicitly links resources to results. And by focusing on instructional conditions within schools and classrooms as well as on revenues, it is consistent with recent reforms that emphasize the inner workings of schools and classrooms and the pedagogies and cultures appropriate to enhanced learning.

But new ideas and narratives do not come to dominate practice and policy unless they attract widespread allegiance, including support from research (or evidence in general) and from teachers and administrators, policymakers, and parents. This is why I stress the implications of improved approaches to school resources for several different groups of participants in chapters 9, 10, and 11: only when there is some consistency in perspective and practices can a new vision come to govern.

There are also barriers to any new narrative. The theory of waste I outlined earlier in this chapter describes potential barriers to the more effective use of resources that are by turns political, organizational, pedagogical, and historical. The nature of politics is a particularly serious barrier, since the preoccupation with dividing the spoils—a politics geared to the old school finance and interest group democracy—is hostile to concerns about effective practice. Part of changing a policy narrative, therefore, is changing the politics that supports it, a subject to which I briefly return in chapter 12. In addition, policy narratives are often distinguished by their simplicity, and it

is possible that a complex conception—like one that encourages attention to a wider variety of resources—will prove too complex and too varied to be widely accepted. Finally, old habits die hard, and it will be difficult to introduce these perspectives to the vast numbers of administrators, teachers, policymakers, parents, and researchers in ways that make them stick and then to prevent backsliding into old ways of thinking. But the alternatives are grim: without the changes necessary to move beyond the conventional analysis of money, spending for education will keep escalating without much improvement to show for it.