WCER’s Consortium for Policy Research in Education (CPRE) offers strategies that schools and districts can use to align the level and use of their resources to dramatically improve student performance, which it labels as doubling student performance, over a period of 5–10 years.

Schools face more demands for accountability as the education system shifts its emphasis to rigorous performance standards and the global economy requires a higher level of cognitive skills for high wage jobs. In the school finance community, this emphasis has induced a shift from equity to adequacy, in both policy and litigation. The term adequacy may seem to narrowly focus on the amount of money needed to produce a desired level of student achievement. But the more general intent underlying the focus on adequacy is to redesign the education finance system to link resource levels, and resource use, more directly to strategies that propel student learning.

CPRE research over the past 15 years has linked school finance equity and adequacy. According to UW-Madison education professor and CPRE director Allan Odden, the research “has aligned effective allocation and use of resources to the most powerful and comprehensive school-based strategies that can boost student learning.”

How the education dollar is spent

CPRE research documents a steady increase in per pupil education funding in the U.S. over the past 100 years. After adjusting for inflation, education funds have risen on average about 3.5% annually. Odden says the consistent rise in spending has not, however, been accompanied by a similar rise in student performance, at least over the past 30 to 40 years. Current education goals are

(continued on next page...)

Making Better Use of Limited Resources

WCER’s Consortium for Policy Research in Education (CPRE) offers strategies that schools and districts can use to align the level and use of their resources to dramatically improve student performance, which it labels as doubling student performance, over a period of 5–10 years.
Given limited resources, educators and policymakers look for better ways to make use of available funds and human capital. This issue of WCER Research Highlights examines that theme across a number of research projects.

Despite steadily increasing funding for education over the past 100 years, achievement levels remain too low and too unequal. Using available resources more effectively requires developing more sophisticated ways to track expenditures. A new report from CPRE offers strategies for better linking resource use to student achievement.

NCLB provides supplemental educational services (SES) for students attending schools in need of improvement. But despite increasing federal funding for SES, accountability remains lax. Patricia Burch finds that some eligible students do not receive these services and, in many cases, SES service providers are not monitored.

The quality of preservice teacher education often suffers because of misalignment between policies in education schools and those in undergraduate science, technology, engineering, and mathematics (STEM) departments. A case study shows how WCER’s SCALE project has helped improve preservice teacher education at one university by fostering stronger ties between education and STEM departments.

Thus not likely to be met without determining how better to use school resources.

Today, about 60% of the education dollar is spent on instruction. Another 10% is spent on administration, 10% on instructional and pupil support, 10% on operations and maintenance, 5% on transportation, and 5% on food and miscellaneous items. Odden says this pattern is similar across districts, regardless of demographics and enrollment.

To align resources with strategies for improving student achievement, Odden suggests thinking of education spending as divided into three “portions”:

- One portion for core instructional services, professional development, and site administration;
- A second portion for instructional and pupil support services, which help the education system accomplish the goal of student achievement in the core subjects; and
- A third portion for overhead (school operation and maintenance, transportation, food services, and central office administration).

The policy and practice question then becomes: Can expenditures in any of these three areas be made more productive, both by maintaining current student achievement with less money and by boosting student achievement by using current and any new funding more effectively?

Answering this question will require more detailed information about resource use. Traditional fiscal reporting systems are limited, Odden says. They track expenditures by function and object at the district level, but not at the school level, and not by the three categories listed above or the strategies within them. Unless instructional resources are spent more effectively, increasing available resources will not likely improve student learning.

**Professional development resources**

CPRE researchers developed a framework for collecting expenditure data on investments in teacher professional development (PD). The framework tracks six cost areas: (a) teacher time; (b) training and coaching; (c) administration; (d) materials, equipment, and facilities; (e) travel and transportation; and (f) tuition and conference fees. This framework provides a way to identify and analyze the PD resources that districts or schools make available to teachers at a given school. The framework also can identify the costs of any specific PD program.
CPRE studies of PD in several large cities found that districts were investing between $4,000 and $8,000 per teacher per year in PD. Higher amounts were associated with more pupil-free days or summer training institutes. The studies also found that the PD strategies were generally “a mile wide and an inch deep” and had little impact on teachers’ instructional practice.

Odden recommends that districts conduct a PD fiscal audit to fully understand their investments. PD should focus on improving instruction in core subjects (mathematics, science, reading, and history). Districts should restructure PD to provide long-term support that enables teachers to incorporate new and powerful instructional strategies into their practice, and begin funding it with reallocated extant PD resources.

**Tracking resource use**

CPRE developed a school-based financial information database to better report education expenditures by educational strategy and program at the site level. This fiscal reporting system provides more insight into effective and ineffective uses of education funds, and it clarifies spending in the three categories of dollars mentioned above.

Odden suggests reporting education expenditures at the school and district levels by educational strategy. The CPRE expenditure framework “unpacks” the instructional category to isolate core instruction, specialist instruction, PD, and types of extra help for students with special needs. This framework includes non-monetary indicators that further clarify resource use—for example, number of minutes allocated for reading and math instruction, class sizes, and percentage of core versus elective classes.

The complete CPRE report, “CPRE’s School Finance Research: Fifteen Years of Findings,” is available online: http://www.wcer.wisc.edu/cpre/publications/newpublications.php

This is the first in a four-part series on the work of CPRE. The second part will cover reallocation of dollars at the school level by educational strategy, school finance adequacy, and use of resources to double student performance.

CPRE research is supported by the U.S. Department of Education, the Carnegie Corporation, and private donors.

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National interest in improving teacher quality has focused on teacher preparation and professional development, particularly in core subjects like science and mathematics. Unfortunately, preservice teacher education programs are often governed by conflicting policies, leading to training that’s of uneven quality.

Future K–12 teachers learn math and science content and receive pedagogical training from many sources, including college and university STEM (science, technology, engineering, and mathematics) and education faculty, and K–12 teachers overseeing their field teaching experience.

Faculty in STEM fields are especially crucial to teacher training, not only because they teach subject matter content but also because they model teaching methods. As a result, some critiques of teacher quality and student achievement in math and science are focusing on STEM instruction in Institutes of Higher Education (IHE). Often as a consequence of poor undergraduate instruction and inadequate academic assistance, undergraduate science majors leave their programs at relatively high rates. Without a constant stream of STEM majors, the shortage of math and science teachers may continue.

But change in the structure of teacher preparation programs to encourage inter-disciplinary collaboration, and in undergraduate STEM instruction, is difficult to achieve. Explanations include structural barriers such as divided responsibilities for content and pedagogical preparation between STEM and education departments. This may lead STEM faculty to perceive that they are not involved in teacher preparation, even when it’s generally acknowledged that many students across campus will become K–12 teachers.

Other explanations include an inhospitable culture that is unfavorable to collaborations between STEM and education faculty, particularly in preservice programs. Such a barrier can exist even in an institution committed to teacher preparation. A particularly stubborn barrier to intercollege collaborations is the perception that the field of education lacks academic rigor.

Addressing this problem, one of the aims of the National Science Foundation (NSF) Math and Science Partnership (MSP) program is to improve teacher quality through fostering partnerships among STEM and education faculty and their K-12 counterparts. In a recent study, school districts participating in MSP partnerships found that a significantly higher proportion of students scored at the “proficient” level or higher on state math and science assessments in the 2004–2005 school year than they had in 2003–2004.*

One MSP program is Systemwide Change for All Learners and Educators (SCALE) at the Wisconsin Center for Education Research. Researcher Matt Hora has recently conducted a qualitative case study of one SCALE collaboration. This case study evaluated the degree to which SCALE influenced STEM instruction and fostered collaboration between STEM and education school faculty within a complex institutional environment. Knowing more about how the institutional
context influences SCALE promises to help NSF and education reformers identify leverage points for future reform efforts.

**Factors that resist change**

The institution profiled in the SCALE case study was a comprehensive university on the West Coast. Several conditions at the university interacted to create resistance to change in teacher preparation and STEM instruction, including:

- A demanding workload (four courses a semester) that kept STEM faculty from participating in professional development activities;
- State policy that divided responsibilities for teacher preparation between STEM and education departments;
- STEM faculty members’ lack of exposure to the learning sciences; and
- A local history of conflict between STEM and education departments.

At the same time, some aspects of the institutional context supported collaboration, including:

- Administrative support for excellence in teaching and pedagogical reform;
- An institution type (comprehensive) that lends itself to a focus on teaching; and
- A strong history of interaction with local K−12 districts.

SCALE introduced a multifaceted intervention that changed some STEM faculty members’ practices and their thinking about the value of pedagogy and education research and modified some structural elements of the teacher preparation program. Some STEM faculty members began to view their own teaching not as the simple transmission of facts, but as an opportunity to improve instruction through a more deliberate and informed approach to lesson planning and student engagement.

**How did this happen?**

The SCALE intervention included a series of professional development workshops designed and facilitated by an education faculty member. These workshops created a collaborative learning environment that lowered barriers to intercollege collaboration. The facilitator focused on dissolving disciplinary stereotypes and divisions, making lessons relevant and applicable to STEM courses, being sensitive to STEM faculty members’ rate of change, and creating a degree of comfort with pedagogical topics.

By treating STEM faculty not solely as content experts but also as professional educators, the facilitator surfaced faculty members’ assumptions about teaching and learning. STEM faculty members began rethinking their instructional practices. The experience helped them to realize that many of their students are future math and science teachers and that some aspects of their courses need to change to meet these students’ needs.

This collaboration fostered a community of STEM and education faculty who likely will continue to model a new approach to teacher preparation. However, individuals interviewed for the case study cited factors that may compromise these outcomes, including policies that generally do not reward pedagogical improvement, disciplinary standards based exclusively on research accomplishments, and the uncertain long-term viability of the workshops.

Researcher Hora cautions that this research is not intended to be generalizable beyond his sample of respondents. However, the findings do suggest ways to approach STEM reform in higher education.

SCALE is funded by the National Science Foundation [*http://www.nsf.gov/news/news_summ.jsp?cntn_id=109725*

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**RESEARCH highlights**

**Working Well With Others**

At the institution studied, collaborative activities do occur and faculty are predisposed to work with one another despite some constraints. For example, university-wide committees exist for educator preparation and the liberal studies program, which provide a venue for interdepartmental interaction. Unfortunately, most science department representatives rarely attend these meetings. The Math department is also unusual in that half of its faculty members are experienced in math education. They are sympathetic to, and conversant in, pedagogical matters. The intent of the faculty in this sub-group was to avoid disciplinary conflicts, and instead carve out “territory” for math education, much like other sub-fields in math. This cautious approach points to the predisposition of STEM disciplines to be hostile to such an endeavor.
Market-based reforms in education are part of a larger neo-liberal movement in economic and political discourse. There’s nothing inherently wrong with that, but market-based education reforms are sometimes promoted at a rate outpacing evidence of their effectiveness, according to UW-Madison education professor Patricia Burch.

The supplemental educational services (SES) provision of the No Child Left Behind (NCLB) Act enjoys popularity, substantial support from the business community, and increased funding. In a recent study of SES programs in 30 states, Burch and colleagues asked: But how well do they work?

Supplemental educational services include additional instruction designed to increase the academic achievement of students attending schools in need of improvement. Services may include tutoring and remediation. SES must be provided outside of the regular school day, and they are to be “high quality, research-based, and specifically designed to increase student academic achievement” (Title I, Section 1116(e)(12)(C)).

Students eligible for SES are largely non-White and poor. They attend schools that serve significant numbers of English language learners (ELLs) and special education students. Although NCLB affords these students school choice privileges, Burch finds that appropriate services for these ELL and special education students are limited. These limitations exist even as available revenues for SES increase. Service providers do not seem eager to engage in special programming for high-need, high-cost students.

Thus far, few efforts have been undertaken to evaluate SES programs. Burch finds low participation rates, limited services available for ELLs and special education students, and limited state and district capacity to implement the law and monitor program quality.

Participation rates. Most estimates suggest that at most 15% of eligible students receive SES. This figure has grown slightly since 2003–2004, the first year of mandated services. Little is known about which eligible students are not participating in SES. Based on a 2005–2006 study, the U.S. Government Accountability Office (GAO) estimated that 20% of districts required to offer SES had no students receiving the services.

Services and providers. Although demand is low, federal funds available for SES are increasing. The funds available for SES increased from $1.75 billion in fiscal year 2001 to approximately $2.55 billion in FY 2005. The potential for sizeable profit has contributed...
to increasing numbers of national service providers. Yet while the supply side of the SES market grows, research on providers’ instructional practices remains scarce. To date, virtually nothing is known about what students are being taught in SES after-school settings, beyond what SES firms report on their Web sites and in their marketing materials.

Although NCLB requires classroom teachers to be highly qualified (as the law defines the term), it sets no requirements for SES instructors. While most are certified teachers, some are high school students and college graduates without teaching experience. Under current regulations, SES providers are not required to provide services to students with disabilities or ELLs.

**Local concerns.** The SES program imposes many responsibilities on school districts but allocates no additional resources to fund them. For example, districts must establish and manage contracts with service providers and must give timely information to parents of eligible students. In addition, problems at the district level may in fact originate at the state level. For example, the process of notifying parents and enrolling students is delayed because states do not release test scores and school improvement data until the academic year is nearly over.

**State concerns.** Like districts, states have many responsibilities under SES but limited capacity to execute them. In the GAO study, 37 of 49 states reported that determining the effectiveness and quality of SES providers was a serious or moderate challenge. Nested within the new SES responsibilities for states and school districts are many activities requiring significant time and effort.

**Effects on student achievement.** There is little research on how SES affects student performance. At the time Burch released her report, only two relevant studies have been conducted by two urban school districts, Minneapolis and Chicago.

**Issues and implications**

Strengthening SES will require addressing a complicated mix of legislative, organizational, instructional, and technical issues, Burch says. The system for holding SES providers accountable for academic outcomes is less rigorous and more ambiguous than that for imposing AYP requirements on schools. Fifteen of 30 states surveyed reported they did not use test score data to monitor the quality of SES programs; they relied instead on annual site visits.

States will be hard pressed to effectively monitor SES programs without additional funds. Districts are likely to lose funds to third-party providers, who are not held accountable for outcomes with the same rigor and consistency as districts.

Because the law provides no new funds to match new requirements, Title I funds must be used, leaving less available for other important Title I programs.

Burch says that analysis of SES cost-effectiveness and fiscal stewardship must be rigorous. It must ensure that private financial interests do not supersede the interests of Title I students.

**Recommendations**

Some version of SES likely will be retained in the NCLB reauthorization. More students become eligible for SES with each passing year, and more public funds will be dedicated to the policy.

Burch recommends amending the law to provide local administrators more fiscal resources and expertise to administer SES programs. Federally funded, comprehensive evaluations should be commissioned to determine the ways in which SES affect student achievement and the extent to which at-risk student populations have access to SES.

And, finally, policymakers should examine the apparent tension between the high-stakes accountability NCLB imposes on schools and the more limited accountability it imposes on SES providers for their contributions to student achievement.

The Policy Brief, *Supplemental Educational Services Under NCLB*, is posted online at www.greatlakescenter.org

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