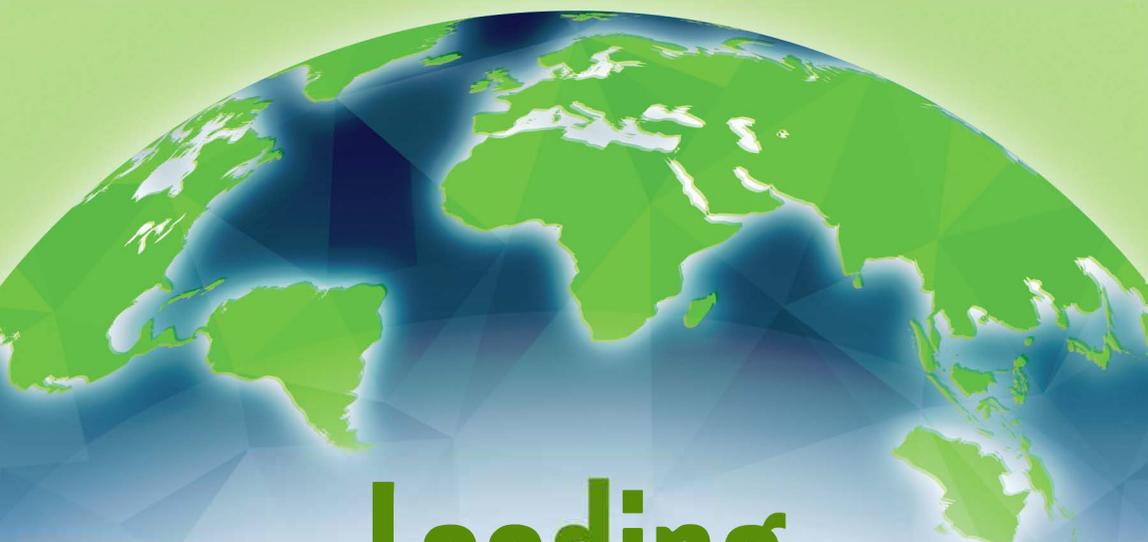

MARC TUCKER



Leading High-Performance School Systems

Lessons from the World's Best

Foreword by Linda Darling-Hammond

ADVANCE UNCORRECTED COPY - NOT FOR DISTRIBUTION



1703 N. Beauregard St.
 Alexandria, VA 22311-1714 USA
 Phone: 800-933-2723 or 703-578-9600
 Fax: 703-575-5400
 Website: www.ascd.org
 E-mail: member@ascd.org
 Author guidelines: www.ascd.org/write



2121 K Street NW, Suite 700
 Washington, DC 20037
 Phone: 202-379-1800
 Fax: 202-293-1560
 Website: www.NCEE.org

Deborah S. Delisle, *Executive Director*; Stefani Roth, *Publisher*; Genny Ostertag, *Director, Content Acquisitions*; Susan Hills, *Acquisitions Editor*; Julie Houtz, *Director, Book Editing & Production*; Joy Scott Ressler, *Editor*; Judi Connelly, *Associate Art Director*; Georgia Park, *Senior Graphic Designer*; Cynthia Stock, *Typesetter*; Mike Kalyan, *Director, Production Services*; Shajuan Martin, *E-Publishing Specialist*; Kelly Marshall, *Senior Production Specialist*

Published simultaneously by ASCD and the National Center on Education and the Economy.

Copyright © 2019 ASCD. All rights reserved. It is illegal to reproduce copies of this work in print or electronic format (including reproductions displayed on a secure intranet or stored in a retrieval system or other electronic storage device from which copies can be made or displayed) without the prior written permission of the publisher. By purchasing only authorized electronic or print editions and not participating in or encouraging piracy of copyrighted materials, you support the rights of authors and publishers. Readers who wish to reproduce or republish excerpts of this work in print or electronic format may do so for a small fee by contacting the Copyright Clearance Center (CCC), 222 Rosewood Dr., Danvers, MA 01923, USA (phone: 978-750-8400; fax: 978-646-8600; web: www.copyright.com). To inquire about site licensing options or any other reuse, contact ASCD Permissions at www.ascd.org/permissions, or permissions@ascd.org, or 703-575-5749. For a list of vendors authorized to license ASCD e-books to institutions, see www.ascd.org/epubs. Send translation inquiries to translations@ascd.org.

ASCD® and ASCD LEARN. TEACH. LEAD.® are registered trademarks of ASCD. All other trademarks contained in this book are the property of, and reserved by, their respective owners, and are used for editorial and informational purposes only. No such use should be construed to imply sponsorship or endorsement of the book by the respective owners.

All web links in this book are correct as of the publication date below but may have become inactive or otherwise modified since that time. If you notice a deactivated or changed link, please e-mail books@ascd.org with the words “Link Update” in the subject line. In your message, please specify the web link, the book title, and the page number on which the link appears.

PAPERBACK ISBN: 978-1-4166-2700-5 ASCD product #118055 n1/19
 PDF E-BOOK ISBN: 978-1-4166-2702-9; see Books in Print for other formats.

Quantity discounts are available: e-mail programteam@ascd.org or call 800-933-2723, ext. 5773, or 703-575-5773. For desk copies, go to www.ascd.org/deskcopy.

Library of Congress Cataloging-in-Publication Data

Names: Tucker, Marc S., author.
 Title: Leading high-performance school systems : lessons from the world's best / Marc Tucker.
 Description: Alexandria, VA : ASCD, [2019] | Includes bibliographical references and index. |
 Identifiers: LCCN 2018030055 (print) | LCCN 2018046503 (ebook) | ISBN 9781416627029 (PDF) | ISBN 9781416627005 (pbk.)
 Subjects: LCSH: Educational leadership—United States. | Educational change—United States.
 Classification: LCC LB2805 (ebook) | LCC LB2805 .T84 2019 (print) | DDC 371.2—dc23
 LC record available at <https://lccn.loc.gov/2018030055>



Leading High-Performance School Systems

Lessons from the World's Best

Foreword.....	vii
Preface	xi
Chapter 1: Systems That Work, Systems That Don't, and No Systems at All.....	1
Chapter 2: The Architecture of High-Performing Education Systems: An Overview	21
Chapter 3: It Begins with a Vision That Becomes a Plan	45
Chapter 4: Powerful, Coherent Instructional Systems — Wrapped in Credentials That Make Sense.....	67
Chapter 5: A Surplus of Highly Qualified Teachers? Surely You're Joking!	115
Chapter 6: Reorganizing Schools Around Highly Qualified Professional Teachers	139
Chapter 7: Equity: How to Close the Gap When the Bar Is Very High	170
Chapter 8: Leading the Revolution: From the Bottom, the Middle, and the Top	190
Bibliography	213
Index	219
About the Author.....	225
About the Sponsoring Organizations	227



Preface

There has never been a more frustrating time to be a school leader in the United States, whether you are a superintendent of schools, a central office executive, or a school principal. That's because the system—designed a century ago to solve a very different set of problems than the ones the nation now faces—does not work anymore. Simply managing current systems is getting harder and harder. That will continue until we replace them with systems that are much better adapted to the challenges we now face. But there has also never been a more exciting time to be a superintendent, a central office executive, or a principal. That's because the people who will be designing the new system that can respond to today's challenges will be you, today's school leaders.

We wrote this book to help you understand the forces that have made the current system obsolete, to give you some insight into the way the world's leading education systems are tackling today's education challenges, and to help you gain the knowledge and skills you will need to design and build education systems that will be as effective at meeting the coming challenges as *any* in the world.

The book was written by the author with a lot of help from a team from the National Center on Education and the Economy, an organization that for almost 30 years has been studying the global economy and the countries with the most successful education systems. You might reasonably ask about our name. The connection—between the

economy and education—has everything to do with why we wrote this book.

For a century, the United States led the world in public education. Borrowing a page from the Prussians, the United States extended the right to a free public elementary school education to youngsters throughout the country in the mid-19th century. Half a century later, the United States did it again with secondary education. And then, after World War II, the nation opened up higher education to the masses. Everywhere else it had been reserved for the privileged few.

By the 1960s, the United States had the world's most highly educated workforce. Economists have shown that this vast, unprecedented expansion of education was a major cause, maybe even the most important cause, of this country's remarkable economic rise at the end of the 19th century (Goldin & Katz, 2008).

By the mid-20th century, the United States was essentially operating a two-tiered system: one that provided what has been called a “thinking curriculum” for an elite minority of students bound for four-year colleges, professional work, and management jobs; and a basic-skills curriculum for everyone else. For much of the 20th century, this system worked fine: most jobs were in retail, manufacturing, mining, and farming, and back in those days, what most workers needed to do those jobs was basic literacy in English and mathematics. Schools were expected to provide students with those skills, give some of them rudimentary vocational skills, and socialize immigrant children into the American melting pot. Before the GI Bill, relatively few went on to four-year colleges and those who did were quickly absorbed into the labor market. As the U.S. economy flourished, all boats rose at once. Those with college educations did very well, but the much larger number with just the basic skills did well enough, especially in manufacturing, to become solid members of the middle class, living, typically, far better than their parents had.

But then the dynamics of the global economy changed. Advances in communications and shipping technology made it possible to locate manufacturing far from the countries where the manufactured products

were to be sold. By then, many developing countries were doing as good a job as the United States at educating their citizens in the basic skills, but their workers were paid as little as one one-hundredth what U.S. workers with the same skills were charging. Millions of jobs went overseas, leaving the people who had those jobs out of work or forcing them to work for a small fraction of what they had previously earned. Manufacturers that failed to relocate their manufacturing operations overseas were often forced out of business (Commission on the Skills of the American Workforce, 1990).

Those changes in the way the global economy worked—as profound and as consequential for millions of Americans as they were—paled in comparison to what was coming: enormous advances in digital technology that are now accounting for the loss of many more jobs than outsourcing ever did (Friedman, 2007). Parallel advances in cognitive psychology, artificial intelligence, neural networks, natural language processing, sensors, robotics, and allied fields, combined with logarithmic advances in processing speed, memory capacity, and networking, have produced advances that could make a quarter to a half of the current workforce very vulnerable—unemployed, unemployable, or employable only at poverty wages—before today’s 1st graders have been in the workforce for 10 years (Brynholfsson & McAfee, 2014; Ford, 2015).

We are describing the young people who actually *have* the basic skills our system was designed to produce in most of our high school graduates. But large numbers of young people graduate or fail to graduate without acquiring those skills.

The challenge now is unprecedented. *American educators must figure out how to provide to all a kind and quality of education that educators have provided up to now only to a small elite.* They will have to raise average academic performance of students graduating high school two to three grade levels above the current average while substantially closing the gaps between the top performers and the bottom performers, and they will need to do all of this for not much more money than schools are now spending.

That, you will say, is impossible. But it isn't impossible. How do we know that? Because high school students in a growing number of countries—close to 30 now—are outperforming U.S. high school students, many of them by the kinds of margins we just described (OECD, 2016b).¹ In the 1970s, the century-long climb in the number of years of education for the average U.S. worker had come to an end. But the number of years for the average worker in other industrial countries had not only caught up to the United States; it continued to climb and eventually surpassed the United States. When researchers began testing students in different countries with the same tests, they discovered that high school students in those countries not only had more years of education but were *better* educated than those in the United States. In fact, the most recent research shows that millennials in the U.S. workforce, once the best educated in the world, are now among the least well educated in the industrialized world (Goodman, Sands, & Coley, 2017)

That is very bad news for the United States, because the amount and quality of the education you have—whether you are a nation or an individual—makes more difference to your income than it ever has before.

This is a critical time for the United States. We have to figure out how to enable the students who now leave school with a 7th or 8th grade reading level and a poor command of 8th grade math (National Center on Education and the Economy, 2013) to graduate instead with much higher skills—both cognitive and noncognitive skills—and we have to figure out how to do it for not much more than we are spending now, because there simply is no more money. We will have to do this at a time when the U.S. economy has turned into two economies: a first-world, high-tech cosmopolitan economy of well-to-do people, and a third-world economy of working and nonworking poor people in which children often grow up without the kind of family support, health care,

1. See the reports from the Programme for International Student Assessment (PISA) from the OECD in Paris, France, described and cited in more detail in Chapter 2.

and cultural stimulation that children in the other economy can take for granted (Temin, 2017).

We can hear you saying that the target we just set is impossible. If our schools are having a hard time producing the current level of achievement with the funds now available, how on earth could we reach the nirvana of outcomes that was just painted without spending a whole lot more money, especially given how far behind our students currently are?

We know this can be done because most of the countries that have been outperforming us have been spending less than we do.² In this book, we are going to tell you how they did it. We will extract from their experience the core principles that they used to build these systems.

But this is not a recipe book. All countries, indeed all states, are different. They are different in their histories, values, economic systems, mixes of cultural and religious backgrounds, and legal structures. For this reason, instead of giving you scripts to follow, we will give you ideas to use and ways to string together those ideas into effective systems that will enable you to match the achievements of the countries, states, and provinces that now set the global benchmarks.

The phrase “string together those ideas into effective systems” is not a throwaway phrase. It is a key to this book and to the success of the countries with the top-performing education systems. Though the average performance of American students compares very poorly to the average performance of students in the top-performing countries, educators and policymakers from all over the world continue to visit our schools, talk to our leading education thinkers, and study the results of our researchers. Why? Because they are looking for what they call our “peaks of excellence.”

2. See Chapter 7 for a discussion of this point. Most of these countries spend much more than the United States on support for families with young children, and their budgets for some costs that we include in school budgets are not included in their school budgets. When these costs are accounted for, the United States may not spend more than these other countries do per student, but they *are* showing that much more can be achieved for the same amount of money at no more cost than the United States spends now.

The United States is home to some of the finest schools in the world. Much research that is used to build first-rate education systems elsewhere was conducted in the United States. Many of the world's most influential education thinkers call the United States home. Remarkable things can be found in many schools and districts. Some states have been gaining ground on the top performers, and one is in their league. You can find a terrific example of almost everything somewhere in the United States. There is a lot to build on here and many resources with which to do it, but it is very, very hard to find places where those excellent things are strung together into systems that work for all students. Our peaks of excellence are world-class. Our systems are far from world-class. This book was written to help you build highly effective systems for educating students from a wide range of backgrounds to world-class standards.

What do we mean by a system? Put yourself in Elon Musk's place as he thinks about building the rockets he will use to launch the next phase of space travel (Vance, 2015). Would he consider putting a Briggs and Stratton two-cycle lawnmower motor in his rocket as its power plant? Of course not. He would start by figuring out how much his payload was going to weigh and then how much thrust would be needed for how many minutes to get that payload, the rocket, and the fuel free of Earth's gravity and on its way at the right direction and speed. He would decide whether to use solid fuel or liquid fuel or some combination for the first and second stages of the rocket, based on their weight, burning efficiency, thrust, and so on. Every part and piece of the rocket would have to be designed in detail this way in light of the characteristics of every other part and piece so that, when they are all assembled into a working rocket, the whole thing works perfectly to the specifications with which the designers started. Change one part, one piece, and the engineers will need to figure out what the impact will be on all the others. The whole thing is one integrated system, composed of myriad subsystems. Each part of each subsystem has to be designed with all the other parts of that subsystem in mind. And each subsystem must be designed to work in harness with the other subsystems.

When you think like that, you are thinking like a designer of systems. But that is not the way education policy is made in the United States, nor is it the way our schools and districts work. We live in a world of silver-bullet solutions (NCSL, 2016), and our schools look like a mortuary of silver-bullet solutions, one piled on another in a great heap, except that, unlike in the mortuary, the dead are still alive. Each silver-bullet solution is still being pursued in a school or district somewhere, creating a rocket that cannot fly.

But this is not what we have seen in the top-performing countries. We see carefully designed, complex, and highly effective subsystems for assuring, for example, a steady supply of top-quality teachers, large enough for all their schools, not just a lucky few (Darling-Hammond, Burns et al., 2017). Those systems are just one subsystem among many, integral parts of much larger, carefully designed systems. Among the other parts are subsystems designed to ensure that all children arrive at school ready to learn; that funds available for schooling are distributed fairly among their schools; that instructional systems are set to world-class standards and are coherent and powerful; that expectations are the same for all their students rather than being a function of students' social class or race; that all the students who move between one stage of their schooling and the next are ready for that next stage and not years behind; that their schools are organized and managed not on the old industrial model prevalent in the United States but more along the lines of modern professional service organizations; that schools are led by school leaders who are themselves excellent teachers and who have the skills needed to manage teachers who are treated as real professionals; that teachers are offered real careers and need not have the same job on their last day on the job as they had on the first, and do not have to become principals in order to feed their families; and that career and technical education is no longer a dead-end for students who are not very good at academics but an option for talented youngsters who want a much more applied form of education that is also academically demanding. Each one of these policy arenas is itself a subsystem that has to be designed carefully to reach the objectives their designers have

for them. But it is no less true that all need to be designed together so that they work easily and well with each other.

Musk did not just set out to design and build a functioning rocket. He wanted a rocket that would be cheap enough to inaugurate the era of commercial space travel. That meant he needed not just a good design, but a fundamentally different design, one that would get top-notch results for much less money. To get there, he needed, among other things, to have a first-stage rocket that would be reusable, that would float out of space after the launch and then settle down on a barge at sea, right side up, ready to be used again. No one had ever done that before.

To build the rockets he needed, Musk had to go back and rethink everything we thought we knew about how to build a rocket, question every assumption, imagine very different ways of doing things. It is as much a matter of rethinking the principles underlying the way the whole system works as it is thinking about how smoothly the parts and pieces work together.

The United States may be well behind the top performers, but we can turn that to our advantage. In the 19th century, when the United States was just putting together the education system we have now, the Prussians had taken the lead in creating public primary schools, the Germans had created the modern research university, and the Scots were far ahead in vocational education and training. Enterprising Americans went to see what they were doing, brought these ideas back to the United States, and built something even better, on a far greater scale, and ended up in the lead.

Our advantage is simply that we are now in a position, once again, to stand on the shoulders of those who have pioneered the new system. If American ingenuity is still alive and well—and we think it is—then we can once again learn from the leaders. If other countries in many parts of the world can do this, there is no reason we cannot do it at least as well as they have done.

We have used this preface to share the headlines with you, to give you a feel for the shape of the book to come. As you can see, the topics

we will cover range widely as we examine what has come to be a world-wide revolution in school design. In the end, this book is about leadership and the role you can play in leading that revolution here at home, with your board, your central office executives, and your principals.

Our aim is to help you understand the principles behind the work of these others so that you can build systems at least as effective as the ones they have built. The school leaders who succeed in bringing U.S. schools into the front ranks of schools worldwide will be the leaders who grasp this agenda, who understand why it is so important to embrace it, and who have the skills needed to design their own systems to successfully implement this agenda. These school leaders will be designing and building the rockets of schooling.

4

Powerful, Coherent Instructional Systems—Wrapped in Credentials That Make Sense

In Chapter 2, you learned that the top performers have carefully crafted instructional systems, with clearly delineated pathways through the system that lead to important gateways. In Chapter 3, you learned about the aspirations for student performance that have shaped goals for learning in top-performing systems. In this chapter, you will see how those learning goals have shaped the content of instruction, expectations for learning experiences and standards, and the way student progress is measured. You will learn how the top performers take all of these elements—learning goals, standards for student performance, curriculum frameworks, course descriptions and syllabi, instructional materials, pedagogies, assessment, development trajectories, learning pathways and gateways, extracurricular activities, and sports—and weave them together into intricate learning systems that produce some of the world’s best results.

Goals for Student Learning

We begin by considering the goals for student learning from the vision presented in Chapter 3. In some respects, the goals contained in that

vision are little different from the aims for education that have been embraced by American educators for a century or more. In other respects, they are radically different.

What Hasn't Changed

Despite the technology revolution, there is almost nothing new about the goals we should set for students. What Harriet Minor saw in the Common Core is what the best teachers have always wanted for their students in the formal curriculum: deep understanding of the subjects they study. The best teachers have tried their best to develop in their students the ability to analyze, synthesize, question, reason, think for themselves, and think outside the box. They've targeted the ability to write about complex matters clearly, concisely and, when required, in a compelling way; the ability to use mathematics fluently for a wide variety of purposes; and the ability to appreciate the power of the scientific method and gain a good grasp of the big ideas in the sciences and technology that have revolutionized the modern world. They have always known that we study history not to accumulate a storage bin of events and dates and battles and changes of government but to understand the forces behind those events and the way humans have reacted to those forces over time, so that students can approach their duties as citizens with an understanding of the importance of the institutions of freedom and democracy.

What we have recently been taught to think of as 21st century skills—things like the ability to solve complex problems creatively and effectively, to lead others but also to contribute effectively as a team member, to work independently but also collaboratively, to plan a complex project and manage it to completion on time, and to use modern information technology effectively—are not 21st century skills at all.

The Duke of Wellington is claimed to have said, nearly two centuries ago, that England's victory against Napoleon at Waterloo was won on the playing fields of Eton. The idea that participation in sports prepares students for both teamwork and leadership is hardly new, no more so than the idea that participation in student government prepares students to be good citizens.

The best educators have always cared deeply about more than all that. The best teachers have seen themselves not just teaching subjects in the curriculum or even just helping students to learn what is expected of them as workers. They have always cared very much about the kind of people their charges would grow up to be—not just smart and competent, but also courageous, empathetic, tolerant, caring, compassionate, hard-working, decent, generous, indefatigable, and confident in the pursuit of their aims—good people who would want to do the right thing when no one was looking. They have always hoped to kindle in their students a love of learning that continues through life.

What’s Stunningly New

Given what we said in Chapter 3 about the direction being taken by advanced intelligent technologies, you might reasonably ask why we wasted your time with all that only to say that the aims of educators in the future ought to be pretty much what they were in the past. Here is what is radically different about these aims.

Although good teachers in all kinds of American schools have long embraced these aims, the system did not. The mass education system we have now, the outlines of which emerged early in the 20th century, had much more modest aims for students. The goals just described were the goals for only the elite, a tiny fraction of the population. What is revolutionary about the goals we just described is that it is now absolutely necessary for all children to be as well educated as the very privileged children were. Why? Because the jobs for those who up until now needed only modest skills are disappearing quickly. The kinds of jobs that will enable people to earn a decent living will require a much higher level of skills and very different kinds of skills than those that previously sustained most people. This is a huge departure from everything that has gone before, because a large percentage of our children, whose education in the current system does not do enough to help them foster these skills, will be unemployable or working for miserable wages in the economy that appears to lie ahead. It is not possible to

educate virtually all students to an elite standard with the system we have, so we need a new instructional system.

Why We Have to Abandon the Sorting System

Why can't we accomplish our new goals by tweaking the system we have? Why can't we just identify the best instructional practices in our current system and apply them everywhere? If they work for some students, why wouldn't they work for all?

They won't work because the American education system operates as a giant sorting system, and a sorting system cannot be used to produce the results the nation now needs. Suppose you are a farmer in the egg business. You get eggs from lots of farms. Some are extra large, some large, some medium, and some small. You go to an agricultural machinery company and purchase an egg-sorting machine. You put all the eggs in one end and out the other come egg cartons, with only one size of eggs in each carton. You would never think your egg-sorting machine would turn out cartons that contained nothing but extra large eggs if you were feeding eggs of many sizes into it.

In the mass-production age, we did not need many professionals and managers. We did not need many craftsmen, either. We had the selective college track for the former and an often selective vocational track for the latter. Everyone else went into the general track. That was at the end, in high school. But the sorting did not begin in high school. It began in 1st grade with the robins and the bluebirds. In overwhelming numbers, the kids from the wrong side of the tracks went in with the other robins and the ones from the right side of the tracks went into the bluebirds. There was nothing mean about this. American teachers were taught by American psychologists that some kids had the genes for academics and others simply did not. Not expecting very much from low-income, minority kids was a matter of not expecting more than they could possibly do.

This sorting within the school was combined with the sorting among school districts. Basing school finance on local property wealth meant that, over time, wealthy students went to school with other wealthy

students and poor students went to school with other poor students. The wealthiest students got the best of everything, the poor ones the worst. This proved to be a very efficient system. In this way, the United States concentrated its best resources for education—its best teachers, schools, and everything else—on the students who were easiest to educate to very high levels. If the best teachers, the best physical facilities, and the best of everything else had been distributed more evenly, it would have been much more difficult and expensive to produce the small number of absolutely first-rate scientists, engineers, executives, doctors, attorneys, generals, and political leaders that have made the United States the sole remaining superpower.

This system had consequences. Because students were sorted into ability groups from their first year in school and expectations for each group were different, the students who started out behind got further and further behind. Students who were called gifted and for whom expectations were high were pushed ahead. Students who were sorted into classes and schools where expectations were very low wound up in social groups in which students who performed well were ostracized. Students sorted into classes and schools where expectations were high were ostracized if they performed badly. The most experienced and best teachers wanted to work in districts and schools serving students in the upper tracks, with students who were eager to learn and easy to control, and the most inexperienced and least effective teachers were stuck with those who were the hardest to discipline and the most challenging to get interested in learning something. Along the trajectory of a student's experience in school, as the tracks hardened, the students who started out in the lowest tracks fell further behind until, by the time they got to high school, they were often years behind. Many were desperately faking the ability to read anything at all and, deeply ashamed and angry, they could not wait to drop out of school.

Though the United States has dropped many of the formalisms of tracking, the essence remains alive and well. If the aim is to get everyone to a high standard, then the standard must be high and constant,

and the time taken to reach it variable, which is the exact opposite of the system we now have, in which the time is held constant and the standard achieved varies with the student. We cannot sort our way to greatness.

How Would a New System Work?

We can see the outlines of a new system in the countries that have constructed much higher performing systems. One part of the system, the part that we will deal with in this chapter, has to do with the standards for student achievement, and the way those standards are translated into curriculum, course syllabi, instructional materials, teaching methods, and student assessment. No less important is the way students are expected to progress through the curriculum, how many are expected to achieve how much at what rate of progress, the strategies used to keep all students on track, and the way the system provides for student choice and variety while making sure that all students master a Common Core curriculum that will serve as a sturdy foundation of learning for the rest of their lives, no matter what path they take.

To show you how the top performers accomplish these goals, we provide here an overview of the strategies they use. Not all of these countries do all of these things. To show you how these strategies fit together in one seamless system, we will illustrate the overall design with examples, mostly from Singapore.

A System of Pathways and Gateways

The top performers see their education systems as a pattern of pathways and gateways for students. The pathways through the system are clear and populated with challenging curriculum that is fully supported. Some lead to jobs right out of what we think of as high school; all of them lead to further education. The pathways are punctuated by gateways that are set to high standards. At each gateway there are choices to be made. The number of gateways varies from country to country, but the typical pattern is to have a major gateway at the end

of what we think of as the 10th grade, or age 16, and another two or three years later, at the end of high school. To get through each gate, a student has to demonstrate a specified level of knowledge and skills, by getting high grades in designated coursework, passing a test, or both. The pathways available on the other side of the gate depend on the courses taken and the grades achieved. For each of the possible pathways, the courses are mostly required and are laid out in a sequence. The exams taken at the gateways are external exams, so that no one can get a better grade by twisting anyone's arm. In most of these countries, the first stretch, from the first day of compulsory school to the end of what we think of as grade 10, is when the students are expected to master the Common Core curriculum. This curriculum is the foundation for everything that comes later. It is set to internationally benchmarked standards and includes the official language of schooling, mathematics, the sciences, and much more.

Though the idea of a demanding Common Core curriculum is important, in practice the curriculum is not necessarily identical for all students. We'll use Singapore to illustrate the point. You can think about their curriculum as including several different tracks. One is what you might think of as the standard academic track. Another is a souped-up version of the standard academic track, with more challenging work for students deemed to be high performing. The bottom track lacks some of the topics in the standard track but would nonetheless be regarded as a tough curriculum in most school districts in the United States. Then there is another track that is also regarded as a standard track, but it is heavily oriented toward applied work. Again, Americans would likely regard the academics quite demanding in this track. Most of the students in this bottom track are headed toward a vocational education program in their last two years of high school.

You will be aghast. Just a moment ago, we were decrying the evils of tracking. Now, here we are, embracing a tracking system. But there is a difference, and the difference is very important. In this case, the whole system is set up so that all but the most severely handicapped students are expected to meet a high, internationally benchmarked standard of

academic achievement, including students who choose the vocational path. That means that the *least* accomplished of them graduate knowing more and being able to do more than the average American high school graduate. The tracking system is set up to make sure that almost all students reach that standard. It is not set up to evade that standard. The whole point of the tracking system is to make sure that the least accomplished students have the time and support they need to reach the standard, no matter what it takes. That is a very different type of tracking system than the kind commonly found in the United States.

When we visit middle and high schools in the top-performing countries, their principals tell us that they do not have to worry about students who enter their schools from their feeder schools being years behind where they should be. The reason that the students in their bottom quartile do so well is that they have not been falling further and further behind their classmates as they have gone through the system.

Again, we will put the spotlight on Singapore to illustrate the point. The curriculum that the lowest quartile of students is taking is demanding but lean. There are no frills. The curriculum that the top quartile of students is taking is the same curriculum but is enriched, with additional topics and deeper work in the core.

For the students at the very bottom of the distribution, the time allotted to the core is extended, all the way to the end of high school, if necessary. “No Child Left Behind” was a slogan in the United States, but it is a reality in Singapore. The whole system is geared toward making sure that almost every student achieves that standard. Not only do students who need more time get it, with more years to reach the standard at the end, but they come in on Saturdays, have extended days, or even work with their teachers into the evening. All through the grades, teachers are expected to closely monitor their students’ progress, not just quarter by quarter, but day by day and minute by minute, and to add time and other resources if they start to fall behind. Students are not accumulating credits. Their actual performance is being monitored against a clearly defined common curriculum using the same external measures used throughout the country.

When the students have mastered the common curriculum, usually in 10 years, they go their own way, depending in part on what they want to do and in part on how well they have done up to that point. This sounds like a more rigid system than it actually is. In Singapore, parents can request that their children be assigned to a higher track than their performance to date would entitle them to and that preference is honored. But if the student cannot keep up, then he or she is reassigned to the original placement. At the 10th grade gateway, it is again possible to move across pathways if the student is willing to take additional coursework and makes the required grades. In this way, students can move from vocational education and training pathways to academic ones and vice versa, or students can choose to do both, if they want the career insurance such a choice might provide.

There are no dead ends in this system. Students in Singapore who are in the standard academic program in high school can go on to a polytechnic and, if they want to and take the right courses, can go from there into university and graduate school. Or they can go into a junior college and straight to university. Students who are in the high school-level vocational program can go right into the job market or go on to polytechnic and then university and graduate school if they want to, if they take the right courses and get the right grades. In this system, the bottom quartile performs above the average American student and the top quartile leaves high school two to three years ahead of the average American student.

The Singaporeans are not 10 feet tall, any more than the Japanese engineers who were beating Xerox were 10 feet tall. How do they do it? The first part of the answer is the system of pathways and gateways just described. But that is not all there is to it. There is also the question of what these countries do to ensure that their students can get these qualifications. That requires a carefully designed instructional system consisting of tightly aligned standards, curriculum frameworks, course syllabi, instructional materials, and assessments. We turn now to a description of a typical instructional system in a top-performing country.

Quality Standards, and the Curricula and Syllabi Based on Them

When we say “academic standards” in the United States, what comes to mind are the Common Core State Standards for English language arts and mathematics and the Next Generation Science Standards. You will find something very similar in the top-performing countries, but not just for their native language, mathematics, and the sciences. The standards typically cover, in addition, foreign languages, technology, national history, world history, geography, music, and the arts.

In the United States, academic standards are usually thought of as narrative statements about what students should know and be able to do. But in the typical top-performing country, there is more. The standards also include examples of student work that meets the standard (that is, gets a good grade) and a clear, detailed statement identifying the specific features of the student work that justified that grade. The examples of student work are usually drawn from actual student work done in response to the prompts in the national examinations, which typically require long-form essays in response. This is especially important for low-income and minority students, who may have less access to examples of good writing, good mathematical reasoning, or good historical analysis than students from more favored backgrounds.

An example of this type of performance standard comes from New Zealand. That country’s national curriculum specifies the achievement levels that indicate a progression of learning from year 1 to year 13, along with samples of student work that exemplify the standards—and annotations to point out the qualities of the work that demonstrate the standards.

Year 4 Writing Standard, New Zealand National Curriculum

By the end of year 4, students are required to create a variety of texts in order to think about, record, and communicate experiences, ideas, and information across the curriculum. To meet the standard, students draw on the knowledge, skills, and attitudes for writing described in the *Literacy Learning Progressions* for students at this level.

As part of their learning in English, the students in this year 4 class are writing to form and express ideas based on a significant personal experience. Each student is writing a recount of a scary experience that they think will interest and engage their audience.

This example illustrates aspects of the task and text and demonstrates how a student engages with both task and text to meet the writing demands of the curriculum. A number of such examples would be used to inform the overall teacher judgment for this student.

“Maraea, please go feed your rabbit!” Mum called from the hallway. “Okay,” I said back and got a bucket to put some grass in for Aorha (my rabbit). So there I was getting some grass for Aorha and as I was about to leave I saw a ram. It was approaching me. I saw it stare at me a scary look like it was going to hurt me. I dropped the bucket and ran. I glanced back and it was chasing me. I was so close to the fence so I started climbing it. The ram caught my pants when I was almost over. I screamed as I pulled it to the ground. But it finally let go so I jumped up, grabbed the bucket, chucked it over the fence then I climbed over the fence before the ram could get me. I lay on the grass relieved that I was safe. I looked in the bucket nothing. “Oh well” I said “she’ll just have to put up with no grass tonight”. As I walked back home I glanced back. I saw the ram. It was staring at me. I quickly turned away. I was safe.

Annotations:

- The student opens the recount with direct speech to engage the reader’s interest in the situation from the beginning.
- In her recount, the student records the main actions, thoughts, and feelings clearly and in sequence, using a variety of simple connectives (“as,” “so,” “when”)
- She supports the main points of her recount with simple detail to give the reader a clear and engaging picture of the situation (particularly the actions the narrator takes as the ram chases and grabs her). The student uses precise verbs for greater clarity (e.g., “approaching,” “stare,” “glanced”). She is familiar with some spelling patterns (“stare,” “scary”) but needs to develop a stronger knowledge of other common patterns (“approaching,” “dropped,” “bucket”).
- The student uses a variety of sentence structures and achieves some excitement and movement in the text by varying the sentence lengths. She uses speech and inner reflections to help give the recount a personal voice.

Quality standards, and the curricula and syllabi based on them, give students a visceral feel for the kind of work required for success. The top performers typically use the standards to develop curriculum frameworks that spell out in detail the progression of topics to be studied, in sequence

in each subject as the student goes through the grades, sometimes by grade, sometimes by grade span. The curriculum frameworks reflect both the logic of the subject and the normal developmental trajectory of students who study those subjects. Development of the curriculum frameworks begins with the specification of what the student is supposed to know and be able to do to get the first qualification, usually at the end of 10th grade, and then backs down to the 1st grade, making sure that, at each grade level or grade span, the student gets what is needed to master the next topic or stage of development in the curriculum. Nothing extraneous is included, and nothing essential is left out. The developers make sure there is enough time for all students to master each topic before moving on, so that no one will be left behind. As we said earlier, some students may need more time and assistance outside the regular classroom hours allotted to the topic, and that extra time and assistance is provided along the way, so that all students can keep up in class.

In many countries, this curriculum framework is then used to create course syllabi for each course in the sequence. The syllabi do what any good syllabus does: describe what is supposed to be learned in the course; the topics to be covered; the books and other materials the student is expected to read; the papers, projects, or other products the student is expected to produce; and the way the student will be assessed. In many cases they also indicate how much each exam, project, or product will count in the final grade (see the example from New South Wales, Australia).

Syllabus for History, New South Wales, Australia

The Australian curriculum is being implemented in New South Wales through new syllabi developed by BOSTES for English, Mathematics, Science and Technology, History, and Geography.

The new K–10 syllabi include agreed-upon Australian curriculum content and content that clarifies learning in kindergarten to year 10. The stage statements for Early Stage 1 to Stage 5 reflect the intent of the Australian curriculum achievement standards.

The syllabi identify the knowledge, understanding, skills, values, and attitudes that students are expected to develop at each stage, from kindergarten to year 10.

Teachers will continue to have flexibility to make decisions about the sequence of learning; the emphasis to be given to particular areas of content; and any adjustments required based on the needs, interests, and abilities of their students.

The syllabi have been designed to be taught within the BOSTES recommended percentages for each key learning area in a typical school week.

Assessment for learning continues to be an essential component of the K–10 syllabi.

Early Stage 1–Stage 3

<p>Early Stage 1 Personal and Family Histories</p>	<p>Stage 1 Present and Past Family Life The Past in the Present</p>
<p>Stage 2 Community and Remembrance First Contacts</p>	<p>Stage 3 The Australian Colonies Australia as a Nation</p>

Stage 4

The Ancient World [50 hours minimum teaching time]

<p>Overview</p> <p>The overview is approximately 10 percent of teaching time of <i>The Ancient World</i>. The content from the overview may be used as an overall introduction to, or may be integrated with, Depth Studies 1–3.</p>		
<p>Depth Study 1 <i>Investigating the Ancient Past (including ancient Australia)</i></p>	<p>Depth Study 2 <i>The Mediterranean World</i> ONE of the following to be studied: Egypt <i>Or</i> Greece <i>Or</i> Rome</p>	<p>Depth Study 3 <i>The Asian World</i> ONE of the following to be studied: India <i>Or</i> China</p>

Syllabus for History, New South Wales, Australia (continued)

The Ancient to the Modern World [50 hours minimum teaching time]

Overview

The overview is approximately 10 percent of teaching time of *The Ancient to the Modern World*. The content from the overview may be used as an overall introduction to, or may be integrated with, Depth Studies 4–6.

Depth Study 4

The Western and Islamic World

ONE of the following to be studied:

The Vikings

Or

Medieval Europe

Or

The Ottoman Empire

Or

Renaissance Italy

Depth Study 5

The Asia-Pacific World

ONE of the following to be studied:

Angkor/Khmer Empire

Or

Japan Under the Shoguns

Or

The Polynesian Expansion Across the Pacific

Depth Study 6

Expanding Contacts

ONE of the following to be studied:

Mongol Expansion

Or

The Black Death in Asia, Europe, and Africa

Or

The Spanish Conquest of the Americas

Or

Aboriginal and Indigenous Peoples, Colonisation, and Contact History

All students must complete a site study in Stage 4. A virtual site study can be used if appropriate.

Stage 5

The Making of the Modern World [50 hours minimum teaching time]

For Stage 5, the two overviews and four of the six depth studies must be studied. Depth Studies 3 and 4, core studies, are to be studied by all students.

<p>Overview</p> <p>The overview is approximately 10 percent of teaching time of <i>The Making of the Modern World</i>. The content from the overview may be used as an overall introduction to, or may be integrated with, Depth Studies 1–3.</p>		
<p>Depth Study 1</p> <p><i>Making a Better World?</i></p> <p>ONE of the following to be studied:</p> <p>The Industrial Revolution</p> <p><i>Or</i></p> <p>Movement of Peoples</p> <p><i>Or</i></p> <p>Progressive Ideas and Movements</p>	<p>Depth Study 2</p> <p><i>Australia and Asia</i></p> <p>ONE of the following to be studied:</p> <p>Making a Nation</p> <p><i>Or</i></p> <p>Asia and the World</p>	<p>Core Study–Depth Study 3</p> <p><i>Australians at War</i> (<i>World Wars I and II</i>)</p> <p>Mandatory study</p>

Syllabus for History, New South Wales, Australia (continued)

The Modern World and Australia [50 hours minimum teaching time]

Overview

The overview is approximately 10 percent of teaching time of *The Modern World and Australia*. The content from the overview may be used as an overall introduction to, or may be integrated with, Depth Studies 4–6.

**Core Study–
Depth Study 4**

*Rights and Freedoms
(1945–present)*

Mandatory study

Depth Study 5

The Globalising World

ONE of the following to be studied:

Popular culture

Or

The environment movement

Or

Migration experiences

Depth Study 6

School-developed topic drawn from either of the overviews, such as

Australia in the Vietnam War Era

Or

The Holocaust

Or

Women’s History

Or

UN Peacekeeping

Or

A Decade Study

Or

The Gulf Wars and the War in Afghanistan

A list of suggested topics is provided in **Depth Study 6** in Stage 6

All students must complete a site study (a virtual site study may be used, if appropriate) in Stage 5.

As you can see from this example, the syllabi in top-performing countries do not dictate that every student will be on the same page of the same textbook every day. That stereotype has led many in the United States to fear a “national curriculum.” In fact, U.S. states, such as Massachusetts, the nation’s top performer, have developed curriculum frameworks that provide important guidance to teachers. The syllabi go a step forward, but they do not constrain teachers.

The syllabi do not include lesson plans. Indeed, teachers have broad latitude, as you will see in Chapter 6, to design lesson plans that fit their students and their personal preferences. The structure provided by the aligned standards, curriculum framework, syllabi, and instructional materials makes it much more likely than in the United States that all students—rich and poor, majority and minority—will get the same rich curriculum, be held to the same high standards, and have access to a strong system of support to enable them to reach the standards.

In many of the top-performing countries, these demanding courses have an enriched version, and teachers are even free to deviate from the course designs if their students are making good progress toward the standards. The supports we have just described are there for everyone who needs them.

Further, because the curriculum framework is the same everywhere, students who move from school to school can pick up where they left off. Teachers in grade 6 can count on students coming in from grade 5 to be ready for the lesson plans they have designed, without missing a beat. Schools of education know what teachers at each grade level and subject have to know and be able to teach. All these parts and pieces work together to provide a strong web of support to all kinds of students as they go through a very demanding program.

Assessment in the Top-Performing Countries

In top-performing countries, the state creates not only the course syllabi but also the examinations, which are based on the course design as captured in the syllabus. They are end-of-course examinations, not tests of the usual American sort that are designed to be curriculum

neutral. The big exception in some countries, and a major bone of contention, is the university entrance examinations, which are viewed widely as an impediment to the achievement of national goals in elementary and secondary education.

Though these exams may contain some multiple-choice questions, they typically rely mainly on essay-type questions and responses. It would be much cheaper to use multiple-choice, computer-scored examinations, but these countries have chosen to use mainly essay-based, human-scored examinations because they want to measure a much wider range of complex skills than they think multiple-choice exams can accurately measure. The state is responsible for issuing the exams and scoring them. The scoring is usually done by teachers, under the supervision of a testing authority that sees to it that professional standards of reliability and validity are met in exam construction and scoring. Scoring these exams is usually viewed as part of the teacher's job, and teachers find that the experience is strong professional learning because they develop a better understanding of what kind of work students need to do to succeed.

The results of these exams provide the exemplars of student work we mentioned earlier. They are typically posted on the ministry website after the exams are given, often along with commentary from the examination authority explaining why the responses got good grades.

When American students take a test, their feedback is a score related to the number of test items answered correctly and, sometimes, information about how their score compared to the scores of other students taking the test. That tells the students nothing about what they did well and what they need to work on. It gives no feeling at all about the target they should be aiming for. It is a game of blind man's bluff.

That might not have mattered when the aim of schooling was to make sure the student could add a column of figures and get the right answer or to make sure that the student could produce a sentence with subject and object in the right places. But it matters greatly when the student has to figure out how to frame a real-world situation in mathematical terms and then proceed to solve the problem so framed in

a series of separate mathematical operations. Or when the student is called on to provide a written analysis of the options facing a policy-maker and argue persuasively for one of them.

The big gateway tests we have described are often the only tests required by the state in a student's whole career in school. In Finland, the only exam required for all students is the college entrance examination; Finland tests students on a sample basis in grades 6 and 9. In many countries, the only required test is at the end of the common curriculum, usually the end of 10th grade and at the end of whatever comes next, which is usually a university preparation program culminating in a university qualification or a vocational education and training program culminating in an industry-recognized qualification, a qualification for further education, or both. In some countries, there is an additional state test at the end of middle school, which is used as an entrance examination for selective high schools.

But all along the way, from 1st grade on, teachers are expected to assess their students and report the results to education officials and parents, using a combination of formative evaluation and summative evaluation of the student's progress toward the qualifications.

Building on the State Standards to Create a Top-Performing System

Most states in the United States have adopted the Common Core State Standards or standards very like them. Some have also adopted the Next Generation Science Standards. None that we know of have used these standards to develop the full panoply of curriculum and instructional supports described in this chapter. But there is no reason you cannot do this in your district, alone or in league with other like-minded districts. When you do this, keep in mind the importance of (1) setting a high minimum performance standard for all but the most severely handicapped students and (2) developing the full web of support needed to get all your students there.

Remember, too, that in the top-performing countries, the core curriculum covers not just their native language, mathematics, and

science. It also typically includes technology, history, art, and music, at a minimum, and often much more, including, in Finland, philosophy. The whole system of curriculum frameworks, course syllabi, and course-based examinations applies to these subjects as well. You do not have to do this all at once, but the faster you move in this direction, the stronger your student performance will be.

College and Career Readiness Standards

Many states now have what they think of as college-and-career-ready standards or are working toward them. But these standards are often expressed in terms of a maze of scores on the SAT or ACT, accumulated course credits, completion of career and technical education course sequences, attainment of industry-recognized certificates, scores on college placement tests, or some combination of these. A score on the ACT or SAT is just that—a score. It tells neither the student nor the teacher what the student has to do to reach the standard, provides no guidance on what kind of work will meet the standard, and points to no specific curriculum that will help the student meet the standard. Most states count as an approved career and technical education program a sequence of three—sometimes four—career and technical education courses. That is roughly one course a year. No top-performing country would recognize this as serious preparation for a career in any occupation that would support a family. And simply completing such a sequence without specifying a performance test and a passing grade is not a serious standard. College placement tests have largely been discredited as measures of college readiness. Many of those who flunk them do well in college and many who pass do not. There is every reason to believe they are poor measures of what it takes to be successful in the typical college that uses them, and many higher education institutions are abandoning their use. Many states appear to be moving toward the use of occupational credentials as a substitute for academic credentials in determining college and career readiness. But the occupational credentials they are using are often based on industry clusters that are not widely recognized by employers as embodying the knowledge and skill needed to do

specific entry-level jobs leading to rewarding careers. More to the point, the substitution of such a credential for a showing that the student is leaving high school ready to succeed in the typical community college is a recipe for graduating a student who will struggle economically his or her entire life. Students who do not have the academic knowledge and skill to succeed in a typical community college are students who cannot read, write, and do mathematics well enough to succeed in the kinds of jobs that will dominate the job market in the near future. To establish school-leaving standards lower than the standards needed to succeed in a typical community college is to cement in place the idea that career and technical education is for students who are no good at academics. That idea is dead and gone in most of the top-performing countries. But we pointed out that the instructional system in the top-performing countries is about much more than their qualification system.

As we said, the United States now has standards for English language arts, mathematics, and the sciences, but lacks such standards for most of the rest of the core curriculum. There are some examples of student work that meets the standards in these areas, but nowhere near the number and variety that exist in the top-performing countries and very little in the way of commentary that explains why they meet the standards. So, overall, we don't have good standards in many subjects, and the ones we have lack the richness that the standards in the top-performing countries usually have, especially the kind of richness that vulnerable students most need. No less important, such standards are almost strictly narrative, lacking in examples of student work that meets the standards and commentary on those pieces of student work that are useful as teachers and students try to understand what the standards really call for.

The United States mostly lacks strong curriculum frameworks matched to the standards. The frameworks we have are not matched to a structure of pathways and gateways, so it is unclear, for example, what part of the Common Core math standards are supposed to be mastered by all students and which should be optional and taught in the upper division of high school. We mostly lack frameworks that are carefully

matched to what the research tells us about the way students actually learn the material, nor do they structure the topics to be studied in logical order or eliminate everything that does not contribute to the outcomes that define the standards for student performance at the end of grade 10.

The United States does not have a strong set of course syllabi matched to a strong curriculum framework matched to an explicit structure of pathways and gateways and curriculum frameworks set to a common set of high standards. Some states and some districts have course syllabi, but they are of uneven quality and are rarely aligned with the other elements of high-performance instructional systems. Because the United States does not have a well-developed system of course syllabi matched to the standards, we have not been able to develop a strong system of teacher education and training matched to the courses they are supposed to teach.

In the United States, the tests are usually based on the standards rather than on the courses that students take, which makes it more likely that the student will be tested on a curriculum that was never delivered. Because the two consortia tests—the Partnership for Assessment of Readiness for College and Careers (PARCC) and the Smarter Balanced Assessment Consortium (SBAC)—are heavily weighted toward multiple-choice prompts that do not require essay-type responses, neither students nor their teachers have a clear idea about what kind of student work will earn high grades—an especially serious problem for low-income students, minority students, and special education students, because expectations are typically so much lower for those students.

Because the textbook companies have produced texts they claim are aligned with the standards, though independent researchers say that is not so for most of them, teachers do not have access to commercial materials that will support a curriculum aligned with the standards. States and not-for-profit organizations are attempting to fill the void with teacher-generated curriculum, but few teachers have the time needed to develop the kind of first-class curriculum routinely developed in the top-performing countries and very little of the material and lessons produced by teachers in the United States has been properly vetted. New

York made a good start at developing materials aligned with the Common Core, and others have been working to meet that challenge, but we have yet to see anything that can match the well-developed, highly aligned instructional systems in the top-performing countries, either for the subjects covered by the Common Core or for the other subjects in the extended core curriculum for grades 1 through 10.

Most states in the United States have pieces of the structure just described in place, but much—perhaps most—of the instructional system support structure routinely available in the top-performing countries is not available in the United States.

This description of the support provided for teachers and students by a well-developed instructional system sounds a bit mechanical and the mechanics are very important, but the spirit in which the components of the system are developed is as important as the engineering of them. The Next Generation Science Standards nicely capture the spirit driving the top performers when they speak not just of the importance of the big ideas but also of the need to identify the most important ideas that cut across the sciences, and when they call for a curriculum that focuses not just on what you know but on what you can do with what you know, not just on the results science has produced but on the spirit of inquiry and the methods that have produced that knowledge. It is the same spirit that leads in assessment to an effort to capture the quality of the performances that matter most, like writing a long essay in history that captures the key differences and similarities in two eras; creating an oil painting that expresses the essence of the scene; understanding a complex problem in the real world, figuring out how to express that problem in mathematical terms, and then setting up and executing the sequence of mathematical procedures needed to answer the original practical problem; or approaching another practical problem with the toolkit a scientist would use to understand how the world in a particular microcosm actually works by generating a hypothesis and testing the hypothesis with data.

Some of you will wonder why nothing has been said thus far about instructional technology. Surely, we can learn something important

from the top performers about how digital technologies can be used to educate students to higher standards and do it in ways that will be more efficient than the 19th century methods we are still using. Well, it turns out that is not the case. The United States spends more on instructional technology per student than any other advanced industrial country. But the OECD-PISA data show no relationship between expenditure on instructional technology and student performance. Even more sobering is the finding from the PIACC data that millennials in the U.S. workforce score lower on technology-enabled problem solving than the millennials in any other country whose workforce has been surveyed by OECD. This is not to say that digital technologies cannot make a difference but only that they have not done so yet. These data would seem to show that, if your aim is to improve student performance, you should be investing your funds in first-rate teachers and high-quality instructional systems, not technology.

What a New Framework Based on Top-Performing Countries Would Look Like

In this section, we describe the system we are recommending to the states we are working with. Think about how you might adapt it to the situation you face in your state.

The Qualification System

The process begins by finding out what your graduates would need to succeed in the community college or colleges nearest you. Don't ask the colleges what that standard is. They will tell you what their aspirations are, not what it actually takes to succeed in their first-year courses. Ask them if you can look at typical first-year textbooks and analyze their reading level. Ask them which is the toughest math course that first-year students will have to take and analyze the content. Ask to see papers that students are asked to write that have been graded by the instructors and use those samples to determine the real writing standard.

Now use what you have learned to set your college-and-career-ready standard. You will be surprised at how low that standard really is, but bear in mind that the majority of high school graduates are now required to take remedial courses and the majority of those who take remedial courses never get a degree. If you can get all of your students to this standard, it will make an enormous difference to your graduates' life prospects.

Establish this new college-and-career-ready standard as the standard you want a steadily rising proportion of your students to reach by the end of 10th grade and all but the students with the most significant delays to reach by the time they leave high school.

This college-and-career-ready standard will be the first big qualification for the students in your system. Once they reach it, students can then choose among the following pathways, all of which they will be ready for: (1) a demanding internationally recognized diploma program designed to get them into the most selective colleges in the world (e.g., AP International Diploma program, the International Baccalaureate program, the Cambridge Diploma program); (2) a demanding career and technical education program leading directly to a well-paying career; or (3) a complete two-year college-level degree program culminating in an associate's degree, awarded to the student along with the high school diploma on graduation.

By using the criteria for succeeding in the first year of community college as the goal for your students to achieve by the end of 10th grade, not the 12th grade, you set up every one of your students for success, whether their aim is Harvard or Stanford, a career in computer systems management, or leaving high school with a two-year college degree at zero cost to their family, ready to go to work in a good job or finish the last two years of college.

A qualifications program structured in this way would greatly improve graduation rates, and it would increase the proportion of high school graduates prepared to succeed in the world's leading selective universities, colleges, and other open-admissions institutions. It would

also result in many more high school graduates prepared for entry-level jobs leading to rewarding careers that pay well. Because this structure makes it possible to earn a two-year associate's degree by the end of high school, free of charge, it would result in enormous savings to parents, students, and the state.

Those outcomes will be products not just of the structure of the qualification system just described but also of its systematic implementation in conjunction with all the other policies and practices described in this and the following chapters.

What Happens Outside of Class

The new model learning system is not just about what happens in class. Beyond creating a first-rate qualification system and a world-class system of instruction, two other things are vital. The first is what we think of the extracurricular program. The other we might think of as the heart of the matter.

The extracurricular program. We pointed out in earlier chapters that digital technologies are likely to make what is distinctly human about our students—things that our greatest educators have always prioritized, like our values, moral commitments, social and emotional skills, creative capacity, leadership ability, ability to contribute to a team effort, and the like—more important than ever.

Most of these elements of a good education cannot be taught directly. They are best learned by example or from experience, under the guidance of a skilled and dedicated mentor. These are best learned in the choir, in the school band, on the football field, in the midnight hours putting the school newspaper together, while campaigning for election for the school government, on the stage crew, by helping senior citizens in a nursing home, or while interning in a law office or apprenticing to a master boat builder.

In most high schools, these activities are voluntary and a student need not engage in any of them. Many of them have room for only a few students, and those are the students who seem to be best qualified to succeed in them. Because many schools charge for these activities,

many students cannot participate. Similarly, students who have jobs after school frequently cannot participate, nor can students who have no transportation home if they stay to do these sorts of activities.

If it is true that the qualities that are best developed by activities of this sort are at least as important as what is learned in class, if the nation's battles are more likely to be won in the nursing home and in student government than in the classroom, then educators might have to rethink what is core and what is optional. Educators might need to be explicit about the qualities that these activities are intended to develop and work together to make sure that students have sufficient opportunities to develop the qualities, ensure that all students sign up for activities that could help develop them, and then track their progress to make sure no one falls through the cracks.

In this model of education, classwork is not at the center and extra-curricular activities on the periphery. Both are joined together in one learning system, the purpose of which is to create a skein of linked learning experiences for students that will enable them to acquire the values, attributes, skills, and knowledge—cognitive and noncognitive—needed to succeed. Teachers organize, develop, and provide some of those experiences directly. In other cases, they just organize, mediate, and track them. Either way, the teacher is making sure that each student gets the learning experiences needed to be successful.

Top-performing countries place a strong emphasis on building such a learning system. They do so in two ways. First, the goals of education, which drive the standards, curriculum frameworks, syllabi, and assessments, are broad and encompass values and attributes as well as cognitive skills and knowledge. For example, the Alberta, Canada, Ministry of Education in 2009 conducted a broad-ranging review of its education system, with the goal of defining what an educated Albertan who graduated in 2030 would look like. The vision that emerged was this: “To inspire and enable students to achieve success and fulfillment as engaged thinkers and ethical citizens with an entrepreneurial spirit within an inclusive education system” (Alberta Education, 2010, p. 7).

Second, top-performing countries give schools and teachers a lot of latitude to provide students with the experiences and supports they need to become good people as well as good learners. This is true even in East Asian countries, belying their (undeserved) reputations as test-taking machines. The examples that follow, from Hong Kong and Singapore, show how schools can take advantage of that flexibility.

“First the heart, then the head.” Now we get to what we just called the heart of the matter. A welder can be successful on the strength of her technical skills alone. A teacher cannot. A student who thinks he is destined for failure has no interest in learning. A student whose whole experience says that no adult can be trusted will not trust her teacher. A student who lives in constant fear or constant pain is not a promising candidate for instruction in long division.

Many teachers in the United States know these things and are ready to do whatever it takes to address these issues, sometimes in circumstances that would curl the hair of their most ardent critics. But many of those teachers do what they do, not because their school leaders or districts encourage them or give them incentives to do those things, but in spite of the disincentives they face. What is interesting about many of the top-performing nations, states, and provinces we have seen, especially in Asia, is the degree to which they expect this behavior, incentivize it, and celebrate it.

In Singapore, Shanghai, and Hong Kong, we have often heard the phrase “first the heart, then the head.” The phrase has particular salience in schools serving children in very poor communities, often communities with many struggling families from ethnic and racial minorities.

Ho Yu College and Primary School, Hong Kong

Located far from the city center on Lantau Island, in an area that has long been home to Hong Kong’s poor, Ho Yu is concrete and functional. When the principal, Lee Suet Ying, came here about 15 years ago, she found a school controlled

by street gangs, the faculty cowed, their morale broken, and the students frightened and angry at a world that seemed to have abandoned them. Almost all who made it to graduation became truck and taxi drivers; got factory jobs; or cooked, washed dishes, and served customers in the countless roadside food stalls and shops.

When she arrived a little after 8:00 a.m., Lee was standing in the schoolyard with other faculty members, greeting the students. Ho Yu is a “through-train” college and primary school, meaning that it enrolls students from grades 1 through 12. We watched the older students throwing basketballs in small groups and the younger ones racing up to Lee and the other faculty members, grinning, looking for a hug and laughing when they got it, folding themselves into Lee’s skirt as they did so, her hand curling around their faces in a caress that was returned in their eyes.

The students’ parents were often illiterate, their homes violent, and their future bleak. When Lee first arrived, many of the students were afraid to come to the school because of the unchecked power of gangs. Expecting little from their teachers, they would sit in class sullen and unresponsive, learning little.

Her first task, Lee said, was not to educate her students—that would come later—but to get the students to trust the faculty and staff. Her top priority was to find staff who had both the desire and the skill to reach out to the students, take a personal interest in them, and help them address the problems they faced in their daily lives. Staff took the kids on trips to places they had never been before, took an interest in their personal lives, appeared in court for them when they got in trouble with the law, and helped them get a job when they could. They were there for these young people day and night, and in the process earned their trust.

It was a very slow process. It took, Lee said, five years. Which is to say that Lee paid little attention to academic achievement

for five years after becoming principal of this school. She knew that she would not be able to lift the academic performance of her flock until the school had become a refuge from a very difficult world and the faculty had become people with whom the students could feel safe and, indeed, loved. The students would not have confidence in themselves and believe they had a future worth investing in until they had adults in their lives who believed in them.

To this day, the faculty is there for the students, whatever it takes. The gates open at 8:00 a.m. Classes end at 4:30 p.m. and that's when the sports and extracurricular programs begin. Most students and teachers are gone by 6:00 p.m. But many stay, partly because they are so deeply engaged in what they are doing. Lee recently tried to lock the doors at 8:30 p.m. Many teachers objected, saying that their students had nowhere else to do their homework and, in many cases, there was no one home and they wanted to make sure their students were safe. But the teachers, we said, must have their own families to go home to. Oh, said Lee, it is the younger teachers who do not yet have kids of their own who are objecting to closing the school at 8:30 p.m.

When the time came, Lee was all business. We asked whether her teachers specialized in math and science or language and social studies in the primary grades, as is so often the case in Asian schools. All my teachers, she said, have majored in the one or two subjects that they teach. Even the primary school-level teachers specialize. You cannot, she said, really teach a subject well, even at the primary school level, unless you have studied it hard at the graduate level. When students are having trouble, she said, the teachers must be able to make accurate guesses as to the nature of the student's misunderstandings. That requires deep understanding of the subject.

We asked Lee how she selected her staff. She turned to two other faculty members in the room. Both vice principals,

they had been with her for 15 years. One had served at the Diocesan Boys' School, one of Hong Kong's most prestigious high schools, before coming to Ho Yu. We asked why she had made the change. Because, she said, these students needed me more. We asked Lee why she picked her. Because of her smile, she said. She explained that her vice principal had met all her academic standards, which were very high, standards on which she would not bend. But that was not enough. She was determined to have teachers who could earn the trust of the students. She wanted, she said, "Teachers who could bring sunshine into the lives of these students." The capacity to bring sunshine was just as important as deep knowledge of the subjects they would teach. She wanted teachers who would love their students and do whatever was necessary to help them succeed.

We took a tour of the school. The last classroom we visited was its pride and joy, a biotechnology lab. A few years earlier, a wealthy businessman and scientist had donated a sophisticated biotechnology laboratory, focused on genetic research, to a local university. He had included in his gift equipment that would enable the university to engage schoolchildren in the study of biotechnology and genetics, but, as it turned out, the university had no interest in educating the wider community. Lee, ever alert, seized the opportunity. The donor was delighted. Lee worked with him and with her teachers to develop a curriculum, materials, and training for the teachers. The students were off-the-wall engaged!

When we walked in, we found not only an impressive array of equipment but also carefully framed materials that did a wonderful job of explaining in simple language some rather complex topics in technology and biology. The whole instructional system was project-based. Lee explained that access to this kind of equipment gave the students the feeling that the sky was the limit for them if they were willing to put in the hard work needed to gain the necessary skills;

they were valued not just by the staff of the school, but by the wider community as well.

Then Lee took us outside to a paved parking space marked off by carefully painted yellow lines. Parked with perfect geometric accuracy within those lines was a bus. She explained that they had worked with the donor, who had paid for it all, to custom design every facet of that bus apart from the frame and its Volvo power train. It was gorgeous. Inside was a mobile laboratory, outfitted to enable everyone from the very young to the very old to learn about biotechnology, not just by reading about it or watching videos but by *doing* it. It was a bit like a modern crime lab, a place where the visitor could analyze DNA in a tissue sample. It was, we thought, impossible to visit this bus and not walk away excited about biotechnology, what it is, how it works, and what it could accomplish. The bus goes all over Hong Kong, a roving educational facility, realizing the donor's dream.

Today, Ho Yu College and Primary School sends 80 percent of its students to some form of postsecondary education. There are schools in the United States with dedicated staffs who have taken their schools from the ranks of poor performers to much higher performance. But this school made us think. Would our accountability systems tolerate a principal who spent five years building trust in her teachers before turning to academic performance? How many principals of our elementary schools would insist that all teachers specialize and all have bachelor's degrees in the subjects they teach? How many of our elementary school faculties would get upset if the principal tried to lock the doors at 8:30 p.m.? How many local business owners would equip a school in the worst section of town with a biotechnology lab? How many of our schools serving mostly low-income students are sending 80 percent of their students to some form of postsecondary education?

Northbrooks Secondary School, Singapore

Northbrooks Secondary is a regular school mainly serving low-income and minority students. Its motto is “Soaring Yet Rooted,” meaning that it intends to help its students achieve great things while being rooted in strong values. The school vision is “Every Brooksonian a Champion, Impacting the Community.” They want to foster a “strong desire to learn and improve and bounce back in the face of adversity.” They want students who “serve by leading and lead by serving.” They want a curriculum that fosters a “plethora of deep learning experiences and quality interactions within the school and beyond . . .”

When we walked into the school, the first classroom we saw was the gym, occupied not by a physical education class, but by students who were launching planes they had designed and built to specifications set by their teacher, who was assisting in the launches and engaging the students in a conversation about each test flight. For this class, the students had been asked to attach weights to their planes at strategic points to put the planes into a stall, from which the plane was supposed to glide to the floor. Some did and others did not, sometimes to spectacular effect. After each flight the teacher asked the whole class why the plane had performed as it did. Both the flight preparations and the conversation after the flight focused on the plane’s aerodynamic properties and the way the added weight had changed those properties. The sophistication of the discussion astonished the visitors.

The former principal, Helen Chong, had created not just this class but a whole program in aerospace for the school. No one had told the students that the study of aerospace demanded a level of achievement in mathematics they would never reach. No one had told them that few students with backgrounds like

theirs would be able to go on to universities and get degrees in engineering. Chong had reached out to NASA and arranged for the students in her aerospace program to visit the Houston space flight center. We learned that these students were getting the mathematics and science instruction needed to make good on their ambitions.

The aerospace program showed these students that they could do anything they had their hearts set on if they were willing to work hard enough to get there. This idea was reinforced by the rock-climbing wall that Chong had built in the paved playground; that, too, helped them to develop the courage, determination, and belief in self that would enable these students to go the distance.

Chong's approach to these students was built on the same "first the heart, then the head" strategy we had seen in Hong Kong. Win their trust first, and academics set to a high standard could follow. Her teachers, too, had been prepared to go to court to bail out their students if that was what it took to build the trust on which their teaching and their students' learning would later depend. Because her students were seeking the same qualifications that students from more favored families were going for, she, too, did whatever it took to attract great teachers who knew their subjects cold and could teach those subjects at high levels to their students.

The difference between Singapore and Hong Kong, on the one hand, and the United States, on the other, is that the former have developed systems that encourage and support what we have just described, so it becomes what is expected and done everywhere, while we don't have such systems and so have come to view their schools as miracles.

In Singapore, as in Hong Kong, the qualification system structured the curriculum and courses that defined the school's program

but still gave the faculty the freedom needed to construct the aeronautics program in a way that engaged students' attention and made them dream great dreams. In this case, as in the Hong Kong case, students' predominantly low-income and minority statuses did not translate into low expectations and a watered-down curriculum because the qualification system set high standards and the supportive instructional system provided schools with an ample supply of first-rate teachers. These schools were no accident, and they are not miracles, either. They are the kinds of schools that well-designed and well-managed systems routinely produce.

Summing Up

The driving idea in this chapter can be summed up very easily: The kind of education we have always provided to the elite must now be provided to everyone. That's because much of the unskilled and semi-skilled work that used to be available to people leaving schools with only the basic skills will be done more reliably and cheaply by digital devices of all kinds. Until recently, the United States could run our schools like a large sorting system, sorting kids into bins labelled for their destinations: unskilled jobs, semi-skilled jobs, skilled crafts and trades, and professional and managerial jobs. The sorting began in 1st grade and continued through the senior year in high school. It was widely thought that only a few students were capable of serious academic achievement, so little was expected of the rest. But that was not perceived as a problem because, except for the skilled craftspeople, most work did not require very much in the way of academic skill or knowledge. Now it is very important that we expect high academic achievement of all our students, whether they will end up as boat builders using advanced carbon fiber technology, farmers controlling driverless tractors from their farm office, or medical technicians implanting tiny sensors in the heart or brain that use radio technology to communicate with devices outside the body.

Now all students will need to have skills and qualities that have always been taught in the prep schools that supplied our future leaders: strong ethical judgement, courage, grit, working independently to a goal, figuring out not just what the solution is but also what the problem is, being a great team member one day and a great leader the next, being a self-starter, having great analysis and synthesis skills, empathy and caring, creativity, imagination, and so on. These skills are profoundly human qualities that intelligent devices will come to late—if ever. Some of these qualities are learned in the classroom, but others are learned on the playing field, in the workplace, or while helping others. Teachers will have to see themselves not so much as imparters of knowledge—though that will still be very important—but as managers of experiences.

When we look at how the top-performing countries are doing this, this is what we see:

1. Time and effort put into building a common vision among the professional and in the wider community, so that virtually everyone is committed to the goal of providing to all the kind and quality of education formerly provided only to a select few and is willing to make the changes needed to get there.
2. Creation of a clear idea of what kind of education all students need to have before they go their separate ways and consensus on when most students should complete that common education (typically by the end of grade 10).
3. Development of a clear curriculum framework with grade ranges and milestones that sets out the trajectory of learning for the common curriculum, important aspects of which are the subjects to be taught, the order in which the component topics in those subjects are to be learned, and the standards to be achieved at each stage.
4. Specification of the qualifications that students can earn as they go through school, each qualification representing satisfactory

completion of the preceding stage and successful acquisition of the knowledge and skills needed to begin the next stage—as one does not proceed to the next stage, in either career or school, without the necessary qualifications.

5. Development of course syllabi, matched to the curriculum framework, that are used by all teachers of the common curriculum and that specify what is to be learned in the course, key material—including books to be used, projects to be undertaken, papers to be written—and how the student will be graded (though not lesson plans, which are to be developed by the teachers, working in teams, in each school).
6. Development of end-of-course examinations and examinations for the qualifications, matched to the standards, frameworks, and syllabi, and accompanied by examples of student work that meet the standards with good grades.
7. Development of techniques for embedded or formative assessment that teachers can use to determine whether the whole class and individual members of the class are grasping what is taught as it is being taught, enabling them to adjust instruction at it is being provided.

When this system is working well, it is set up so that there is more time and support for students who are struggling to master the Common Core curriculum to a global high standard, while more advantaged students get a more enriched curriculum and can move on to get more advanced qualifications earlier. The standards for the qualifications are immovable; the time and support needed to achieve them may be different for different students. It is the very opposite of the sorting system.

What has just been summarized is the approach to the formal core academic curriculum leading to what could be the first qualification, to be reached by most students by the end of grade 10, after which they can choose from among a variety of high school upper-division programs, ranging from a demanding career and technical education program

to what amounts to an Associate’s degree program in high school to programs like AP, IB, or the Cambridge diploma program. We point out that the currently popular method of designating as Career and Technical Education students those students who take at least three CTE courses in high school would be regarded as a joke in most of the top-performing countries, where CTE qualifications require years of combined classroom study and on-the-job training set to high standards that can only be met by taking very demanding performance examinations. Career and technical education in those countries is not regarded as a dead-end destination for students who struggle in school, because one can get into CTE programs only after demonstrating high competence in the core curriculum.

The instructional system described in this chapter is not just for students who are college bound. It is for everyone and, though it is set to global academic standards, it is designed not for sorting students into different futures, but for enabling all students to achieve high standards. It encompasses not just the head, but the heart and the hand as well. It is about not just what happens in the classroom, but the experiences that students have on the playing field, in the workplace, on field trips, and in the food pantry.

Summing Up: Instructional Systems

Element	Top-Performing Systems	U.S. System
Pathways and Gateways	Qualifications certify that the student is qualified to begin the next stage of his or her education, has passed the performance exams needed to get a “journeyman’s” certificate to begin a specified career, or has taken specific required courses designed by the state and earned required grades on externally graded state exams	Diploma is often just an attendance certificate Nowhere does it certify more than an 8th grade level of literacy High school requirements specify time in the seat but do not certify what has been learned or the standard to which it has been mastered

Element	Top-Performing Systems	U.S. System
Academic Standards	<p>Statements of knowledge and skills all students are expected to learn</p> <p>Typically illustrated with examples of student work that meet the standards</p> <p>Typically cover not only native language, mathematics, and science, but also history, social sciences, foreign languages, technology, art, music, and other subjects considered to be in the instructional core</p>	<p>Statements of knowledge and skills all students are expected to learn (e.g., the Common Core for English and mathematics literacy, Next Generation Science Standards)</p> <p>Rarely illustrated with examples of student work that meets the standards</p>
Curriculum Frameworks	<p>Clearly delineated progressions of topics in each subject for entire common curriculum matched to or incorporating the standards</p> <p>Syllabi matched to the progressions that specify the content of each course in the progression, the books to be read, projects to be completed, and how students will be assessed</p>	<p>Sometimes include progression of topics; rarely include required course syllabi; often include teacher-generated curriculum materials that may or may not be reviewed or approved by state authorities and may or may not be usable for full courses or course sequences</p> <p>Many teachers use textbooks as the basis of their curriculum, even though they are not designed for that purpose and may not be aligned with the standards</p>
Assessments	<p>Assessments based on the course syllabi</p> <p>Typically in essay form or performance based, with few if any multiple-choice, computer-scored questions</p> <p>Typically scored by teachers</p>	<p>Rarely designed to assess a particular curriculum or syllabus</p> <p>Mostly multiple-choice, many (e.g., PARCC, SBAC) typically scored by machine</p>

What Can a School Superintendent Do to Create a Powerful, Coherent Instructional System?

If you are a superintendent of schools, and you believe that what we've described in this chapter makes sense, what should you do?

1. Consider creating a Common Core curriculum for all students that could be completed by the end of grade 10 but might not be completed by some students until the end of high school. Consider building that curriculum as the heart of the college-and-career-ready qualification system described here. Let your faculty know that they will be expected to get all but the most severely handicapped students to the college-and-career-ready standard, with a steadily growing proportion of the students reaching that standard by the end of 10th grade, whatever that takes. Let every student know that is your goal for them and that you will not settle for less.
2. If your state has adopted the Common Core, have your best teachers use it to create a curriculum framework that lays out, grade by grade, or grade span by grade span, the order in which the topics specified in the standards are to be taught, culminating in the exams to be given at the end of 10th grade. Note that the mathematics standards in the Common Core include mandatory topics and, at the end of the sequence, additional standards. These additional standards are the standards the authors thought would be appropriate for the last two years of high school, at least for some students. The mandatory standards are those the authors thought all students should meet by the end of 10th grade. You may well find that the Common Core sets a higher end-of-10th-grade standard than would be required to be successful in the first year of your local two-year and four-year colleges, and you will have to decide where to set the standards between these two poles.

3. Once you have set up the curriculum framework, consider using the framework to create course syllabi for your district, defining an explicit set of course designs that will be used throughout the district to implement the standards. You could make these course designs mandatory or advisory, make them advisory for schools in which all or most students are progressing nicely through the curriculum framework and mandatory for schools where that is not the case, or you could set up a school inspection team to visit schools where students are not on a trajectory to success to decide whether any given school is required to use the standard courses. Once you have course designs to implement the Common Core, you will want to create standards, curriculum frameworks, and course syllabi for the more comprehensive core curriculum for which your state may not have any standards. If your district is large enough, you may have all the specialized talent you need to do this. If not, you may want to partner with other districts in your state to get it all done.
4. If your state is using the Common Core, it may be using one of the state consortium tests (PARCC or SBAC) in the grades in which states are required to test (six grades in elementary and middle school and one grade in high school). Those tests will not be matched to your new course designs, but they will be matched to the standards on which the course designs are based. The providers of these tests may or may not have sample prompts for their constructed-response items and may or may not have annotated examples of student responses that earned high marks. They will not have examples of student work for the multiple-choice items and some other computer-generated items. Where you are not able to get these prompts, you might want to create examples of student work that meets the standards and annotations on the work explaining why it meets the standards, and you might want to assemble teams of your best teachers to start developing a suite of standards and associated

materials for every subject in your curriculum, including those subjects for which there are no common standards. Make sure that the examples of student work are authentic, not ginned up for this purpose. Fake work can be identified from a distance, and real student work will earn the support of teachers and students alike.

5. Chapter 6 presents a design for engaging your teachers in a serious effort to develop first-rate lessons and materials to support the instructional system described here. You will need to use the system described in Chapter 6 to curate and populate a growing library of first-rate materials and lessons that your teachers can use to teach the curriculum you are using in your district to get all or almost all your students to your 10th grade standard.
6. The materials your teachers develop should include a wide range of formative evaluation instruments and methods closely keyed to your curriculum. As those resources are being developed, you will want your best teachers to train other teachers on how to use these formative evaluation resources to closely monitor the students for whom they are responsible. The purpose is to catch students who are beginning to fall behind the curve described by the curriculum framework before they have fallen very far at all. The aim is to make sure they never fall far behind. Some testing organizations have developed formative assessment instruments. Some of these instruments are very strong and aligned to the state standards. But others are simply short versions of the end-of-year tests and provide little valuable information for teachers. Look carefully before buying one of these products. Chapter 6 describes a way to organize your schools so that teachers have much more time to work together to design, build, and assess the courses and lessons that will be needed to implement this design. That time will also be available for teachers to work one-on-one and in small groups with students who need extra help to stay on

track. You will also need to make time available before school, after school, on Saturdays, and during the summer to help students who would otherwise fall behind the curve established by the curriculum framework. Even if you do all of this, some students will fall behind, and for them, it is hoped, they will still have their junior and senior years, and perhaps even more time, to meet the standards.

7. When this system is up and running, more and more of your students will be ready, by the end of their sophomore year of high school, to succeed in the first year of community college. If you follow the pattern established by the top-performing countries, you will make the end-of-10th-grade standard the point at which students go in very different directions. Some will go into the International Baccalaureate program. Others will take a full load of Advanced Placement courses or do the Cambridge IGCSE program, all of which prepare students for the most demanding, selective colleges in the world. A much larger proportion of your students will be going in that direction than is the case now because students who meet your 10th grade standard will be ready not just for your local community college and four-year state university, but also to succeed in these very demanding upper secondary school programs. However, many of your students will not want to go down that road. They may want to enroll in a nearby vocational program that provides high-level technical training leading directly to good jobs. Or you might have such a program right in your own district. They might want to enroll in a program for their junior and senior high school years that will result in getting a two-year college degree at the end of their senior year, free of charge. That degree might be in an advanced technical area that leads directly to a good job and a great career or it might lead to transfer to a four-year college for the last two years of a bachelor's degree program. In a system like this, all these options become available.

A Qualification System: Imagine Prep at Surprise

In 2010, the Arizona state legislature passed a law that offered schools the opportunity to try a dramatic new approach to high school education. Instead of offering students diplomas based on time in the seat, the legislation authorized schools to award a Grand Canyon Diploma to students who demonstrated that they have attained the knowledge and skills necessary to be ready for college and careers. Students could reach this level at any point between the end of grade 10 and the end of grade 12; if they did so before the end of grade 12, they could stay in school and take advanced coursework, take dual enrollment courses at a community college, or enroll directly in postsecondary education.

Imagine Prep at Surprise, a charter school in Phoenix serving grades 6–12, took up the challenge. “We were looking for an identity,” says the principal, Chris McComb. “We talk about college, career, and life, but what does that mean? This was an opportunity to connect ourselves with something meaningful, and something right to do for kids.”

The system Imagine Prep put in place is a qualification system. Such systems are common in high-performing nations but are a radical departure from traditional high schools in the United States. Putting it in place successfully requires rethinking almost every aspect of schooling because students have to hit real performance targets in the core curriculum.

At the heart of a qualification system are the assessments used to determine whether students can demonstrate college and career readiness. Based on NCEE recommendations, which had formed a national network of schools pursuing qualification systems, Imagine chose the examinations developed by Cambridge International Examinations, the organization that develops the International General Certificate of Secondary Education (IGCSE) examinations used in Great Britain to determine students’ qualifications for prestigious universities.

The Cambridge program, used by schools in more than 120 countries around the world, offers not only examinations scored by highly trained examiners but also a complete set of course syllabi on which the exams are based. The syllabi are in turn based on carefully constructed curriculum frameworks that step the students through a sequence of topics logically ordered to enable those who work hard to succeed on the exams. The exams are essay based, which means that they can measure kinds of student achievement that are difficult if not impossible to measure with multiple-choice exams. The standards for the courses and exams are internationally benchmarked. Students who do well on the exams are top candidates for admission to the world’s leading universities.

To McComb, the examinations defined the system by setting clear expectations for students and enabling the school faculty to build a program of study that would enable students to reach those goals. “The assessments make clear what students need to know and be able to do,” he says. “If you start there, you can build back from there to grades 9 and 10.”

Unlike many tests used in the United States, the Cambridge examinations truly allowed students to demonstrate their competencies, McComb says. “The exams are short answer, essay format,” he adds. “That’s different from clicking on an answer that best fits a scenario. Having students express themselves in writing is a better measure of what they are able to do.”

Imagine developed an end-of-8th-grade test to be able to place students in high school, so that they would know whether entering 9th graders were ready for the demanding Cambridge program and could help the students who were behind get up to speed. They also created formative assessments to track student progress during the year.

Some of the syllabi were quite detailed, while others were less so. But all of them gave teachers a considerable amount of flexibility, McComb says. “We have early release every Wednesday,” he says. “Teachers work in content teams. They work in a four-week teaching cycle. The teachers identify where they want to be, and hold ‘data chats’ to plan next steps. There is constant adjustment.”

The faculty also had to make some adjustments to accommodate state requirements and student schedules. As a public school, Imagine is accountable to the state and administers the state test. The mathematics sequence in the Cambridge syllabus differed from the state sequence, so the school made some changes to that syllabus.

The school also found that the schedule, which had 60-minute periods, was not sufficient for students to learn all of the biology content in the curriculum. So, the school added a “zero period” for students in biology to learn laboratory skills.

Over the years, the school has continued to make adjustments. Data showed that mathematics performance was a problem, so the faculty examined the data and improved teaching strategies. As part of that effort, the school removed a teacher who was ineffective.

McComb is pleased with the progress the school has made. “I still think we have more to do in terms of educating all students on what exactly their goal needs to be, what the Grand Canyon [Diploma] is, why they’re in certain courses, and what it means to be proficient in those courses. [But] where we are now versus where we were in 2012—it is a completely different environment.”

8. What has been described thus far is a system for organizing a student's academic program that is very much like what you would find in one of the top-performing education systems. In most of the top-performing systems, a student's program encompasses much more than academics. It is, as the American phrase has it, about the "whole person." At the beginning of this chapter, we mentioned that Asian education systems put much more emphasis on developing their students' values and character than we do, at least as an explicit goal. Like the Western countries generally, they are also putting more emphasis on the so-called 21st century skills. In addition to the traditional academic goals, they also put more emphasis on physical development of the student—quite apart from sports—than the Western countries. As we said in our analysis of the effects of intelligent machines on the future of work, all these arenas—the ones that go beyond academics, the ones that touch on our humanity and not just our intellect—are likely to be much more important goals for our students in the future than they have been in the past. What we see in the countries that are furthest ahead is a concerted effort to design schools in which all these goals are fused into a unified vision for student development. This is the implication for you and your school system: As you involve your school faculties and your community in long-range planning for your schools, get them to think with you about schools in which the job of the teacher includes instruction in the usual sense of that term, but goes way beyond that. The job of your school faculties gets reframed as the job of people responsible for creating, organizing, and supervising experiences for students in and out of school, all of which contribute to these expanded goals. Some of these goals will be achieved in your sports program, some in school clubs and activities, some on field trips, some in apprenticeships, and some in the opportunities you create for students to lead other students in and out of school. You offer many of these opportunities now, but most people view them

as ancillary to the main purpose of schooling, which is academics. The idea here is that the purposes of schooling previously thought to be ancillary—values, character, 21st century skills development—have become central. If that is the case, much more attention needs to be given to making sure those opportunities are available to every student and that each student is participating in a pattern of activities that will enable him or her to emerge from school with all the important qualities, not just the academics.

9. The kind of curriculum that is now needed is not the kind of curriculum in which a student can be successful just by paying attention in class, taking good notes, doing the homework, completing the required assignments, and acing the exams. Just as what we used to call vocational education is going to have to be built in the future on a much stronger academic foundation, academic education will have to be much more applied than it has been. As your teachers create your curriculum frameworks, build the syllabi, and craft their lessons, they will have to be thinking constantly about how they can get their students to apply to real-world problems what they are learning, constantly going back and forth between theory and practice. The aim of the whole curriculum is not to enable your students to get their ticket punched, to pass tests. It is to learn a great deal about the world they live in that will be useful to them in myriad ways. This is not a new idea. Alfred North Whitehead, writing in his classic, *The Aims of Education*, once called knowledge that is accumulated but not used “inert” knowledge. He did not think much of inert knowledge. The human brain works by forging connections among its neurons. If those connections are not used, they wither. If you understand something but do not know how to use it, you probably do not understand it. If you want to keep it, you must use it. If you want to learn it at a deeper level, you must use it often and in a more complex way. So our last suggestion to you as you think about building your instructional

system is to think about how your schools can help students make much better connections between thinking and doing.

10. Just as in the case of Singapore, if you set up a system of very demanding standards and a no-less-demanding curriculum, some students will not be able to get any kind of qualification at various gateways. The easiest way to solve this problem is to let these students drop out as soon as the law allows. The next easiest way to address the problem is to assume that these students cannot meet serious standards and give them something to do while waiting for a credential that has no labor market value at all. The hard thing to do is what an increasing number of top performers are doing: finding a way for these students, the ones at the bottom of the heap, to meet the same high standards the other students do, whatever it takes. There are good models in the United States. Make sure that an effective way to meet this challenge is part of your plan.



Bibliography

- Alberta Education. (2010). *Inspiring education: A dialogue with Albertans*. Edmonton, Alberta, Canada: Government of Alberta, Ministry of Education.
- Allegretto, S., & Mishel, L. (2016). *The teacher pay gap is wider: Teachers' pay continues to fall further behind pay of comparable workers*. Washington, DC: Economic Policy Institute.
- Barber, M., & Mourshad, M. (2007). *How the world's best performing systems come out on top*. San Francisco: McKinsey & Company.
- Brynjolfsson, E., & McAfee, A. (2014). *The second machine age: Work, progress, and prosperity in a time of brilliant technologies*. New York and London: W. W. Norton.
- Bull, R., & Bautista, A. (forthcoming). *International case studies of innovative early childhood systems: The early advantage in Singapore*. Retrieved from <http://ncee.org/what-we-do/center-on-international-education-benchmarking/cieb-supported-research/>
- Burns, D., & McIntyre, A. (2017). *Empowered educators in Australia: How high-performing systems shape teaching quality*. San Francisco: Jossey-Bass/Wiley.
- Commission on the Skills of the American Workforce. (1990). *America's choice: High skills or low wages!* Rochester, NY: National Center on Education and the Economy.
- Darling-Hammond, L., Burns, D., Campbell, C., Goodwin, A. L., Hammerness, K., Ling Low, E. E., McIntyre, A., Sato, M., & Zeichner, K. (2017). *Empowered educators: How high-performing systems shape teaching quality around the world*. San Francisco: Jossey-Bass/Wiley.
- Darling-Hammond, L., Goodwin, L., & Low, E. (2017). *Empowered educators in Singapore: How high-performing systems shape teaching quality*. San Francisco: Jossey-Bass/Wiley.

- Desmond, M. (2016). *Evicted: Poverty and profit in the American city*. New York: Crown Publishing.
- Drucker, P. F. (1969). *The age of discontinuity*. New York: HarperCollins.
- The Economist*. (2016). Automation and anxiety: Will smarter machines cause mass unemployment? Retrieved from <https://www.economist.com/news/special-report/21700758-will-smarter-machines-cause-mass-unemployment-automation-and-anxiety>
- Egalite, A., Kisida, B., & Winters, M. (2015). Representation in the classroom: The effect of own-race teachers on student achievement. *Economics of Education Review*, 45, 44–52.
- Eiter, M. (2002). Best practices in leadership development: Lessons from the best business schools and corporate universities. In M. Tucker & J. Coddling (Eds.), *The principal challenge: Leading and managing schools in an era of accountability* (pp. 99–122). San Francisco: Jossey-Bass/Wiley.
- Ford, M. (2015). *The rise of the robots: Technology and the threat of a jobless future*. New York: Basic Books.
- Friedman, T. (2007). *The world is flat: A brief history of the twenty-first century*. New York: Farrar, Strauss, and Giroux.
- Fullan, M., & Quinn, J. (2015). *Coherence: The right drivers for action in schools, districts and systems*. Toronto: Corwin and Ontario Principals Council.
- Gang, D. (Ed.). (2010). *National survey and policy analysis for teacher professional development in primary and secondary schools*. Shanghai: East China Normal University Press.
- Gladwell, M. (2008). *Outliers: The story of success*. New York: Little, Brown and Co.
- Goldhaber, D., & Walsh, J. (2014). *Rhetoric versus reality: Is the academic caliber of the teacher workforce changing?* Seattle, WA: Center for Education Data and Research.
- Goldin, C., & Katz, L. (2008). *The race between education and technology*. Cambridge, MA: Harvard University Press.
- Goodman, M., Sands, A., & Coley, R. (2017). *America's skills challenge: Millennials and the future*. Princeton, NJ: Educational Testing Service.
- Goodwin, L. (2017). *Empowered educators in Singapore: How high-performing systems shape teaching quality*. San Francisco: Jossey-Bass/Wiley.
- Hammerness, K., Ahtiainen, R., & Sahlberg, P. (2017). *Empowered educators in Finland: How high-performing systems shape teaching quality*. San Francisco: Jossey-Bass/Wiley.
- Harari, Y. N. (2017). *Homo deus: A brief history of tomorrow*. New York: HarperCollins.
- Haynes, M. (2014). *On the path to equity: Improving the effectiveness of beginning teachers*. Washington, DC: Alliance for Excellent Education.
- Holley, P. (2015, January 29). Bill Gates on dangers of artificial intelligence: “I don’t understand why some people are not concerned.” *Washington Post*.

- Retrieved from https://www.washingtonpost.com/news/the-switch/wp/2015/01/28/bill-gates-on-dangers-of-artificial-intelligence-dont-understand-why-some-people-are-not-concerned/?utm_term=.19ffaea72ed4
- Ingersoll, R. (2003). *Is there really a teacher shortage?* Philadelphia: University of Pennsylvania, Consortium for Policy Research in Education.
- Ingersoll, R., & Perda, D. (2014). *How high is teacher turnover and is it a problem?* Philadelphia: University of Pennsylvania, Consortium for Policy Research in Education.
- Jensen, B., Downing, P., & Clark, A. (2017). *Preparing to lead: Lessons in principal development from high-performing education systems.* Washington, DC: National Center on Education and the Economy.
- Kahlenberg, R. D. (2007). *Tough liberal: Albert Shanker and the battles over schools, unions, race, and democracy.* New York: Columbia University Press.
- Kirp, D.L. (2013). *Improbable scholars: The rebirth of a great American school system and a strategy for America's schools.* New York: Oxford University Press.
- Krugman, P. (2014, November 12). On income stagnation. *The New York Times*. Retrieved from <https://krugman.blogs.nytimes.com/2014/11/12/on-income-stagnation/>
- Kumpailanen, K. (forthcoming). *International case studies of innovative early childhood systems: The early advantage in Finland.* Retrieved from <http://ncee.org/what-we-do/center-on-international-education-benchmarking/cieb-supported-research/>
- Kurzweil, R. (2005). *The singularity is near.* New York: Penguin Books.
- Learning Policy Institute. (2017). *What's the cost of teacher turnover?* Retrieved from <https://learningpolicyinstitute.org/product/the-cost-of-teacher-turnover>
- Levy, F., & Murmane, R. (2004). *The new division of labor: How computers are creating the next job market.* Princeton, NJ: Princeton University Press.
- Long, C. (2016, January 20). How high-performing nations treat educators as professionals. *NEA Today*. Retrieved from <http://neatoday.org/2016/01/20/high-performing-nations-professional-development/>
- Manyika, J., Chui, M., Miremadi, M., Bughin, J., George, K., Willmott, P., & Dewhurst, M. (2017). *Harnessing automation for a future that works.* San Francisco: McKinsey Global Institute, McKinsey & Company.
- McCorduck, P. (2004). *Machines who think: A personal inquiry into the history and prospects of artificial intelligence.* Natick, MA: AK Peters Ltd.
- McGregor, D. (1960). *The Human Side of Enterprise.* New York: McGraw-Hill.
- McGregor, D. (1967). *The Professional Manager.* New York: McGraw-Hill.
- Mullis, I. V. S., Martin, M. O., Foy, P., & Hooper, M. (2016). *TIMSS 2015 international results in mathematics.* Boston: Boston College, Lynch School of Education, TIMSS & PIRLS International Study Center.
- Murray, C. (2012). *Coming apart.* New York: Crown Forum.

- National Center on Education and the Economy. (2013). *What does it really mean to be college and work ready?* Washington, DC: Author.
- National Center on Education and the Economy. (2018). *How does Maryland stack up? A gap analysis comparing Maryland to international and domestic top performers*. Produced for the Maryland Commission on Innovation and Excellence in Education.
- National Conference of State Legislatures. (2016). *No time to lose*. Denver, CO: Author.
- National Institute of Education. (2009). *A teacher education model for the 21st century: A report by the National Institute of Education*. Singapore: Author.
- Nunnery, J. A., Ross, S. M., Chappell, S., Pribesh, S., & Hoag-Carhart, E. (2011). *The impact of the NISL executive development program on performance in Massachusetts: Cohort 2 results*. Norfolk, VA: Old Dominion University, Center for Educational Partnerships.
- Nunnery, J. A., Yen, C., & Ross, S. (2011). *Effects of the National Institute for School Leadership's executive development program on school performance in Pennsylvania: 2006–2010 pilot cohort results*. Norfolk, VA: Old Dominion University, Center for Educational Partnerships.
- OECD. (2000). *Knowledge and skills for life: Results from the OECD PISA 2000*. Paris: OECD Publishing.
- OECD. (2010). *Strong performers and successful reformers*. Paris: OECD Publishing.
- OECD. (2014a). *PISA 2012 results in focus: What 15-year-olds know and what they can do with what they know*. Paris: OECD Publishing.
- OECD. (2014b). *TALIS 2013 results: An international perspective on teaching and learning*. Paris: OECD Publishing.
- OECD. (2015). *Helping immigrant students to succeed at school—and beyond*. Paris: OECD Publishing.
- OECD. (2016a). *Education at a glance 2016: OECD indicators*. Paris: OECD Publishing.
- OECD. (2016b). *PISA 2015 results (volume I): Excellence and equity in education, PISA*. Paris: OECD Publishing.
- OECD. (2017a). *Education at a glance 2017: OECD indicators*. Paris: OECD Publishing.
- OECD. (2017b). PISA 2018 participants. Retrieved from <http://www.oecd.org/pisa/aboutpisa/pisa-2018-participants.htm>
- OECDStat. (2017). Income distribution and poverty, by country. Retrieved from <http://stats.oecd.org/index.aspx?queryid=66670>
- Putnam, R. (2015). *Our kids: The American dream in crisis*. New York: Simon & Schuster.
- Rivkin, S. G., Hanushek, E., & Kain, J. F. (2005). Teachers, schools, and academic achievement. *Econometrica*, 73(2), 417–458.

- Sang-Hun, C., & Markoff, J. (2016, March 9). Master of Go board game is walloped by Google computer program. *The New York Times*.
- Sato, M. (2017). *Empowered educators in China: How high-performing systems shape teaching quality*. San Francisco: Jossey-Bass/Wiley.
- Sharkey, P., & Graham, B. (2013). *Mobility and the metropolis: How communities factor into economic mobility*. Philadelphia: Pew Charitable Trusts.
- Singapore Academy of Corporate Management. (2014). Education in Singapore. Retrieved from <http://www.singapore-academy.org/index.php/en/education/library-media-center/singapore-presentation/item/217-education-in-singapore>
- Statistics Canada. (2011). Immigration and ethnocultural diversity in Canada. Retrieved from <http://www12.statcan.gc.ca/nhs-enm/2011/as-sa/99-010-x/99-010-x2011001-eng.cfm#a2>
- Stewart, V. 2010. *How Singapore developed a high quality teacher workforce*. New York: The Asia Society.
- Stiglitz, J. (2012). *The price of inequality: How today's divided society endangers our future*. New York: W. W. Norton.
- Swanson, B., & Mandel, M. (2017, May 14). Robots will save the economy. *The Wall Street Journal*.
- Temin, P. (2017). *The vanishing class: Prejudice and power in a dual economy*. Cambridge, MA: MIT Press.
- TNTP. 2015. *The mirage: Confronting the hard truth about our quest for teacher development*. Washington, DC: Author.
- Tucker, M. (2011). *Surpassing Shanghai: An agenda for American education built on the world's leading systems*. Cambridge, MA: Harvard Education Press.
- Tucker, M. (2012). *The phoenix: Vocational education and training in Singapore*. Washington, DC: National Center on Education and the Economy.
- Tucker, M. (2016a). *9 Building blocks for a world-class education system*. Washington, DC: National Center on Education and the Economy. Retrieved from <http://ncee.org/9buildingblocks/>
- Tucker, M. (2016b, June 23). High poverty and high achievement in Hong Kong. *Education Week*. Retrieved from http://blogs.edweek.org/edweek/top_performers/2016/06/high_poverty_high_achievement_in_hong_kong.html
- Tucker, M. (2017). Education for a digital future: The challenge. *Future frontiers: Education for an AI world*. New South Wales, Australia: Melbourne University Press and the New South Wales Department of Education. Retrieved from https://education.nsw.gov.au/our-priorities/innovate-for-the-future/education-for-a-changing-world/media/documents/future-frontiers-education-for-an-ai-world/Future_Frontiers-Text.pdf
- Tucker, M., & Codding, J. (2002). *The principal challenge: Leading and managing schools in an era of accountability*. San Francisco: Jossey-Bass.
- Tyack, D., & Cuban, L. (1995). *Tinkering toward utopia: A century of public school reform*. Cambridge, MA: Harvard University Press.

- U.S. Department of Education. (2012). *The nation's report card: NAEP 2012 long-term trends in academic progress*. Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics.
- U.S. Department of Education. (2013). *The nation's report card: A first look: 2013 mathematics and reading*. Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics.
- U.S. Department of Education. (2014). *Equitable access to quality educators: State equity profiles*. Washington, DC: Author.
- U.S. Department of Education. (2015a). *The nation's report card: 2015 mathematics and reading assessments*. Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics. Retrieved from https://www.nationsreportcard.gov/reading_math_2015/#?grade=4
- U.S. Department of Education, National Center for Education Statistics. (2015b). *Public school teacher attrition and mobility in the first five years: Results from the first through fifth waves of the 2007–08 beginning teacher longitudinal study*. Washington, DC: Author.
- U.S. Department of Education, National Center for Education Statistics. (2017a). *Adult training and education: Results from the National Household Education Surveys Program of 2016*. Washington, DC: U.S. Department of Education.
- U.S. Department of Education, National Center for Education Statistics. (2017b). *Digest of education statistics*. Washington, DC: U.S. Department of Education.
- U.S. Department of Labor, Bureau of Labor Statistics. (n.d.). *Labor force participation rate 1970–2015: Ages 16 and over, seasonally adjusted*. Retrieved from <https://data.bls.gov/pdq/SurveyOutputServlet>
- Vance, A. (2015). *Elon musk: Tesla, Space X, and the quest for a fantastic future*. New York: Ecco-HarperCollins.
- Wilson, W. J. (1987). *The truly disadvantaged: The inner city, the underclass, and public policy*. Chicago: University of Chicago Press.
- Xiaoyan, L., Kidwai, H., & Zhang, M. (2016). *How Shanghai does it: Insights and lessons from the highest-ranking education system in the world*. Washington, DC: World Bank
- Yoon, K. S., Duncan, T., Lee, S. W.-Y., Scarloss, B., & Shapley, K. (2007). *Reviewing the evidence on how teacher professional development affects student achievement* (Issues & Answers Report, REL 2007–No. 033). Washington, DC: U.S. Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory Southwest.
- Zhang, M., Ding, X., & Xu, J. (2016). *Developing Shanghai's teachers*. Washington, DC: National Center on Education and the Economy.



About the Author



Marc Tucker is the founder, CEO, and president of the National Center on Education and the Economy. A leader of the standards-driven education reform movement, Tucker has been studying the strategies used by the countries with the most successful education systems for three decades. He created New Standards—a precursor to the Common Core, the National Board for Professional Teaching Standards, the

Commission on the Skills of the American Workforce, and its successor, the New Commission on the Skills of the American Workforce; and he was instrumental in creating the National Skill Standards Board. Tucker also created the National Institute of School Leadership.

Tucker authored the 1986 Carnegie report *A Nation Prepared: Teachers for the 21st Century* and the report of the Commission on the Skills of the American Workforce, *America's Choice: High Skills or Low Wages*, and was the lead author of *Tough Choices or Tough Times*, the report of the New Commission on the Skills of the American Workforce. He coauthored or edited *Thinking for a Living: Education and the Wealth of Nations*; *Standards for Our Schools: How to Set Them, Measure Them, and Reach Them*; and *The Principal Challenge*.

Tucker was commended by President Bill Clinton for his contributions to the design of the Clinton administration's education and

job-training proposals in the Rose Garden ceremony celebrating the passage of the legislation authorizing the Clinton program. In 2014, he received the James Bryant Conant Award from the Education Commission of the States for his outstanding individual contribution to American education.

Related ASCD Resources

At the time of publication, the following resources were available (ASCD stock numbers appear in parentheses):

Print Products

Curriculum 21: Essential Education for a Changing World edited by Heidi Hayes Jacobs (#109008)

A World-Class Education: Learning from International Models of Excellence and Innovation by Vivien Stewart (#111016)

Catching Up or Leading the Way: American Education in the Age of Globalization by Yong Zhao (#109076)

Transforming Schools: Creating a Culture of Continuous Improvement by Allison Zmuda, Robert Kuklis and Everett Kline (#103112)

Promises Kept: Sustaining School and District Leadership in a Turbulent Era by Steven Jay Gross (#101078)

Schooling by Design: Mission, Action, and Achievement by Grant Wiggins and Jay McTighe (#107018)

Teachers Wanted: Attracting and Retaining Good Teachers by Daniel A. Heller (#104005)

Leading with Focus: Elevating the Essentials for School and District Improvement by Mike Schmoker (#116024)

Sustaining Change in Schools: How to Overcome Differences and Focus on Quality by Daniel P. Johnson (#105006)

Balanced Leadership for Powerful Learning: Tools for Achieving Success in Your School by Bryan Goodwin and Greg Cameron with Heather Hein (#112025)

Align the Design: A Blueprint for School Improvement by Nancy J. Mooney and Ann T. Mausbach (#108005)

West Meets East: Best Practices from Expert Teachers in the U.S. and China by Leslie Grant, James Stronge, Xianxuan Xu, Patricia Popp, Yaling Sun, and Catherine Little (#111012)

Five Levers to Improve Learning: How to Prioritize for Powerful Results in Your School by Tony Frontier and Jim Rickabaugh (#114002)

What Makes a World-Class School and How We Can Get There by James H. Stronge with Xianxuan Xu (#117078)

Leading Change Together: Developing Educator Capacity Within Schools and Systems by Eleanor E. Drago-Severson and Jessica Blum-DeStefano (#117027)

For up-to-date information about ASCD resources, go to www.ascd.org. You can search the complete archives of *Educational Leadership* at www.ascd.org/el.

ASCD myTeachSource®

Download resources from a professional learning platform with hundreds of research-based best practices and tools for your classroom at <http://myteachsource.ascd.org/>.

For more information, send an e-mail to member@ascd.org; call 1-800-933-2723 or 703-578-9600; send a fax to 703-575-5400; or write to Information Services, ASCD, 1703 N. Beauregard St., Alexandria, VA 22311-1714 USA.

ADVANCE UNCORRECTED COPY - NOT FOR DISTRIBUTION