

# Straw into Gold, Revenues into Results: Spinning Out the Implications of the Improved School Finance

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By W. Norton Grubb, Luis A. Huerta, and Laura Goe

Surely revenues are central to the quality of schooling; nearly everybody thinks so. Generations of reformers have come along, each needing more money. Advocates for equity have rediscovered inequalities in spending nearly every decade, from Ellwood Cubberly's<sup>1</sup> complaints about reliance on local revenues a century ago to Jonathan's Kozol's<sup>2</sup> attack on "savage inequalities," to the latest lawsuits such as *Williams v. California*,<sup>3</sup> with its extensive documentation of disgusting bathrooms, crumbling buildings, dated textbooks, and inadequate teachers. Most school leaders and district administrators plead for more money, especially in urban areas, where the needs often seem limitless, and some of the most strenuous battles in statehouses are now over school funding, particularly in an era of stagnant budgets. As political systems become dominated by special interest groups, debates over the allocation of revenues often overshadow those about teaching and learning.

But the centrality of revenues and expenditures is not necessarily warranted. Real expenditures per pupil (inflation adjusted) have risen constantly throughout the past century, doubling since the late 1960s and increasing by 10% in the late 1990s, as Table 1 indicates, yet these increases have not reduced the need for reforms, eliminated the inadequacies in resources, or enhanced the equity of outcomes. Evidently, just increasing spending has not—and by extension will not—resolve the problems

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1. E. P. Cubberly, *School Funds and Their Apportionment* (New York: Teachers College, 1905).
2. J. Kozol, *Savage Inequalities: Children in America's Schools* (New York: Harper Perennial, 1992).
3. *Williams v. State of California*, Superior Court of California, County of San Francisco, 312236 (May 17, 2000).

Table 1. Expenditure per Pupil in Public Elementary and Secondary Schools

School Year	Current Expenditure, Constant 2000–01 Dollars
1919–20	\$490
1929–30	\$887
1939–40	\$1,104
1949–50	\$1,555
1959–60	\$2,235
1969–70	\$3,782
1974–75	\$4,603
1979–80	\$5,124
1984–85	\$5,745
1989–90	\$6,867
1994–95	\$6,972
1999–2000	\$7,591
2000–01	\$7,628

Source: National Center for Education Statistics, *Digest of Education Statistics 2001* (Washington, DC: Author): Table 167.

in our schools, perhaps because the problems themselves are moving targets. It has been difficult to show that increased spending makes any consistent difference in outcomes, at least as indicated by test scores; Hanushek's<sup>4</sup> review found only 13 of 65 studies with significant positive effects. School finance lawsuits have proliferated since the 1970s, but even in states where revenues have become more equal, redistribution has not led to less variation in outcomes.<sup>5</sup> And school finance researchers have expressed their own misgivings about the analysis of funding only and noted how difficult it is to link funding with resources and outcomes.<sup>6</sup>

It is crucial to move beyond the analysis of money itself and instead examine the relationships among funding, resources, and educational results, an approach for improving school finance analysis.<sup>7</sup> Whereas school finance has emphasized the level and distribution of revenues and expenditures, even when trying to link

4. E. A. Hanushek, "The Impact of Differential Expenditures on School Performance," *Educational Researcher* 18 (May 1989): 45–62.

5. J. Yinger, *Helping Children Left Behind: State Aid and the Pursuit of Educational Equity* (Cambridge, MA: MIT Press, 2004).

6. See especially R. Berne and L. O. Picus, *Outcome Equity in Education* (Thousand Oaks, CA: Corwin, 1994); D. H. Monk and J. Underwood, *Microlevel School Finance: Issues and Implications for Policy* (Cambridge, MA: Ballinger, 1988): 183–205; A. Odden and C. Busch, *Financing Schools for High Performance: Strategies for Improving the Use of Educational Resources* (San Francisco: Jossey-Bass, 1998); D. H. Monk, "Policy Challenges Surrounding the Shift Toward Outcome-Oriented School Finance Equity Standards," *Educational Policy* 8(4) (1994): 471–488; S. Barro, "Fund Distribution Issues in School Finance: Priorities for the Next Round of Research," *Educational Evaluation and Policy Analysis* 11(1) (1989): 17–30; and D. K. Cohen, S. W. Raudenbush, and D. L. Ball, "Educational Resources, Instruction, and Research" (unpublished paper, School of Education, University of Michigan, 1999).

7. An earlier draft called this the new school finance, but this description was used to emphasize adequacy in A. Odden, "The New School Finance: Providing Adequacy and Improving Equity," *Journal of Education Finance* 25(4) (2001): 467–487.

funding to outcomes,<sup>8</sup> an improved school finance approach focuses on resources in schools and classrooms that improve valued outcomes: a focus on teachers with particular competencies rather than teacher salaries or on school climate rather than computer spending. The emphasis should be on effective or active resources, in the language of Cohen et al.,<sup>9</sup> where the analysis of resources must necessarily engage all the difficult issues when certain resources and practices affect outcomes and when they do not—the purview of substantial literatures on school effectiveness and educational production functions linking outcomes to inputs. In our approach, this entails elaborating conceptions of resources, clarifying why funding is often wasted and therefore why the translation of funding into effective resources is not straightforward, and then developing new models of the connections between revenues, resources, and the results of schooling.

#### SHIFTING FROM REVENUES TO RESOURCES

The first step is to distinguish several types of school resources (simple, complex, compound, and abstract) and nonschool resources, including family background and the ways in which students themselves are resources to schools and to each other. The most common starting point in thinking about the conversion of revenues to results is a simple input–output model:

$$SO = f(R, FB) + u, \quad (1)$$

where SO refers to schooling outcomes, R represents revenue and simple school resources, FB reflects the influences of family background, and  $u$  is an error term. This equation, in its metaphorical form, has driven the search for effective practices, often considered as discrete programs or curricula (e.g., Success for All or Open Court), one-on-one tutoring (e.g., Reading Recovery), or themed schools (e.g., career academies or magnet schools), leading in turn to an enormous evaluation literature, both qualitative and quantitative, assessing the effectiveness of many practices. In its algebraic form, Equation 1 has dominated the efforts to estimate educational production functions, which almost always measure outcomes by test scores and often use simple proxies for family background (e.g., family income, school lunch eligibility, or parental education). The most common way of measuring school resources (R), often because of serious data limitations, has been to take the elements of the identity, such as expenditures per pupil (E), and disaggregate them into an equation,

8. H. Ladd, R. Chalk, and J. Hansen, *Equity and Adequacy in Education Finance: Issues and Perspectives* (Washington, DC: National Academy Press, 1999).

9. D. K. Cohen, S. W. Raudenbush, and D. L. Ball, “Resources, Instruction, and Research,” *Educational Evaluation and Policy Analysis* 25(2) (2003): 119–142.

$$E = (T/P)S + A + M + K + SS, \quad (2)$$

with components such as the teacher–pupil ratio (T/P); average teacher salary (S), itself a function of credentials and experience; administrative costs per pupil (A), often derided as administrative bloat, as if they do not contribute to outcomes; books and materials (M); capital outlays per pupil (K); and student support expenditures per student (SS), including tutoring, guidance and counseling, and health and mental health services. The most frequently studied resources are simple resources, those derived from the simple identity in Equation 2, including the teacher–pupil ratio, teacher salary levels, teacher education and experience, teacher test scores, and various books and materials. Such studies usually focus on elements of the classroom and instruction, but noninstructional resources such as student support may also be important, particularly in enhancing progression and completion rather than test scores.

But a little thought suggests that there are no strong a priori reasons for thinking that simple resources have the hypothesized effects on outcomes. If instructors continue to teach the same way in smaller classes, class size reduction will have no effect; if some experienced teachers become skilled whereas others are burned out, then experience will have no effect on the average; if teacher education is concerned with content knowledge but fails to improve pedagogical knowledge or pedagogical content knowledge,<sup>10</sup> more education may not affect the quality of teaching and therefore learning outcomes; and if guidance and counseling in practice turn into administrative paperwork and special education administration, then they will not affect student decisions and outcomes. So simple resources are likely to be necessary but not sufficient, and this may explain why Hanushek<sup>11</sup> found so many studies with insignificant coefficients and coefficients of the wrong sign.

Instead, what may be more effective are compound resources, in which two or more resources are jointly necessary: teachers with experience and a greater repertoire of teaching methods, class size reduction and adequate teacher preparation (rather than inexperienced and noncredentialed teachers), adequate classroom space and staff development so teachers can teach differently in smaller classrooms,<sup>12</sup> and high school teachers with credentials in specific subjects who teach in their fields of education.<sup>13</sup> In general, the conditions for sufficiency can be

10. L. S. Shulman, "Knowledge and Teaching: Foundations of the New Reform," *Harvard Educational Review* 57 (1987): 1–22.

11. Hanushek, "Impact."

12. B. M. Stecher and G. W. Bohrnstedt, *Class Size Reduction in California: Findings from 1999–00 and 2001–02* (Palo Alto, CA: Ed Source, 2002).

13. R. M. Ingersoll, "Teacher Turnover and Teacher Shortage: An Organizational Analysis," *American Educational Research Journal* 39(3) (2001): 499–535.

examined only by looking inside the school and the classroom—metaphorically if not literally, through classroom observation and measurement—in order to see how simple resources are used. Otherwise it is impossible to distinguish a skilled, experienced teacher from a burned-out teacher, to see what changes class size reduction (or staff development, small schools, or any other change) has caused, or to distinguish administrative bloat from leadership that might lead to more effective schools<sup>14</sup> or dual principals who might pay greater attention to instruction and support services.<sup>15</sup>

In addition, many resources in school are complex; they do not enter Equation 2, and they cannot be easily bought. For example, while the reading wars and the math wars rage on, there is evidence from many sources that constructivist pedagogical practices, or the hybrid practices that combine skill-oriented teaching with conceptual and constructivist teaching, are more effective as long as outcomes are not measured narrowly.<sup>16</sup> But changing pedagogical approaches has been difficult, particularly in high schools influenced by the disciplines and college exams.<sup>17</sup> It is hard to know how to buy constructivist and hybrid teaching, and it is often necessary for schools to construct such practices through leadership and staff development of the right type, which may cost money for release time and outside expertise, but where money is again necessary but not sufficient. Another complex resource is teachers who are the same race as students, who appear to be modestly more effective than those of other races,<sup>18</sup> but finding enough Latino and African American teachers has been a struggle in which spending on recruitment and salaries has not been sufficient. A final example includes teachers experienced in a particular school (as distinct from total experience) and

14. R. Lemons, T. Luschei, and L. S. Siskin, "Leadership and the Demands for Standards-Based Accountability," in *The New Accountability: High Schools and High-Stakes Testing*, ed. M. Carnoy, R. Elmore, and L. Siskin (New York: Routledge, 2003): 99–128.

15. W. N. Grubb and J. Flessa, "A Job Too Big for One: Multiple Principals and Other Approaches to School Leadership" *Educational Administration Quarterly*, in press.

16. This is not the place to weigh all the evidence about pedagogical approaches, but a few examples include M. Knapp and Associates, *Teaching for Meaning in High-Poverty Classrooms* (New York: Teachers College Press, 1995); C. Snow, M. S. Burns, and P. Griffin, *Preventing Reading Difficulties in Young Children* (Washington, DC: National Academy Press, 1998); J. D. Bransford, A. L. Brown, and R. R. Cocking, *How People Learn: Brain, Mind, Experience, and School* (Washington, DC: National Academy Press, 1999); and D. Hickey, A. Moore, and J. Pellegrino, "The Motivational and Academic Consequences of Elementary Mathematics Environments: Do Constructivist Innovations and Reforms Make a Difference?" *American Educational Research Journal* 38(3) (2001): 611–652. Grubb's work with NELS88 data also confirms the positive effects of constructivist practice and the negative effects of conventional teaching on a wide variety of outcomes: W. N. Grubb, "Multiple Resources, Multiple Outcomes: Testing the 'Improved' School Finance with NELS88" (unpublished paper).

17. L. Cuban, *How Teachers Taught: Constancy and Change in American Classrooms 1890–1990* (New York: Teachers College, Columbia University, 1993).

18. T. S. Dee, "Teachers, Race, and Student Achievement in a Randomized Experiment," *Review of Economics and Statistics* 86(1) (2005): 195–210.

knowledgeable about that school and community. This has been a special problem for urban schools because the factors that influence teacher mobility include several dimensions of working conditions (e.g., inadequate administrative support, too many intrusions, student discipline, and limited faculty participation in decision making) as well as salary.<sup>19</sup> Many effective resources are likely to be complex rather than simple, perhaps requiring more revenue but only in combination with other policies.

Still other resources are ones we might call abstract because they are particularly difficult to discern or measure. Abstract resources are also complex—there is no point in searching for a categorization with rigid and unambiguous boundaries—but they are usually embedded in a web of relationships and practices in a school. For example, Newmann et al. described the coherence of the curriculum as a resource and showed that schools with curricula that reflect a central vision—in contrast to schools with many unconnected programs—have better outcomes.<sup>20</sup> Bryk and Schneider argued that school reform is impossible when personal relationships are mistrustful, as they often are in urban schools.<sup>21</sup> Lampert argued that an equilibrium is necessary among the views of students, the views of instructors, the assumptions of the curriculum, and institutional influences,<sup>22</sup> and Cox showed how learning breaks down with inconsistencies between the attitudes of students toward educational purpose and learning and the attitudes of instructors.<sup>23</sup> Stability is surely a crucial resource: Students who change schools perform less well than those who do not,<sup>24</sup> and turnover in teachers, principals, and superintendents inevitably brings turmoil to schools and impedes reform. A school's culture also is an abstract resource, measurable through observation and questionnaires but difficult to know how to construct (or, for failing schools, how to reconstruct). Organizational structure might be considered a kind of abstract resource: Several authors have argued that internal accountability (in which teachers and administrators feel accountable to each other and to students), collegial decision making,

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19. R. M. Ingersoll, *Why Do High-Poverty Schools Have Difficulty Staffing Their Classrooms with Qualified Teachers?* (Washington, DC: Center for American Progress and Institute for American's Future, 2004).

20. F. M. Newmann, B. Smith, E. Allensworth, and A. S. Bryk, "Instructional Program Coherence: What It Is and Why It Should Guide School Improvement Policy," *Educational Evaluation and Policy Analysis* 23(4) (2004): 297–321.

21. A. S. Bryk and B. Schneider, *Trust in Schools: A Core Resource for Improvement* (New York: Russell Sage Foundation, 2002).

22. M. Lampert, *Teaching Problems and the Problems of Teaching* (New Haven, CT: Yale University Press, 1991).

23. B. Cox, "Navigating Community College Demands: Contradictory Goals, Expectations, and Outcomes in Composition" (unpublished Ph.D. dissertation, School of Education, University of California, Berkeley, 2004).

24. R. W. Rumberger and K. A. Larson, "Student Mobility and the Increased Risk of High School Dropout," *American Journal of Education* 107 (1998): 1–35.

and widely distributed leadership are necessary for schools to respond effectively to external accountability demands.<sup>25</sup> Again, it is hard to know how to buy abstract resources. Money may be necessary for some elements, but they have to be constructed in individual schools, they entail the participation of many different people, and they have different elements that must be consistent, such as student stability, teacher stability, and principal stability, or teacher perceptions, student attitudes, and curricular content.

Many nonschool resources affect educational outcomes. The most obvious include the multiple effects of family background. These often are not clearly delineated, especially when data about family background are limited to a few crude measures, such as eligibility for school lunch and breakfast programs, or a single measure of income or parental education. The different effects of family members include their attitudes toward the school curriculum and the process of schooling, best reflected by their levels of schooling; their ability to provide income; their behavioral modeling; parents' aspirations and expectations for their children; the stability of family life; the family's language background; and the attention adults pay to their children. The communities in which families live also are resources, particularly in providing positive and negative role models and creating cultures such as the culture of violence, which has been particularly detrimental for young black men and boys.<sup>26</sup> It is worth disentangling these different dimensions because some of them, such as income support, can be changed more readily than others, such as language background. Furthermore, modifying some family-based resources entails policies well beyond educational policies, such as housing policies to increase stability, welfare policies to guarantee income support, urban development policies to change community influences, and perhaps family support programs to help stabilize family life.

Finally, students are themselves resources.<sup>27</sup> They come to school with different personal and intellectual resources, reflecting differences in their prior cognitive preparation, their motivation and engagement, the expectations and financial resources of their parents, their approaches to schoolwork, and their conceptions of what constitutes learning. Family background surely influences students' ability to benefit (SA), but this capacity can also be enhanced by early childhood programs, the efforts of teachers in the early grades to socialize students, the quality of prior schooling, family literacy and parent participation, efforts to institute instructional practices (e.g., constructivist teaching) and orga-

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25. M. Carnoy, R. Elmore, and L. Siskin, eds., *The New Accountability: High Schools and High-Stakes Testing* (New York: Routledge, 2003); and J. Spillane, R. Halvorson, and J. B. Diamond, "Investigating School Leadership Practice: A Distributed Perspective," *Educational Researcher* 30(3) (2001): 23–28.

26. G. Canada, *Fist, Stick, Knife, Gun: A Personal History of Violence in America* (Boston: Beacon, 1995).

27. Cohen et al., "Resources, Instruction."

nizational forms (e.g., small schools) that might increase motivation and engagement, guidance counseling, school services, and the like.<sup>28</sup> Conversely, SA may be undermined by conditions leading to student resistance,<sup>29</sup> black students' notion that school success is "white" and therefore undesirable,<sup>30</sup> preferences for fun and games or adolescent mating rituals, or more serious health and mental health conditions such as drug and alcohol abuse, pregnancy, and depression. And instructional conditions may respond to a student's ability to benefit. For example, teachers may respond positively to motivated students and negatively to those who are disruptive, student-centered teachers adjust their instruction to students with varying backgrounds and interests,<sup>31</sup> and schools provide different levels of resources through tracking or teacher assignments to students with lower levels of preparation—sometimes more and sometimes less.<sup>32</sup>

As a working hypothesis, it seems likely that complex resources are more unequally distributed than are expenditures per pupil because they depend on funding plus other actions, and compound resources are more unequally distributed than are simple resources. There is a smattering of evidence in the existing literature,<sup>33</sup> and Table 2 presents more complete results based on work with National Educational Longitudinal Survey of the Class of 1988 (NELS88) data describing the variation among students, measured by the coefficient of variation, for several kinds of resources. This coefficient is 0.282 for expenditure per student, among the lowest levels of inequality in the table. Other simple resources are distributed slightly more unequally (except teacher salaries), but some compound and complex resources are much more unequally distributed, as are some of the abstract resources, particularly a negative school climate and the stability of the school as measured by changes over the year. Resources related to family

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28. National Research Council, Committee on Increasing High School Students' Engagement and Motivation to Learn, *Engaging Schools: Fostering High School Students' Motivation to Learn* (Washington, DC: National Academy Press, 2003).

29. P. Willis, *Learning to Labour* (Farnborough, England: Saxon House, 1977).

30. S. Fordam and J. U. Ogbu, "Coping with the Burden of 'Acting White,'" *Urban Review* 18(3) (1986): 176–206.

31. See also the discussion by Cohen et al., "Resources, Instruction," of student-centered teaching regimes, which are ways of adjusting teaching to the interests and capacities of individual students. This is similar to the point of Brown and Saks that teachers may allocate resources differently between students within classrooms; B. W. Brown and D. H. Saks, "The Production and Distribution of Cognitive Skills Within Schools," *Journal of Political Economy* 83(3) (1975): 571–593; B. W. Brown and D. H. Saks, "The Microeconomics of the Allocation of Teachers' Time and Student Learning," *Economics of Education Review* 6(4) (1987): 319–332.

32. A. Gamoran, "Resource Allocation and the Effects of Schooling: A Sociological Perspective," in Monk and Underwood, 207–232.

33. H. Lankford and J. Wyckoff, "Where Has the Money Gone? An Analysis of School District Spending in New York," *Educational Evaluation and Policy Analysis* 17(2) (1995): 195–218; and N. A. Alexander, "Considering Equity and Adequacy: An Examination of Student Class Time in New York State Public Secondary Programs, 1975–1995," *Journal of Education Finance* 28 (Winter 2003): 357–382.



Table 2. Variation in Resources

	Coefficient of Variation	Correlation with Mother's Education	Correlation with Family Income per Dependent (C)	Correlation with Expenditure per Pupil
<b>Funding</b>				
Expenditure per pupil (C)	0.282		—	
Instructor salaries per pupil (C)	0.259	.090	.064	.881
Parental contributions (C)	2.903	.054	.029	.222
<b>School Resources</b>				
<b>Simple resources</b>				
Years taught secondary	0.386	.055	.025	.155
Pupil-teacher ratio	0.385	-.045	-.032	-.202
Teacher salary base (C)	0.146	.001	.028	.518
Certified teacher	0.293	-.007	.010	.010
<b>Compound resources</b>				
Teacher in field	0.214	.039	-.005	.021
(+) Teacher preparation time	0.298	.075	.026	.081
(+) Staff development	0.378	.023	-.004	-.019
(-) General track	1.239	-.110	-.032	-.030
(-) Vocational track	2.570	-.193	-.081	-.024
(-) Remedial education	1.609	-.100	-.072	-.039
<b>Complex resources</b>				
(-) Math teaching: rigid	0.158	-.034	-.012	-.054
(+) Math teaching: creative	0.134	.039	.003	.001
(-) Science teaching: rigid	0.181	-.003	.002	-.072
(+) Science teaching: creative	0.091	-.022	-.002	-.032
(-) Teaching: conservative	0.173	-.066	-.031	-.097
(+) Teaching: progressive	0.366	.183	.237	.000
(+) Teacher control	0.140	.039	.015	.044
<b>Abstract resources</b>				
(+) School climate (S)	0.202	.082	.010	.004
School climate (A)	0.449	-.103	-.053	-.025
(-) Negative school events	1.460	-.022	.002	.024
(+) School attendance rate	0.051	.043	.044	-.040
School coherence (A)	0.262	.051	.009	-.053
School changes (A)	0.550	-.021	-.010	.027
Principal decisions	0.164	.031	.019	-.044
Internal decisions	0.173	.056	.037	.062
Parent decisions	0.559	-.025	.010	-.036
District relations	0.202	.035	.005	-.025
<b>Nonschool Resources</b>				
Student ability to benefit				
(-) Changed schools	2.066	.001	-.020	-.043
(-) Has a child or is expecting	4.636	-.117	-.051	-.033
(-) Work hours/week	0.919	-.097	-.033	-.025

Table 2. Variation in Resources (*continued*)

	Coefficient of Variation	Correlation with Mother's Education	Correlation with Family Income per Dependent (C)	Correlation with Expenditure per Pupil
(+) Student use of counseling	0.972	-.035	-.080	.007
(+) Extracurricular activities	1.267	.151	.064	.045
(+) Outside school activities	1.503	.208	.049	.050
(+) Hours of outside reading	0.878	.042	.015	.041
(-) School help or referral	0.898	.052	-.001	.086
(-) Behavior problems	3.085	-.037	-.019	.013
(+) Friends pro-college	0.341	.245	.102	.093
(-) Friends pro-dropout	3.117	-.113	-.047	-.023
(-) Gang member	2.278	-.080	-.037	.028
<b>Family resources</b>				
(+) Income per dependent (C)	0.720			
(-) Low parent education	3.431	-.546	-.139	-.045
(+) High parent education	1.515	.820	.224	.116
(-) Female-headed family	2.011	-.123	-.186	-.025
(-) Family instability	1.032	-.103	-.090	-.019
(-) Native language not English	3.418	-.154	-.099	.043
(-) Low parent expectations	1.775	-.268	-.098	-.050
(+) High parent expectations	1.204	.224	.065	.052
(+) College money saved	1.509	.322	.316	.092

(+) = positive effect on some outcomes,  $p \leq .05$ ; (-) = negative effect on some outcomes,  $p \leq .05$ ; A = administrator reported; C = corrected for cross-section price differences devised by Chambers (1998); S = student reported.

Source: National Educational Longitudinal Survey of the Class of 1988 data, second follow-up (12th grade).

background—many measures of student ability to benefit, as well as family resources themselves—are highly unequally distributed. These preliminary results indicate that distinguishing among types of resources may explain why inequalities in outcomes are so large. Finally, the last column presenting correlations with expenditure per pupil indicates that only simple resources (teacher experience, the pupil-teacher ratio, and the teacher salary base) are correlated with spending. For many of the most effective resources, then, money is not a powerful cause of variation.

By now we have a richer way to think about both school resources—whether simple, compound, complex, or abstract—and nonschool resources that affect learning. The relationship between money and these school resources is more complicated than it is in simple input-output models; money may be necessary but not sufficient, and many school resources must be carefully constructed by school communities with the active participation of teachers and administrators, and often students and parents too. Furthermore, because outcomes are generated in

schools and classrooms, we must conceptualize and measure the resources that matter at the level of the classroom and school rather than examining overall expenditure levels at state or district levels.

### THE POLITICAL ECONOMY OF WASTE

The previous section provides one way to see why revenues and expenditures might not matter much to the resources that are crucial to educational outcomes. Once one recognizes that revenues do not automatically lead to effective or active resources, one might ask why funds might be allocated to ineffective or inert resources. Some insights about school resources emerge from widespread, if casual, observations about the ways in which education funds are misspent. The infinite forms of waste come up routinely in discussions by teachers, principals, and reformers:<sup>34</sup>

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

Funds can be spent on inputs that have no effect such as incompetent teachers, rents such as increases in salaries that are not tied to greater teacher effort or that do not reduce turnover, or worthless inputs such as textbooks, supplies, or computers unused by teachers who did not want them.

Resources may not be tied to changes in practices (e.g., staff development that fails to change how teachers teach or reforms that fail to change practice).

Funds can be spent on purely symbolic practices such as a new retention program or a new superintendent to assure parents that everything possible is being done.

Resources can be spent on well-intentioned but ineffective practices such as adopting simple forms of technology or following reform trends that turn out to have no effect on learning.

Resources can be spent on changes with potential long-run benefits, but changes occur in local decisions or state mandates so that resources spent earlier are wasted.

Resources can be spent piecemeal and fail to lead to coherent change (e.g., money spent without an overall plan such as money spent at the end of the year or staff development funds allocated to individual teachers rather than to a schoolwide priority).

Resources can be spent on changes that are necessary but not by themselves sufficient, such as spending on computers without teacher training and computer maintenance or class size reduction without sufficient training of teachers in new techniques.

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34. We have benefited in particular from observations in schools and from exercises in which students in the Principal Leadership Institute at University of California-Berkeley identify waste.

The reasons for waste are empirical issues, and they surely vary among schools and among districts. The first three categories mean that no change takes place, and the next five change practices, but the changes are ineffective. The challenge is to use funding both to change practices and to make the kinds of changes that matter to outcomes.

What is troubling about public schools is not that they occasionally misspend resources but that they seem structured to do so. First, public education is driven by conventional interest group politics. The demand for jobs often is more powerful than that for enhanced learning, and so battles over the level and distribution of spending dominate educational politics.

Second, several characteristics of schools as organizations—loose coupling, organizational inertia, instability, disagreement about goals, and the sheer difficulty of instruction—make it difficult to ensure changes in schools and teachers. In the current fiscal climate, the lack of slack resources may inhibit reform because teachers and administrators lack the time to change their practices. Reforms that entail jointly necessary changes rather than piecemeal reform are particularly difficult under the conditions in many schools, including disagreements over goals and pedagogies, instability in personnel, and inconsistencies in conceptions of roles. Lampert described the potential misalignment of teacher practices, student understanding of schooling and learning, the curriculum, and the larger institution, pointing out that these four elements of every classroom must be consistent.<sup>35</sup> However, each is complex, and the mechanisms leading to equilibrium often are unavailable, so instruction often suffers in ways that depend on the specific nature of the misalignment.

Third, the history of schooling imposes its own weight. Many resources, 81.5% of total expenditures, are locked up in salaries and benefits covered by contracts that cannot be changed in the short run. Even long-run changes may entail bitter political battles, especially with unions. Other resources are embedded in school buildings and land, difficult and expensive to reconfigure. Even as incremental budgeting prevails, only marginal changes occur from year to year. Many reforms end up being “more of the same,” and if the old uses 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. Courts can forbid practices but cannot or will not specify what should take place. Legislative remedies usually are stated in terms of dollar amounts rather than in terms of how dollars are used, reinforcing the tendency to see the problem as one of spending levels

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35. M. Lampert, *Teaching Problems and the Problems of Teaching* (New Haven, CT: Yale University Press, 1991).

and distribution rather than the effective use of the resources. Only recently, with conceptions of adequacy based on resources rather than funding, is there any possibility for instructional concerns to enter litigation strategies.

This conception of waste identifies the structural conditions—political, organizational, instructional, historical, and legal—that undermine the effective use of funding. Furthermore, our working hypothesis is that these conditions are worse in urban and low-income districts. Political disagreements seem much sharper, including the lack of uniform support for public schooling that Stone has labeled the lack of civic capacity;<sup>36</sup> resource-starved communities are more likely to view the schools as sources of employment; and symbolic politics are likely to be especially acute because the depth of problems and racial conflicts make symbolism attractive. Instability and turnover of teachers, administrators, and students make institutional change more difficult. Lack of consensus within schools, tense personal relationships,<sup>37</sup> and the absence of slack resources appear worse than in suburban or rural schools. The pedagogical issues in teaching low-income, immigrant, and special education students are especially difficult, and teachers are more likely to lack experience and expertise. The problem is not only that revenues are inadequate to meet the educational and noneducational needs of urban students but also that structural conditions may make urban districts unable to do as much with the revenues they have. Reform of these conditions may be necessary before money can be spent effectively.

There are several ways out of the dilemma of ineffective spending. One is research based: If we knew with some certainty what practices are effective, then we could concentrate funds on them. This is the impulse behind the growing literature on what works, now on the Web site of the Institute of Education Sciences; the Obey–Porter legislation of 1997, providing federal funds for proven practices; categorical funds for specific (and presumably effective) practices ranging from Head Start to school lunches; foundations’ efforts to replicate successful models; and reformers creating networks of schools replicating their promising practices. But coming up with a list of proven practices has been both difficult and contentious. Many results cited as proof are weak, the methods of evaluation involve endless debates, and the pressure for proven practices heightens the unavoidable debate over what we want education to be, for example, whether we want to measure outcomes with standardized tests rather than authentic writing and problem

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36. C. Stone, *Building Civic Capacity: The Politics of Reforming Urban Schools* (Lawrence: University Press of Kansas, 2001).

37. D. Ballou, “The Condition of Urban School Finance: Efficient Resource Allocation in Urban Schools,” in *Selected Papers in School Finance*, ed. W. J. Fowler Jr. (NCES 98-217. Washington, DC: NCES, 1998); and C. M. Payne, “*I Don’t Want Your Nasty Pot of Gold*”: *Urban School Climate and Public Policy* (WP-97-8. Evanston, IL: Institute of Policy Research, Northwestern University, 1997).

solving. The search for what works will surely continue, but it cannot always specify how to convert ineffective resources into effective ones.

The other way of combating ineffective spending is to place resources in the hands of people who might know what is effective: school boards, superintendents, or (in site-based budgeting) principals with site councils. In vouchers and choice mechanisms, parents are given more control, if only through choice and exit. States and the federal government have played more active roles in choosing what is effective through categorical grants, state standards, and curriculum guides. But many approaches to who makes resource decisions reflect the Golden Rule—"he who has the gold makes the rule"—rather than experience or research, so that limited information about instructional alternatives, favorite solutions despite contrary evidence, or political posturing rather than effectiveness may drive resource decisions.

So neither the research-based approach of finding what works nor the practice-based approach of identifying who might make the best decisions can extract us from the structural problems associated with spending money more effectively. Moreover, the choice between research- and practice-based approaches exemplifies Dewey's observation: "Mankind likes to think in terms of extreme opposites. It is given to formulating its beliefs in terms of Either-ors, between which it recognizes no intermediate possibilities."<sup>38</sup> Instead, some synthesis might be preferable to either alternative—for example, a search for evidence about what works under what conditions, together with resource decisions by those at the school level most familiar with students and their communities. But in searching for some way forward, there is no substitute for confronting the reasons why resources often go for naught.

## MODELS OF REVENUES, RESOURCES, AND RESULTS

The most common approaches to examining the effects of revenues and resources on educational outcomes have been the efforts to estimate educational production functions such as Equation 1. Such equations have been estimated for many data sources,<sup>39</sup> and a large literature for developing countries reproduces many of the American conclusions.<sup>40</sup> But there are serious limitations of these results, some imposed by the data available and others caused by an overly simple conceptual model. Conventional production functions treat the school as a black box,

38. J. Dewey, *Logic: The Theory of Inquiry* (New York: Holt, 1938).

39. E. A. Hanushek, "Assessing the Effects of School Resources on Student Performance: An Update," *Educational Evaluation and Policy Analysis* 19(2) (1997): 141–164.

40. B. Fuller and P. Clarke, "Raising School Effects While Ignoring Culture? Local Conditions and the Influence of Classroom Tools, Rules, and Pedagogy," *Review of Educational Research* 64(1) (1994): 119–157.

where the researcher fails to consider the interactions within the school and classroom. The simplest improvement on Equation 1 is to specify a two-step process in which revenue, or the simple resources money can buy, influences instructional conditions (IC) in classrooms and schools (different complex, compound, and abstract resources). These instructional conditions in turn enhance learning and other outcomes. Formally,

$$IC = f(R) + e; \quad (3)$$

$$SO = g(IC, FB) + u, \quad (4)$$

where  $f$  and  $g$  are functions and  $e$  and  $u$  are error terms. The conventional production function is a reduced-form version of Equations 3 and 4 in which Equation 3 is substituted into Equation 4, conflating two different processes.

A small amount of research has taken this approach. Raudenbush and his colleagues used National Assessment of Educational Progress data first to determine that four dimensions of instructional conditions improved math scores: the school's disciplinary climate, advanced course offerings, the preparation of math teachers in mathematics, and an emphasis on math reasoning.<sup>41</sup> Although they did not estimate versions of Equation 3, they found variation in these instructional conditions by parental income and race. Goldhaber and Brewer used NELS88 data to estimate the effects of teacher characteristics such as experience, certification, and college major (all simple resources) and teacher practices (complex resources) such as control over discipline and teaching techniques, the use of small groups, questioning, and problem solving.<sup>42</sup> Although some teacher practices led to higher math scores, they found very little relationship between teacher characteristics and teacher practices, implying that buying expensive characteristics such as teacher education and experience did not necessarily lead to more effective practices. Elliott also used the NELS88 data to examine the effects of spending on opportunities to learn, measured by teacher qualifications, pedagogical strategies, and classroom resources such as science and computer equipment.<sup>43</sup> Expenditures affected math and science scores both directly and indirectly by increasing the use of effective pedagogies by educated teachers (a compound resource).

A further elaboration is to introduce students as resources by including student ability to benefit (SA). This may be influenced by family background, school

41. S. W. Raudenbush, R. P. Fotiu, and Y. F. Cheong, "Inequality of Access to Educational Resources: A National Report for Eighth-Grade Math," *Educational Evaluation and Policy Analysis* 20(4) (1998): 253–267.

42. D. D. Goldhaber and D. J. Brewer, "Why Don't Schools and Teachers Seem to Matter? Assessing the Impact of Unobservables on Educational Productivity," *Journal of Human Resources* 32(3) (1997): 505–523.

43. M. Elliott, "School Finance and Opportunity to Learn: Does Money Well Spent Enhance Students' Achievement?" *Sociology of Education* 71(3) (1998): 223–245.

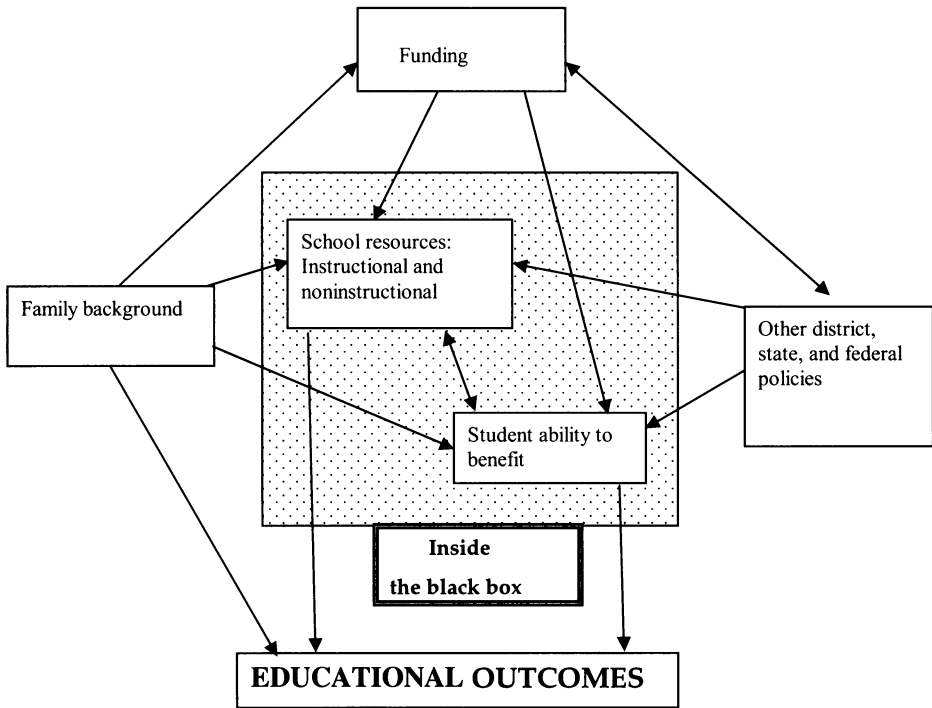


Figure 1. The Black Box Exposed: How Resources Affect Student Achievement

resources (R), and instructional and noninstructional conditions such as student supports, or school resources (SR):

$$SA = h(SR, R, FB, \dots) + v, \tag{5}$$

where *h* is a function and *v* is an error term. Because student ability to benefit and school resources may influence one another, the growing system of equations now includes a simultaneous relationship between school resources and students as resources. With revenues included in R, other district and state policies that affect how revenues are used should also be included.

In this model, illustrated in Figure 1, the school is no longer a black box because school resources (instructional and noninstructional) and student behavior inside schools interact. School revenues are external to or exogenous to the workings of schooling, but they may require other school resources including internal alignment, planning, and stability to influence outcomes. The effects of family background are also considered exogenous, although family effects could be brought into the model of schooling effects and considered endogenous if the school has active parent participation programs designed to enhance parental expectations, inform parents about college costs and benefits, or otherwise influence parental resources. The reduced-form equation corresponding to Equations 3, 4, and 5 is still



the simple production function of Equation 1, indicating how many causal processes the conventional production function ignores. As a model for qualitative research, Figure 1 illustrates that the investigation of revenues and resources should always recognize more complex interactions than previously examined.

#### IMPLICATIONS FOR RESEARCH, PRACTICE, POLICY, AND LITIGATION

Because the improved school finance focuses on resources in addition to funding, on effective use of resources rather than waste, and on school- and classroom-level analyses, the research and practice that it implies are somewhat different from prior approaches to effectiveness. The demands on research are substantial, partly because discussions of funding should never be divorced from how revenues are spent, and the school and classroom should never be left as a black box.

However, there are at least three promising directions. The first is to examine natural experiments, or more precisely quasiexperiments, when schools experience substantial infusions of money. This has happened, for example, in state responses to lawsuits where states have increased their aid to districts; in other cases pilot projects have increased resources to a selected group of underperforming schools.<sup>44</sup> These natural quasiexperiments 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 in some way. The approach of learning where the money goes at the school and classroom level would also be valuable in better understanding the political economy of waste.

As an example of this approach, Hess clarified that reforming schools in Chicago used discretionary funds in very different ways: Schools with improving achievement tended to enrich their offerings by adding computers, music, art, science labs, and physical education, whereas those with declining achievement spent more on resource teachers in math and reading, classroom aides, reduced class sizes, discipline, counseling, and truancy programs.<sup>45</sup> An examination of reforms in California under Assembly Bill 1274, which provided selected schools with an additional \$155 per student per year over five years, found that resources were spent largely on more of the same, including staff time and computer equipment, and that very little was spent on staff development that might have changed teaching

44. K. LaGuarda, "State-Sponsored Financial Assistance to Low-Performing Schools: Strategies from Nine States" (paper presented at the American Educational Research Association, Washington, DC: Policy Studies Associates, 2003).

45. G. A. Hess Jr., "Understanding Achievement (and Other) Changes Under Chicago School Reform," *Educational Evaluation and Policy Analysis* 21(1) (1999): 67–83.

and learning.<sup>46</sup> Goe's article in this issue examines the effects of funding in California's Immediate Intervention/Underperforming Schools Program (II/USP), clarifying the many ways in which funds were misused by schools and constrained by districts.

A second research strategy would be to return to the effective schools approach. Developed as a challenge to interpretations of the Coleman report that "schools don't make a difference," this research has examined supposedly effective schools, some selected for unexpectedly high test scores and others selected by reputation.<sup>47</sup> Various studies came to roughly the same conclusions, often summarized as the "five-factor model": Effective schools are those with strong administrative leadership, high expectations for student achievement, an orderly atmosphere conducive to learning, an emphasis on basic academic skills, and frequent monitoring of student progress.<sup>48</sup> However, the allocation of revenues was never a crucial component of this research. Some of the five factors (such as high expectations or strong leadership) are complex resources, and it is difficult to know what the links to funding might be. Some authors noted that a minimum spending level might be necessary; as Gray concluded, in language similar to ours,

Adequate levels of resources seem to be necessary but not a sufficient condition for a school to be effective. . . . In twenty years of reading research on the characteristics of effective schools I have only once come across a record of an "excellent" school where the physical environment left something to be desired.<sup>49</sup>

A return to this research tactic could examine high- and low-performing schools to see how revenues and resources are used differently. One example is that of Miles and Darling-Hammond,<sup>50</sup> who concluded from the literature that in effective schools teachers knew students well and had common planning time, complex resources that were particular forms of instructional conditions. They searched for schools with above-average student performance that also promoted the abilities of teachers to work with one another and to know their students well. From classroom observations they concluded that the particular use of time and not just the amount of time on task was important.

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46. J. W. Little and R. Dorph, *Lessons About Comprehensive School Reform: California's School Restructuring Demonstration Program* (Berkeley: University of California, Graduate School of Education, 1998).

47. J. S. Coleman, E. Q. Campbell, C. J. Hobson, J. McPartland, A. M. Mood, F. D. Weinfeld, and R. L. York, *Equality of Educational Opportunity* (Washington, DC: U.S. Department of Health, Education and Welfare, 1966).

48. R. R. Edmonds, "Effective Schools for the Urban Poor," *Educational Leadership* 37 (1979): 15–24, 37; and D. L. Clark, L. S. Lotto, and T. A. Astuto, "Effective Schools and School Improvement: A Comparative Analysis of Two Lines of Inquiry," *Educational Administration Quarterly* 20(3) (1984): 41–68.

49. J. Gray, "The Quality of Schooling: Frameworks for Judgments," *British Journal of Educational Studies* 38(3) (1990): 213.

50. K. H. Miles and L. Darling-Hammond, "Rethinking the Allocation of Teaching Resources: Some Lessons from High-Performing Schools," *Educational Evaluation and Policy Analysis* 20(1) (1998): 9–29.

More generally, examining the resource use of schools with strong outcomes entails selecting schools with large positive residuals from Equation 1. These are schools that have unexpectedly high levels of effective school resources for their levels of spending per student (high error term), unexpectedly high levels of student engagement (high  $v$ ), or unexpectedly high levels of outcomes given school resources and family backgrounds (high  $u$ ). Case studies of exemplary schools could then search for evidence about which of these characteristics seem important, integrating questions about revenues into the analysis of resource use.

A final possibility is estimating equations like those in this article. This is the approach of Raudenbush et al.,<sup>51</sup> Goldhaber and Brewer,<sup>52</sup> and Elliott,<sup>53</sup> although they do not include the resources that students represent from Equation 5. The article by Grubb in this issue represents this approach, examining the effects of funding on school resources known to be effective in enhancing educational outcomes, using the NELS88 data. Unfortunately, information about instructional conditions and student ability to benefit are scant or nonexistent in most U.S. data; therefore, new datasets, created with these information needs in mind, are necessary to extend this research strategy.

Each of these three research strategies has drawbacks. Investigating natural quasiexperiments in which revenues suddenly increase provides little information on the effectiveness of the practices changed. The examination of self-conscious reforms can make comparisons only within a group of schools trying to reform, and the link between reforms and outcomes often remains troublesome. A return to the effective schools tradition suffers from the problems of that earlier body of work,<sup>54</sup> particularly the uncertainty about whether the schools chosen are really effective. The effort to estimate equations describing what happens in schools and classrooms is subject to many measurement and logical problems, some of which may be unresolvable. A multipronged effort, with due attention to the weaknesses of each particular approach, may be the best way to examine how best to use resources.

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51. Raudenbush et al., "Inequality of Access."

52. Goldhaber and Brewer, "Why Don't Schools?"

53. Elliott, "School Finance."

54. S. C. Purkey and M. S. Smith, "Effective Schools: A Review," *The Elementary School Journal* 83(4) (1983): 436–452; B. Rowan, S. T. Bossert, and D. C. Dwyer, "Research on Effective Schools: A Cautionary Note," *Educational Researcher* (April 1983): 4–31; L. Cuban, "Transforming the Frog into a Prince: Effective Schools Research, Policy, and Practice at the District Level," *Harvard Educational Review* 54(2) (1984): 129–151; M. Cohen, "Instructional, Management, and Social Conditions on Effective Schools," in *School Finance and School Improvement: Linkages for the 1980s*, ed. A. Odden and L. D. Webb (Cambridge, MA: Ballinger, 1983): 17–50.

### *Implications for Educators and Administrators*

Most school-level administrators seem to spend little time worrying about the effectiveness of the resources at their disposal.<sup>55</sup> The constant barrage of administrative requirements and parental demands leaves little time to establish plans and priorities,<sup>56</sup> and many districts do not encourage such planning because they give schools few discretionary resources.

Where principals have more say over their budgets, they become increasingly skilled at responding to incentives. In England, grant-maintained (GM) schools enabled school heads to allocate resources subject only to a board of governors and the national curriculum. Under these conditions most heads of GM schools became adept at making rational resource decisions, selecting their students more carefully, spending more money on “show” (spruced-up buildings and grounds) to attract parents, and focusing their best teachers on students just at the margin of passing high-stakes tests.<sup>57</sup> Although some of these decisions are objectionable from a global perspective, they indicate that school administrators quickly learn how to allocate resources rationally when the opportunity and necessity present themselves.

At the school level, a great deal of waste appears to come from the lack of planning, from districts spending on resources that schools do not use, and from long-established practices that are probably ineffective, such as spending for instructional aides and parent liaisons. A promising strategy in some districts has been to develop site-based budgeting, with allocation of funds to schools based on weighted student formulas using higher weights for low-income students, English learners, special education students, and identified grade levels.<sup>58</sup> Typically schools must undergo a planning process before spending these resources. The allocation of funding under these plans proves to be more equitable than conventional forms of allocation.<sup>59</sup> There has not been much analysis of how the

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55. W. L. Boyd and W. T. Hartman, “The Politics of Educational Productivity,” in *Microlevel School Finance: Issues and Implications for Policy*, ed. D. H. Monk and J. Underwood (Cambridge, MA: Ballinger, 1988): 271–308.

56. L. Cuban, *The Managerial Imperative and the Practice of Leadership in Schools* (Albany: State University of New York Press, 1988); Grubb and Flessa, “A Job”; J. Flessa, “What’s Urban in the Urban School Principals: Case Studies of Middle School Principals” (unpublished PhD dissertation, School of Education, University of California, Berkeley, 2003).

57. N. Finkelstein and W. N. Grubb, “Making Sense of Education and Training Markets: Lesson from England,” *American Educational Research Journal* 37(3) (2000): 601–632.

58. See A. Odden, “School-Based Financing in North America,” in *School-Based Financing*, ed. M. Goertz and A. Odden (Thousand Oaks, CA: Corwin, 1999); A. Cole and W. N. Grubb, “Equity and School Control: The Potential of Recent District Budgetary Reforms” (unpublished paper, 2006).

59. K. H. Miles and M. Roza, *Understanding Student-Based Budgeting as a Means to Greater Resource Equity* (Wayland, MA: Education Resource Strategies, and Seattle: Center on Reinventing Public Education, University of Washington, 2004).

planning processes work, but an examination of New York City's performance-driven budgeting initiative revealed that low-performing schools, with principals and teachers who lack knowledge and experience and with instability caused by staff turnover, have limited capacity to implement performance-driven budgeting.<sup>60</sup> Although both the planning process and the budgeting process may now operate imperfectly, steady improvements in such procedures, technical assistance to principals and school budget committees, and their incorporation into educational administration programs<sup>61</sup> could result in school site educators who are better able to make effective resource decisions. A planning process, using effective practices supported by research and a budget process providing incentives for school-level decision makers, exemplifies a Deweyan synthesis of research-based and practice-based approaches to eliminating waste.

Similarly, many districts do not seem to consider resource allocation very carefully. Many give schools little discretion over spending, and many districts (particularly urban districts) have enveloped budget decisions in bureaucratic rules and procedures, reducing the ability of schools to allocate resources effectively. Some districts seem incompetent in getting resources to schools in a timely way, make decisions that schools find counterproductive, or swing back and forth among politically motivated decisions, all contributing to waste. One alternative, clear from the planning procedures adopted in Seattle, is to create district priorities based on evidence of effectiveness before allocating funds to schools to be spent in accordance with more detailed school-level priorities. But whatever the mechanism, these approaches to finance ask how every part of the education hierarchy—from the school to the federal level—can first determine effective practices and then allocate resources to support those practices.

### *Implications For Policy: Creating Complementary Reforms*

A large number of federal and state policies seem to generate ineffective reforms. One simple thought experiment would be valuable before policies are enacted:

60. D. Siegel and N. Fruchter, *Evaluation of the Performance Driven Budgeting Initiative of the New York City Board of Education* (New York: Institute for Education and Social Policy, New York University, 2002).

61. Resource allocation seems to be treated briefly in most education administration programs. In a random sample of textbooks, L. W. Hughes, *The Principal as Leader*, 2nd ed. (Upper Saddle River, NJ: Prentice Hall, 1999), has only two pages on funding. M. Speck, *The Principalship: Building a Learning Community* (Upper Saddle River, NJ: Prentice Hall, 1999), has nothing at all. J. T. Seyfarth, *The Principal: New Leadership for New Challenges* (Upper Saddle River, NJ: Prentice Hall, 1999); and T. L. Drake and W. H. Roe, *The Principalship*, 5th ed. (Upper Saddle River, NJ: Prentice Hall, 1999) each allow a single chapter near the end of their texts, and both treat resources as budgeting issues rather than educational decisions. For one effort to clarify the funding issues for administrators, see D. H. Monk and M. L. Plecki, "Generating and Managing Resources for School Improvement," in *Handbook of Research on Educational Administration: A Project of the American Educational Research Association*, 2nd ed., ed. J. Murphy and K. S. Louis (San Francisco: Jossey-Bass, 1999).

What will happen in schools and in classrooms if a particular change involving additional revenues is made? The popular idea of class size reduction provides a good illustration. In California, the potential of small classes was undermined by shortages of qualified teachers, especially in hard-to-staff schools; by the need for additional space; and by the inability of teachers to change instruction. The result is that an extremely expensive reform generated poor results,<sup>62</sup> something that could have been foreseen by such a thought experiment. Perhaps classroom impact statements, paralleling environmental impact statements, should be required to justify major new policies. Similarly, the military spends billions on “war games” and elaborate simulation of defense options; it is not too much to ask state and federal policymakers to deliberate a little longer about the classroom consequences of their proposals.

Policymakers need to think about the complementary policies needed to change outcomes. The complementary elements of reforms almost always take the form of compound resources: money for computers plus professional development plus adequate maintenance, a vision for a school plus careful selection of personnel plus staff development, incentives for improvement plus resources for capacity building. To be sure, sometimes policymakers think in these ways. A number of finance cases have led to broader legislative reforms, on the assumption that redistributing money without reforming other school practices would be insufficient. Examples include the 1984 reforms in Texas, the 1990 changes in Kentucky,<sup>63</sup> and the 1991 reforms in New Jersey, where legislators were unwilling to provide more resources to urban districts without accountability measures.<sup>64</sup> Another example was California’s II/USP, which included five potentially complementary provisions: additional funding, plans for spending those resources, a consultant to help schools develop plans, school site councils to help formulate plans, and incentives for improvement. But legislators do not routinely support compound resources, and II/USP schools did not treat various elements as complements.

The traditional way in which state and federal governments have tried to increase the effectiveness of spending has been through categorical rather than general funding, targeting funds to specific and presumably effective practices. But categorical funding limits the discretion of districts and schools in allocating resources effectively. When carried to an extreme, as in California, where more than 40% of state

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62. Stecher and Bohnstedt, *Class Size Reduction*.

63. J. E. Adams, “School Finance Policy and Students’ Opportunities to Learn: Kentucky’s Experience,” *The Future of Children* 7(2) (Winter 1997): 79–95.

64. W. A. Firestone, M. E. Goertz, B. Nagle, and M. F. Smelkinson, “Where Did the \$800 Million Go? The First Year of New Jersey’s Quality Education Act,” *Educational Evaluation and Policy Analysis* 16(4) (1997): 359–373.

revenues come through categorical programs,<sup>65</sup> it contributes to spending in piecemeal rather than integrated ways, and it reinforces the tendency to think about what inputs can be bought with specific grants rather than the relationship between aggregate resources and outcomes. The alternative, bottom-up mechanism to increase resource effectiveness relies on school-level expertise rather than state (or federal) controls. Schools develop their own reform strategies and then find the necessary resources, or reallocate existing spending to convert inert to active resources<sup>66</sup> (e.g., replacing ineffective aides with classroom teachers or ineffective staff development with different approaches). Site-based planning and budgeting developed with weighted student formulas are other examples. In effect, these approaches allow the school rather than the state legislature to define what effective resources are. Of course, such policies require schools with well-informed principals, teachers able to deliberate about schoolwide priorities, and stable conditions—what some have called internal accountability or capacity.<sup>67</sup>

### *Implications for Litigation: The Williams and CFE Cases*

School financing often has been driven by litigation, especially since 1971 and the *Serrano* case in California. Evidently, conventional interest group politics is unable to redistribute resources,<sup>68</sup> and therefore advocates have relied on the courts to enforce the equity principles embedded in state constitutions. Earlier rounds of litigation concentrated on funding; these cases relied on evidence about unequal resources, a remedy that concentrated on district-level revenues.<sup>69</sup> Although some of these cases have led to greater equality in spending per student,<sup>70</sup> they have not led to greater equality in outcomes, and their effects on the resources that might influence outcomes have not been widely examined.<sup>71</sup>

65. N. Finkelstein, W. Furry, and L. A. Huerta, "School Finance in California: Does History Provide a Sufficient Policy Standard?" in *Crucial Issues in California Education 2000: Are the Reform Pieces Fitting Together?*, ed. E. Burr, G. C. Hayward, B. Fuller, and M. W. Kirst (Berkeley: Policy Analysis for California Education, University of California, 2000).

66. K. H. Miles, "Freeing Resources for Improving Schools: A Case Study of Teacher Allocation in Boston Public Schools," *Educational Evaluation and Policy Analysis* 17(4) (1995): 476–493; Miles and Darling-Hammond, "Rethinking"; Odden and Busch, *Financing Schools*.

67. Carnoy et al., *New Accountability*, especially Lemons et al., "Leadership."

68. T. Lowi, *The End of Liberalism: The Second Republic of the United States*, 2nd ed. (New York: Norton, 1979).

69. For the *Serrano* case, J. E. Coons, W. H. Clune III, and S. D. Sugarman, *Private Wealth and Public Education* (Cambridge, MA: Harvard University Press, 1970).

70. G. A. Hickrod, R. Chaudhari, G. Pruyne, and J. Meng, "The Effect of Constitutional Litigation on Education Finance: A Further Analysis," in *Selected Papers in School Finance*, ed. W. Fowler (NCES 97-536. Washington, DC: National Center for Education Statistics, 1997); S. E. Murray, W. N. Evans, and R. M. Schwab, "Education-Finance Reform and the Distribution of Education Resources," *American Economic Review* 88(4) (1998): 789–812; D. C. Thompson and F. E. Crampton, "The Impact of School Finance Litigation: A Long View," *Journal of Education Finance* 27 (Winter 2002): 783–816.

71. Yinger, *Helping Children*.

More recent litigation has argued instead for adequacy in school resources, based on state constitutional requirements for a “thorough and efficient education” (the most common language) or a “general and uniform education.”<sup>72</sup> But adequacy is an abstract concept, and so defining adequacy has been varied and ambiguous. One approach has been to compile a list of simple resources that experts might consider adequate: a certain teacher–pupil ratio, a specified annual salary per teachers, resources for counselors, books, and the like.<sup>73</sup> Another has been to argue that school districts known to have high-quality schools must have adequate resources, so adequacy should be pegged to spending levels in such districts. These approaches represent different ways of coming up with a target dollar amount of spending per pupil, so they do not involve any consideration of what resources are effective. A third approach has been to define outcomes deemed adequate and then to determine via an educational production function what resources would be necessary to generate this outcome. Quite apart from being politically infeasible because it generates some enormous expenditure differences, this approach starts from conventional production functions rather than a careful understanding of how revenues are used to enhance effective resources.<sup>74</sup> At the end of the day, adequacy approaches have specified how much more ought to be spent on schools, ranging from 16% in some New York calculations to as much as 85% in South Carolina, but the remedies are still stated in dollar terms.<sup>75</sup>

However, a recent lawsuit in California, *Williams v. State of California*, focuses not on the inadequacy of dollars but rather on real resources in schools and classrooms: credentialed teachers, up-to-date textbooks, and physical facilities. These are arguably resources with positive effects on various outcomes; the complaint cites much evidence of effects on learning.<sup>76</sup> To be sure, the initial amount of money (\$178 million in 2004–05) is woefully inadequate to solve the problems, and a school-level complaint procedure devised by Grubb, Goe, and Huerta may prove to be cumbersome and bureaucratic.<sup>77</sup> But the proposed solution does not assume

72. W. H. Clune, “The Shift From Equity to Adequacy in School Finance,” *Educational Policy* 8(4) (1994): 376–394; P. A. Minorini and S. D. Sugarman, “Educational Adequacy and the Courts: The Promise and Problems of Moving to a New Paradigm,” in Ladd et al., 175–208; J. W. Guthrie and R. Rothstein, “Enabling Adequacy to Achieve Reality: Translating Adequacy into State School Finance Distribution Arrangements,” in Ladd et al., 209–259.

73. “Legislative Council on the Oregon Quality Education Model,” in *The Oregon Quality Education Model* (Salem: Oregon Legislative Assembly, Policy and Research, 1999).

74. W. D. Duncombe and J. M. Yinger, “Performance Standards and Educational Cost Indexes: You Can’t Have One Without the Other,” in Ladd et al., 260–297.

75. D. T. Conley, *An Overview of Adequacy Funding: Models and Policies* (presentation to the Berkeley Unified School District. Eugene: University of Oregon, Center for Educational Policy Research, 2005).

76. J. Oakes and M. Saunders, “Education’s Most Basic Tools: Access to Textbooks and Instructional Materials in California’s Public Schools,” *Teachers College Record* 106(10) (October 2004): 1967–1988.

77. W. N. Grubb, L. Goe, and L. A. Huerta, “The Unending Search for Equity: California Policy, the ‘Improved School Finance,’ and the *Williams* Case,” *Teachers College Record* 106(11) (2004): 2081–2127.



that remedies should be stated in funding per pupil. Instead, it specifies resources necessary at the school and classroom levels and provides incentives for districts to allocate resources to their worst-off schools. In the end, it clarifies that the state is responsible for decent instructional conditions in all schools and classrooms.

The decision in *Council for Fiscal Equity (CFE) v. State of New York* requires the state to ensure that every school has the resources necessary for providing a “sound basic education,” including the capacity for necessary instructional conditions. As Huerta argues in this issue, the CFE case has the potential for revising resources rather than merely funding. The decision mandated an accountability system to measure whether reforms provide a “sound basic education” and commissioned the New York Adequacy Study to accomplish this.<sup>78</sup> The results of this study ascertain practices within schools and classrooms that enhance learning and then allocate resources to those practices. Still, lawsuits often are crude solutions to unequal resources, generated as last resorts when legislative approaches fail to equalize revenues or resources. But some have been more effective than others, and they might have more effects on the school resources that really matter than litigation focused only on revenues.

### *Toward a New Narrative for Resources*

Over the past century, several simple stories or policy narratives<sup>79</sup> have dominated the efforts to fund schools. The dominant one is simply that more is better and that the solution to any educational problem entails increased spending. A recent counternarrative, following the Coleman Report and Hanushek’s summary of the literature, has argued that schools do not make much of a difference, at least compared with family background, and that additional expenditures do not necessarily lead to better outcomes. These competing narratives have tended to battle one another, with opponents restating the existing literature and searching for one more study to bolster their views.

The improved school finance is at least a candidate to replace these older narratives. Without abandoning the analysis of spending levels and equity, it adds an emphasis on resources and effectiveness, consistent with the current interest in accountability and with what works. It also responds to the historical concern for efficiency because it explicitly links resources with results.<sup>80</sup> By focusing on instructional and noninstructional conditions in schools and classrooms as well as rev-

78. Campaign for Fiscal Equity, *The New York Adequacy Study: Determining the Costs of Providing All Children in New York an Adequate Education* (final report) (New York: American Institutes for Research/Management Analysis and Planning, 2004).

79. On policy narratives, the easily understood and widely accepted stories that often govern policy, see E. Roe, *Narrative Policy Analysis: Theory and Practice* (Durham, NC: Duke University Press, 1994).

80. R. E. Callahan, *Education and the Cult of Efficiency* (Chicago: University of Chicago Press, 1967).

enues, it is compatible with recent reforms emphasizing the inner workings of schools and classes, the pedagogies and cultures necessary for enhanced learning.

But new ideas and narratives do not come to dominate practice and policy unless they attract widespread allegiance, including support from researchers, teachers and administrators, policymakers, and parents. This is why we have stressed the implications of the improved school finance for different participants: Only when there is some consistency in perspectives and practices can a new narrative come to dominate. The alternatives are grim: Without making the necessary changes, spending for education is likely to keep escalating without much improvement to show for the additional money.