

CPRE's School Finance Research: Fifteen Years of Findings

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CPRE and particularly the CPRE group at the University of Wisconsin-Madison have been working on school finance redesign since 1990. The issue that has driven this effort has been the goal of state standards-based education reform and, more recently, of the federal No Child Left Behind (NCLB) Act to teach all students to high standards. This goal has shifted the orientation of the education system from inputs to outcomes – student achievement to rigorous performance standards – with an attendant accountability focus at the school site. In the broader school finance community, this focus has induced a shift from “equity” to “adequacy,” for both litigation and policy. Though adequacy narrowly seeks to identify the level of dollars needed to produce a desired level of student achievement, its more general objective is to redesign the finance system to link resource levels and resource use practices more directly to student learning.

This policy brief describes how CPRE has approached this agenda over the past decade and a half, cites the bulk of research that we have published, and reveals how our current finance research has begun to explicitly link the level and use of resources with strategies districts and schools can deploy to literally double student performance over a five- to ten-year time period. During the time period over which this finance research agenda has evolved, we believe it has succeeded in linking school finance equity and adequacy, aligning effective allocation and use of resources to the most powerful and comprehensive school-based strategies that can boost student learning, and identifying strategies for how and how much to pay teachers.

This policy brief summary of CPRE school finance research and its policy conclusions is divided into the following sections:

- How education dollars are spent
- Tracking education resource at the school level and by educational strategy
- Education resource reallocation
- Toward school finance adequacy
- Using resources to double student achievement
- Use of dollars after a school finance reform
- Pricing adequacy recommendations and enhancing teacher compensation
- School-based budgeting and the weighted student formula
- Summary with policy and practice implications

How the Education Dollar is Spent

We knew that accomplishing the student achievement goals of state and federal reforms required using the education dollar more effectively. Thus, we developed several efforts beginning in 1990 to better understand how the education dollar was typically being spent. This work led to several publications (Firestone, Goertz & Natriello, 1997; Goertz & Stiefel, 1998; Monk, Roellke & Brent, 1996; Odden, Monk, Nakib & Picus, 1995; Odden & Picus, 1992, 2000, 2004, and 2007; Odden & Busch, 1998; Picus, Tetrealt &

Murphy, 1996; Picus & Wattenbarger, 1996). The following are several conclusions from these analyses:

- a. There has been a steady increase in education dollars per pupil which, after adjusting for inflation, have risen on average about 3.5 % annually over the past 100 years.
- b. Today, about 61 percent of the education dollar is spent on instruction, with 10 percent on administration (5-6 percent at the site and 4-5 percent at the central office), 10 percent on instructional and pupil support, 10 percent on operations and maintenance, 5 percent on transportation and 5 percent on food and miscellaneous items. This pattern is remarkably similar for districts with very different demographics and number of pupils.
- c. Further, over the past fifty years, the percent of expenditures spent on the classroom – or instruction – has remained consistent at about 60-61%.
- d. However, over this same time period, there has been tremendous change in the composition of those classroom/instructional expenditures. Whereas fifty years ago the vast bulk of such expenditures were for regular classroom teachers (the grade level teachers in elementary schools and math, science, reading/writing, history and language teachers in secondary schools), today significant portions of such expenditures are spent on specialist teachers (art, music, family and consumer education, vocational education, health, physical education, etc.) and for extra services for struggling students – those from lower income backgrounds, those learning English and those with disabilities. More funding has also been used to employ instructional aides.
- e. There is no indication that administration consumes large sums of money. Administrative expenditures have remained pretty constant – about 5-6 % for site administration and about 4-5 % for central office administration. Interestingly, the latter figures are lower for the largest districts in the country, such as New York City, Chicago and Los Angeles.
- f. Though revenues per pupil increased consistently over time, there has not been a commensurate increase in student achievement, although more students are being served in schools and performance at the basic levels has risen. Although more services have been provided to students with special needs, perhaps ensuring that overall achievement did not drop, the consistent rise in spending per pupil was not accompanied by a similar rise in student performance, at least over the past 30-40 years. The result means that current education goals are not likely to be met without determining how better to use school resources.

Though these findings were a good first step in understanding how the education dollar was used, we decided that additional information was needed.¹ To put the above findings into a more understandable context, we suggested that a different, and perhaps more helpful, way to understand how the educational dollar is spent is to think of it as divided into three portions:

- a. One portion for core instructional services (grade-level teachers in elementary schools and core subject teachers – mathematics, science, language arts/reading/writing, social studies and foreign language – in secondary schools), professional development and site administration. These would be considered the “line” resources in education.
- b. Another portion for additional instruction, as well as instructional and pupil support services: specialist subjects such as art, music, career/technical and physical education; compensatory, special and bilingual education services; guidance counselors, social workers, psychologists, family outreach personnel; and instructional support personnel such as librarians. These are the “support” resources in education as their purpose is to help the education system accomplish the core goal of student achievement in the core subjects.²
- c. A third portion for necessary “overhead” including operation and maintenance of schools (heating, cooling, cleaning, fixing, etc.), transportation, food services, and central office administration (the superintendent’s office, the business and personnel offices, and school board services).

The policy and practice issues, then, become whether expenditures in any of the three “portions” of education resources can be more productive, either by attaining current achievement with less money or by spending the extant money more effectively and boosting results, with a focus on the latter given the performance challenges for schools.

Addressing these issues required more detailed information about resource use practices. Since traditional fiscal reporting systems tracked expenditures by function and object at the district level, but not by the above three categories nor at the school level where teaching and learning take place, the typical financial reporting systems provided very limited information about how the education dollar is used. To be sure, the traditional fiscal reporting systems reported use by the functional categories of instruction, instructional support, administration, etc. but these categories are very broad and provide little if any information on how the funds are used within each function, especially instruction. Such knowledge is needed to make more effective use of those dollars.

¹ As we indicate below, we have concluded that the major productivity issues in education have to do with how resources within the instructional function are used. For this as well as other reasons, we are not bullish with the notion to simply boost the percentage spent on instruction, i.e., the “65 percent solution.” Unless current and any new resources within the instructional function are spent more effectively, increasing the portion spent on instruction will be unlikely to impact student learning.

² In the broad organizational literature, the second portion would be labeled “staff,” but since most educators refer to teachers as staff, we use the term “support” to indicate this function.

Tracking Resources Used for Professional Development

The first project we undertook to specify district and school expenditures in more detail was focused on the area of professional development. Although it was becoming widely accepted that professional development was a key catalyst for changing classroom practice, little was known about how much districts and schools spent on professional development, and on what types? When we looked across existing studies, we found differences in terminology that prevented us from being able to compare costs across studies. These shortcomings led us to develop a framework for collecting expenditure data on investments in professional development (Odden, Archibald, Fermanich, & Gallagher, 2002). The framework, shown in Figure 1, includes six cost elements: 1) teacher time, 2) training and coaching, 3) administration, 4) materials, equipment and facilities, 5) travel and transportation, and 6) tuition and conference fees. The accompanying article clearly defined the terms used in the framework to ensure that researchers could use it to collect data and to compare findings across sites and studies.

This professional development cost structure provides a way to identify, calculate and analyze the professional development resources that districts or schools make available to teachers at a given school site; the framework can also be used to identify the full costs of any specific professional development program. Teacher time, and trainers and coaches comprise the largest components of professional development costs.

We have used the framework, along with Education Resource Strategies' Coding Tool,³ to identify the costs and foci of professional development in several large cities (Fermanich, 2002; Miles, Odden, Archibald & Fermanich, 2004; Gallagher, 2002; Archibald and Gallagher, 2002). These studies found that the large districts studied were investing between \$4000 and \$8000 per teacher per year in professional development, with the higher numbers associated with more pupil free days or summer institutes for training. The studies also found that the professional development strategies were generally a mile wide and an inch deep, having little impact on teachers' instructional practice. A similar study of professional development investments in a smaller, rural district found much lower professional development investments (Thayer, 2004).

The primary implication from this research is that districts should first conduct a professional development fiscal audit to fully understand the fiscal size of their current investments in professional development. Cincinnati, Atlanta, Boston, Chicago and Minneapolis are examples of districts that have used the framework to conduct such audits. The implications for practice that emerged from such studies suggested reallocating extant professional development resources, which are quite sizeable in most large districts, first by focusing professional development on improving instruction in the core subjects (mathematics, science, reading and history) and second by restructuring professional development to provide long term support in ways that enabled teachers to actually incorporate new and more powerful instructional strategies into their ongoing

³ Education Resource Strategies, or ERS, is Karen Hawley Miles' company, with whom we have collaborated, to analyze professional development expenditures.

practice. [See Odden, Archibald, Fermanich & Gallagher (2002) for a summary of the key structural features of effective professional development.]

Figure 1
A Cost Structure for Professional Development*

Cost Element	Ingredient	How Cost is Calculated
Teacher Time Used for Professional Development	<i>Time within the regular contract:</i> -when students are not present before or after school or on scheduled in-service days, half days or early release days -planning time	- teachers' hourly salary times the number of student free hours used for pd - the cost of the portion of the salary of the person used to cover the teachers' class during planning time used for pd
	<i>Time Outside the regular day/year:</i> -time after school, on weekends or for summer institutes	- the stipends or additional pay based on the hourly rate that teachers receive to compensate them for their time
	<i>Other Time During the regular day/year</i> -release time provided by substitutes	- substitute wages
Training and Coaching	<i>Training</i> -salaries for district trainers -outside consultants who provide training; may be part of CSRD	- sum of trainer salaries - consultant fees or comprehensive school design contract fees
	<i>Coaching</i> -salaries for district coaches including on-site facilitators	- sum of coach and facilitator salaries
Administration of Professional Development	Salaries for district or school level <i>administrators</i> of professional development programs	- salary for administrators times the proportion of their time spent administering pd programs
Materials, Equipment and Facilities Used for Professional Development	<i>Materials</i>	- materials for pd, including the cost of classroom materials required for comprehensive school designs
	<i>Equipment</i>	- equipment needed for pd activities
	<i>Facilities</i>	- rental or other costs for facilities used for professional development
Travel and Transportation for Professional Development	<i>Travel</i>	- costs of travel to off-site pd activities
	<i>Transportation</i>	- costs of transportation within the district for professional development
Tuition and Conference Fees	<i>Tuition</i>	- tuition payments or reimbursement for college-based pd
	<i>Conference Fees</i>	- fees for conferences related to pd

* Revised version of framework in Odden, Archibald, Fermanich & Gallagher (2002)

Tracking Resource Use at the School Level and by Educational Strategy

The utility of having a detailed framework for capturing expenditures for professional development led to our developing a framework for capturing *all* school-level expenditures. Therefore, we next tackled the issue of how to develop a *school-based* financial information data base that could better report *educational expenditures by educational strategies or specific educational program use* at the site level. We began by developing a special issue of the *Journal of Education Finance* (Odden & Busch, 1997) on the state-of-the-art of school-based reporting which, in 1997, was not very robust. Very few states had devolved their financial reporting systems to the school level and those that did largely reported just the same functional categories at the site level. Although this was an advance, the expenditure categories were still too broad to provide much useful policy or practice information.

We followed up that effort by developing a new fiscal reporting structure that could provide the type of detailed resource use information at the school level that indicated more specifically how resources were used. Our system suggests reporting educational expenditures at the school and district level by their educational strategy (Odden, Archibald, Fermanich & Gross, 2003). One major objective for the expenditure framework (see Figure 2) was to “unpack” the instructional category and report spending of dollars by educational strategy such as core instruction, specialist instruction, professional development, and types of extra help for students with special needs to achieve standards. This framework includes several other non-dollar indicators, each of which provides additional information about resource use, such as number of minutes allocated for reading and math instruction in elementary schools, class sizes, and percentage of core versus elective classes in high schools. The goal was to provide a richer and more detailed report on how the education dollar was used within the instructional category and at the school level.⁴

Through subsequent empirical work at several schools, CPRE researchers have found that using the above framework to report expenditures (Odden, Archibald, Fermanich, & Gross, 2003) provided a comprehensive and more explanatory portrait of education resource use for the delivery of instruction. We showed that such a fiscal reporting system provided more insight into both effective and ineffective uses of the education dollar, and could be used to illuminate spending in each of the above three “portions” of dollars. In a forthcoming article, we show how the framework can be used to identify the costs of instructional improvement (Odden et al., forthcoming).

As we discuss below, we have used this framework to track how dollars have been used by educational strategy at the school level after Arkansas’ 2004 school finance reform (Odden, Mangan & Picus, 2006) and are using this framework to conduct a similar analysis for the Wyoming legislature. In the Wyoming study, we also will be analyzing the link between resource use practices and each school’s instructional strategy.

⁴ We are engaged in additional work to “align” the categories in Figure 2 with the three portions of the education dollars discussed above. Very generally, items 1, 4, 6 and 8 would be placed in the first portion.

Figure 2 School Expenditure Structure and Resource Indicators*

School Resource Indicators	
Student Enrollment Percent Low Income Percent Special Education Percent ESL/LEP Expenditures Per Pupil Professional Development Expenditures Per Teacher Special Academic Focus of School/Unit Length of Instructional Day	Length of Class Periods Length of Reading Class Length of Mathematics Class Reading Class Size Mathematics Class Size Regular Class Size Percent Core Teachers/Grade Level Classroom Teachers
School Expenditure Structure	
Instructionally Related	<ol style="list-style-type: none"> 1. Core Academic Teachers <ul style="list-style-type: none"> - Grade Level Teachers (in elementary schools) - Math, Science, History, Language Arts and language teachers (in secondary schools) 2. Specialist and Elective Teachers/Planning and Preparation <ul style="list-style-type: none"> - Art, Music, Physical Education, etc. - Academic Focus With or Without Special Funding - Vocational - Librarians 3. Extra Help <ul style="list-style-type: none"> - Tutors - Extra Help Laboratories - Resource Rooms (Title I, special education or other part-day pull-out programs) - Inclusion Teachers - English as a Second Language Classes - Special Education Self-contained Classes for Severely Disabled Students (Including Aides) - Extended Day - Summer School - District-Initiated Alternative Programs 4. Professional Development <ul style="list-style-type: none"> - Teacher Time (Substitutes and Stipends) - Trainers and Coaches - Administration - Materials, Equipment and Facilities - Travel & Transportation - Tuition and Conference Fees 5. Other Non-Classroom Instructional Staff <ul style="list-style-type: none"> - Coordinators and Teachers on Special Assignment - Instructional Aides 6. Instructional Materials and Equipment <ul style="list-style-type: none"> - Supplies, materials, textbooks and formative assessments - Computers (hardware, software, peripherals) and equipment 7. Student Support Services <ul style="list-style-type: none"> - Counselors - Nurses - Psychologists - Social Workers - Extra-Curricular and Athletics
Non-Instructional	<ol style="list-style-type: none"> 8. Administration <ul style="list-style-type: none"> - Principal/Assistant Principal - Clerical Staff and Supplies 9. Operations and Maintenance <ul style="list-style-type: none"> - Custodial, maintenance, grounds keeping, etc. - Utilities, supplies - Security - Food Service

* Revised version of framework reprinted from Odden, Archibald, Fermanich, & Gross (2003).

Also over the course of the last decade, Goertz and Stiefel conducted a series of analyses on the equity of the distribution of resources (dollars, teachers, etc.) across schools in several large urban districts (Goertz & Stiefel, 1998). They showed that resources were distributed quite unequally across school sites, and that schools with concentrations of students with low-income and minority backgrounds had the most strikingly unequal resources, particularly experienced, high quality teachers.

Reallocating Dollars at the School Level

Having better knowledge of how schools use resources is the first step toward using those resources more productively. A second step concerns how those dollars might be reallocated to more productive uses. Because the U.S. education system educates only about one-third of the nation's students to a rigorous proficiency standard (National Center for Education Statistics, 2005), the stark reality of the goal of teaching *all*, or nearly all, students to high standards requires doubling or tripling student academic achievement, and it is unlikely that there will be a commensurately large increase in dollars.⁵ So to accomplish this achievement goal means schools will need to restructure themselves to more powerful educational strategies and, in the process, reallocate all dollars to their new and more effective educational visions.

However, the dominant assumption among most educators has been that because education is “labor” intensive, it cannot engage in resource reallocation strategies. Thus, we focused research attention on the topic of resource reallocation and the questions of whether resource reallocation can be done in education, and if so, how? Contrary to the predictions of many, we found numerous examples of schools that had dramatically reallocated their resources and usually for the purpose of improving student performance. From that research, we created about a dozen case studies of schools – both urban, suburban and rural – that had reallocated resources and in the process used teachers, time, and dollars both differently and more productively. These research efforts led to a book on resource reallocation (Odden & Archibald, 2001a), a series of empirical publications (e.g., Goertz & Hess, 1998; Goertz & Duffy, 1999; Miles & Darling-Hammond, 1998; Odden, Archibald & Tychsen, 2000; Odden & Archibald, 2000, 2001b), and cases of school-based resource reallocation (<http://www.wcer.wisc.edu/cpre/finance/research/reallocation.php>).

From these cases, we found that resource reallocation was focused largely on the second “portion” of dollars – the resources in the “support” portion of the education dollar. Driven largely by displeasure with their students’ performance, and in most cases more specifically the performance of their students needing extra help (those from lower income or ELL backgrounds or with disabilities), the schools redesigned their entire schools’ education program and through both restructuring and resource reallocation transformed themselves into different and more productive educational organizations. In the process they tended to expand time spent on core academic subjects, often provided

⁵ Though we know that performance increases do not proportionately track resource increases, we make this point simply to note that the large performance increase expectations essentially means that improving education productivity must be placed onto the policy and practice agendas.

lower class sizes for those subjects, invested much more in professional development for teachers, and many times provided more intensive and much more effective extra help for struggling students, such as one-to-one tutoring. We found that the resource reallocation process followed the procedures of large scale organizational change (Mohrman, 1994; Odden & Archibald, 2001a), which made sense as the schools restructured themselves as part of the underlying process of their resource reallocation.

About that same time, the New American Schools (NAS) created for the U. S. education system a series of “whole school designs” or what many called “comprehensive school reforms” that were designed to be more successful in teaching students to high state and district performance standards. Fortuitously, we were asked to analyze the costs of those whole school designs (see Odden, 1997; Odden & Busch, 1998). We found that all designs had a set of resources that ultimately aligned well with our expenditure reporting structure and could be funded with the national average expenditure per pupil, the latter being a latent NAS design goal. In this research, we found that whole school designs generally used resources differently than traditional schools – the designs, like the schools that had reallocated resources, focused more resources on the core subjects, often provided smaller class sizes for these subjects, invested in substantial ongoing professional development (including school-based instructional coaches) so teachers could acquire the skills to effectively teach the curriculum in the various designs, and provided extra help strategies for struggling students such as one-to-one tutoring. Subsequent research showed that many but not all designs produced higher levels of student achievement than typical schools (Borman, Hewes, Overman & Brown, 2003).

Toward School Finance Adequacy

Ultimately, however, the costs of these and even more powerful whole school designs need to be aggregated into district and state costs, and then converted into a state school finance policy that provides each district and each school with an “adequate” amount of resources. Building on the previous research on the costs of more effective school-wide strategies, Allan Odden and Larry Picus developed the “evidence-based” approach to school finance adequacy. This approach summarizes research and best practices evidence on the major dimensions of schools that have cost implications – school size, class size, core instruction, specialist instruction, extra help for struggling students, professional development, administration, etc. – and identifies for each school in a state a level of “adequate” resources. These resources are then combined with district-level functions for operations and maintenance, transportation, food services and central administration to determine an “adequate” resource level for each district in the state.⁶ Furthermore, although most adequacy studies simply “carry forward” expenditures for operations and maintenance, central office, transportation and food services, the 2006 Picus and Odden adequacy analyses in Washington and Arkansas reviewed the literature of the effectiveness and efficiency of these functions and used standards to estimate

⁶ All adequacy studies as discussed below and in Odden (2003b) identify resources at the school and district levels and then aggregate them to the state to identify the statewide costs of adequately funding the schools.

adequate resources for these functions as well. Table 1 indicates the results of such an adequacy study for the state of Wisconsin.

Table 1
Recommendations for Adequate Resources for
Prototypical Wisconsin Elementary, Middle and High Schools

School Element	Elementary Schools	Middle Schools	High Schools
School Characteristics			
School configuration	K-5	6-8	9-12
Prototypic school size	432	450	600
Class size	K-3: 15 4-5: 25	6-8: 25	9-12: 25
Full-day kindergarten	Yes	NA	NA
Number of teacher work days	190 teacher work days, so an increase of 5 days.	190 teacher work days, so an increase of 5 days.	190 teacher work days, so an increase of 5 days.
% Disabled	14.5 %	14.5 %	14.5 %
% Poverty (free & reduced lunch)	30 %	30 %	30 %
% ELL	~10 %	~10 %	~10 %
% Minority	21.2 %	21.2 %	21.2 %
Personnel Resources			
1. Core teachers	24	18	24
2. Specialist teachers	20% more: 4.8	20% more: 3.6	33% more: 8.0
3. Instructional Facilitators and Mentors	2.2	2.25	3.0
4. Tutors for struggling students	one for every 100 poverty students: 1.30	one for every 100 poverty students: 1.35	one for every 100 poverty students: 1.8
5. Teachers for ELL students	An additional 1.0 teachers for every 100 ELL students who 0.43	An additional 1.0 teachers for every 100 ELL students 0.45	An additional 1.0 teachers for every 100 ELL students 0.60
6. Extended Day	1.1	1.125	1.5
7. Summer School	1.1	1.125	1.5
8. Alternative Schools	NA	NA	1 AP plus 1 teacher for every 7 alternative school students
9. Learning and mild disabled students	Additional 3 professional teacher positions	Additional 3 professional teacher positions	Additional 4 professional teacher positions
9. Severely disabled students	100% state reimbursement minus federal funds.	100% state reimbursement minus federal funds.	100% state reimbursement minus federal funds.
10. Teachers for gifted students	\$25/student	\$25/student	\$25/student
11. Vocational Education	NA	NA	No additional for career/technical education
12. Substitutes	10 days per teacher	10 days per teacher	10 days per teacher

School Element	Elementary Schools	Middle Schools	High Schools
13. Pupil support staff	1 for every 100 poverty students: 1.3	1 for every 100 poverty students plus 1.0 guidance/250 students 3.15 total	1 for every 100 poverty students plus 1.0 guidance/250 students 4.2 total
14. Non-Instructional Aides	2.0	2.0	3.0
15. Librarians/media specialists	1.0	1.0	1.0 librarian 1.0 Library technician
16. Principal	1	1	1
17. School Site Secretary	1.0 Secretary and 1.0 Clerical	1.0 Secretary and 1.0 Clerical	1.0 Secretary and 3.0 Clerical
Dollar per Pupil Resources			
18. Professional development	Included above: Instructional facilitators Planning & prep time 10 summer days Additional: \$100/pupil for other PD expenses – trainers, conferences, travel, etc.	Included above: Instructional facilitators Planning & prep time 10 summer days Additional: \$100/pupil for other PD expenses – trainers, conferences, travel, etc.	Included above: Instructional facilitators Planning & prep time 10 summer days Additional: \$50/pupil for other PD expenses – trainers, conferences, travel, etc.
19. Technology	\$250/pupil	\$250/pupil	\$250/pupil
20. Instructional materials, equipment, including textbooks, and formative assessments	\$165/pupil	\$165/pupil	\$200/pupil
21. Student Activities	\$200/pupil	\$200/pupil	\$250/pupil
Central Office Expenditures			
22. Central Administration	\$658 per pupil	\$658 per pupil	\$658 per pupil
23. Operations and Maintenance	2004-05 expenditures: \$938 per pupil	2004-05 expenditures: \$938 per pupil	2004-05 expenditures: \$938 per pupil
24. Transportation	Actual expenditures replaced in the near future by a standards-based formula	Actual expenditures replaced in the near future by standards-based formula	Actual expenditures replaced in the near future by a standards-based formula
25. Food Services	Should be self supporting.	Should be self supporting.	Should be self supporting.
26. Debt Service	Some kind of equalizing formula	Some kind of equalizing formula	Some kind of equalizing formula

The results from these analyses are similar *in form* though not in detail to the results from the professional judgment approach to determining school finance adequacy, as described by Odden (2003b). In addition to the evidence-based and professional judgment approaches, there also are the successful district and cost-function approaches to assessing school finance adequacy (see Odden (2003b) for an overview). Over the years, CPRE sponsored several analyses that used the “cost function” approach to adequacy (Reschovsky & Imazeki, 1998, 2000, 2001) and those authors continued to use the cost-function approach in other states including Texas (Imazeki & Reschovsky, 2006) and most recently California (Imazeki, 2006). We expand below on how we have made advances in the successful district approach to school finance adequacy.

The evidence-based approach to school finance adequacy has been used for state-sponsored adequacy studies in Kentucky (Odden, Picus & Fermanich, 2003a), Arkansas (Odden, Picus, Fermanich & Goetz, 2003b; Odden, Picus, and Goetz, 2006 AR), Arizona (Odden, Picus, Fermanich & Goetz, 2004), Wyoming (Odden, Picus, Goetz, Fermanich, Seder, Glenn & Nelli 2005), Washington (Odden, Picus, Goetz, Mangan, & Fermanich, 2006) and Wisconsin (Odden, Picus, Archibald, Goetz, Turner Mangan, & Aportela, 2006) as part of state-sponsored school finance research.⁷ Of the major states that have redesigned school finance structures to reflect adequacy – Arkansas, Kansas, Maryland and Wyoming – two (Arkansas and Wyoming) used the evidence-based approach as the basis for their changes.

In states that have adequacy studies, the results are then incorporated into newly designed school finance formulas. In every instance that we know, the new formula is some version of a new foundation formula. In Wyoming, the foundation amount for each district was determined by first applying the recommendations in that state’s Table 1 to each school in the district, aggregating those to a school-based total for the district, and then adding in the district level resources to determine the “adequate” level of funding for each district. Since the recommendations were applied to the precise sizes and demographics of each school and district, the result was a different adequate amount for each district. By contrast, Arkansas took its version of Table 1 and calculated an average expenditure per pupil for the state, which was then used in a foundation program with that adequate amount as the new foundation expenditure level. In addition, Arkansas provided categorical aid for students from poverty and ELL backgrounds.

In the forthcoming fourth edition of the top school finance text, *School Finance: A Policy Perspective*, Odden and Picus (in press) include the entire evidence-based analysis in a chapter at the beginning of the book and show how the results can be used in various school funding structures.

In a forthcoming chapter, Odden, Goetz and Picus (in press) show that the average per pupil costs of the resources in the evidence-based adequacy model are very close to the

⁷ We are fully aware that there is no perfect approach to determining school finance adequacy (for example, see Hanushek (2006) for critiques of various approaches). As Odden, Goetz and Picus (2007) argue, however, the evidence-based approach provides a sound starting point as it provides the types of resources schools need to deploy strategies that can double student performance (see next section) and which can be funded at the national average expenditure per pupil, which is more money in some but not all states.

national average expenditure per pupil. This suggests that many districts in many states have the resources to deploy these strategies. Although more research and information is clearly needed, we would argue that schools and districts would be wise to use the strategies in the evidence-based model as research shows that those strategies, especially the small classes in grades K-3, the significant investments in professional development including the school-based coaches, and the 1-1 tutoring, do boost student learning (see next section on doubling student performance). Thus, our perspective is that if schools and districts have the dollars to support the strategies in the evidence-based model, implementing those strategies – like the schools that have doubled student performance have done – would be a good initial strategy for using their resources in the most effective ways.

In summary, then, our research has:

- Identified the overall levels of resources for public schools, changes over time, and general uses by function.
- Created two detailed expenditure reporting structures, one that can be used to identify extant professional development investments, and another that ‘unpacks’ the instructional function and shows by educational strategy how resources are used at the school level.
- Used this reporting structure to help identify the cost of several “comprehensive” or “whole” school designs
- Developed the evidence-based approach to school finance adequacy that identifies the resources at the school and district level that are needed to double student performance, using school-based resource categories that align with the new expenditure reporting framework, and
- Used the new reporting framework to identify how resources from an adequacy reform were used by educational strategy at the school level.

We expand on these latter two issues in more detail below.

Using Resources to Double Student Performance

In Washington, we were asked not only to conduct a school finance adequacy analysis using the evidence-based approach but also to conduct an adequacy analysis using the successful district approach. Typically, the successful district approach first identifies a set of student outcome variables of interest to the policy community, then finds districts that educate students to those outcome levels, and finally calculates the weighted average expenditure per pupil of those districts, with that expenditure figure being the proposed “adequate” level of education spending.

In Washington, however, we not only conducted this aspect of the successful district analysis, but also studied several schools in the successful districts with the goal of determining how those schools used resources as well as how those resource use practices were linked to the schools’ instructional improvement strategies, which had resulted in the high levels of student performance. We found multiple examples of

schools that had “doubled” student performance⁸ over the previous 4-7 years, including rural and urban schools, schools in large and small districts, and schools with high and low concentrations of students from lower income backgrounds (Fermanich, Mangan, Odden, Picus, Gross & Rudo, 2006).

We followed this research with studies of similar schools or districts that had doubled performance in Wisconsin (Odden, Picus, Archibald, Goetz, Turner Mangan & Aportela, 2007). Again, we found schools all over the state and in very different socio-demographic contexts that had “doubled” student performance, including one district in which two elementary schools had doubled the percentage of students scoring at the “advanced” levels on state tests in mathematics.

These powerful examples of actual districts or schools doubling performance, and in many cases reducing the achievement gap, show that there is knowledge about how to dramatically improve student academic achievement – which we label as “doubling” performance. Further, and rather surprisingly, we found that the schools followed a strongly similar set of steps in their doubling performance strategies. These schools:

- 1) Set high goals, many times trying to educate 90-95 percent of students to at least proficiency and a significant portion to the advanced achievement levels, and sometimes setting the goal of literally doubling student performance.
- 2) Analyzed student data to become deeply knowledgeable about the status of student performance and the nature of the achievement gap. This step included analysis of state test score results, which provided a “macro” picture of student achievement, as well as analysis of “formative” assessments that gave the schools more detailed and nuanced information about the exact nature of what students did and did not know about the various concepts that were in the states’, districts’ and schools’ content standards that needed to be taught. The formative assessments allowed teachers to tailor their instruction to the precise learning needs of their own students, thus making instruction more effective and using instructional time more efficiently.
- 3) Reviewed evidence on good instruction and effective curriculum and made decisions on a new instructional program for the site. All the schools threw out

⁸ We use the term “double performance” to indicate more generally schools and districts that have dramatically improved student performance primarily on state tests. Sometimes they have literally doubled performance, such as doubling the percentage of students scoring at or above proficiency. Sometimes, performance of sub-groups, such as low income and minority students, doubles. Sometimes, performance at or above the advanced levels is the performance that doubles. We would use the term “doubling” for the district that hiked performance from 65 percent at or above proficiency to 95 percent. We do not imply, though, that doubling is all that needs to be accomplished; in some cases, performance must triple or more. The argument is that a first bold step towards accomplishing the ambitious student performance goals of state standards based reform or of NCLB, and of using resources effectively, would be a doubling of performance from current levels, and even that a first approximation of “adequate” resources might be resources that would allow schools do double student performance.

the old curriculum and replaced it with a different and more rigorous, and often research-based, curriculum.

- 4) Invested heavily in teacher training that included intensive 1-2 week summer institutes, longer teacher work years, as well as resources for trainers and most importantly, placing instructional coaches in all school. Research shows that it is the instructional coaches who are the critical factor in making professional development work, i.e., lead to change in teachers' instructional practice that is linked to student learning gains.
- 5) Provided extra help for struggling students that, with a combination of state, local funds and federal Title 1 funds, consisted of some combination of tutoring in a 1-1, 1-3, or 1-5 format, extended day academic help programs, summer school, and English language development for all ELL students.
- 6) Created smaller classes in early elementary years, often lowering class sizes in grades K-3 to 15, citing research from randomized trials.
- 7) Used time more productively, often increasing time allocations for some core subjects, protecting classes from interruptions during core class periods, and in secondary schools, offered double class periods in subjects where students were struggling to achieve to standards.
- 8) In the process created "professional school communities," with teachers working collaboratively on the instructional program and in the formative assessment analyses. And finally, were
- 9) Used programs, strategies and resource levels that can be funded with the national average expenditure per pupil, suggesting that with the current revenues in the nation's education system, schools should be able to dramatically increase student academic performance at least in some subject areas and at some grade levels through school restructuring and resource reallocation.

The schools used the resources in the adequacy model, specifically small classes in grades K to 3, heavy investments in professional development including school-based instructional coaches, extra help strategies for struggling students such as 1-1 and small group tutoring as well as extended day programs, etc. We found a high degree of alignment between the resources recommended in Table 1 and the resource needs of the strategies schools deployed to double performance. In virtually all cases, the schools not only restructured but also engaged in significant resource reallocation. However, all the examples were of schools that had boosted student performance in just one or two content areas (e.g., reading and mathematics), and at one or maybe two education levels (e.g., elementary and middle school levels), through a combination of new grants and reallocating extant resources. And in most districts, the schools did not have any more resources to reallocate but needed similar resources to produce similar results in all five core content areas and at elementary, middle and high school levels. The evidence-based

recommendations in those state's Table 1, thus, were focused on identifying the resources needed by all schools to double student performance in the medium term in all core content areas and at all education levels – elementary, middle and high schools.

Use of Dollars after a School Finance Reform

CPRE has a tradition of analyzing how dollars have been used at the local level after a school finance reform. In the early 1990s, it analyzed these issues in Kentucky, New Jersey and Texas, after each state enacted large school finance reforms, with Kentucky's changes initiating the school finance adequacy movement (Adams, 1993, 1994; Firestone, Goertz, Nagle, & Smelkinson, 1994; Odden, 1993; Picus, 1994; Picus & Wattenbarger, 1996). These studies found that the new systems were more equitable (Adams & White, 1997; Picus & Hertert, 1993a, 1993b; Picus & Toenjes, 1994) and also found that new dollars were used to modestly increase the portion of the budget spent on instruction, increased professional development expenditures, raised teacher salaries, and were deployed to a variety of other needs that were specific to each local district. But all studies ran into the problem of the "grossness" of the available data – that not much data were available at the school level, where teaching and learning take place, and the broad function of "instruction" was too broad to provide any detail of use of resources by educational program or strategy. These findings lead to the development of the expenditure reporting frameworks discussed which were then used to study the issue of the use of school finance reform dollars with reforms in Arkansas and Wyoming.

The studies of schools that have doubled performance actually were conducted shortly after another study in Arkansas of how schools used the significant new resources from Arkansas' 2004 school finance adequacy reform. One of the key questions Arkansas policymakers had, after raising the sales tax and providing significant new funding for Arkansas' schools for the 2004-2005 school year, was how the funds were used at the local level, and whether local practices in using the new adequacy dollars – as well as the other dollars that had been in the system – produced improvements in student learning. These were the same questions on the minds of policymakers in Wyoming, who had funded two rounds of increased education revenues in response to a court mandate to fund schools adequately.

As is the case in nearly all states, neither Arkansas nor Wyoming policymakers put restrictions on the local use of school finance reform dollars. And in both states, the legislature was sued shortly after injecting new funds into the system, with local educators saying that the funding increase still was not adequate.

As mentioned above, Arkansas had implemented an adequacy reform based on recommendations from an evidence-based school finance adequacy analysis (Odden, Picus & Fermanich, 2003b). That report included an Arkansas version of Table 1. Since legislators believed that the use of resources reflected in its version of Table 1 would produce improvements in student learning, they wanted to know the degree to which actual resource use paralleled that state's version of Table 1, and commissioned a study to probe that issue. The study used the expenditure reporting framework discussed above

(Odden, Archibald, Fermanich & Gross, 2003). Since the details on use of dollars and expenditure patterns were beyond what the Arkansas – or any state’s standard reporting – system provided, the study analyzed resource use in a random sample of about 105 schools, with the data gathered by on-site interviews of principals and superintendents.

The study found that schools used resources in ways quite different from the uses in Arkansas’ version of Table 1 (Odden, Turner Mangan & Picus, 2006). These findings were not all that surprising; fiscal federalism would predict that without constraints on the use of funds, schools and districts would use funds in multiple different ways, and that is what the study found. However, there were some central tendencies in local resource use. The study showed that schools provided lower class sizes, more electives, less professional development and many fewer instructional coaches, fewer extra help services and very little 1-1 tutoring, and higher teacher salaries than had been included in the Arkansas funding model. The implications were that unless the state included some restrictions on the use of resources, schools would be unlikely to use the resources according to the recommendations in the adequacy model, which subsequent research showed was how schools that were doubling performance used resources. Further, Arkansas schools had not improved student performance and thus would be hard pressed to argue that their resource use practices, different from those in the adequacy funding model, were more effective in producing student learning gains (Odden, 2006).

The expenditure reporting framework is now being used in a two-year study of resource use practices in *all* 363 schools in Wyoming, as that state’s legislature is interested in what is happening with the significant new dollars it has provided to schools over the past decade including an additional \$200 million in funding for 2006-07 bringing total K-12 educational revenues to over \$1 billion. That study, like the successful district study in Washington, also is collecting information on each school’s instructional improvement strategy so the results will provide an integrated view of resource use in concert with instructional improvement.

Since the standard fiscal reporting systems do not provide the detailed types of information on resource use practices that is desired by state policymakers, these studies are expensive as school resource use practices are unearthed only through interviews and document analysis conducted on site in each individual school. Odden and Picus are developing an effort that would redesign state fiscal reporting systems so that these kinds of data, at some point in the near future, could be produced through the standard financial reporting structures (Odden & Picus, 2006).

The other policy implication is that states should seriously consider placing some restrictions on the use of school finance adequacy dollars. If the state concludes that some specific uses, such as class sizes of 15 in grades K-3, 1-1 tutoring and instructional coaches as part of professional development, will positively impact student learning, then putting dollars for these purposes into a focused categorical program might be a wise policy to insure that such resources are used for those practices.

Pricing Adequacy Recommendations and Enhancing Teacher Compensation

Although a related Policy Brief provides an overview of our teacher compensation research, there are aspects of that research that should be mentioned in this school finance context. In the evidence-based approach as well as the professional judgment approach to school finance adequacy, numbers of teacher positions are identified for various educational strategies. In order to provide a cost estimate for the recommendations, a teacher salary needs to be used.

Thus, we conducted research using new federal data bases (the O*NET system) to determine what “adequate” teacher salary levels should be, an issue which most adequacy studies have ignored. Our assumption is that not only do the types of educational strategies and thus the number of teacher positions need to be adequate, but also that those teachers need to earn an “adequate” salary in order for the results to lead to a comprehensive and adequately funded state school finance system. In Arkansas and Washington, we compared teacher salary levels to salaries of workers in occupations with similar skills, competencies and job responsibilities to teaching. The Arkansas analysis found that teacher salary levels in that state were below those in similar occupations and recommended a salary increase (Wallace, Odden & Picus, 2003). But the Washington analysis found teacher salaries were not below those of similar occupations so did not recommend a teacher salary increase (Imazeki, 2006; Odden et al., 2006).

We have described the methodology for these analyses in more detail in a new handbook for state and local policymakers and a new book on teacher compensation (Odden & Wallace, 2007a, 2007b). Our general recommendation is that teacher salaries should be comparable to salaries of occupations that require similar competencies and skills as well as job responsibilities. Unfortunately, however, current data bases that can be used for these comparisons include only salaries and not benefits. Since teacher benefits tend to be higher than benefits for comparable jobs in the private sector, the ideal analysis would compare salaries and benefits, but because of the lack of benefits data, a comparative analysis of total compensation – salaries and benefits – cannot be made at this time.

In addition to identifying average salary levels, both the new teacher compensation handbook and book make the case for several additional teacher salary premiums that might be appropriate in certain circumstances, including:

- Premiums for teachers in subject area shortages such as mathematics and science
- Premiums for teachers in geographically challenged communities such as isolated rural and inner-city urban locations, and
- Premiums for teachers in low performing and/or high poverty schools.

Although these premiums would violate the “equity” embedded in the current single salary schedule, if the premiums are not provided districts experience either shortages of teachers or are able only to hire lower quality teachers. Offering a salary premium in these instances is at least one part of the solution. The book and the handbook

recommend premiums in the range of \$5000-\$6000 per year (see also, Goldhaber & Player, 2003; Milanowski, 2003).

Further, following on the premise that a high quality, effective teacher is the key ingredient to boosting student academic achievement – a claim supported by a wide variety of research – we also have been involved in research on designing more strategic teacher compensation and education human resources systems (see Heneman & Milanowski, 2004; Odden & Kelley, 1997, 2002; Odden & Wallace, 2007a). We have suggested that teacher compensation structures should move from basing annual salary increases on years of experience and education degrees, which are not strongly linked to student learning gains, to direct measure of teachers’ instructional expertise, which are linked to student learning gains (Heneman, Milanowski, Kimball & Odden, 2006; Milanowski, 2002; Odden, Kelley, Heneman & Milanowski, 2001; Odden & Wallace, 2007a; 2007b). We should note that the proposals for altering base pay structures for teachers are easily aligned with various state initiatives to implement a two-tiered approach to teacher licensure (see for example, Odden, 2003a).⁹

Since measurements of teachers’ instructional expertise are developed via new forms of performance-based teacher evaluations, we conducted several studies of how these new evaluations work (Gallagher, 2004; Heneman & Milanowski, 2003; Kimball, 2002;). We found that small, medium and large districts are able to design and operate such programs and that they can produce reliable performance-assessment scores across teachers, that are “good enough” to use in new teacher pay plans (Odden, 2003a, 2004). Further, through more sophisticated value-added techniques, we have shown that these new systems separate teachers into 3-4 groups linked to their impact in producing student learning gains (Milanowski, Kimball & Odden, 2005). In other words, the new performance assessment systems are valid; the higher the performance-based teacher evaluation score, the greater the student learning gains produced.

In order to make these programs work, both a district’s professional development programs and their overall human resource management programs need to be aligned with the knowledge, skills and competencies included in the new teacher evaluation and pay systems. This probably means new or more targeted investments in ongoing teacher professional development. As previously described, we created a framework to identify how much districts and schools invest in professional development and in what types, as once again, standard fiscal reporting systems do not identify total professional development investments (Odden, Archibald, Fermanich & Gallagher, 2002).

Since the new pay structures were based on teachers’ instructional expertise as measured by new performance assessments, if the professional development programs were restructured and more focused, teachers’ scores on their evaluations would rise, which would boost their salaries. Assuming the performance evaluation scores were valid, then student achievement would also rise.

⁹ There is a 2007 CPRE Policy Brief on Teacher Compensation that discusses all of these issues more fully, including aligned HR systems. See also Heneman, Milanowski, Kimball and Odden (2006).

However, we also discovered that in many places, district human resource management systems were not strategically aligned with the newly desired teacher competencies, either embodied in the new teacher assessment systems or in the new compensation structures. Thus we developed a tool that districts could use to conduct a “strategic human resource system audit,” to determine which aspects of the HR system were aligned and which elements were not (Heneman & Milanowski, 2004). We are now using this audit instrument to conduct HR audits in districts and using the results to help them redesign their overall HR systems.

School-Based Budgeting or the Weighted Student Formula

Finally, we also conducted research on school-based budgeting, which has now taken on the label of the “weighted student formula.” Though the terms are often used interchangeably, school-based budgeting connotes decentralization of budget authority to schools while the weighted student formula connotes more just a way of funding schools, via the students who attend the school, although the proponents of the weighted student formula strongly support school-based budgeting and more school autonomy. One strategy districts can use to provide funding to each school site is to create a needs-based weighted pupil formula. We have produced several articles and two books on this topic (see for example, Goertz & Odden, 1999; Odden, 1999; Odden & Busch, 1998).

This approach to providing schools with resources is developing rapidly around the world (see Ross & Levacic, 1999). It is seen as a more objective and fairer way to distribute resources to schools. It also should be a key aspect of funding schools when districts move to a school-based management strategy (Odden & Odden, 1996; Odden, Wohlstetter & Odden, 1995). Indeed, to make school-based management work – use resources to boost student learning – schools must be given the authority and develop the capacity to build school budgets that allocate resources in different ways. Increasing school-level control over budgeting, hiring and curriculum would enable schools to target resources to appropriate programs and services. But successful implementation of school-based management and budgeting requires the dissemination and use of financial and strategic planning information, and training in data analysis, budgeting and financial management (Odden & Busch, 1998). Our research has shown however, that while a school-based budgeting process appears to increase the involvement and satisfaction of different stakeholder groups in school resource allocation decisions, the authority for school-level decisions remains in the hands of the principal (Goertz & Stiefel, 1998; Goertz & Hess, 1998; Erlichson & Goertz, 2002).

Synthesis with Policy and Practice Implications

In short, we believe we have identified many of the key aspects of the education and finance systems that need redesigning in order to align the finance structure more tightly with efforts to improve student learning. We have developed:

1. A better understanding of the use of the education dollar, knowledge that shows that over the past one hundred years dollars per pupil after adjusting for inflation

have increased about 3.5 percent annually, and a realization that although the percent of the dollar spent on instruction has remained the same – about 60-61 percent – there is a real need to know more about use of the dollar within the instructional category. Our perspective is that understanding the use of resources within the instructional function is a critical step toward understanding how better to use instructional resources to produce higher levels of student academic achievement.

2. With Karen Miles, a procedure for identifying how to capture all of a district's and school's investments in professional development together with ways to redeploy those dollars to more effective strategies.

We would suggest that all districts use this framework to periodically conduct a professional development fiscal audit. The audit will identify both the level of investment in ongoing professional development and the foci of those investments. The results will allow most districts, particularly larger districts, to reallocate substantial professional development resources to more intensive programs focused on improving teachers' instructional practice in the core academic subjects of mathematics, science, reading, writing, communication and history.

3. A new fiscal reporting structure for schools to account for the use of the education dollar within the instructional function by showing expenditures by key educational strategies at the school and district levels, including details of all investments in professional development.

As noted below, we would encourage states to modify their current financial reporting structures to collect these school level – as well as teacher and classroom level – data according to this reporting structure. These new micro-data on resource use inside the instructional function would provide much needed data for the policy and practice communities as they seek to know “what works” in education, to engage in evidence-based policymaking and practice actions, and reallocate resources to more effective uses. We recognize that redesigning state fiscal reporting systems along these directions is a large, complex task, and will take time and money, but we believe the results would be worth the effort.

4. An evidence-based (and cost function) strategy to identify an adequate level of resources for prototypical elementary, middle and high schools, as well as districts.

We have concluded that the evidence-based method of determining school finance adequacy is one of the most cost-effective approaches and provides the level and types of resources that should enable most schools to dramatically increase – literally double in many cases – student academic achievement. We would encourage states to consider basing their school finance structure on the results of this approach and we would encourage districts to provide resources to schools

according to the same recommendations, whether the resources are provided as staff and dollars and/or through a weighted student formula.

5. An emerging and seemingly robust understanding of what schools can do to double student performance and close the achievement gap.

To make sure these findings apply everywhere, states should sponsor studies of schools that have doubled performance in their states, and incorporate the findings into leadership and other training programs to help spread that knowledge to all districts and schools. States then should recalibrate their school finance structures to provide the resources needed for schools to deploy all the strategies needed to double student performance. The recommendations in the evidence-based approach to school finance adequacy represent a good first step in identifying what these resources are.

6. A way to identify what would be an “adequate” teacher salary level.

We would encourage all states to conduct analyses of the federal O*NET data base to identify salaries for workers with knowledge, skills and job responsibilities similar to teachers and seek to insure that the average teacher salary in the state be approximately at the same level. We also encourage states to provide additional salary premiums for teachers in subject area shortages (e.g., mathematics and science) and in urban and/or other low performing schools to insure that they can compete in the labor market for quality teachers in those subjects and more challenged communities.

7. New approaches to standards-based teacher evaluations that separate teachers into four groups based on their effectiveness with students, and which are good enough to use for consequences, such as teacher pay increases.

Here we would recommend that states design and help implement these systems, in order to support a statewide vision of good instruction. Performance level 2, as in Connecticut, could be used as the second tier of professional licensure, and all levels could be used to trigger increases in base pay for teachers.

8. New forms of teacher compensation that link the level of pay more to the level of effectiveness in producing student learning, and that encourage teachers to learn and use the types of instructional strategies that are more effective in boosting student learning to higher standards.

Although there are multiple ways to design such structures, as the accompanying Policy Brief on teacher compensation outlines, our suggestion to states and districts would be to couple teacher salary increases to new forms of teacher compensation that base pay increases on factors linked to student learning gains, such as the score on a performance-based evaluation system, connections that do

not now exist for years of experience (except for the first three years) or education degrees and units.

9. Proposals for a more strategic human resource HR system.

We would encourage all districts to conduct an HR alignment audit in order to determine the degree to which all elements of their HR systems – recruiting, selecting, socializing, deploying, training, evaluating and paying teachers – are tightly aligned to their instructional improvement strategies and the district’s vision of good instruction, so that the various pieces of the HR system send consistent and reinforcing messages, all geared to improving student academic performance.

Our research is now focused on trying to determine “what works” in education. In addition to randomized trials, we also are attempting to identify effective programs and strategies through sophisticated statistical techniques. To this end, we developed an educational framework on the student-, classroom/teacher- (e.g., a measure of teacher quality, class size, SES of classroom) and school-level (e.g., size, professional development expenditures per teacher, expenditures per pupil for tutors, professional community) factors that impact student learning (Odden, Borman & Fermanich, 2004) and are using this framework to verify, via hierarchical linear modeling statistical techniques, whether specific variables at these three levels in specific contexts actually are linked to student learning gains, as well as the magnitude of those impacts (for examples, see Archibald, 2006; Fermanich, 2003; Milanowski, Kimball & Odden, 2005). Over time, our goal will be not only to verify the positive impacts of the various cost elements in our school-level adequacy models, but also the positive impacts of various curriculum and instructional improvement efforts.

We believe that investigating these important issues inside schools, issues that all schools need to address however they are governed or managed, provides a key to understanding both programmatically and fiscally how to dramatically improve student achievement, which is the goal of both state standards-based education reform and NCLB.

But in order to enable these types of future analyses to be conducted, we would advise states and districts to restructure their financial reporting systems in ways that incorporate the information in our proposed expenditure framework and the broader recommendations for classroom and teacher data in our data development proposal (Odden & Picus, 2006).

Finally, we readily admit that more research needs to be conducted on all of these issues. Considerable fine-tuning is needed for all of the above contributions to have the greatest possible effects, including tailoring and adapting each to the specific needs of a particular state, district or school. But the above summary shows that the country is not starting from scratch in its efforts to redesign the finance system in ways that align it with student

learning. Tremendous progress already has been made. To move forward, we should use the evidence that we have, and develop the second generation of these efforts.

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