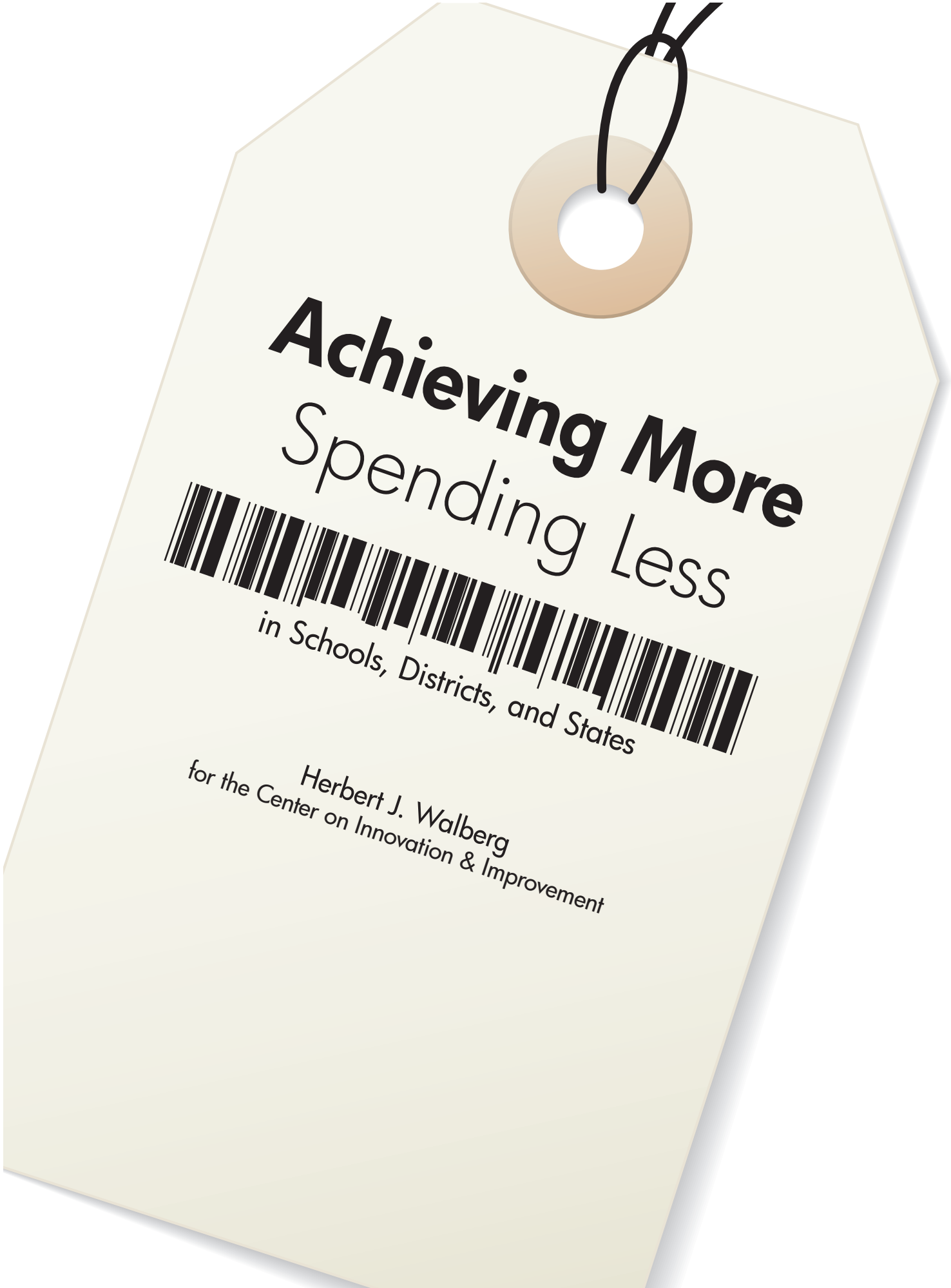

Achieving More Spending Less

in Schools, Districts, and States

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for the Center on Innovation & Improvement

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Information Tools Training

Positive results for students will come from changes in the knowledge, skill, and behavior of their teachers and parents. State policies and programs must provide the opportunity, support, incentive, and expectation for adults close to the lives of children to make wise decisions.

The Center on Innovation & Improvement helps regional comprehensive centers in their work with states to provide districts, schools, and families with the opportunity, information, and skills to make wise decisions on behalf of students.

The Center on Innovation & Improvement is administered by the Academic Development Institute (Lincoln, IL) in partnership with the Temple University Institute for Schools and Society (Philadelphia, PA), Center for School Improvement & Policy Studies at Boise State University (Boise, ID), and Little Planet Learning (Nashville, TN).

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Foreword

States, districts, and schools face two urgent problems: improving learning outcomes for all students, and making do under bleak budget projections and declining resources. Now is the time to think about achieving more while spending less, or at least achieving more without increasing spending to drive the change. We turned to Herb Walberg, our Chief Scientific Advisor, to write this piece to prompt new thinking about costs and benefits. Herb has done seminal work on "productivity" over the years, tapping into education research on learning outcomes as well as research from the field of economics on productivity and cost-benefit analysis.

While this provocative publication is sure to stir our thinking, we also want to catalog practical suggestions for achieving more and spending less. To this end, we are soliciting contributions to a database of innovative ideas for productivity. We want to know what states, districts, and schools have done to become more productive. The ideas do not need to be grandiose: cost cutting sometimes comes through the accumulation of many small efforts.

At www.centerii.org, in the upper, left-hand corner of the home page, we have posted a link to a web-entry form where you can submit proven strategies for reducing cost without negatively impacting learning, and for increasing learning outcomes without increasing cost. Please help us spread the word about this solicitation. Thank you.

Sam Redding

Director, Center on Innovation & Improvement

Introduction

Forty-six states and many municipalities face financial deficits that total more than $130 billion. The deficits are likely to continue threatening and diminishing school spending. Since August 2010, an estimated 400,000 state and locally financed workers, including teachers and firefighters, have been laid off (*Financial Times*, January 13, 2011, p. 7). Policymakers and educators face the productivity or efficiency challenge of maintaining or preferably increasing learning with the same or lower spending levels.

The Current Crisis: Achieving Less, Spending More

The need for meeting this challenge has grown increasingly obvious in the last few decades. Elementary and middle school students lag behind students from other economically advanced countries on achievement tests and often fall further behind through the school years. Even more ominous, of 30 advanced economies, only Greece, Mexico, and Turkey had smaller percentages of 15-year-old students with advanced mathematical skills, prerequisite to the study of such high paying fields as engineering, science, medicine, and finance that, along with related fields, contribute to the growth of the economy and national welfare (Hanushek, Peterson, & Woessmann, 2011).

Despite substantially rising school costs in the last four decades, fewer students graduated on time from high school in 2009 than in 1970 (National Center for Education Statistics, 2011). The top American research universities rank second to none in the world, but the usual colleges and lesser universities must provide remedial programs for ill-prepared high school graduates.

As pointed out nearly three decades ago in *A Nation at Risk* (1983), poor school performance has big consequences on student and national prosperity, recently estimated by Hanushek (in press): "A teacher one standard deviation above the mean effectiveness annually generates marginal gains of over $400,000 in present value of student future earnings with a class size of 20 and proportionately higher with larger class sizes. Alternatively, replacing the bottom 5-8 % of teachers with average teachers could move the U.S. near the top of international math and science rankings with a present value of $100 trillion."

The public increasingly recognizes the seriousness of school productivity problems. An *Education Next* (Howell, Petereson, & West, 2009) national survey report showed that the percentage of the public that gave schools a grade of A or B declined from 30% in 2005 to just 18% in

2009. These problems are even more important in a new decade when high levels of knowledge and skills partially determine national prosperity and citizens' quality of life.

Increasing Productivity

In an era of financial stringency and demands for better school performance, it is useful to think about several means of raising school productivity (Monk, Walberg, & Wang, 2001): 1) increase learning effectiveness without increasing costs; 2) reduce costs without diminishing effectiveness; or 3) both, that is, increase effectiveness and simultaneously reduce costs. Much of the Center on Innovation & Improvement's (CII) work focuses on the first since there is a large corpus of rigorous research on the comparative effectiveness of a large range of school educational policies and practices. This is briefly discussed in this document.

The second way is also discussed in prior CII material and in the present document, but little research is available on comparative costs. For example, research provides measurable effects of homework, but the costs are usually not estimated since that would require the amount and value of teacher and student time required for assignment, completion, and grading. Such costs may vary considerably from school to school and depend heavily on initial assumptions. On the other hand, the learning effects and costs of other policies and practices such as class size reductions can be more readily calculated.

The third means of achieving greater productivity is unusual and potentially the most powerful but likely to be more controversial and challenging of the status quo. For precise evidence, it requires both estimates of effectiveness and of costs, which usually requires cross-disciplinary research involving both economics and psychological research on learning effects to find both better and cheaper means of education. An outstanding example documented here is employing far fewer but superior teachers rather than costly and relatively ineffective class size reductions, a major reason that most advanced countries achieve more at lower per student costs than the United States.

Overview

The purpose of this document is to concisely summarize research on how learning productivity can best be increased by all three means. It is aimed to serve responsible officials in schools, districts, and states. Though the present document emphasizes new research on "learning more, spending less," much past research on effective methods is described in greater detail in a related book from CII, *Improving Student Learning: Action Principles for Families, Classrooms, Schools, Districts, and States* (Walberg, 2011), which emphasizes rigorous, statistically controlled, contrast-group research. The references in this work, available on the CII website (www.centerii.org) and in the book, give examples on how specific productivity-raising policies can and have been used in schools.[1]

This document can serve as a convenient index of dozens of reports by CII's staff responding to the needs of states and school districts. This document also invites state, district, and school officials to contribute examples of policies and practices they have successfully employed (see Appendix 1 for submission form).

In the next section, possible "transformational innovations" are featured. Unlike most of the previous policies and practices featured in CII's resources, these recently became salient as a result of the financial crisis. They may not only dramatically increase rates of learning but also reduce costs. Several of these innovations are less well researched but, in the current era of budgetary stringency, are increasingly put forward by policy analysts and legislators as having considerable potential to meet the productivity challenge. For these reasons, they deserve attention here.

Transformational Innovations

The term "transformational innovation" is used in a special way in this document. In education, innovation ordinarily means a change in policy or practice in a given school or district. Here it means a substantial change seldom observed in most of the nation's schools that appears to have the capacity to change other

[1]Many of the references to the research findings discussed here may be found in the published and Internet versions of the book. The rest are cited in the present document.

educational policies and that promises to greatly improve learning, reduce costs, or both. The term as used here approaches what in economics is called "creative destruction" and in business is called "disruptive technology." These are sufficiently fundamental to change whole firms and industries.

As originally used, the term creative destruction emphasized entrepreneurs who employ radical new technologies that are substantially more effective, efficient, or appealing than past and current technologies. In promoting progress, they eventually destroy older technologies often employed by large established firms wedded to old ways. As a result, firms and even whole industries may decline and fall (Schumpeter, 1975).

These technologies may entail new products, services, and forms of organization, management, transportation, advertising, and financing. Steamships, for example, replaced sailing ships and plastic began replacing glass and wood. The Internet is replacing traditional publishing; digital is replacing film photography; television, cable, DVDs, and downloadable media are replacing theaters; mobile cell phones are replacing pay phones and hard-wired home phones. Today, Google, Yahoo, iTunes, and other Internet technologies challenge newspapers, book publishing, and music distribution. Academics continue to study these technological transformations. At the Harvard Business School, Clayton Christensen (2006) revived such thinking about industries in general and argued that "disruptive technologies" are likely to transform schools.

Several possible transformational innovations have appeared or become more salient in school policy since I began writing *Improving Student Achievement* in 2008. Unlike the relatively well-researched policies and practices in the book with supportive evidence for learning effectiveness, transformational innovations may or may not yield substantial learning gains. But because of growing interest to parents, citizens, educators, and legislators, the promise to save money, and how likely it is to substantially affect other major state, district, and school policies, transformational innovations merit discussion in this section. Even educators who may find themselves philosophically opposed to the ideas may benefit from considering them before having to act or not act on them because of substantial budgetary shortfalls.

Transformational Budgeting

Given the federal, state, and local budget crises, Petrilli and Roza (2011) summarized 15 ways to tretch school dollars. Taken as a whole, they appear to maintain or increase learning while reducing costs. They are as follows:[2]

1. **End "last hired, first fired" practices**. Layoffs should be based on relative ineffectiveness rather than seniority.
2. **Remove class-size mandates**. Small classes are costly and contribute little to learning.
3. **Eliminate mandatory salary schedules**. Pay teachers for performance.
4. **Eliminate state mandates regarding work rules and terms of employment**. As in other occupations, underperformers ought not be retained at the expense of student learners and taxpayers.
5. **Remove "seat time" requirements**. Some students can learn much faster than others; they can proceed more quickly and graduate early.
6. **Merge categorical programs and ease onerous reporting requirements**. Programs for English language learners and for children in poverty or with special needs create undue administrative complications and staffing costs while contributing little to student learning.
7. **Create a rigorous teacher-evaluation system**. Pay for performance requires a fair, objective assessment system based largely on student learning gains.
8. **Pool health-care benefits**. Separate systems of health care disallow maximum economies of scale.

[2]The bolded words below are Petrilli and Roza's, which are followed by my brief explanation or comment. Petrilli and Roza based their summary on an edited book by Hess and Osberg (2011). For one-paragraph summaries and additional points about stretching dollars, see Petrilli and Roza's summary; for complete descriptions and data, see the original work edited by Hess and Osberg.

9. **Tackle the fiscal viability of teacher pensions.** Shift from defined benefit to defined contribution plans and require greater levels of employee contribution.
10. **Move toward weighted student funding**. Provide identical funding for each student based on student needs rather than school size or changes in school size attributable to declining enrollments or losses of students to charter schools.
11. **Eliminate excess spending on small schools and small districts**. The relatively small positive effects of school and district size are insufficiently worthwhile to encourage.
12. **Allocate spending for learning-disabled students as a percent of population**. Basing extra funding for such students on district specification encourages over-identification.
13. **Limit the length of time that students can be identified as English language learners**. The sustained extra funding for such students encourages schools to keep them in the program reducing their exposure to English.
14. **Offer waivers of non-productive state requirements**. Disallow such requirements provided achievement levels are sustained (or better, eliminate them altogether).
15. **Create bankruptcy-like loan provisions**. Allow districts to declare bankruptcy in order to sign new vendor and collective bargaining contracts.

Taken singly, these policies are likely to save money. Taken as a whole, they might make U.S. schools among the most productive in the world. The next several sections describe examples of policies that combine several of these policies.

School Triggers

First begun in California and supported by liberals and conservatives, school triggers are petitions that, when signed by more than 50% of a school's parents, require extraordinary changes in the school. The change variants include chartering the school with a new private board, replacing the staff, or closing the school and allowing parents to send their children to another public school or to a private school with tuition support of 75% of the originating school cost (Bast, Behrend, Boychuk, & Oestreich, 2011). The American Legislative Exchange Council (2011), a bipartisan organization of cooperating legislators from 50 states, has offered model school-trigger legislation, and in December 2010, nine states were considering versions of parent trigger legislation.

Though not completely consistent, the bulk of the many research studies of charter schools indicate that charter students learn more than those in comparable nearby public schools (Walberg, 2007). The most rigorous study, a randomized comparison of students lotteried into charter schools with those lotteried out who remained in their assigned schools showed that charter students excelled, and the effect was larger for those that entered at younger ages and earlier grades. Because they employ many of the transformational budget policies (see the previous section), the charter school per-student cost averages about 80% of nearby public schools' cost.

For lack of space, the typical charter school must turn away many applicants, and despite their desirability, some states put severe limits on the number of charter schools, and ten states disallow them altogether. Because of these limits, the fast growth in the number of charter schools slowed in recent years and is now about 5,000 or 4% of the roughly 122,000 schools in the U.S. Though limited in number, the charter schools enroll about 1.5 million students. If more states pass trigger legislation, the pent-up demand is likely to substantially increase the number of charter schools and their students.

Tiger Mothering?

Of the economically advanced countries, Taiwan, Hong Kong, and Korea took the first three places in advanced mathematics performance by 15-year-olds. 24% of the students in these countries (on average) were advanced in contrast to 6% in the United States (Hanushek, Peterson, & Woessmann, 2011). East Asian countries have long done well on international comparisons in mathematics and science (and their economies have grown as much as three times the rate of Western countries). Despite potential socioeconomic and language handicaps, the children

of East Asian immigrants to the U.S. have also excelled.

One plausible and evidenced-based explanation of stereotypical East Asian superior performance is the stimulating quality of the home environment. Walberg (2011) refers to the evidence that educators can suggest to parents to academically enrich the 92% of time that students spend outside school in the first 18 years of life (see also Redding, 2000, for practical principles and activities).

Even so, few non-Asian American parents, mothers in particular, rise to the heights of Tiger Mothering as described by Amy Chua (2011)—daughter of Chinese immigrants, mother of two daughters, cum laude graduate of Harvard Law School, author of two award-winning best sellers, and chaired professor of law at Yale University. Despite the immense efforts of American assimilation, writing books, and becoming a chaired professor at an Ivy League university, Chua enforced with iron will more than strict discipline on her two daughters. They were allowed no playmates. There were not allowed to be in a school play nor to complain about not being in a school play. Her daughters had to be the number one student in every subject except gym and drama. Because she spoke a lesser dialect, Chua hired an elegant speaker of the preferred Mandarin to tutor her daughters. They were not allowed to play a musical instrument other than piano or violin. She forbade sports and other extracurricular activities.

Though a half hour of study outside of school might be acceptable to many American educators and parents, Chua required three hours of her daughters. After that was music practice, up to six hours on one occasion for daughter Sophia to master a composition without dinner or a bathroom break. The girls were nearly always first in all academic subjects, and Sophia played at New York City's Carnegie Hall.[3]

Chua recently discussed her mothering book with the world's elite political and business leaders at the World Economic Forum in Davos, Switzerland. Her book and article about it generated 5,000 passionate and conflicting comments in, of all places, the *Wall Street Journal's* posting site. The comments and Amazon reader reviews and ratings of Chua's book (as of January 14, 2011) are also polarized: 19 five stars, 20 one star, and only 11 between. Those rejecting her view preferred socialization including dating, sports, and other extracurricular activities, and allowing children and adolescents great latitude to choose their friends and activities.

Perhaps recognizing the iron law of learning psychology, those favoring Chua's view held that great lengths of engaged practice with high standards is the important ingredient of reaching the top. Many defending Chua's views and practices maintained that mastery precedes creativity in most fields.

Given such conflicting views, what can educators do? They can hardly change child and adolescent rearing philosophy and practices, especially from one extreme to the other. But, they can point out to parents the relationship between how their children spend their time outside of school and their success in school and possibly in life. Even small improvements in the amount and quality of academically constructive hours outside school are likely to have more than moderate learning effects and contribute little to school costs. Despite her distinguished law career and best selling books, Chua's long hours of devoted attention to her daughters should cause educators to think carefully about how students spend their time. They may decide to act on their conclusions.

So suggests the U.S. Secretary of Education, Arne Duncan, reacting to the results of the Organization for Economic Cooperation and Development's international achievement survey, which revealed that a cross-section of Shanghai 15-year-olds took first place in science, reading, and mathematics among 65

[3]Despite such strict upbringing, the daughters acquired a sense of humor as well as a sense of fulfillment. In an open letter to her mother published in the *New York Post*, daughter Sophia Chua-Rubenfeld (2011) declared her critics wrong in assuming "Lulu and I are oppressed by our evil mother. That is so not true. Every other Thursday, you take off our chains and let us play math games in the basement." What she gained from it all: "To me, it's not about achievement or self-gratification. It's about knowing that you've pushed yourself, body and mind, to the limits of your own potential."

participating countries. Shanghai, of course, is not China, but as Secretary Duncan said in a December 7, 2010 interview, "We have to see this as a wake-up call. I know skeptics will want to argue with the results, but we consider them to be accurate and reliable, and we have to see them as a challenge to get better." He added, "The United States came in 23rd or 24th in most subjects. We can quibble, or we can face the brutal truth that we're being out-educated" (quoted in Dillon, 2010).

Differentiated Pacing

It is obvious to most parents and educators that children come to school with vastly different degrees of preparation and learn at vastly different rates. Yet, conventional neighborhood schools largely employ a lockstep grade progression that is frustrating for educators, parents, and students as they grow progressively different from one another during the school years. For this reason, about 80% of U.S. public high schools practice tracking or assign students to classes of various levels of challenge according to their developed capabilities (Walberg, Reynolds, & Wang, 2004). Even with tracking, students within classes may differ greatly in their prior knowledge and skills; some find the material too difficult, others too repetitive. Grouping unlike students together may impair all their learning rates (Petrilli, 2011).

There are several possible solutions for consideration. The Advanced Placement program allows bright high school students to take college level courses and to demonstrate their proficiency on creditable national examinations. In principle and to a lesser extent in practice, able students can graduate from high school in less than four years and complete college studies in less than four years, saving their own time and also taxpayer and parent costs of less productive years of education.

A striking and far more extreme example of such acceleration was the core highly academic curriculum and mastery examination system at the University of Chicago beginning in the mid-1930s. Students were awarded degrees—not by passing courses but by passing tough examinations. Some students were admitted early and able to graduate by age 18. Studies of the program indicated that they went on for advanced degrees and successful lives—some highly notable. Reminiscent of Tiger Mother principles and of schools in Asia and Europe that concentrate on learning, the University withdrew from the Big Ten football league and diminished the role of fraternities and sororities. Other examples of such acceleration are "governor's schools," such as the Illinois Academy of Mathematics and Science, which are residential and highly selective. Some advanced, often specialized public schools require tough entrance examinations or counsel parents of academically less promising students to send their children elsewhere. These schools, however, are not necessarily less costly, but the amount learned per dollar spent greatly excels.

Superior Teachers

The introduction to this document pointed out research that estimated that moderately good teachers confer huge achievement and later income advantages to their students, and that replacing the lower 5-8% with average teachers would move the U.S. to the top of the international achievement ranks with an ultimate value of $100 trillion. Also mentioned previously, the major reason other countries get better achievement results than the U.S. at lower costs was pointed out by Andreas Schleicher of the Organization for Economic Cooperation and Development:

> Only 9% of the variation in achievement can be explained by how much is spent. High achieving countries have large classes taught by great teachers. Poor performers employ less effective teachers for smaller classes, recruiting the extra staff from further down the ability range. (*Economist*, 2010, p. 68)

Performance Pay

With or without recruiting superior teachers, carefully designed incentive systems can also improve teaching performance. Performance-based pay, of course, is widely practiced in private firms and increasingly used in government, including public schools (Kremer, Miguel, & Thornton, 2009; Lazear & Shaw, 2007; Podursky & Springer, 2006). Economists and behavioral psychologists have long shown that appropriate incentives, both symbolic and real, powerfully shape behavior. Such thinking is entering or re-entering education, including with respect to

teachers. Policymakers' interest in teacher incentives is rising, and the public supports them.

Still, nearly all public school teachers have been paid according to a "single-salary schedule" or "position-automatic system," which means that, within a district, all teachers with a given number of years of experience and education level receive identical pay. Except during the first few years of teaching, neither of these pay determinants is linked to student achievement. Even special pay for hard-to-recruit subjects such as science and mathematics and "combat pay" for teaching in difficult schools are rare. On the other hand, pay for performance is more common in private and charter schools, which on average excel in achievement.

Many educators and some policy analysts cite teacher performance pay for their students' learning as insufficiently demonstrated to justify further study or use in schools. Yet, the achievement failures and rising costs of public schools suggest the opposite. Since performance pay is nearly universal in other occupations and professions, the burden of proof rests with those who defend the single-salary schedule. Despite questionable claims that performance pay is unfair to educators, the present single-salary schedule is actually unfair to the millions of children in public schools who are subject to poor teaching and repeatedly failing schools. It is also unfair to unrewarded educators whose performance excels and may resent that slackers receive equal pay.

Though performance pay systems can improve achievement, they require careful design and are subject to unanticipated effects. For example, a possible design problem could involve educators who concentrate on students below the proficiency cut scores, neglecting other students. To solve this problem, the average achievement gains of all students may be taken as the performance criterion rather than simply the percentage that crosses a particular cut score.

The best incentive programs align teachers' raises or bonuses with student learning, but additional criteria may be used, such as giving the principal's assessment half the weight of the overall performance rank. Also, it would be reasonable to pay principals based on school performance to encourage them to take greater care in assessing and rewarding high-performing teachers. Making the incentive half the total compensation for both teachers and principals may be too much, but 5% seems too little. Given the poor performance and high costs of public schools, large incentives relative to base pay seem to be in order.

Since students' achievement at the end of an academic year is substantially predictable based on their standing at the beginning of the year, it is reasonable to gear payment to the test gains made under the teacher in question. Admittedly, more study of teacher incentive programs is required, but the prominence of incentives in economic theory, behavioral psychology, and much of the American workforce may be sufficient evidence for expansion on a much wider scale in schools.

Online Teaching and Testing

A recent survey of the public showed about a quarter thought middle and high school students should get credit for online courses (Howell, Peterson, & West, 2011). Expanded access to electronic media offers today's teachers and students effective and potentially cheaper new ways to teach and learn. In the long run, instructional technology is likely to prove more effective, cost efficient, and time saving than regular classroom teaching since technologies, particularly computer technologies, generally improve substantially with time.

Even now, as pointed out in *Improving Student Learning* (Walberg, 2011), the most extensive synthesis of research covering 232 control-group studies found that student achievement, attitude, and retention were the same for classroom and education over the Internet. Eight separate (meta-analytic) reviews revealed that computer-based instruction had superior effects on student achievement. On average, students gained more knowledge in computer-based instruction and took more pleasure than their counterparts in standard classrooms. Gifted students, in particular, derived great benefits from computer-based tutoring and accelerated classes.

New electronic media can add sound, color, animation, and interactivity to text, adding stimulation for engagement. The Internet offers an instantaneous and free (or inexpensive) access to content. When low-speed Internet connections,

slow computers, or both are a concern, CDs or DVDs provide a large amount of material, which can be easily distributed at a low cost. Providers' websites or files on local servers can also provide access to materials for individual students or staff in education centers, schools, libraries, and classrooms—both for small-scale specific distribution and for uniform, large-scale curriculum adoption. But CDs and DVDs cannot be easily updated like material on the Internet—material that, like printed matter, needs to be vetted for accuracy, currency, and appropriateness of content (Walberg, 2011).

It seems premature to claim that technology now leads to better learning at less cost for the entire school curriculum. Even so, impressive results have been achieved in the tool subjects of mathematics and reading. Educational technology is very likely to attain ever-increasing levels of efficiency in terms of both effectiveness and lower costs.

States and the nation seem to be increasingly agreeing on a stable set of specific curriculum offerings and standards. This would make it far more worthwhile to develop online programs carefully designed and matched to the agreed upon content and standards. Spending sufficient funds for high-quality programs would increase learning and reduce the unit costs to the extent that increasingly large numbers of students are taught using this technology.

Transformational Leaders

Perhaps Michelle Rhee of the Washington, DC schools and Joel Klein of New York City are the nationally best known of all recently retired superintendents. They were transformational in the sense used here of enacting bold policies that affected many parts of the systems where they served as chief executives and inaugurated several of the reforms described above. Consider their views.

Michelle Rhee

An immigrant from South Korea and a former Teach for America teacher, according to the account in *Wikipedia*, Rhee gained a reputation as tough and straight forward when she served as Chancellor of Schools in Washington, DC. When she began in 2007, schools in the nation's capital were the third highest in cost per student among big cities, yet only 8% of the eighth graders were at grade level in mathematics. Among many changes, including closing 21 schools, she gained union agreement to a new contract with raises up to 20% and bonuses of up to $30,000 in exchange for diminished tenure protection. She fired 241 teachers, most of which had been given poor evaluations, and she put 741 employees on notice for dismissal. During her tenure, graduation rates and reading and mathematics scores improved substantially, and she gained much national attention for her school reform efforts.

After her bold leadership in Washington, Chancellor Rhee founded and is chief executive of StudentsFirst, dedicated to improving schools around the country. Reflecting her nationally recognized leadership, 100,000 people signed up as members of the organization during its first 48 hours and contributed $1 million in small online donations. In describing the organization, she pointed out that American 15-year-olds scored very poorly in reading, mathematics, and science on the 2009 PISA tests.

In her article "In Budget Crises, an Opening for School Reform," Rhee (December 11, 2010, p. A17) emphasized that StudentsFirst's efforts will concentrate on three initiatives. In her (abbreviated) words, these are:

- Treating teachers like professionals. Compensation, staffing decisions, and professional development should be based on teachers' effectiveness, not on their seniority. That means urging states and districts to implement a strong performance pay system for the best teachers, while discontinuing tenure as job protection for ineffective teachers. This will ensure that the money spent on teachers' salaries goes to the hard-working professionals who are improving student achievement every day.
- Empowering parents and families with real choices and real information. Parents, especially those who live in lower-income neighborhoods, have limited educational options for their children. StudentsFirst believes that states and school districts must remove the barriers that limit the number of available seats in high-quality schools. This includes allowing the best charter schools to grow and serve more students. It also

means giving poor families access to publicly funded scholarships to attend private schools.

- Ensure accountability for every dollar and every child. Due to the financial downturn in the states, it is critically important to ensure that every dollar spent on public education has a positive impact on student learning. Unfortunately, billions of dollars today are wasted on things such as paying for advanced degrees for teachers that have no measurable impact on student achievement.

Joel Klein

In his eight-year tenure in New York City, Klein supervised the nation's largest school district and worked under a mayor who boldly took responsibility for the schools. In his retirement account, Klein challenged the usual idea and observation that poor children can't learn and cited "Harlem Success Academy, a charter school with all minority, mostly high-poverty students admitted by lottery," which "performs as well as gifted schools that admit kids based solely on demanding tests" (Klein, 2011).

Klein further argued, "Traditional proposals for improving education—more money, better curriculum, smaller classes, etc.—aren't going to get the job done. Public education is a service-delivery challenge, and it must be operated as such. Albert Shanker, the legendary teachers' union head, was right when he said that education has to be, first and foremost, about accountability for 'student outcomes.' This means there must be consequences if children or adults don't perform" (Klein, 2011).

Klein maintained, "Whether it's health care, education, or any other service, poorly-structured, nonaccountable delivery systems cost a fortune and don't work" (Klein, 2011). To counter such dysfunctionality, Klein gave principals new authority over their school budgets, hiring, and choice of programs. He rewarded those that did well and removed those who did poorly. He closed almost 100 failing schools and increased the number of charter schools.

Multiple Productivity Reform Levels

Based on *Improving Student Learning* (Walberg, 2011), this section points to the most productive means of raising student achievement while avoiding additional costs or even reducing costs. As in the book, the means are presented at four major levels of school systems—classrooms, schools, districts, and states. The means are presented in outline and the reader is referred to the book and other CII resources for explanations, references, and illustrative examples.

Classrooms

- Build on prior learning
- Allocate learning time wisely
- Provide high–quality instruction

Schools

- Increase opportunity to learn and class time
- Employ effective schools practices
- Align curriculum and instruction with standards and assessments
- Provide challenging, well-defined student goals
- Offer student incentives
- Initiate school–parent programs

Districts

- Employ well-educated, knowledgeable teachers
- Employ valid employee screening tests
- Pay teachers for performance and for contribution
- Avoid traditional pay policies
- Provide initial and continuing professional education
- Employ high-quality online teaching and teachers

States

- Define rigorous standards
- Hold schools accountable for meeting standards
- Administer rigorous, external examinations
- Require achievement accountability
- Provide state-level incentives
- Build state capacity to support local educators

- Recruit distinguished educators for district consultation
- Provide targeted state assistance
- Monitor progress in achievement
- Foster and improve charter schools
- Restructure failing schools
- Dismiss underperforming staff
- Close repeatedly failing schools
- Recruit transformational leaders

Conclusion

It should be clear from this document that a number of policies and practices are available to increase educational productivity, which help make learning more effective, reduce costs, or both. Intended for busy educators and policy makers, this document is an overview of actionable productivity innovations. Compared to the huge underlying research literature, this document is purposely concise but refers to and serves as an index to many of CII's resources. These provide further explanations, references to research, and examples in practice.

New in this document are Transformational Innovations. Several are less well researched than those previously summarized by CII, but, in the current era of budgetary stringency, are increasingly put forward by policy analysts and legislators as having considerable potential to meet the productivity challenge.

As pointed out in the introduction, CII invites contributions by educators to illustrate both old and new applications of productivity-raising policies and practices. Appendix 1 is the invitation and sample submission form. CII and the educators who use the ideas will undoubtedly be greatly appreciative of contributions and contributors.

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For a free downloadable copy of Herbert J. Walberg's book, *Improving Student Learning: Action Principles for Families, Schools, Districts, and States,* visit **www.centerii.org** (see Download CII Publications).

Appendix 1: Achieving More, Spending Less—Innovation for Productivity

Online Submission Form

Enter at: www.centerii.org

See Productivity! on home page

Respondent information

Title:

First Name:

Last Name:

Position:

Organization affiliation:

Telephone:

Email:

State, district, or school in which the productivity policy or practice has been implemented

Organization Name:

Address:

City:

State:

Zip:

If the policy or practice was implemented in a district or school, briefly describe the demographics of the school or district: for example, poverty rates, racial-ethnic composition:

Intended grade levels of the innovation, if applicable:

Intended subject areas of the innovation, if applicable:

Title that would succinctly describe the innovation (10 words or less):

Please describe the innovation in less than 500 words and how it contributed to greater achievement levels, lower costs, or both:

Appendix 2: Time Influences and School-Level Influences on Student Learning

Time Influences on Learning in Various Types of Studies

Area Researched	Relative Effect
Time on task	1.10
Matching time spent to time needed	1.10
Studies of how school time was used	0.49
All estimates	0.47
Efficient time use	0.42
Learning extended by homework and study	0.41
Studies in which instructional time was extended	0.40
Attendance rate	0.32
Earlier start in school or extra preschool	0.27

From *Improving Student Learning: Action Principles for Families, Schools, Districts, and States* (p. 12, Walberg, 2011), http://www.centerii.org/survey/

School-Level Influences on Student Learning

Variable	Relative Effect
Opportunity to Learn	.88
Class Time	.39

From Improving Student Learning: Action Principles for Families, Schools, Districts, and States (p. 47, Walberg, 2011), http://www.centerii.org/survey/

Appendix 3: Database of Resources

The Center on Innovation & Improvement offers a database of downloadable summaries and full reports on research and examples of school and district improvement and state systems, which may be found at http://www.centerii.org/search/ciisearch.aspx. In addition, the site offers similar resources on extended time and SES, school restructuring and turnarounds, charter schools, public schools of choice, and private schools. These resources are grouped on the website in the following categories:

School Improvement
- Assessment
- Curriculum
- Curriculum of the Home (Parents)
- Dropouts
- Early Childhood
- English Language Learners
- Evaluation on Improvement Strategies
- Finance
- High School Improvement
- Improvement Planning and Implementation
- Instruction
- Leadership
- Parent Education
- Policy
- Professional Development
- Purpose (Vision, Mission, Roles)
- School-Home Communication
- Shared Leadership
- Special Education
- Technology
- The Change Process
- U.S. Department of Education Guidance and Reports
- Using Data and Reports

School Improvement Grants
- Closure Model
- Communication About School Reform
- Restart Model
- Selecting an Intervention Model
- Selecting/Contracting with External Providers/ Partners
- Transformational Model – Extended Learning Time
- Transformational Model – General
- Transformational Model – Instruction
- Transformational Model – Staff Evaluation
- Turnaround Model

District Improvement
- Assessment
- Curriculum
- Curriculum of the Home (Parents)
- Dropouts
- Early Childhood
- English Language Learners
- Evaluation on Improvement Strategies
- Finance
- High School Improvement
- Improvement Planning and Implementation
- Instruction
- Leadership
- Parent Education
- Policy
- Professional Development
- Purpose (Vision, Mission, Roles)
- School-Home Communication
- Shared Leadership
- Special Education
- Technology
- The Change Process
- U.S. Department of Education Guidance and Reports
- Using Data and Reports

State Systems of Support
- General
- Organizational Websites
- State Resources and Examples

Extended Time and SES
- Evaluation of SES Effectiveness
- Extended Time Programs
- Out-of-School Time
- SES Promising Practices
- SES Tools for Districts and Schools
- SES Tools for Parents and Community Leaders
- SES Tools for States and Providers
- U.S. Department of Education Guidance and Reports

Restructuring and Turnarounds

- Chartering as a Restructuring Option
- Contracting with Education Management Providers
- District Role in Restructuring
- Implementation of a Restructuring Plan
- Organizational Websites
- State Role in Restructuring
- State Takeover of Schools and Districts
- The Restructuring Plan and Options
- Turnaround with New Leaders and Staff
- U.S. Department of Education Guidance and Reports

Charter Schools

- Charter Schools Promising Practices
- Chartering as a Restructuring Option
- Establishing or Converting to a Charter School
- Evaluation of Charter School Effectiveness
- Special Education
- U.S. Department of Education Guidance and Reports

Public School Choice

- General
- U.S. Department of Education Guidance and Reports

Private Schools

- General
- Special Education
- U.S. Department of Education Guidance and Reports

About the Author

Chicago-born and a current resident, Herb Walberg is Distinguished Visiting Fellow at the Hoover Institution, Stanford University. He formerly taught at Harvard University and is Emeritus University Scholar and Professor of Education and Psychology at the Univer-sity of Illinois at Chicago. He was awarded a Ph.D. from the University of Chicago, where he is a member of the Fellows Society.

He has written or edited more than 55 books and written about 300 articles on such topics as educational effectiveness and exceptional human accomplishments. Among his recent books are the *International Encyclopedia of Educational Evaluation*; *Narrowing the Achievement Gap*: *Strategies for Educating Latino, Black, and Asian Students* (with Susan Paik); and *Testing Student Learning – Evaluating Teaching Effectiveness and School Accountability* (both with Williamson M. Evers),

Herb served as a founding member of the National Assessment Governing Board, re-ferred to as "the national school board," given its mission to set education standards for U.S. students and measure progress in achieving them. Herb was also a Presidentially appointed, Senate approved founding member of the National Board for Educational Sciences, which provides policy guidance and oversight of about $600 million for federal education research.

Appointed a fellow of four academic organizations including the American Association for the Advancement of Science, American Psychological Association, and the Royal Statistical Society, Herb is a founding fellow of the International Academy of Education, headquartered in Brussels. He edited a booklet series for the Academy on effective educational practices, which is distributed by the United Nations International Bureau of Education to some 4,000 education officials in more than 120 countries and on the Internet (at http://www.ibe.unesco.org/en/services/online-materials/publications/educational-practices.html).

Herb has given invited lectures in Australia, Belgium, China, England, France, Germany, Italy, Israel, Japan, the Netherlands, South Africa, Sweden, Taiwan, Venezuela, and the U.S. to educators and policy makers. He has frequently testified before U.S. Congressional committees, state legislators, and federal courts. Herb chaired the Scientific Advisory Group for the Paris-based Organization for Economic Cooperation and Development project on international educational indicators. He also advised UNESCO and the governments of Israel, Japan, Sweden, and the U.K. on education research and policy.

In his research, Herb employs analyses of large national and international data sets to discover the factors in homes, schools, and communities that promote learning and other human accomplishments. He also employs research synthesis to summarize effects of various educational conditions and methods on learning and other outcomes, the results of which have important bearings on education policy and practice. For the past two decades, he concentrated on educational productivity, that is, increased learning at lower costs.

He serves as the Chief Scientific Advisor for the Center on Innovation & Improvement, a trustee of the California-based Foundation for Teaching Economics, and he chairs the boards of the Beck Foundation and the Heartland Institute. Further details are available in "Who's Who in America," "Who's Who in Medicine and Health Care," and "Who's Who in the World" and on several Internet sites.

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