



Building a 21st Century U.S. Education System

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Contents

| | |
|--|------------|
| Foreword | 12 |
| <i>Bob Wehling, Building a 21st Century U.S. Education System</i> | 13 |
| Voices from the Field | 22 |
| Chapter 1: <i>Rebecca Palacios, Education and Freedom</i> | 23 |
| Chapter 2: <i>Arlene Ackerman, Sustaining School District Success: An Urban Superintendent's Reflections</i> | 27 |
| Chapter 3: <i>David Hornbeck, The Missing Ingredient in School Reform: A Political Base</i> | 32 |
| Preparing and Supporting 21st Century Teachers | 45 |
| Chapter 4: <i>Thomas G. Carroll, Teaching for the Future</i> | 46 |
| Chapter 5: <i>Arthur E. Wise, Teaching Teams in Professional Development Schools: A 21st Century Paradigm for Organizing America's Schools and Preparing the Teachers in Them</i> | 59 |
| Chapter 6: <i>Linda Darling-Hammond, Building a System of Powerful Teaching and Learning</i> | 65 |
| Chapter 7: <i>Barbara Kelley, Teacher Recruitment, Preparation, Induction, Retention, and Distribution</i> | 75 |
| Chapter 8: <i>Ken Howey and Nancy Zimpher, Creating P-16 Urban Systemic Partnerships to Address Core Structural Problems in the Educational Pipeline</i> | 87 |
| Chapter 9: <i>Carri Schneider and Ted Zigler, View from the Trenches: Two Practitioners Reflect on the Need for a National System of Educational Leadership Preparation</i> | 99 |
| Political Context of 21st Century Education | 109 |
| Chapter 10: <i>Diane Ravitch, Ensuring Access to a World-Class Education</i> | 110 |
| Chapter 11: <i>Bob Sexton and Jacob Adams, Changing the Dynamics of Educational Governance: Why Improving America's Schools Requires More than Changing Who's in Charge</i> | 112 |
| Chapter 12: <i>Jim Hunt, Making Politics Work to Dramatically Improve American Education</i> | 116 |
| Chapter 13: <i>Richard Riley, Charting a New Course in American Education</i> | 123 |
| Education and the Global Economy | 128 |
| Chapter 14: <i>Ed Rust, Education and the Economy</i> | 129 |
| Chapter 15: <i>Kent Seidel, The World is Flat, and U.S. Education has Flat-Lined: Designing an Information Infrastructure to Support a Globally Competitive Educational System</i> | 135 |
| Creating 21st Century Learning Organizations | 150 |
| Chapter 16: <i>Mary Hatwood Futrell, A Nation of Locksmiths: Transforming Our Education System to Guarantee All of America's Children a Quality Education</i> | 151 |
| Chapter 17: <i>Peggy Siegel, Transforming Education: In Search of a 21st Century Solution</i> | 160 |
| Chapter 18: <i>James Kelly, Looking Back, Thinking Ahead</i> | 170 |
| Chapter 19: <i>Chad Wick, The Meek Shall Inherit the Public Schools: Who Will Be Left Behind in the Learning Economy?</i> | 179 |
| Conclusion | 189 |
| <i>Bob Wehling, Together We Can</i> | 190 |
| List of Contributors | 193 |
| Appendix | 203 |

CHAPTER 15

The World is Flat, and U.S. Education has Flat-Lined: Designing an Information Infrastructure to Support a Globally Competitive Educational System

Kent Seidel

Education's purpose is to replace an empty mind with an open one.

—Malcom Forbes

Much attention has focused in recent years on global competition and increased pressure to adapt as other countries are filling roles which have been dominated by the United States in the past. These include both manufacturing (e.g. China's supply of inexpensive products) and service sector work (e.g. India's technology and customer support industries). Any solution advanced to address these circumstances typically includes education reform in a central role, and with good reason. When work roles change, education needs change. We must adapt if we are to maintain our historic position as an economic superpower and continue to produce new sources of revenue. As other nations join the global marketplace, adding workers with ever-increasing skill levels to the available workforce, the consensus is that we need to do something different to maintain our competitive edge.

This threat is growing exponentially at an incredible pace. To put a finer, if more cynical point on the matter, it is not so much that our educational system has become ineffective (from the standpoint of producing workers for the past economy, anyway), but that other nations are co-opting our system. In a sense, the traditional "product" of U.S. education is being outsourced. To reform our educational system with the goal of producing more of the same old result, but for more children, is not going to address this problem. We must build upon our well-established educational infrastructure, enabling life-long learning in such a way that our youth and adult citizens can take on the "new work" of the 21st century. (It is worth noting, however, that without our long-established system of public education, neither we nor the rest of the world would likely be in a place to need to take education to the next level.) As with other aspects of our economy in the world marketplace, if we can't compete on price, we must compete with quality and innovation.

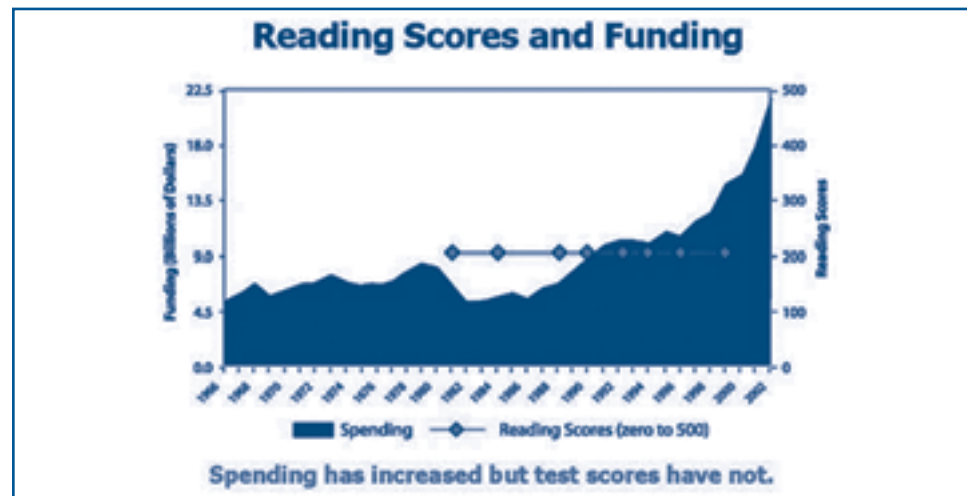
In truth, the call for education reform in the name of global competition is not new. Every decade or so for the last 50 years, a national report or book has resonated with policy and business leaders, who have now become education's most vocal customers. Most recently, these reports of researchers, journalists, and high-powered committees have focused more on global economic competition,¹ but the need to foster innovation, creative and critical thinking, rich literacy, and deep math, science, and technological understanding through education reform has been a common call to action. Consider this description of the National Defense Education Act (1958):

“Sputnik once again elevated the word ‘competition’ in the language of government officials and the American public. Sputnik threatened the American national interest even more than the Soviet Union’s breaking of America’s atomic monopoly in 1949... Perhaps more importantly, however, Sputnik forced a national self-appraisal that questioned American education, scientific, technical and industrial strength, and even the moral fiber of the nation.... Sputnik raised questions about the ability of the nation’s education system to compete. Congress responded with the National Defense Education Act of 1958. It emphasized science education and became a significant part of the country’s science policy.”

(National Science Foundation, 1994, online, Chapter III)

That moment in history in 1957 when the Soviets pulled ahead of America is considered a major turning point in the history of education reform as well. Since then, the pressure has steadily increased on the educational system to support the nation’s efforts to compete successfully in a rapidly changing global society. Economic justification—the “human capital” model—for education is so ingrained in multiple generations that it is rare today for students, teachers, or parents to think beyond job utility and economic prosperity as a reason for schooling. Another landmark report, *A Nation at Risk*⁶ arguably led directly to the standards reform movement, with development of national and state standards and related standardized testing agendas. But while the pressure on schools has been increasing and constant, the educational system as a whole has not responded with results that are satisfactory on a scale to meet the global challenge. One can make an excellent case that students are leaving schools better educated than ever before,³ but the U.S. Department of Education and others make the point that scores on the Nation’s Report Card⁴ have remained fairly flat for decades (see Figure 1 below, the inspiration for the title of this chapter). Likewise, many schools have risen to the challenge of closing achievement gaps. Yet standardized achievement scores overall leave much to be desired, substantial gaps remain among our racial, ethnic, and other minority groups. Dropout rates are high, and too many children do not attend college or, if they do, do not graduate with a degree. Why, with so much attention paid and so many smart people working on the problem for so many years?

Figure 1⁵



It does not seem that the needs assessments were off-base. These have been consistent over time, they make sense given the evolving workplace and technology trends, and they have been supported by research in many locations. The sort of education that helps students be more creative, innovative, adaptive, and able to learn and apply learning in new ways is not only possible, it has been outlined fairly explicitly in the national standards for most content areas. These reports were also not wrong in their assessment of the role of education in the economy and in the need to prepare a workforce for tomorrow rather than yesteryear. What has gone awry at a very basic level is the way in which these calls to action have been put into play, with policies calling for more of the same old way of doing things. Rather than putting policy and governance structures into place that will encourage and support education for the 21st century, we have simply stepped up the pressure on a system designed for industrial age results to give us more of the same.

This chapter will review the importance of education for maintaining and growing our economic advantage, as well as how the outcomes of this perspective can simultaneously satisfy other important justifications for formal schooling. This includes some discussion of the type of education really needed for us to finally begin to transition at scale from the industrial age into the 21st century and beyond. I will then look at the role of business and the private sector in the mix, sorting out some issues of public and private good, and discuss why traditional market drivers are unlikely to get us anywhere different than we are going now. A purposeful system of information and accountability that will drive the appropriate changes and support the right work in schools is essential. To this end, I offer some thoughts about modifying support and accountability systems in order to meet societal needs and acknowledge policy realities. Finally, I present a few ideas for modifying current systems to begin to move us toward the educational goals for which so many have been calling for the last half century.

Education Matters: Human capital, global competitiveness, and personal and social benefits

To manage a system effectively, you might focus on the interactions of the parts rather than their behavior taken separately.

—Russell L. Ackoff, Wharton School of Business

Let's return to the cynical point above: that other nations are successfully co-opting our processes of producing an educated workforce, with the result that both the quantity of jobs and the quality of skills required by those jobs are more easily outsourced across the globe. How can we maintain our leading stance in the world? It is increasingly clear that leaving no child behind in meeting industrial age outcomes is nowhere near adequate, even if we were to succeed: other nations are able to produce more individuals very like the graduates of our current school systems without even attempting to educate their entire populations.⁶ This is a global competition we cannot win. We still have several unique advantages on which to build new successes, however, including:

- an infrastructure designed to reach the majority of our population, providing accessibility not only to children but to citizens of all ages;
- a diversity of participation in the system which, when it works, provides access to a broad range of experiences, ideas, and the opportunity for learners to bring these together, fostering creativity and innovation;
- a network of educational institutions, policy bodies, accountability systems, and the public which has the potential to be responsive to these needs of the nation if some important changes can be made.

Before getting to some of the changes in the infrastructure that could move us forward across the board, we must clarify a few issues related to human capital and globalization. As an aside, I hope the reader will permit some leeway in my discussion of students and schools in economic, industrial terms—my choices are made to emphasize the arguments. I also assume that we wish to place the educational system, at least in large part, in the service of economic ends. This is because society demands it as a means to prosperity, but also because the shift in the quality and type of education that will meet the demands of the future workplace will also satisfy many of the humanistic and democratic goals that are of prime importance.

Whose needs are driving the system?

Humans live in particular places while corporations, the entities powering globalization, are able to “live” in many places at once. Many live in multiple nations, and if successful, corporate entities have much, much longer and different life spans than an individual. The point is that we cannot any longer assume that the “national,” “state,” or “local” needs are the needs of the corporate members of the global workplace. In fact, our corporate citizens have proved themselves willing and able to go where the talent lies at the best cost (which is arguably sensible behavior for a corporation).

How are interactions of globalization and rapid technological change impacting education?

A second clarification is about the global workplace itself. We can only make educated guesses about what the future holds for our workers of tomorrow. We may never have really known what the future held, but today we are sure that we are uncertain. The top industries of today did not exist until fairly recently, and it is almost guaranteed that if today’s jobs are still around in quantity for today’s pre-schoolers to claim in 20 years, they will be done in very different ways. Our traditional educational system designed to produce workers for clearly pre-defined roles cannot surmount this problem. Consider this summation of the knowledge-based economy and the speed with which it is evolving:

“The removal of routine mental activity such as arithmetic calculation from human beings and its transfer to computers will be seen as of equal significance as the removal of the tool from the workers hand and its transference to the machine in the First Industrial Revolution. This freed the human mind for involvement in higher order

creative tasks. Rather than devaluing the productions of the human mind, it appears that value in the 21st century will become even more dependent upon the creations of the human mind mediated by computers and data communication and processing.

As knowledge creation became a focal point of our thinking about economic activity, managers faced an environment with two attributes: increased emphasis on knowledge creation and a transience of existing products and knowledge. The acceleration of new knowledge creation sped up the devaluation of the concrete results of knowledge creation, the products... For managers, understanding and operating at the industry's speed will be the difference between success and extremely rapid failure."⁷

Just like for-profit and nonprofit businesses in other sectors, schools must develop the ability to respond and adapt at a much quicker pace than ever before. And educational institutions have a second side to this coin: their ability to become adaptive at a rapid pace will permit them to prepare the individuals they are teaching to become successful managers and workers. What needs to be teased out in detail is how education is interconnected with individual, local, and regional economic and social success. There is a strong body of evidence that education and the economy are related in important ways:

“On the national level, there is convincing research showing that public schools have a profound effect on national economic growth, by influencing the quantity and quality of education. “Human capital” theory documents that investment in the skill level of a nation’s population translates into increased national productivity. Education also leads to higher wages and greater social opportunity.”⁸

This relationship is an incredibly strong driver of the educational system and the expectations held of it. If these interactions are changing with globalization and rapid technological change, then we must recognize how and work to adapt the system to our benefit.

The primary relationship driving the formal educational system is currently anchored in localized notions of social capital and competitive economic success on a local scale. Ericson and Ellett (2002) capture it well:

“The belief in the social and economic efficacy of education...holds that social rewards and privileges belong not to an elite, hereditary class, but should go to those individuals of talent, intelligence, and industry....[W]ith the growth of the common school in the 19th century, it takes little imagination to understand how beliefs concerning the social and economic efficacy of education could be translated into a conviction that schooling pays social and economic dividends. Clearly, it is a conviction that could appeal to employers interested in the relatively greater profits an educated workforce could generate...

[But] imagine a society that distributes social and economic benefits (income, status, earnings opportunities, etc.) on the basis of the distribution of purely educational benefits (knowledge, skills, judgment, etc.). Such a society is likely to be extremely inefficient. It is difficult and time-consuming to discover who knows more and who less. But if there were an intervening social institution that functions to evaluate individuals' relative possession of educational benefits, then such official testimony would straightforwardly provide the basis for a subsequent distribution of social and economic benefits.... In our own society,

it is through the development of certification in the educational system (by such instruments as grades, test scores, diplomas, and transcripts) that made possible the development of a relatively efficient meritocracy based on education and gave powerful confirmation to the belief in the efficacy of education.”

This brings us to one explanation for why it has been so difficult to move the educational system from creating a ranked order of its students to truly meeting expectations of standards-based mastery learning, wherein all students achieve to a high level. Simply put, if one is too successful in helping all students achieve, one may be seen as failing at the traditional task of ranking students for social and economic participation. When an institution too far removed from real children begins to change expectations of student populations but still works within the traditions of meritocracy as described above, it seems too much like social engineering for many in our democratic society. Conversely, for an individual teacher or school leader not to embrace notions of equality in learning and bringing all students to high levels regardless of concern for ranking smacks of racism or classism. It is no wonder that the blame and responsibility for leaving no child behind falls squarely on the shoulders of teachers and leaders at the local level, even when these educators’ options for attaining results are severely restricted by a system outside their control. Indeed, when past traditions of schooling for distribution of social and economic credits clash with new needs for higher order learning broadly distributed, the local site is where these consequences are felt most deeply.

I am not naively suggesting that we ignore the influence of our democratic market systems and expect schools, communities, and the economy to magically turn on a dime in order to change the outcomes of the educational system. But the operative conflict I describe is a powerful reason why school reforms have not been very successful to date. Furthermore, the situation is unlikely to get any better, and my guess is it will worsen. The combination of globalization and rapid shifts in technology means that achieving and maintaining economic efficiency within the old system will be increasingly difficult. Spring summarizes efficiency in education for us in this way:

“Ideally, in the human resource model, all graduating students will enter jobs that match their education, interests, and aptitudes.... [In] human capital accounting... external efficiency is measured by the ability of school graduates to get jobs that are appropriate for their education. In this conceptual framework, an educational system is very inefficient if PhDs in literature become cab drivers or students educated to be airline mechanics spend their lives painting landscapes. Internal efficiency refers to the cost of educating each student. For instance, a school system is internally inefficient if students do not graduate on time or if they must repeat grades or subjects.”⁹

The problem is, we can no longer be externally efficient as the evidence presented at the front of this chapter suggests, because 1) we do not know what jobs should be targeted; 2) if we do guess correctly at the jobs, we are unlikely to guess how to fully prepare students to do them; and 3) even if we guess the first job correctly, it is likely that our students will go on to have many other types of jobs within their work life—as many as eight or more.¹⁰ We can also no longer be sure of internal efficiency, because our measures

for judging this are designed for a rank-order system. Schools distribute money, time, expertise, and other resources efficiently and “equally,” and learners sort themselves into their own successes. The new needs for the 21st century demand that we hold the learning results constant and allow the other inputs to vary. Given this approach, we must clearly define outcomes, as well as ways to measure these, and use the findings for continued improvement or internal efficiency will be impossible to judge.

To summarize, we are in a disastrous position with our educational system. We have strong and unyielding forces in place designed to produce results that are no longer on target for our needs, and we do not have the data systems in place to allow us to understand progress toward results we desire even if they were to occur.

What is the chief product of our educational system?

Let’s continue this exploration with a discussion of the results we are seeking for the 21st century—beginning with the end in mind.¹¹ What can be done in the face of the issues described above? It is much easier to divert a river than to stop it. If we can be clear about the results that we need our educational system to produce for the 21st century, then we may be able to modify the direction of the driving forces that currently prohibit lasting change.

The new focus for our educational production system needs to be larger than the distribution of social and economic credits. Every school must make an intentional contribution to the intellectual and creative capital that has served as the foundation of our success in the world. It has been a necessary and sufficient goal in the past for education to provide opportunities for all students, and to sort students according to how well they avail themselves of these opportunities. One result of this has been that student success can be predicted strongly by socio-economic supports outside of school. Today, one of the most explicit goals of schools must become responding to students’ external socio-economic supports: compensating for deficits where appropriate and building on strengths where possible in order to assure all students reach their potential to contribute to our society’s intellectual and creative resource pool.

What does the learning needed for the 21st century look like? Lifelong learning capacity is essential, as is the ability to think across traditional disciplines and boundaries in order to discover new things. Two excellent sources articulating these learning outcomes are the Alliance for Curriculum Reform’s *Schoolwide Goals for Student Learning*¹² and the *Framework for 21st Century Learning from the Partnership for 21st Century Skills*.¹³ In *Smart Money*, Schweke offers an economic developer’s perspective:

“U.S. firms must compete on the basis of new, higher-quality service and production approaches that utilize new technologies and a more skilled workforce. Economic developers call this “the high road” because it offers a path to a strong economy based on, and generating, higher-paying jobs, greater productivity, and wealth.... How do we travel on this high road? The best prescription would have the following three components:

1. Develop a more seamless, well-endowed lifelong learning system.

2. Reform wasteful business incentive programs and redirect savings into education or other state priorities.

3. Create and maintain a modernized revenue base.”¹⁴

Of course, such a shift in outcomes for education is going to require new supports, training, and “re-tooling” on a large scale—not much different from the kinds of re-tooling that businesses in other sectors have been making for some time in order to continue to compete. Our policies and information and accountability systems will need to be modified to expect and empower these changes to be made.

Sorting out public good and private interests.

A final piece of the puzzle that sets the context for how to modify our existing systems is the relationship between public good and private interests, and how the multitude of organizations that comprise our educational system fit into the big picture.

With regard to the public/private good relationship, I offer the following: Learning attained by an individual is by definition a private good. The learner makes the ultimate decision to do the learning, and is the primary beneficiary of doing so. Societal groups benefit by proxy from the collection of learning mastered by individuals in their midst. It is therefore very much in the interest of the public group to influence what learning is attained (that which benefits the group’s future); how it is distributed (broadly, and such that many capacities are gained for the group—everyone being an expert at one thing would not be best, for example); and whether and how it is used (e.g., a genius who never applies her learning, or does so to damaging ends, would be bad for the group).

In our current crisis of global competition and technological advances, some fundamental traditions must be uncovered and reconsidered. Schools can no longer be thought of as competing companies, and the traditional market drivers for improvement will not be very effective in the long run. If one thinks of education solely as a consumer commodity, then at what point will it be okay for society if a consumer decides not to “buy?” This is, in fact, happening with alarming consistency across our nation, evidenced by low high school graduation rates, low college attendance, and even lower college graduation rates. Similarly, the traditional ranking of individuals will not disappear, but the population for ranking has greatly expanded. What must change is how we think of ranking within our educational system. We must ensure three things to be successful in today’s world:

1. Ensure that ranking is not a goal of the system, but an incidental outcome, and ensure that ranking does not negatively impact individuals’ interest in continuing to progress their learning; many educators are dealing with this successfully already.¹⁵
2. Make available to learners as wide a range of areas for potential success as possible, so we can be responsive and adaptive, open to whatever the future may bring, and allow learners to excel with their strengths. This means we must not narrow the curriculum to only basic “core subjects,” but rather work to expand options.
3. Broaden our horizons in judging success—we no longer work to see our students be top in their class, but rather top in the world. The entire group must move up to meet society’s needs.

And finally, it is important that we include the full spectrum of the educational system in our change plans. Any institution that is responsible for educating an individual in our society must be a participant in this leap forward—the stakes are too great. This means that our accountability systems must be flexible and respectful enough to accommodate the democratic freedoms we value and permit private, parochial, charter, and home schools, while ensuring the outcomes of these are adequate. To use an extreme example, while a parent should be able to educate a child at home, the result of a poor effort will negatively impact the child's future and, as a consequence, the public (which may have to remediate, support, or jail said child as an adult). We do not permit parents to abuse their children in ways that damage their future lives and society; why should we permit egregious educational efforts?

Extreme examples aside, the evidence is that uninformed parents are not likely to choose educational experiences—in public schools or otherwise—with broad goals in mind, but rather from short term competitive or personal perspectives.¹⁶ This is because individuals are not likely to consider the uncertainty of future workplace issues. They have most likely only experienced traditional educational approaches, quite adequate “back then” but which do not move us toward a bright future now. In addition, they are unlikely to have been exposed to a range of educational experiences and therefore do not know what is possible. I believe the solution to these issues is to modify our educational system, so it engages and informs parents and the broader public. This will help our private-sector educational options meet high-quality expectations and be supported as a reasonable choice.

Rewarding the Right Behaviors: An outline for a new information system

Design is not just what it looks like and feels like. Design is how it works.

—Steve Jobs, Apple Corporation

To summarize, we have finally reached a most serious point in our need for change, after 50 years of progressively increasing pressure from global competition and rapidly advancing knowledge and technologies. The future (some would say it is here) requires a true paradigm shift in the type of work we expect of our educational system. This shift includes preparing all of our citizens to be self-directed, capable, and lifelong learners. It requires us to move from isolated silos of basic “core subject” knowledge to providing learners with rich and varied curriculum and instruction linked to real-world applications.

Our assessment of the implications of globalization encourages us to move soon to bring all learners to higher levels, and this means changing our traditional expectations of education, from dispensing social and economic credits to thinking globally with all learners. To do this, schools need more responsive sources of information and they need to find ways to take responsibility for all of the learners in their charge. They must be permitted to change the traditional “inputs” of education if needed to reach every learner.

We must think differently about the natural ranking of individuals that occurs in any endeavor, so that it does not harm the learning process. Finally, the new infrastructure

must engage both public and private components of the whole educational system to help ensure our entire society is uplifted in the change—global competition pressures require no less. All of this means our ground rules for the new system would include the following:

- It must account for the public good while permitting the private successes that provide motivation for an important segment of our society. This will require new and effective ways to engage the public and parents within the educational process and with accountability results.
- It must provide justifiable public results in the short term (a variety of “check-ins” on schools) as well as benchmarks and evidence of success longer-term (e.g., how well do high school graduates perform in postsecondary education?).
- It will modify both the content and the administration of standardized assessments in ways that encourage the higher levels of learning desired.
- It will focus accountability and information systems on the global education results needed, while providing real-time data locally that will encourage the communities of learning and individualization of instruction that we know are necessary for all students to succeed.
- It must place authority at the local level to make key decisions about learning and teaching, within the accountability system (trust but verify).

The good news is the incredible expansion of information, knowledge, and technology capacity can benefit education as well. We have new capacities for data collection, analysis, and management that permit us to pose and answer questions and get important information to the educators and learners “on the ground” with accuracy and speed never before possible. We have new knowledge about human development, the brain, and how people learn that we can apply to address practical problems. We have new informal systems of learning with which we can build new ways to motivate learners, and new networks and technologies, such as the internet, to better connect schools with their partners in education such as parents, other schools, and community agencies. The information and accountability infrastructure that will support 21st century learning will be different in quality and focus, but it can be built on current foundations. It will be important to look at linkages of policies, accountability expectations, and data systems as we move forward, modifying old systems and installing new ones that permit educational work to be done more effectively and efficiently while supporting problem solving and innovations.

Modify accountability and information structures to expect and empower those working most closely with learners to teach for the 21st century.

A difficulty is the traditional hierarchical bureaucratic control systems upon which education has relied work against the kind of close-to-the-learner, responsive, and adaptive structure needed to attain the results we desire. We can establish distributed leadership structures and provide real-time information at multiple levels within the organization, however, in order to encourage the environments that will support learning. Many private

sector corporations have already modified their structures in these ways in order to be more quickly responsive and competitive. Specifically, the accountability system should collect data and provide informational supports that will focus educators on problem-solving approaches based on good evidence about individual students' progress. Elmore notes that, traditionally,

“Educators do not organize their work around systematic analysis and improvement of the core functions of the institution. Educators have taken the view that “practice” is idiosyncratic to the individual, and it grows out of individual attributes, rather than out of systematic understanding of the nature of the work.”¹⁷

We have already seen a trend toward research-based practice and “What Works” prescriptions for educators' day to day efforts with children, but we must go deeper to get the results we need. The responsive data systems and accompanying training for educators to use system data along with formative classroom assessments must enable locally led problem solving and differentiated instruction. Biesta puts it this way:

“...research cannot supply us with rules for action but only with hypotheses for intelligent problem solving. Research can only tell us what has worked in a particular situation, not what will work in any future situation. The role of the educational professional in this process is not to translate general rules into particular lines of action. It is rather to use research findings to make one's problem solving more intelligent.”¹⁸

With regard to being able to problem-solve and adjust to meet learners' needs, rather than keeping “inputs” constant and allowing learning outcomes to vary, Elmore offers this:

“...certain solutions—the age-grade structure, the allocation of single teachers to classroom units, the allocation of specific content to specific periods of time, and so on—have become “fixed” in the institutional structure of schools. They have become fixed, not necessarily because we know they work in some educational sense, although that may be true, but because... they help us manage the demands and uncertainties of mass education.”¹⁹

Re-tooling our educational system's capacity for collecting and using data for problem solving, from individual teacher to large scale, is a top priority. The focus of this “educational problem solving” must be finding ways to teach across curriculum areas, and to anchor disciplinary learning to core learner skills that will prepare students for the 21st century—critical, analytical, and creative thinking; self-guided learning and self-assessment; personal and social responsibility, expanding and integrating knowledge; and communication and interpersonal skills. Educators must be prepared to guide students through the preschool to higher education (P-20) system with a combination of mastery learning summative assessments and assessment for learning approaches. Schools must be permitted to make choices with the management of schedules, curriculum, and instruction to provide students with flexible groupings in content areas as they master learnings and are ready to move on.

Modify our existing accountability systems to strengthen the public good while honoring private interest traditions.

First, expanding the above discussion of modifying traditions to consider formal accountability measures, it will be important to move standardized tests away from the disconnected content “silos” and lower-level skills that are too common today. This can be done by modifying the content of these assessments and by changing the way in which they are administered and used. Ensure that large-scale assessments are vertically scaled and carefully aligned to key standards only, and then sample students within the system (and oversample minority populations as needed for accuracy). This will put standardized assessments back into their proper role—as a “temperature taken” of the overall work of the system—while freeing up funds for different accountability measures. Provide data in a useful and timely manner to districts and schools, and use them in conjunction with other data as the basis for improvement plans—and then support the improvement plans. The National Research Council recommends:

“Large-scale assessments should sample the broad range of competencies and forms of student understanding that research shows are important aspects of student learning. A variety of matrix sampling, curriculum-embedded, and other assessment approaches should be used... Large-scale assessment tools and supporting instructional materials should be developed so that clear learning goals and landmark performances along the way to competence are shared with teachers, students, and other education stakeholders.”²⁰

An added benefit would be additional time for quality teaching, as schools will gain little from “stopping teaching” to “prep for the test” in a sampled system. This is just as well, since the reasons students do poorly on standardized assessments²¹ are almost never addressed in the short term or long term by test prep strategies.

Second, do not require all high-stakes assessments at pre-set intervals (which have been put in place using a fairly arbitrary calendar). Instead, let students tackle them when ready, with real consequences and rewards for success, and watch schools to be sure that developmental progressions are within reason. Use growth and value-added measures as primary ways to judge progress through schools.

Finally, require some of these mastery learning “boards” (in core areas and key grades) for all students in our society who wish to be formally recognized as educated—even the home schooled—and include private and charter schools in this baseline system.

Modify and improve linkage of data and information across P-20 systems to support success.

We must develop systems that will support, identify, and reward improvements across the P-20 system.²² This means preparation and professional development resources for the faculty and staff of schools to be prepared to teach for 21st century knowledge and skills, using varied assessments and instructional methods to differentiate support and reach all students.

Instead of using school choice as a punishment that tends to de-fund public education,²³ partner charter schools with traditional schools in a formal system of research and deve-

velopment, wherein the charters can experiment as to whether regulations are helpful or not. Then permit public schools to adapt and adopt the findings. Engage research partners in higher education in these efforts, as well as partnering teacher and administrator preparation programs with P-12 institutions to modify early preparation and induction to be more effective. Connect data related to higher education and its graduates (including teachers and school leaders) with the accountability and information system described above, in order to look at benchmarks for change across the entire educational system.

Conclusion

Fifty years after Sputnik and nearly 25 years after the *A Nation at Risk* report, our nation is perhaps more at risk than ever. It should be apparent these are not temporary trends, but deep shifts in how the global society functions, and our educational system must adapt. It is not enough to hope for market drivers or evolutionary processes to step in—waiting for the system to improve or perish—since as a society we need all of our members to be supported in reaching their full learning potential. If we cannot find ways to adapt our policies, governance, and resources to move the whole system toward meeting 21st century needs, informed by carefully designed information and accountability systems, we will continue to steadily fall behind our global neighbors. In addition, the divides between “haves” and “have-nots” in our society will continue to deepen. We have the technology, we have the knowledge and we can find the resources. I hope that after five decades of needs assessment, we can finally find the will to take action.

Endnotes

1. See *Tough Choices or Tough Times*, 2007; *Rising Above the Gathering Storm*, 2007; and *The World is Flat*, 2005.
2. National Commission on Excellence in Education. (1983).
3. E.g., see Rothstein, 1997.
4. NAEP, the National Assessment of Educational Progress
5. No Child Left Behind: A new era in education. Powerpoint presentation of the U.S. Department of Education.
6. For an interesting short video presentation on some of the numbers related to this point, readers are encouraged to see “Did You Know?” at <http://thefischbowl.blogspot.com/2006/08/did-you-know.html>
7. Kenney and Curry, 1999, pages 14-15
8. Weiss, 2004, page 31
9. Spring, 2000, page 148
10. U.S. Department of Labor
11. Thanks to Stephen R. Covey
12. Available in *Indicators of Schools of Quality*, National Study of School Evaluation, 1998

13. Available online at <http://www.21stcenturyskills.org>
14. Schweke, 2004, pages 41-42
15. For example, see the assessment for learning work of Rick Stiggins and the Assessment Training Institute, online at <http://www.assessmentinst.com/>
16. See for example, Lubienski and Lubienski, 2006.
17. Elmore, 2007, page 4
18. Biesta, 2007, pages 20-21
19. Elmore, 1995, page 368
20. National Research Council, 2001, page 13
21. A few to consider: they didn't actually learn the material; they memorized material rather than mastering to the point where they can transfer to different applications such as different intellectual prompts or formats on the test; they misread and made a mistake answering something they really do know; they had personal issues that day; they are sure they'll do badly and thus have no motivation to try; they do not feel that they will be punished for poor results; they see no direct reward for doing well; they are bored by tests and want to be elsewhere, doing something more interesting.
22. A useful resource is the CPRE/CRESST Standards for Accountability Systems, available online at: http://www.cse.ucla.edu/products/policy/cresst_policy5.pdf
23. E.g., see Bracey, 2002.

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