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ABSTRACT

The challenge facing school finance is how to harness the school-finance system to the fundamental purpose of education: to improve learning for all students. The challenge is posed by political demands for better school performance and accountability, and by court rulings that tie school funding to standards of adequacy. This paper examines four new significant challenges, or changes, that will affect future finance scenarios. The first change is demographics. The number of school-aged children is expected to continue to increase. And as the student population grows, it is expected to become increasingly diverse, placing more pressure on education budgets. The second change is in labor. Schools must have personnel policies that will enable them to compete in the marketplace for skilled teachers. The third change is in technology. Funding will have to be available for technology in the classroom. The fourth change is in the move toward nontraditional education, notably charter schools, contracting, and vouchers. The growing number of educational providers and the increasing pressure for parent choice shifts the attention from how to fund districts to how to fund schools. While this paper offers no concrete solutions, it poses a number of questions for policymakers. (Contains 21 references.) (WFA)

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21st Century School Finance: How Is the Context Changing?

by Janet S. Hansen

July 2001

In the 20th century, school finance was primarily about how to use state and federal resources to overcome the fiscal disparities inherent in a public school system that initially depended heavily on local funding. Now, the more important question is how to harness the school finance system to the fundamental purpose of education: improving learning for all students.

This challenge – posed by political demands for better school performance and accountability, and by court rulings that tie school funding to the adequacy of educational provision – would be sufficiently daunting on its own. But it must be met in an era when education will feel the effects of other significant changes as well:

- New demographic realities: students are growing in number and becoming increasingly diverse, while at the same time fewer and fewer taxpaying adults have school-age children of their own
- A more competitive marketplace in which teachers must be recruited and retained
- The development of new technologies with great promise for improving student learning, but which come with major costs
- Increased interest in diversifying the provision of publicly funded elementary and secondary schooling, combined with growing demands for more parental choice.

All these changes call into question traditional school finance policies.

Linking School Finance to Student Learning

It is sometimes argued that the 19th century was a time of establishing public schools in the United States, the 20th century was a time of guaranteeing access to public education for all and the 21st century will be a time of ensuring that all students receive at least an adequate education. Political pressures for performance and accountability and court mandates for funding levels that guarantee adequacy are pushing policymakers to re-orient school finance policies toward this new objective.

Transforming education into a performance-oriented enterprise

Public education has been under serious attack in the past two decades for failing to provide the nation's children with the education they need to be productive workers and effective citizens in the complex, global society of the 21st century. Sustained attention has been directed at moving education from its traditional preoccupation on inputs and rules to a focus on the outcomes of schooling. In particular, schools are increasingly expected to be accountable for improving student learning.

Reformers have offered various approaches to education accountability. Some would rely on the mechanism of the marketplace to reward and punish school performance; parents who can choose where to enroll their children would be expected to seek out high-performing schools and shun those that do not perform well. The intertwined issues of school choice and competition will be taken up in the last section of this paper.

The most widely implemented strategy for focusing education on performance is standards-based reform. Virtually every state has, over the past decade, undertaken the process of setting standards for what students need to know and be able to do in key academic subjects. Many states have developed tests aligned to these standards to measure student achievement; others use more generic tests of student knowledge. Forty-five states have established school accountability systems to report on or rate school performance, with test scores as the most frequently measured outcome. Twenty states reward successful schools with money (*Education Week*, 2001a: 80-81). Some of these financial rewards are directed to individual teachers, though most are given to schools on the assumption that teachers (and sometimes other personnel, as well) are collectively responsible for student performance. At the school level, some financial rewards are divided up among the responsible individuals. Some rewards may be spent on educational programs but not on salary increases or bonuses. The federal government appears poised to require annual testing of all students in grades 3 through 8 in English and math and to link at least some federal funding for states to improvements in student scores on these tests.

Holding schools accountable for results is critical to efforts to re-orient education toward performance, but there is still much to learn about how to design accountability systems to get the incentives right (CED, 2001). Research is just beginning into the reliability and stability of different methods of ranking and rating schools for the purposes of determining rewards and sanctions. Differences in school size and in the size of relevant cohorts of students (the number of students in a grade, or the number of students in different ethnic groups within a school or grade) can result in accountability systems with perverse incentives if these systems are not designed with sufficient understanding of the statistical properties of the underlying measurements. Improperly designed incentives can have serious effects on the morale and motivation of school personnel. They might, for example, cause good teachers and principals to shun employment in schools incorrectly labeled "low-performing" in favor of "high-performing" schools with a better chance of winning rewards.

Accountability poses structural as well as design challenges to finance policies. Schools today seldom have significant responsibility for determining their own spending. Most decisions about how resources are allocated continue to be made at the district level. Holding school-level personnel accountable for student performance without giving them the authority to decide how best to meet their students' needs is inherently contradictory. Meaningful site-based budgeting authority would seem to be a necessary corollary to new accountability requirements.

"Adequacy" as a new legal standard for school finance policy

Efforts to link funding to school performance through rewards and sanctions affect education finance policies at the margin. More far-reaching changes designed to link funding to student learning outcomes are being driven by litigation that asks courts to require states to provide an "adequate" education to all children. Plaintiffs generally argue that the funds available to their districts are insufficient to support adequacy.

Litigation emerged as a key strategy in efforts to reform school finance in the 1970s. Traditional finance policies that emphasized local control and local financing resulted in large disparities in the available resources and spending levels among school districts because of differences in local wealth. Frustrated by their inability to reduce these disparities through legislative action, reformers turned to the courts. They initially challenged school finance policies on the grounds that the spending disparities among districts violated the equal protection clauses in both the federal and state constitutions. While efforts to apply federal 14th Amendment protections failed, the California Supreme Court in *Serrano v. Priest* in 1976 overturned the state's school finance system solely on the basis of the state constitution's equal protection clause. In *Serrano,* the plaintiffs successfully argued for a "wealth-neutrality" principle in school

funding: the quality of public education, measured most commonly by looking at dollar inputs, may not be a function of wealth other than the wealth of the state as a whole.

Serrano energized school finance reform and launched a vigorous era of change that continues to this day. Initially, because of the wealth-neutrality argument's success in *Serrano* and because most state constitutions provided similar bases for legal action, litigation largely focused on reducing spending disparities among districts. By 1998, legal cases had been brought against school finance systems in 43 states. In 19 states, supreme courts found school funding systems unconstitutional. Litigation or the threat of litigation sometimes spurred reform even when no formal court decision had been rendered (National Research Council, 1999b: 73).

As time went on and public concern about education quality became louder, school finance reformers realized that they might force further changes and, perhaps more importantly, tie them to education outcomes through a different legal approach. State constitutions, unlike their federal counterpart, contain a variety of so-called education clauses. These specify education as a state function and require legislatures to maintain public schools that provide education variously described as "thorough and efficient" or "ample" or "adequate." In the wake of a far-reaching 1989 court decision in Kentucky, reformers approached school finance in the 21st century with a new standard for gauging the legality of funding systems: a so-called adequacy standard.

Though adequacy arguments appeared in earlier legal challenges, it was the Kentucky Supreme Court's decision declaring the entire state's education system inadequate and unconstitutional that galvanized the shift toward an adequacy standard in courthouses and statehouses. In *Rose v. Council for Better Education*, the court not only overturned the existing education system but also declared that the state had a legal obligation to provide students with the opportunity to develop a number of specific capabilities.[1] The Kentucky case spurred numerous challenges in other states and directly influenced the decisions in several, as judges in Alabama, Massachusetts and New Hampshire relied specifically on the Kentucky court's definition of an adequate education in crafting their own decisions. At least one court decision based on adequacy (the fifth decision of the New Jersey Supreme Court in *Abbott v. Burke*) also shifted attention from the adequacy of school district funding to the adequacy of funding available to individual schools. The New Jersey court ruled that not only must the state equalize funding between its poorest urban and wealthiest suburban districts, but also the affected districts must use their funds to implement whole-school reform programs and must have sufficient funds to support whichever program each school adopts.

While the legal context for school finance is sometimes described as having shifted from a focus on equity to a focus on adequacy, it can more revealingly be said to have shifted from a primary concern for spending on schools to a primary concern for the adequacy of education itself. As such, it links school finance directly and centrally to decisions about improving student learning. Herein lies the appeal of the adequacy argument. It promises to shift the nature of finance decisionmaking, from a process often dominated by political bargaining over how to distribute available funds to one focused on what the education system should accomplish and what educational opportunities students must be given to meet these objectives.

There are, however, major unresolved questions that must be addressed if school finance is to be held to an adequacy standard, as a recent study committee on school finance pointed out (National Research Council, 1999b: 132-3). That group noted that earlier concepts of equity were similarly daunting in their infancy but that over time progress was made in defining and measuring them. It urged courts and policymakers seeking to apply an adequacy standard to school finance to be aware of issues that are not yet fully resolved, such as:

- What does adequacy mean? Exactly what educational objectives does it set for students and schools? These are not technical questions but rather issues requiring difficult political judgments which may be subject to the same kinds of public resistance that have faced finance reformers in the past.

- What will it mean to extend the concept of adequacy as an equity standard to federal, school and student-level policies – not just to the district level, where most court decisions to date have focused?
- Will states permit district add-ons to the state-determined adequate spending level? Add-ons (which some courts have permitted and some have not) seem likely to result in spending disparities, putting poor families or children living in poor communities at a relative disadvantage.
- What happens to the definition of an adequate education when it collides in the political arena with demands to adequately fund other worthy objectives? One state court (Wyoming) has ruled that the state constitution gives education pride of place before all other public services, but it seems unrealistic to expect that basic resource allocation decisions can be resolved in some rational and technical fashion rather than in the political arena.
- How will courts or legislators determine if funding is adequate? Various methods are being developed to help states answer this question, but it is fair to say that there is as yet no consensus on what it costs to ensure that schools have the resources needed to achieve specific outcomes, assuming that they produce education reasonably efficiently.

New Demographic Realities

Improving student learning and ensuring that all children receive an adequate education in the 21st century will be complicated by changing demographics of the students to be educated, as well as of the adults who must pay for education through their taxes.

Growth and diversity in school-age children

In the second half of the 20th century, educators had to cope with major swings in the number of school-age children. They weathered, in succession, the post-World War II "baby boom," then the "baby bust", and most recently a "baby-boom echo." Public elementary and secondary school enrollments peaked at 46.1 million students in the fall of 1971, fell to a low of 39.2 million students in the fall of 1984, and rose to a new high of 47.0 million students in the fall of 2000 (National Center for Education Statistics, 2000:Table 3).

Population projections show that there will be almost another one million children of school age in the next five years, although after that schools will get a brief respite from growth until the number of children begins increasing again after 2010.

Projected Number of Children Aged 5-17, 2000 to 2020

Year	Number of Children (in thousands)
2000	51,509
2005	52,406
2010	52,002
2015	52,934
2020	55,200

Source: *Education Week* (2000:33)

The near-term promise of slower growth in student enrollments could be upset, however, if the rising public interest in prekindergarten education results in expanded responsibilities for public schools. There are currently about 8 million children ages three and four in the population. About half of them are enrolled in what the Census Bureau calls "nursery school," a proportion that has increased from 5% in 1964 (Census Bureau, 2001a: 2-3). Many of the currently enrolled children are in private, not public, schools. A few states (for example, Georgia and New York) have embarked on programs to provide

publicly funded universal access to pre-K programs for 4-year-olds. Courts in New Jersey and North Carolina have mandated access to pre-K for at-risk youngsters as part of adequacy-based lawsuits. (The North Carolina court specified 4-year-olds, while the court in New Jersey included 3-year-olds as well.) While publicly funded pre-K programs are often supplied through a wide range of providers (including nonprofit and for-profit centers as well as public schools), the potential expansion of coverage to many or all 3- or 4-year-olds could put new pressure on education budgets just as the growth in 5- to 17-year-olds is easing.

The effects of changing student body size will affect different places differently, as they already have. While the decade of the 1990s was overall a period of enrollment growth, 845 out of 3,140 counties actually experienced a decrease or no change in their school-age population between 1990 and 1998. At the same time, 301 counties were coping with increases in school-age children of more than 25% (*Education Week*, 2000:3). Clearly, the degree of stress on school finance resulting from enrollment changes will depend on where one looks.

As the student population grows over the decades ahead, it is also projected to become increasingly diverse. By 2040, less than half of the school-age population will be white and non-Hispanic, down from 79% in 1972.

Percent of School-Age Population of Various Racial/Ethnic Backgrounds

	1972	2000	2010	2020	2030	2040
White non-Hispanic	79%	65%	60%	56%	53%	49%
Black non-Hispanic	14%	15%	14%	14%	14%	14%
Asian/Pacific Islander/Other	1%	5%	6%	7%	8%	9%
Hispanic	6%	15%	20%	23%	25%	28%

Sources: Census Bureau (2001a: 4); *Education Week* (2000:36).

The challenge of meeting the education needs of an increasingly diverse student body will be felt in more and more school districts, as immigrants spread out from traditional population centers. Districts will need to improve the educational prospects for those children of foreign-born parents who have low levels of income and education. Hispanic immigrants in particular tend to be poorly educated relative to other racial/ethnic groups and to native-born Hispanics. Proficiency in English is, of course, also an issue. In 1999, 5% of all elementary and secondary students (but 25% of Asian/Pacific Islanders and 18% of Hispanics) were both foreign-born and had at least one foreign-born parent. Twenty percent of all students (but 88% of Asian/Pacific Islanders and 65% of Hispanics) had at least one foreign-born parent (Census Bureau, 2001a: 5). Race and ethnicity are also associated with poverty. In 1998, 19% of all children (but over one-third of black and Hispanic children) were living in poverty (*Education Week*, 2000:41).

It is widely agreed that poor children and children with limited proficiency in English need more expensive education services, requiring policymakers either to adjust school finance formulas to take these additional costs into account or to fund special compensatory programs. In the past, cost adjustments have been tackled in unsystematic and sporadic ways. The growing emphasis on providing all students with an adequate education makes it increasingly important that finance policies recognize the costs of educating special-needs students.

Unfortunately, there is little empirical evidence about the size of these costs. Researchers frequently adjust per-pupil spending or revenue numbers by using a weight of 1.2 for poor children and children with limited proficiency in English. This weight derives from incomplete data on budget decisions in the federal Title 1 compensatory education program rather than any effort to cost out the actual education needs of special-needs students. Economists are currently exploring statistical cost models that are beginning to shed light on how much the presence of such students affects the cost of providing an adequate

education. While at present imperfect and insufficiently transparent for direct use by policymakers, these models may someday provide a standard against which more straightforward and easy-to-understand measures could be compared (National Research Council, 1999b: 126-9).

The graying of America

In 2000, only 36% of American households included individuals under 18 years old, about the same as in 1990 (Census Bureau, 2001b). Households with school-age children will become even more rare as the population ages: the baby-boom generation that so affected the schools in the 1950s and 1960s will start reaching retirement age in another decade. In 2000, less than 13% of the population was age 65 or over. By 2030, over 20% of the population will be at least 65 (Harris, Evans, and Schwab, 2000).

The impact of this demographic shift on federal and state budgets that fund costly programs benefiting the elderly (such as Social Security, Medicare and Medicaid) has been much discussed. But what about the implications for education? Will budget pressures mean less support for education spending? Will the elderly who do not have school-age children be less willing than parents to support local school taxes? What about their support for state spending on education, which has increased in importance relative to local finance over the last half century?

It is not a foregone conclusion that the elderly who no longer have children in school will encourage a shift in public spending away from education. Poterba (1998) offered a number of reasons why older Americans might continue to support education, ranging from altruism to self-interested reasons, such as (1) the need for highly-skilled younger workers who can earn good wages and support taxes for programs like Social Security or (2) a belief that higher spending on education will be capitalized into the value of their homes.

Rehder et al. (2000) have examined the empirical evidence about the likely effects on education spending in an aging America, and have drawn some provocative conclusions. They find evidence from the 1970s to the 1990s that the elderly have only a small negative impact on local education spending, but that the elderly are much less willing to support state spending on schools. They suggest that this is because local school spending increases housing values, whereas state spending does not. State spending for education also competes with other programs that directly benefit the elderly, such as Medicaid. Thus, to the extent that education finance systems shift toward state spending (as the result, for example, of "adequacy" court decisions or local property tax revolts), the negative effect of an aging population on education spending could be magnified. At the same time, Rehder et al. warn that the 21st century will see a far greater share of elderly in the population than has ever before been true. This could mean that past patterns of behavior will not be accurate predictors of future trends.

The Labor Market for Teachers

Education dollars are spent on two major categories of inputs: labor and capital. Schooling is especially labor-intensive: about 80% of education expenditures are for people, primarily instructional staff (NCES, 2001: Table 166). Thus, changes in the marketplace for teachers can be expected to have significant impacts on school finance.

The marketplace for teachers has indeed changed. Most important, education no longer can count on the captive workforce that it had when women and minorities had few other employment opportunities. The impact on education of new labor market realities was blunted for a while because the "baby bust" reduced the need for new teachers during the 1970s and 1980s. The inadequacy of traditional compensation and related personnel policies has only become apparent as schools faced both rising enrollments and tight labor markets in the 1990s, and now the pending retirement of many teachers who were hired 30 to 40 years ago to instruct the baby-boom generation.

In the new century, schools must have personnel policies that will enable them to compete successfully in a competitive marketplace for talented women and men to teach the nation's children.

A key argument for change is to give states and districts the ability to address staffing problems that are not uniform across the nation. The projected need for "two million new teachers over the next decade" is often used to suggest that the United States faces an impending teacher shortage. In fact, the problem appears to be less a general shortage of teachers and more an issue of shortages in specific high-demand fields (math, science, special education, bilingual education, technology education) and in certain locations (low-income urban and isolated rural schools and fast-growing districts in the south and west).

The ability of schools to address these needs does not depend on compensation policies alone. Better information for potential teachers and for teacher-preparation programs on supply and demand projections by field, streamlined hiring practices, better mentoring for new teachers, improved working conditions, more widespread use of alternative routes to teacher certification, and other changes can affect how many people enter and stay in teaching.

In addition, however, changes are needed in traditional compensation policies, such as the "single salary schedule" and pension and other rules that restrict teacher mobility, all of which appear increasingly unsuited to the needs of the 21st century education labor market.

Under the single salary schedule, which prevails in most school districts, teacher pay depends solely on length of service and educational degrees and credits. The inflexibility of this schedule prevents administrators from adjusting pay to market conditions in specific fields, rewarding especially successful teachers (measured by improvements in student learning), or providing incentives to encourage better teachers to teach in schools with hard-to-serve students. Contract bargaining between local teachers' unions and school districts also tends to result in salary increases that are back-loaded onto the parts of the salary schedule that benefit veteran teachers. This keeps entry-level salaries relatively low and probably hinders the ability of schools to attract high-quality new teachers into the profession and retain them in the early years.

The single salary schedule combined with union seniority rules giving experienced teachers the right to choose their assignments generally results, even within the same district, in the neediest students being taught by the least experienced and qualified teachers (at least as defined by formal credentials). Continuing wealth-based disparities in spending among districts further disadvantage needy students when better-qualified teachers are lured away by higher salaries in neighboring districts.

District accounting practices that average teacher costs across schools further multiply the effect of disparities in teacher qualifications, to the additional detriment of schools enrolling the most disadvantaged youngsters. Schools are typically charged under the accounting rules the same amount for each teacher, regardless of the teacher's actual salary. As a result, schools (often those serving more advantaged students) that attract experienced and thus more expensive teachers are charged the same as schools enrolling harder-to-serve students whose teachers are far less experienced and lower paid. Districts could change these policies and charge schools the real cost of the teachers they employ. This would enable low-income schools to bid more effectively for senior teachers or at least give them the resources to use for other instructional purposes if their real salaries were below district averages. However, in the face of what Hill (2001) calls "a conspiracy of silence" among school boards, superintendents and teacher unions about this budgetary discrimination against schools serving the poorest students, traditional accounting practices persist.

Benefit policies, particularly those involving pensions, also restrict schools' ability to meet staffing needs by luring back retired teachers or recruiting experienced teachers from other districts or states which do not need them. Thirteen states did pass legislation in 1999 or 2000 to allow teachers to draw full pension benefits while teaching full or part time. Some are using such policies to attract retired teachers to hard-to-staff schools or target teachers of high-demand subjects (Hirsch, 2001).

Existing pension plans for K-12 teachers generally penalize mobile workers (Ruppert, 2001). Unlike higher-education employees, most of whom are covered by "defined-contribution" pensions; most K-12 teachers participate in "defined-benefit" pension plans.[2] Designed to recruit younger workers willing to commit to education careers, these plans recognize longevity by rewarding employees for continuous

years of service. Benefits are back-loaded, so that the greatest increase in benefit levels occurs for employees who have worked the longest. Few states have pension reciprocity agreements with other states, and some lack reciprocity agreements among different pension plans within the same state. States have in recent years made it easier for teachers who move to purchase retirement service credits and have reduced vesting periods or permitted partial vesting. Some have created options for teachers to participate in defined-contribution plans rather than the traditional defined-benefit plans. Despite these changes, a recent analysis of pension portability for K-12 teachers concluded that "most states still lack a recognized policy for dealing with an increased probability that teachers will move to other locations and change employers over the course of their teaching careers" (Ruppert, 2001:3). Pension policies that penalize mobility add to the disincentives facing teachers who, if they move, are likely to find that their accrued experience will not be fully recognized in terms of where they are placed on the salary schedule in their new districts.

Using Technology to Improve Learning

While attracting and retaining high-quality teachers will continue to be the most important input factor in improving student learning, technology offers unprecedented opportunities to enhance the learning process.

In 1999, a National Research Council study on developments in the science of learning concluded that "[t]echnology has become an important instrument in education. Computer-based technologies hold great promise both for increasing access to knowledge and as a means of promoting learning" (National Research Council, 1999a). New technologies can make it easier for teachers to utilize emerging scientific understandings about how people learn to create more effective learning environments.

Fulfilling the educational promise of technology is not, however, just a matter of ensuring that students have access to computers and to the telecommunications hardware and services that will connect them to information networks such as the Internet. High-quality software needs to be developed. Teachers need to be educated to use new technologies effectively. While much attention has been directed to the possibility of a "digital divide" among social and demographic groups, *Education Week*'s recent report on technology concludes that hardware access (as measured by student-to-computer ratios) is roughly comparable among high-poverty and low-poverty schools. Access to high-quality technologies is still uneven, however, and there are "serious inequities in how technology is used for different groups of students" (*Education Week* 2001b: 12).

A 1997 report on school technology identified three financing challenges: (1) funding the relatively high levels of capital expenditures needed to install school technology systems; (2) sustaining annual operating costs; and (3) securing the funds to regularly retire and replenish portions of the system to keep it modern (Pelavin Research Institute and American Institutes of Research, 1997). Technology funding thus has implications for both capital and operating budgets. The costs for both budgets are typically overlooked or underestimated, and the interrelationships between capital and operating needs not always recognized.

Funding patterns for technology differ from those that characterize other education expenditures. Whereas the federal government (at only 6%) is a relatively minor partner in paying for school operating costs, Washington has had a significantly greater impact on funding for technology. Estimates place the current federal share of education technology investment at between 20% and 35% of all elementary and secondary technology outlays, or roughly $1.5 billion. These estimates do not include funding for telecommunications access made possible through the E-rate program, which will channel roughly $6 billion over three years to schools and libraries to support the costs of telecommunications services, internal access and internal networking (Web-Based Education Commission, 2000:117-9). Thus, budgetary decisions in Washington could have greater impact on technology investments than on other aspects of education.

States, which overall share educational operating expenditures fairly equally with localities, historically left responsibility for facilities and equipment largely up to local governments. A number of states have

stepped up efforts to fill in gaps stemming from insufficient funds for technology in schools and districts, including providing direct aid, matching grants, aid for debt service and state loans. There are, however, still states that provide no financial support for education technology (Education Commission of the States, 2001). Heavy reliance on local funding for technology raises the same specter of geographic inequalities based on local wealth that spawned court challenges to school finance policies. Inequities in capital funding have been included in a few court cases already. "Adequacy" suits are increasingly likely to raise the issue of technological adequacy as computers become more central to the education process.

School districts have traditionally funded their capital budgets through local government bonds. Thirty-year bonds, however, may not be a sensible vehicle for financing equipment that should be replaced in three to five years. Moreover, the political willingness and fiscal capacity to issue bonds differ from district to district. Perhaps because technology became an important consideration so recently and so rapidly, financing arrangements are comparatively piecemeal and idiosyncratic. Schools have funded technology investments not only through bond revenues, but also with special grants, partnerships with businesses, local funding by parents and categorical funding from state and federal governments. This piecemeal approach seems unsuited to widespread and substantial use of technology in schools.

Two recent reports (Education Commission of the States, 2001; Web-Based Commission, 2001) have pointed out that states and districts continue to underestimate the costs of education technology by reporting only the capital costs of acquisition rather than Total Cost of Ownership (TCO). TCO includes all expenses associated with deployment, maintenance and troubleshooting, including such things as software, service and support, and training. ECS reported that many district technology budgets only address the acquisition costs of hardware and software, although these are only 25% of the actual lifetime cost of technology integration. The failure to recognize and budget adequately for TCO is a likely contributor to the uneven and sometimes ineffective utilization of technology in the nation's schools.

States and districts also tend to think of technology expenses as add-ons, rather than as substitutes for personnel or facilities. To date, this is an accurate reflection of the way education technology is being used. In the future, however, it is possible that technology may enable education to become less place- and time-bound than it has traditionally been; and the role of teachers vis à vis students could change. While higher education and adult training are more likely than K-12 education to be affected by dramatic new ways of using technology to enhance learning, high schools in particular also may find technology affecting how students are connected to buildings and to teachers. School finance policies based on traditional understandings about these linkages would need to be rethought.

New Ways of Providing Public Education

In the 20th century, publicly funded education was provided in a fairly uniform fashion. States delegated much of their constitutional responsibility for financing and providing schools to local governments. Districts in turn raised revenues (mainly through local property taxes) and created schools to which students were assigned on the basis of where they lived. School finance policy focused heavily on state-to-district funding formulas to alleviate interdistrict disparities. Even as the state share of educational expenditures grew, districts remained the locus of finance, making most decisions about how education dollars were to be spent. Financial reporting and accountability focused on districts. Parents sometimes had the option of sending their children to magnet schools, and a few districts developed either intradistrict or cross-district choice programs (sometimes in response to court orders concerning desegregation). Mostly, though, parents exercised choice about where their children would attend school by moving from less to more desirable school districts or, in the case of about 10% of school children, enrolling them in private school. (Clearly, these latter options were more readily available to families who were financially better off.)

What may mark the most far-reaching contextual change for school finance in the 21st century is the potential move from a single dominant model of public school provision to a system offering greater diversity of providers and more choice for parents about where to enroll their children. Widespread dissatisfaction over the performance of the existing school "monopoly" and concerns that education has

become over-bureaucratized have led to calls for improving efficiency by subjecting schools and districts to the discipline of competitive market pressures. The result is increased public debate over the desirability of school choice and an expansion of nontraditional arrangements for providing publicly funded education, most notably charter schools, contracting, and vouchers.[3]

At the moment, though, these new institutional arrangements exist at the margins of public education. To date, only charter schools have made much of a dent on the traditional way of doing business.

Charter schools are public schools that are granted freedom from many district and state regulations in exchange for meeting accountability provisions that are spelled out in a charter. First created in Minnesota in 1991, charter laws have now been enacted in 38 states (including the District of Columbia). In the fall of 2001, 35 states are expected to have operational charter schools, enrolling approximately 520,000 students (Center for Education Reform, 2001). Parents, teachers or others may band together to apply for charters, which may be granted by school districts, the state or other entities (such as universities). The latter arrangements put charter schools outside the control of local districts. Charter schools generally operate as nonprofit organizations, though they may contract with for-profit firms for management services.

Charter school funding provisions vary from state to state. Charter schools appear to obtain less funding than "regular" schools. They sometimes receive less than 100% of operating revenue available to regular schools; they frequently do not receive funding to finance facilities and debt equivalent to districts; they may pay administrative fees to school districts or chartering authorities without receiving offsetting services; and when they enroll predominantly special-needs and at-risk students, they may be substantially underfunded. There are some offsetting factors that benefit charter schools relative to regular schools, however. They may receive in-kind services that aren't reflected in superficial revenue calculations; and they have the freedom to configure their grade-level structure, waiting lists and enrollment to generate optimal class size, staffing and funding (Nelson et al., 2000:4).

Contracting refers to district agreements with for-profit firms to operate entire schools, rather than just to provide specialized services and supplies, as in the past. It represents another innovation aimed at improving school performance through competition. Private firms would appear to offer some important advantages over the alternative of chartering schools: they have access to private capital for investment; they can run multiple schools and thereby benefit from economies of scale; they have strong incentives to provide quality control to preserve the firm's reputation; and they give the school district more control over the types of schools being provided without having to be involved in running schools (National Research Council, 1999b: 188).

Contracting has, however, had limited success to date. Much-publicized disagreements between school districts and the firms with whom they have signed contracts have led in a number of cases to early terminations and non-renewal. Several education management companies have ceased operations or have decided not to contract with school districts, focusing instead on contracting arrangements with charter schools. Hannaway (1999) found that education contracts tended to be incomplete or to reflect limited specificity in many key clauses, such as those covering objectives, performance and costs, due to the inherent difficulties associated with specifying educational objectives and with measuring educational performance. This created room for disputes with districts, which were sometimes exacerbated by changes in political support for the idea of contracting.

At this point, it is not clear the extent to which contracting out regular educational services will be successful either in promoting greater student achievement or in making profits for company investors.

Vouchers are the most controversial of the nontraditional approaches to providing public education, and as yet affect few students. Only Cleveland, Milwaukee and Florida provide publicly funded vouchers that give some students the choice of attending private rather than public schools. Fewer than 15,000 students currently receive these vouchers. (Maine and Vermont also provide vouchers for students who have no local public school.)

The spread of vouchers has been limited in part by legal questions, especially whether vouchers to religious schools will pass constitutional muster. To date, there has been no definitive ruling from the U.S. Supreme Court, though advocacy groups are hoping to bring a case that would settle once and for all whether publicly funded vouchers to religious schools do or do not violate the principle of separation of church and state. While a favorable court ruling seems necessary for voucher programs to spread much beyond their current base, such a ruling will not end the heated debate over whether vouchers pose a threat to traditional American support for public schools.

These new approaches to providing public education challenge 20th century school finance policies because they shift attention from how to fund districts to how to fund schools. The issue seems unavoidable, whether or not nontraditional providers remain peripheral or become more central to American education, because of other forces creating pressure for school-based finance. These include efforts to hold schools accountable for performance and to ensure that schools, and not just districts, have the resources they need to provide an adequate education.

The question of how schools, rather than districts, could be funded raises many new policy issues not entailed in district-level education finance (Goertz and Odden, 1999). These include a host of questions that must be addressed in determining how to link the four recurring functions in fiscal operations (planning, implementing, evaluating and reporting) to three broad categories of goals (control, fairness and the accomplishment of results). They involve many nuts-and-bolts issues, such as how to allocate personnel and non-personnel resources to schools, how to assess the fairness of these allocations, and how to determine which functions should remain at the district level and which should be devolved to schools. They require re-orientation of fiscal and data systems from the district to the school level.

Perhaps most crucially, funding schools rather than districts raises the question of what the role of school districts and their boards will be in the 21st century. Will they continue to be both funders and providers of education? Or will the decades ahead see their emphasis shift to funding and overseeing fiscal and educational accountability, while leaving education supply to a diverse and decentralized set of providers who make resource allocation decisions for themselves? In states where major responsibility for education funding and accountability is or becomes lodged at the state level, would the loss of responsibility for providing education perhaps lead districts to wither away? What might the consequences be for local fundraising and local support of public education?

Endnotes

1. The Kentucky court said that an adequate education would provide students with the opportunity to develop at least the following seven capabilities:
   - Sufficient oral and written communication skills to enable students to function in a complex and rapidly changing civilization
   - Sufficient knowledge of economic, social, and political systems to enable the student to make informed choices
   - Sufficient understanding of governmental processes to enable the student to understand the issues that affect his or her community, state, and nation
   - Sufficient self-knowledge and knowledge of his or her mental and physical wellness
   - Sufficient grounding in the arts to enable each student to appreciate his or her cultural and historical heritage
   - Sufficient training or preparation for advanced training in either academic or vocational fields so as to enable each child to choose and pursue life work intelligently
   - Sufficient levels of academic or vocational skills to enable public school students to compete favorably with their counterparts in surrounding states, in academics, or in the job market.
2. Under a defined-benefit plan, an employee's future retirement income is determined by a benefit formula specific to the retirement plan. Typically, retirement income is based on years of service with

the employer and on final average pay multiplied by a benefit percentage factor. Employees are guaranteed a specific level of lifetime income that they can directly relate to their pre-retirement earnings. Under a defined-contribution plan, a specified amount of salary is contributed to the retirement account for each employee. The amount of income at retirement depends on the contributions made, the investment earnings achieved at the age of retirement, and the income option the retiree selects. The nature of the individual accounts in defined-contribution plans makes it easier to provide for portability than with defined-benefit plans (Hirsch: 2001:4-6).

3. There also has been growth in the availability of state tax credits for education-related expenses. These "tax expenditures" are not included in the discussion because they are less consequential for traditional school finance policies than charters, contracting, and vouchers.

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