How Massachusetts Built a World-Class School System

By Marc Tucker on December 22, 2016 6:30 AM

Many people know that the United States has for years performed **very poorly** on the OECD's PISA comparative survey of national student performance of 15-year-olds. However, Massachusetts has participated in the last two surveys, and, in this last one, emerged as a star performer, scoring in the top ranks worldwide. In this blog, I analyze that performance, offering some explanations for Massachusetts' success, suggesting some opportunities the state might have to do even better and explaining why I think that other states need to look hard at Massachusetts but also other top performing countries as well.

With a raw score of 529, Massachusetts would have had the sixth highest raw score in the world in science if it were a country and no other sub-jurisdictions were on the list. Alberta, British Columbia and Quebec in Canada did better, so it would be ninth on a list that included the sub-jurisdictions. But, when looking at these results in terms of the statistical significance of the differences between scores, only Singapore did better.

Massachusetts scored 527 in reading, the second highest after Singapore if the state was a country, fifth highest if the sub-jurisdictions taking PISA are included. No jurisdiction's scores exceeded Massachusetts if the standard is statistical significance. Eight were similar.

Mathematics was a different story. Its average score was 500, the twenty-first highest in the world if it were a country and no other sub-jurisdictions were on the list. If other sub-jurisdictions were included, it would rank thirty-fourth. If statistical significance is the standard, though, only eleven national systems scored higher, while 19 systems were not significantly different.

One of the most interesting aspects of the data is what they say about Massachusetts' drive to close the achievement gap. Between the 2012 PISA assessment and the 2015 assessment, schools with 50 to 75 percent of their enrollment eligible for free and reduced price lunch went from average scores of 481 to 505 in science, 488 to 506 in reading and 465 to 478 in mathematics. Schools enrolling even higher proportions of disadvantaged students did not improve much, but this record is nonetheless very impressive.

So what has enabled Massachusetts to reach the top of the world's education league tables? Our analysis of the strategies used by the top performers for years **is summed up here**. We called Mitch Chester, Massachusetts Commissioner of Education, to see whether that analysis captures the distinguishing features of that state's successful reforms. It turns out that it does. So, let's review the bidding.

Governance and vision

According to our analysis, successful reforms are coherent, supported by a wide and deep coalition, grounded in a broad commitment to build a high-wage, high value-added economy, pursued over the long haul by changing administrations and implemented by government agencies working together and not at cross-purposes. All those things are true in the Massachusetts case. The Massachusetts Education Reform Act of 1993 provided the economic and educational vision and the broad-based political coalition needed to get there. That coalition kept the vision alive even as the governor's office changed parties. The Deval Patrick administration made basic changes in the governance structure for education, creating a unified structure to replace a highly fractionated one.

Support for young children and their families

Massachusetts was the first in the nation to bring early childhood services under one roof, in 2005, with the creation of the Department of Early Education and Care to better coordinate services and expand access. The state committed itself to working toward universal preschool, free community college for early childhood educators and new curriculum and standards for birth to age three programs. It established an Early Childhood Educator Scholarship program, built strong professional development programs for early childhood educators and created a career ladder for early childhood workers. Commissioner Chester told us that the fiscal challenges that came with the Great Recession made it impossible to achieve the levels of access that the state had aimed for on the schedule originally envisioned, but did not dent the commitment it made to focus on improving the quality of services and personnel in this key arena.

More resources for disadvantaged students who need them the most, so that all students can reach high standards

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Massachusetts spent $13,540 in 2013 per pupil, adjusted for regional cost differences, the 12th highest in the nation. More important, it uses a pupil-weighted funding formula that adds substantial sums to the base for specific characteristics of students such as English language learners, low-income and special education. This additional funding for disadvantaged students is among the highest in the country. That's what makes the system both fair and effective. Overall, Massachusetts spends **7.3 percent more state and local dollars** on each student in a low-income district than in a high-income district. That figure is 14.8 percent when federal funding is included, eighth highest among the states. We have also observed that the world's top performers work hard to assign more and better teachers to schools serving high proportions of disadvantaged students. Here, too, Massachusetts does what the top-performing education systems do.

Powerful, coherent instructional systems coupled with clear gateways

This, of course, is what Massachusetts is best known for. Back in the 1990's, as the standards movement got underway, many states set low standards, hoping to strengthen them over time. Wrong strategy. Massachusetts benchmarked the standards used by the world's top-performing countries, set its own standards there, assumed that Massachusetts students could meet them, and then gave their educators the time and support they needed. They developed assessments that matched the standards not only by setting high passing marks, but, much more important, in their demands for mastery of the underlying conceptual structure of the subject matter. Most other states set lower standards, required much shallower mastery, provided much less support to teachers, gave them less time to figure out how to teach to the new standards and backed off in the face of widespread belief that poor and minority students would not be able to perform at the required levels (which, of course, did not prove to be the case in Massachusetts). This is not what the top-performing countries do, nor is it what Massachusetts did. By 2014, **88 percent of the state's tenth graders** were passing their demanding high school assessment, required for graduation, one of the most rigorous in the country. A new version of that exam is now being constructed, intended to incorporate the best features of the old MCAS exam and the more technologically advanced PARCC exam.

High-quality teachers and leaders

All of the top performers have built their systems on the assumption that top performance requires highly capable teachers who are treated as professionals. Massachusetts ditched the undemanding Praxis tests used by many states to assess beginning teachers' mastery of subject matter and built their own tests set to a much higher standard, using them to ratchet up significantly their standard for teacher licensure. That set of tests is widely regarded as the most challenging in the country. The pass rate for the required special subject tests was only 64 percent in the most recent administration. Among private institutions that prepare teachers in Massachusetts, Lesley University prepares the most. Lesley requires students to declare education as a double major with the other major being the subject the candidate plans to teach. Lesley's Master's program requires teachers to complete 75 hours in the field under a trained mentor, followed by a full semester in the classroom, assuming progressively greater responsibility. The state requires that newly hired teachers be mentored for one year following certification. From the beginning, the state has recognized that good teachers who are poorly led do not stay in teaching very long. It is with some pride that I note that Dave Driscoll, state commissioner of education when the Massachusetts Education Reform Act was being implemented, **turned to our National Institute for School Leadership's Executive Development Program** to train principals all over the state, giving them the skills they needed to support their faculties properly as the whole complex program of reforms was rolled out statewide. The NISL leadership development curriculum is designed to help leaders at all levels of the system implement comprehensive school improvement agendas of the kind that Massachusetts had embraced.

Teacher leadership and professional work environments

This may be the arena in which Massachusetts is farthest behind the top performers. However, the state seems to have set the stage for important progress in this area. State law requires the Department of Elementary and Secondary Education to take over districts that are performing below acceptable levels and gives the department considerable powers in those districts, above and beyond those typically enjoyed by the local school boards. In the case of Lawrence, the historic mill town on the Merrimack River, the state chose to use those powers to implement a form of teacher career ladder which, while less aggressive than those in some of the most advanced countries and even some other states, still lays down a marker for one of the most important features of school organization and management in the top-performing countries, well-developed career ladders for teachers and school leaders. Initially opposed by the local teachers' union, it was, Commissioner Chester told us, later embraced as they came to understand how such career ladder systems can be used to create schools in which teachers are treated as high-status professionals.

A high-quality career and technical education system

Though Massachusetts is most widely known for ratcheting up academic standards, it should also be known for creating one of the strongest systems of secondary career and technical education in the nation. But it is now reaching beyond that achievement to partner with the Pathways to Prosperity Project, run by the Harvard Graduate School of Education and Jobs for the Future, intended to bring to the United States many of the key features of the best career and technical education systems in the world, including opportunities for students to serve as paid apprentices for employers offering state of the art equipment, processes and technical staff. Like all the top-performing countries that are strong in this arena, Massachusetts sees career and technical education not as a home for students who do not do well on academics, but as an opportunity for students who do well on academics to learn in an applied setting. Academic achievement in Massachusetts is not an option. It is the goal for all students.

Here is the really interesting thing about Massachusetts: Consider first the state's advantages. It is one of the wealthiest states in the union. Its parents are among the best-educated in the nation and the world. It is home to a remarkable collection of first-rate universities and research and development organizations. This does not explain its achievements. After all, other states are in the same class in each of these dimensions and are far behind Massachusetts in measured student achievement. Massachusetts got way out front because of the specific policy measures it adopted and the way implementation of those measures was managed, as I have shown.

But other countries have gotten to the same plateau without those advantages, some starting their journey in deep poverty amid great conflict. States that look at the Massachusetts example as unattainable need to look at other places that have done just as well without its advantages and then go back to Massachusetts to look again through new glasses.

But the other—no less interesting—thing about Massachusetts is how much room it has to grow, to get even better, by adapting features of other top systems that it has not yet implemented or implemented widely. These include but are by no means limited to requiring elementary school teachers to specialize in either mathematics and science or English and social studies (which I believe could all by itself substantially close the gap with other nations in mathematics performance), limiting enrollments in teacher education programs to research universities, implementing advanced forms of career ladders for teachers and principals statewide, creating a statewide apprenticeship system and fully implementing the early childhood programs it envisioned years ago. The aim should be to get better and better. It is what Singapore has done year after year. One gets the sense talking to Commissioner Chester that this is exactly where he wants to go.

Categories: Massachusetts PISA

Tags: Massachusetts PISA

6 comments

Sort by: Oldest to Newest

Charles Hoff
1:57 PM on December 22, 2016
Score: 0
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Serious work, with consequences for failure not seen elsewhere!

1 reply

Edd Doerr
3:50 PM on December 22, 2016
Score: 1
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It should be noted that Massachusetts, the state with the 2nd highest % of Catholics, twice voted down efforts to divert public funds to private schools, in 1982 by 62 to 38 and in 1986 by 70 to 30. And in 2016 voted against charter school expansion by 62 to 38. The rest of the states should follow the Bay State's example. -- Edd Doerr

Monty Neill
4:33 PM on December 22, 2016
Score: 0
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There are flaws in teh MA system that consulting with Commissioner Chester is hardly about to reveal. Among them:

The gap between English speakers and English language learners has not closed; but there are not so many, so that does not drag down scores on NAEP so much. Oh yeah, NAEP scores have largely stagnated. That of course largely assumes, as Marc Tucker does, that tests really tell us most of what we need to know about system quality.

He avers MCAS is 'high level.' In its first few years, independent teams of teachers, professors, educated community members evaluated MCAS. We found it mostly low level. It most assuredly fails to measure real higher order thinking skills, understanding of concepts, ability to apply knowledge.

The new state teacher test had such vital components as test takers listening to tapes which were low quality and hard to hear, along with analyzing passages written in antique English. So it became harder to pass, especially for prospects of color, but not because they had anything meaningful to do with teacher quality.

There are lots of great teachers in MA. They basically hate the MCAS. When Barbara Madeloni first won election to the Mass Teachers Assn as an upstart candidate, her primary campaign point was opposition to the testing regime. Surveys of teachers confirm their opposition.

I could go on, but I hope the point is clear: to the extent MA has a strong educational system (much of which is due to a highly educated populace in general), it is not due to testing but is in spite of it.

Principal 123 Score: Report Abuse
4:58 PM on December 22, 2016 0
I have many questions after reading this post...13,500 per student...my state spends 8,000 per student.

1) What are the average class sizes in schools in MA? I have class sizes of 26 in my kindergarten with 4-5 high needs special education students and very little support beyond the teacher. This matters.
2) What kinds of specialists do schools have access to on a regular basis? Are specialists used with a pull out or push in model? If the latter, do teachers and specialists have time to collaborate to create lessons and discuss instructional methods?
3) What type of focused professional development do teachers, administrators, schools, and districts take part in regularly? Is there a statewide focus or is it up to districts to decide based on need?
4) How is the per pupil amount funded in MA? Our state is one of five with no sales tax and thus our biennial budgets are cyclical and unpredictable and heavily dependent on income tax.
5) What does career and technical education system look like at the elementary, middle and high school levels?
6) Do elementary students have access to a balanced curricular approach? We have PE, but no music, no art, no technology, etc. We barely have recess.
7) Average teacher salary in MA= 60,000+ Average teacher salary in OR= 33,500 How is this possible? What impact does this have on education across the board?
8) Since it sounds like MA has been focused on higher standards since the early 90s, would it make sense to believe that in 20 years of working with higher standards in quality systems other states may well 'figure it out' as MA has done? My state has been focused in this manner for the past 5 years and I would like to assume that as students from year to year are exposed to more rigorous standards and expectations, we will see these types of results as well?

I firmly believe it is possible to get there but education is a system of many varied and complex components. Education needs to be a priority in my state and I just don't think 8,000 per pupil helps us get there.

SPEDWatch Score: Report Abuse
6:48 PM on December 22, 2016 0
And let's not forget about students with special needs. The achievement gap between them and their non-disabled peers has actually gotten worse over time. A world-class school system? Not if you learn differently from the pack.

Stephen Kaiser Score: Report Abuse
9:52 PM on December 22, 2016 0
This analysis needs to list its assumptions right up front.

First, it assumes that a test measures learning, knowledge or some other such function. In truth, a test may measure how well

students do taking tests, how prepared they are to take tests, and what is the potential for cheating.

Secondly, it ignores the effects of learning-outside-of-school. In twenty-two of my twenty-five years of schooling, I learning more outside of school than in-school. Yet if I score high on a test or go to a good college the high school takes credit for my education. What provisions does Massachusetts have to measure learning outside its schools?

Could it be that we are measuring, in part, access to the Internet? Massachusetts may have more Internet access that more rural or less affluent states. With kids spending more time on the Internet rather than watching television, we might see a benefit to learning in school and outside of school, especially if the alternative is television.

Another assumption is that the goal is to simply finish high up compared to other nations. It is an internalized competition. Presumably, if we become number one, we can stop and say the job is done. I say, NO, the job is to make education work significantly better than even the best nations.

In virtually all developed nations, schools have a similar format and a similar system of drill and kill. When Sputnik was launched in October 1957, a hue and cry went up, that we needed to catch up with the Russians and to copy the Russian school system. For decades, other nations were trying to copy ours. The image of the school room is common throughout the world, with a teacher standing and lecturing or directing, students tethered to their chairs, kids writing or going to blackboards. Computers have changed this process in some ways, for better or for worse.

We still don't know whether our methods are any better than those of Quintilian in the first century A.D. I found school tedious, boring and repressive until the age of twelve, when I went to England for a year. I immediately realized I was behind, and desperately tried to catch up. In time I managed to finish first in my Form, but it was not American education that got me there. I had to be motivated to learn and I was. When I came back to the states, I could have gone into my sophomore year in high school, based on what I knew. Instead I followed the age track and was bored to tears in eighth grade and my high school Freshman year. I had learned three year's worth in one year.

At age 12 I realized that something magical had happened. My potential had opened up, rather than being repressed by school. When I later became a school teacher K-8, I saw kids similarly repressed, and especially those who suffered from math phobia. I looked around my society generally and recognized large majorities who were math phobic because of their school experience.

We must do better than the conventional school experience. Setting up Massachusetts as the idol to be emulated is still aiming too low. We have suffered in the early 1960s from New Math and other ill-considered innovations in schooling. Fifty years later we suffered from the Common Core and its dreadful new formulations of mathematics which leave both kids and parents baffled by New Math II.

Massachusetts did do one thing right. In the early 1990s it developed its own system of tests, and while high-stakes testing can be very damaging, the Massachusetts versions or MCAS appears to have been superior to versions from other states, and also superior to the Common Core. Some cities, like Cambridge (home of Harvard and MIT) chose to stick with MCAS and not adopt the Common Core. Other cities and towns did the same thing.

Nationally, the Common Core experiment has been a failure, and it is likely that a gradual purge of any reference to Common Core will occur in the coming years. Six billion dollars invested by Bill Gates will have gone up in smoke, and the opportunities for true education reform will be dampened by this experience in failure.

Setting up Massachusetts as better than the Common Core may be a positive step, but still it is a very small step. From my own experience of doubling and tripling my learning rate, I think we can do much better.

SK