Report
Highlights and Key Lessons from Singapore and Shanghai
Implications for the United States

U.S. Education Delegation to Singapore and Shanghai
October 21-19, 2011
INTRODUCTION
Seeking to learn from two of the world's highest performing education systems, a delegation of US education leaders travelled to Singapore and Shanghai, from October 21-29, 2011. Organized by the National Public Education Support Fund and the Education Funder Strategy Group, in partnership with the Asia Society, participants included federal and state officials, and leaders of philanthropy, teachers' associations, and non-profit organizations. The delegation visited schools and post-secondary institutions, met with ministry/commission officials, teachers, principals and students as well as with business and government leaders from the U.S.

The goals of the delegation were to:

- Understand how Singapore and Shanghai have become top-performing education systems and what have been the key system drivers for high achievement;
- Examine the human resource development process for building effective teaching and leadership capacity throughout these systems;
- Learn about processes for achieving equitable student opportunities and outcomes;
- Gain insight into how these education systems are innovating and responding to the workforce demands and skills needed for advanced 21st century economies.

The group reviewed background materials on each of the two systems, including chapters from the OECD report Strong Performers and Successful Reformers by Kai-ming Cheng from the University of Hong Kong on Shanghai and Vivien Stewart from Asia Society on Singapore. In addition, Linda-Darling- Hammond of Stanford University and Kai-ming Cheng accompanied the group and provided further context and research findings. All the participants found it eye-opening to observe these top-performing systems first-hand and engage in high-level dialogue about the policies and practices that support their success.

This report summarizes the discussions at the meetings and site visits and describes the lessons learned from Singapore and Shanghai. The challenge now is to bring the lessons home. Of the myriad observations and insights, what are the highest priority lessons for the U.S? And what follow up actions should federal and state officials and philanthropies undertake as a result? This report is intended to inform that discussion.

SINGAPORE

HIGHLIGHTS OF MEETINGS

School Visits
In Singapore, we had the opportunity to visit three schools, a sampling of the portfolio of schools that Singapore is creating with an emphasis on local school innovations that, if successful, can later be extended across the whole of Singapore.

- **Tampines Elementary School** is in a working class neighborhood and uses a community school model to carry out its mission that its pupils should be "enriched beyond limits, and loved beyond measure." The dynamic principal presented the goals of the school—excellence, self-directed learners, physical and aesthetic
excellence and creativity, themes we were to hear many times over during the course of our visit to Singapore. A lot of emphasis was placed on the support of teams of effective teachers and on the need to engage the hearts of learners before engaging their minds. A black box theatre donated by community allowed the use of drama to encourage self-confident speaking in both English and Chinese.

- **The National Junior College** is equivalent to an elite science magnet school and, in fact, the school’s staff has visited similar “super science” schools in China, Russia, and the U. S. to develop and exchange ideas. Many of the students are the children of the nation’s leaders and graduates of the school make up a significant portion of the leadership of the country. The school is trying to broaden its curriculum to include aesthetic components and global exposure using backward design and constructivist approaches that would be familiar in an American school setting, but are newer in Asian schools. It is a Monday-Friday boarding school and every student has a teacher mentor.

- **Beacon Primary School** is one of the schools in Singapore that has an intensive focus on the integration of information and communication technology (ICT) into instruction, including digital art and storytelling, one-to-one computing, investigative skills, and use of 3D virtual learning environments. Although the principal stressed that it is too early to tell what the impact of this ICT use is on student achievement, the teachers are documenting their experiences to share with other teachers through the Singapore Academy of Teachers.

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**Institute for Technical Education**

Another eye-opening visit was to the Institute of Technical Education (ITE). The idea for ITE came from the Singapore Economic
Development Board in the early 1990s. Its goal was to train manpower to attract industry while transforming the quality and image of vocational and technical education and providing an alternate pathway to careers for the bottom 25% of Singapore's students. The organizers of ITE completely revamped the previous vocational/technical curriculum and developed a workforce certification system, developed courses in new industries and consolidated existing technical colleges into three mega-campuses with physical and technological facilities comparable to the best universities. To combat the societal prejudice against less academically inclined students, ITE created a brand for its “hands-on, minds-on, hearts-on” kind of applied learning. All three campuses of ITE offer business, ICT, and engineering but each campus also has special programs and the west campus, that we visited, has a school of hospitality.

There are 25,600 students and 2,500 staff at ITE. Fully 25% of students in grades 10-14 are in the ITE after ten years of general education. ITEs have close ties to industry for lecturers, equipment, curriculum, internships etc. Graduates have an employment rate of over 90%, and Singapore has the lowest youth unemployment rate in region. The ITE has helped Singapore to adapt to the very open global economy and ITE now runs internal training certificates for companies as well. Singapore is regarded as a global leader and innovator in technical education and has been ranked No 1 in the world in technical skills. The ITE curriculum also provides life skills as well as technical skills. ITE’s current goal is to develop graduates who are “work-ready and world-ready” by providing 25 % of its students with overseas experiences.

**Ministry of Education**

At the Singapore Ministry of Education, the delegation met Tan Ching Yee, Permanent Secretary; Ho Peng, Director General of Education; Cheong Wei Yang, Director of Planning; and Manogaran Suppiah, head of the new Singapore Teachers Academy. Later the Ministry held a reception for the delegation with Minister of Education, Heng Swee Keat.

The Ministry gave a broad overview of the phases of development of the Singapore education system. Over time, the system has developed a diverse array of school options and educational pathways (with equal expenditures for each pathway), and strong early learning support programs in primary schools to meet the needs of all students. The system has now achieved high standards and considerable social mobility with about one half of students from lower socio-economic groups getting to university. Now in its fourth phase, the system is trying to build on its record of strong academic knowledge transmission to make education more student-centered and oriented towards a more holistic range of 21st century outcomes and values, including self-direction, critical thinking, active citizenship and global awareness.

A key focus of the Ministry of Education is on the quality of the teaching force. The Ministry recruits from the top one third of high school and college graduates and, in fact, one in eight college graduates become a teacher. All teachers receive initial training at - the National
Institute of Education, then 100 hours of professional development per year. Teachers are employees of the government and all professional development is paid for by the government. An Enhanced Performance Management System for teachers assesses key competencies, including 1) the role of teachers in the academic and character development of their students; 2) the pedagogic initiatives and innovations teachers have developed; 3) the professional development they have undertaken; 4) their contribution to their colleagues and to the school; and 5) their relationship to community organizations and to parents. Learning outcomes are defined broadly, the evaluations are conducted by multiple professionals, and the system is used as part of the development of teachers’ career paths. To provide competitive salaries and professional support for teachers, Singapore made a deliberate decision to prioritize teacher quality over class size.

The system is also trying to make schools centers of innovation and to develop a portfolio of schools, each with its own character. In the past, the education system in Singapore was even more centralized, with an inspectorate system. Now, instead a school excellence/self-improvement model based on European experience and the Malcolm Baldridge awards is used. Schools do self-evaluations and, every six years, there is an outside assessment. The primary school leaving examination is the main yardstick for secondary school entrance. The Ministry would like to use other measures such as portfolios but parents support the examination system. Officials stressed their approach of continuous improvement and international benchmarking. Singapore has learned a lot from research and best practices in the U.S. “The U.S. has low average student performance compared with other countries but excellent peaks,” said Mrs. Tan.

**National Institute of Education**

At the National Institute of Education (NIE), the “heart of education,” Dean Lee Sing Kong described the close tripartite relationship between the Ministry, NIE and the schools, which allows for close alignment between policy and practice to produce good outcomes for students. In earlier times, Singapore had significant teacher shortages but in the early 1990s developed a plan to build a high-quality teaching force. This involved several steps: setting competitive salaries for entry into the profession: public acknowledgment of the teaching profession as “nation-builders”: and the development of career tracks as master teachers, school leaders or content specialists that enabled teachers to build their skills and responsibilities over a lifetime. NIE’s teacher preparation programs, which involve both bachelors and postgraduate degrees, focus on mastery of subject matter knowledge, understanding learners, and equipping teachers with a repertoire of pedagogical skills.

NIE also runs the Leaders in Education Program, a six month, full-time paid program for teachers who have been identified as having leadership potential and are given progressively more responsibility in their schools. The program focuses on producing leaders who can create innovative learning environments ("schools of the future"). It includes an overseas study trip, the design and implementation of an innovation in an actual school, seminars with international experts etc.

**Singapore System for Career Tracks in Education**
Looking to the future, NIE is in the process of revamping its teacher preparation program to focus on 21st century competencies, the incorporation of technology into collaborative learning spaces, and the expansion and deepening of research in classrooms to make teacher education more evidence-based.

**Other meetings**
Other meetings held by the delegation included a stop at the Lee Kuan Yew Institute for Public Policy at the National University of Singapore, a lunch with U.S. Ambassador to Singapore, David Adelman, and a session with Philip Yeo, chairman of SPRING Singapore, who spoke about Singapore’s strategy to develop high-level scientific talent. In these meetings, the focus of the discussion was on the growing exchanges between American and Singaporean universities and the rapid development of the Singapore higher education system. A number of American universities have campuses in Singapore, including Chicago’s Booth School of Business; the University of Nevada Hotel School, the NYU Law School and School of Fine Arts, Harvard and MIT. Singapore is becoming a medical hub and the Duke Medical School has a branch in Singapore, where students can pursue Duke/National University of Singapore degrees. A topic of much discussion was the recent announcement that Yale and the National University of Singapore are planning a Yale liberal arts degree program that will open in a couple of years and introduce a very different model of higher education into a system that has up until now been very focused on science and engineering.

At the graduate level, Singapore has a deliberate policy of importing exceptional students from across Asia by paying for their education and thus building a pipeline of 1,000 PhDs in
critical fields such as biomedicine, chemical engineering and information technology. Finally, the US Ambassador emphasized the importance of and opportunities for the US to fully engage with Asia across all fields. Singapore is particularly important: the US has twice the investment in Singapore that it has in China and it is the US’s 12th largest trading partner. (It should be noted that most of the US investment in Singapore is an accounting strategy to keep the profits of US companies from being brought back to the US where they would be taxed.) US products have high prestige and do well in Singapore. While some 4,000 Singaporean students go to the US to study – mostly to top-tier schools – a small but increasing number of US students (600) spend some period of time in Singapore. However, compared to other areas of trade, educational and cultural exchanges lack structure.

A concluding session with Simon Tay, chairman of the Singapore Institute of International Affairs, a poet and professor of law and public policy at the National University of Singapore, put the education system into the larger context. Tay described the noise and energy of the cranes and factories that have characterized a decade of heady growth in Asia that has led to the emergence of huge cities and the decline of rural areas. The significance of Asia’s rise cannot be underestimated. It has propelled hundreds of millions of people out of poverty but serious environmental issues have emerged and while there has been impressive economic growth, there has been less social or political growth. Tay argued that an undercurrent of dissatisfaction is emerging in Asia: educated people will want social growth and the losers in globalization will demand it.

He questioned the common narrative of the irresistible rise of Asia and decline of the U.S. (as for example in Tom Friedman’s book, That Used to be Us). Asia’s new middle class are flocking to buy US products such as Apple. The US therefore benefits from Asia’s economic development while Singapore companies have so far been unsuccessful in creating global brands, so the business opportunities in Asia could be won by American products. The crisis in the U.S. is also not necessarily due to Asia’s rise. The US had good infrastructure in the past, although it is now crumbling, and American civil society is strong even if the national government seems to be paralyzed.

The challenge for Singapore’s education system is to move from education for manufacturing to education for acts of creation. The education system has produced good results and lots of opportunity for Tay’s generation but no choice. Intellectuals and education leaders are now questioning some aspects of the system—because of the need for creativity. And at the higher education level, as institutions expand, the totally state-funded model is untenable and a different financing model will need to be developed.

**KEY LESSONS FROM SINGAPORE**

Singapore is clearly a major global success story. Having transformed itself from third-world to first-world status in fifty years, Singapore today is a gleaming global hub of trade, finance, and technology with a world-class education system. From the meetings, visits and discussions, the delegation was struck by a number of political and educational policies and practices that have driven the development of this high-performing education system.

**Vision and Leadership**
Singapore leaders across the board share a palpable consensus about the centrality of human resources to economic development. Recognizing that human resources are their only natural resources, there is an urgent focus on human capital development and education is Singapore’s ‘core business.’ Singapore is preparing its students to function in the globalized world of the future and while there is fear that Singapore could be overwhelmed at any point by larger players in the global economy, the public conversation about education is aspirational rather than negative, it is about rising to challenges, and making the best of what they have rather than just lamenting what they don’t have or haven’t yet achieved.

**Alignment between Education and Economic Development**

Key to Singapore’s success has been the strong link between education and economic development, achieved through close communication between the Economic Development Board, Manpower Ministry, and Ministry of Education, and by rotation of ministers between departments. This linkage has made investment in education a central priority, kept education policies very pragmatic, and has led to the development of high-quality math and science education and to the creation of world-class technical education. The Institute for Technical Education, which the delegation visited, is an impressive example of reimagining and transforming technical and vocational education. It is designed to serve the bottom quarter of students in terms of school achievement. Whereas in the US, 25% of students drop out of high school, in Singapore, 90% graduate from ITE and get jobs.

**Capable Ministry of Education**

Singapore has a very strong, well-educated and effective civil service, who are able to maintain a focus on continuous improvement over a long period. They also have close ties to the schools and to the National Institute of Education so that policy, research and practice are closely aligned. Consequently, there is fidelity of implementation across the system rather than the huge gap that typically exists between policy and practice in the U.S. “They are implementation geniuses,” said one member of the delegation.

**High Standards and High Stakes Gateways**

Singapore’s education system is extremely rigorous. The academic standards set by its Primary Leaving Examination and its O and A-levels are as high as anywhere in the world. Students, teachers and principals all work very hard towards these important gateways. All students have a strong early foundation in the core subjects of math and science, as well as literacy in two languages.

**High-Quality Teachers and Principals**

Since the 1990s, Singapore has developed comprehensive human resource systems to attract the highest quality people into teaching and school leadership and support them in their work. So Singapore schools have the capacity to carry out policies effectively and to deliver high-quality teaching and learning, a cornerstone of its high performance. In the early days, when education levels were low, Singapore had a low entry threshold for teaching. Respecting its original teachers, Singapore bootstrapped its education system by continuously improving their teaching skills while moving them into positions where they would be effective. Today, Singapore recruits prospective teachers from the top one third of their graduating class; provides financial support during training in exchange for a commitment to teach; provides high-quality training at the special purpose National
Institute of Education; benchmarks entry-level salaries to those of other professions such as engineering; provides 100 hours of professional development each year to every teacher; and provides a clear set of career paths, based on performance. Singapore also has a sophisticated talent management plan for identifying and developing leaders.

**Meritocracy**
Underpinning the Singaporean system is the belief that education is the route to advancement and that hard work and effort pay off for students of all ethnic backgrounds. This belief and reality has been created through a wide range of policies including early intervention programs in early childhood and elementary schools, and, at the secondary level, different types of schools and multiple pathways to careers and further education. While Singapore still has a higher percentage of variance in student performance based on socioeconomic status (higher than the OECD average), the inputs to schools are more equal than the U.S. in terms of resources, infrastructure, teaching and leadership. Singapore has worked hard at building a nation out of different ethnic, religious and linguistic groups, and operates a system that values multilingualism and multiculturalism. However, as in all countries, globalization is increasing the levels of income inequality within Singapore and it will have to work hard to maintain this degree of social mobility going forward.

**Curriculum and Instruction**
Singapore does not leave it to individual teachers or to the private sector to create a curriculum to meet its high standards. A system-wide Curriculum Development Institute has developed strong programs in math, science, technical education and languages. Having been very successful as a traditional knowledge transmission education system, Singapore is now trying to focus more on creativity, problem-solving and learning how to learn. To create “future-ready” Singaporeans, they are emphasizing arts, character development, and becoming a good citizen both locally and globally. This kind of well-rounded curriculum used to characterize American schools but has been narrowed in recent years.

**Collaboration, Professionalism and Accountability**
Singapore runs on performance management at all levels and agencies of government, including the education system. Students, teachers, principals, Ministry and NIE staff all have incentives to work hard. The alignment of policy and practice is reinforced by a culture of collaboration. Everyone is responsible and accountable for working together effectively to achieve goals determined throughout the system by the Ministry of Education and each school. The system for teacher and principal appraisal rests in the context of substantial support and employs a basket of measures that define outcomes broadly and evaluations are conducted by multiple professionals. Teacher networks and learning circles encourage peer-to-peer learning and the Academy of Singapore Teachers, opened in September 2010, further encourages teachers to share best practices.

**Continuous Improvement and Global Orientation**
Delegates were struck by the ethic of continuous improvement and purposeful innovation that characterizes Singapore, which aims to produce “thinking schools in a learning nation.” As part and parcel of this, they have mined international research and best practice not only to benchmark and compare their performance but also to improve.

**CHALLENGES FOR SINGAPORE**
Singapore certainly has its challenges. For example, a side effect of examination pressure is massive tutoring outside of schools and a level of streaming that many Americans would not agree with. The examination system maintains high standards but is also a constraint on innovation. And while Singapore has significantly closed its achievement gaps and focused on bringing up the lowest achievers, there is still a strong correlation between socio-economic status and achievement (although far less than in the U.S.). But Singapore educators are not resting on their laurels. Singapore is now revamping its curriculum, teacher training and assessment to encourage the development of the kind of high-skilled, creative knowledge workers needed for the 21st century.

**IMPLICATIONS FOR THE U.S.**

Singapore has built a highly successful education system through creating a policy infrastructure that drives performance and by building the capacity of educators to deliver high-quality education in every school. While the small size and tightly coupled nature of the education system may make it less relevant to larger countries, Singapore is the size of some of our larger cities and smaller states so that its practices could be examined through that lens. Although the U.S. as a whole is vastly different in scale and governance, we could ask ourselves in what form we might develop our own version of the long-term vision and leadership that has driven Singapore to the top.

In today’s world, developing stronger connections between education and economic development and reimagining technical education as Singapore has done would also seem to be a key to future prosperity. The U.S. urgently needs to connect the dots between what industry needs and what schools are producing.

Given the centrality of teaching and school leadership to the quality of any education system, a key question that the delegation left Singapore with was – how can the federal and state governments work together and in partnership with districts to raise the image, quality, professional training and effectiveness of the teaching and leadership profession in the US to match that of Singapore? How can we move from our vicious cycle on teacher quality to their virtuous cycle?
SHANGHAI

HIGHLIGHTS OF MEETINGS

In Singapore, the delegation had been able to see each of the parts of a very well-managed system, but the scale of Shanghai, a city of 22 million people, limited our exposure. Nevertheless, there were some clear insights and observations. Shanghai is the leading edge of China’s education system and has pioneered innovations in curriculum, examinations, and overcoming inequality that are spreading to other parts of China. Through these reforms, it has been able to systematically improve quality, with one indicator being its top performance on the 2009 PISA assessment. In Shanghai, the delegation visited two schools, one a top-performing school and one a turnaround school, met with the leadership of the Shanghai Education Commission, and visited East China Normal University, a leading university in China with a strong tradition in teaching and leadership development. Discussions in Shanghai focused primarily on their approach to turning around low-performing schools, the teaching profession in China, and how Chinese education is changing to meet the demands of a global knowledge economy.

No 2 High School Affiliated with East China Normal University

Founded in 1958, the No 2 Secondary School affiliated with East China Normal University is one of the highest-performing and resource-rich schools in Shanghai and is a national model for science and math under the auspices of the national Ministry of Education. Each member of the delegation was paired with a student for a tour of the school, discussion, and lunch. The school has 1500 students, including 200 students in the International Division, primarily from Korea and Indonesia. In earlier years, students were selected solely through examination, but since the government wants to improve access to top-performing schools, now only about 40% enter that way and the rest enter through school recommendation or through a citywide lottery. Most of the students board during the week and go home at the weekends.

The school's motto is “pursuing excellence and innovation” and the principal described the Chinese word for excellence as having two meanings: “independence and surpassing yourself.” In addition to the Chinese National Curriculum, the principal described the school as being characterized by 6 One Hundreds: 100% of students do 100 hours of volunteer work; 100% do research activities; 100% join interest clubs; 100% study 300 optional courses, many in humanities and social sciences; 100% conduct experiments at school; and 100% learn to swim. Members of the delegation saw superb facilities, including state-of-the-art lab facilities, where students spoke about a series of highly sophisticated research projects in the natural and social sciences, engineering, and technology.

The school recruits its teachers from both normal and comprehensive universities through a process that involves a long intentional interview, testing of subject matter knowledge, and observation of pilot lessons. Once hired, for the first six months, teachers simply observe the best teachers in the school. In addition to teaching classes, teachers also have
mentoring responsibilities. Home room teachers monitor each student’s progress regularly and visit students’ homes. The quality control system for teachers involves observation by senior teachers, student and peer evaluations of teachers, and a self-reflective process as well as indicators of student achievement. As with other schools in Shanghai, the school has an obligation to support lower performing schools to reduce the gap between schools. It provides professional development for 100 teachers from other schools in Shanghai each year, who return to their schools as lead teachers. It also provides a management team and teacher professional development for two schools that serves less advantaged populations. It is also developing a clone of itself in a poorer community on the outskirts of Shanghai.

When asked about her biggest goal, the principal said it was to “go global.” The school has sister school relationships with schools in San Diego, Chicago, and with private schools in New Jersey and Washington DC, but she would like to be able to give all of her teachers the opportunity to go abroad in order to develop as a globally-focused and innovative school.

**Zhabei No 8 Middle School**
The Zhabei district of Shanghai is a lower income area with poor educational performance. In 1994, Liu Jinghai became the principal of Zhabei District School No 8, a school that had been among the poorest performing in the district. Mr. Liu applied a strategy that he called ‘success’ education that he had developed through many years as a researcher. His approach is based on the observation that low-performing students have no confidence in their ability to succeed, a situation made worse by the examination pressures in schools in China. In addition, teachers in these schools lack belief in their ability to be successful with such students. His strategy is to offer students a wide range of curricula and extra-curricular activities so that they can find a talent and a passion to increase their confidence; to systematically raise the quality of teaching; and to regularly connect to parents. This success education program has transformed the school, greatly improving its ranking in the district and increasing the number of secondary school graduates who go on to higher education to 80%. The school has subsequently helped to turn around ten other low-performing schools in Shanghai.

The delegation had an opportunity to observe a music class and a math class and to have a discussion with Principal Liu and several teachers and students. The classes we observed had very well-organized lessons with clear objectives and a variety of classroom activities. Students were intensely focused, with no time wasted, and other teachers were observing the lesson. Believing that effective teachers have a very clear idea of what they want to teach and how and that all people learn through imitation, the school tries to make the hidden characteristics of good teaching visible to others. The emphasis is on helping younger teachers to develop strong fundamentals of good teaching practice. Once they have mastered the discipline of good lessons, then they can innovate. New teachers arrive in
schools knowing educational theory but not how to deal with the individual needs of students, what points of a lesson to emphasize and how to effectively convey the most difficult concepts. Each teacher has a mentor teacher who observes classes, helps with the lesson and checks that every student in the class is engaged. All teachers of a particular subject are part of a teachers’ study group and work together on lesson plans and cross-observe each other’s lessons.

Since 2005, Zhabei School has worked with ten other “weak” or “rural” schools under Shanghai’s “empowered administration” policy. Under this policy, the successful school receives funds from the Shanghai Education Commission to improve the weaker schools. Believing that the fundamental problem in these schools is that administrators believe their teachers are weak while the teachers believe their students are weak, Zhabei applies its ‘success for all” methods of finding and encouraging students’ different talents and self-confidence and working with teachers to increase the effectiveness of their instruction. Teachers come to Zhabei Middle School to shadow effective teachers and Zhabei teachers and the principal go to the low-performing school to improve school management, culture and instruction. Zhabei has also created an E-Learning platform to enable the school to support teachers at a distance. Principal Liu reported that all ten of the schools showed improvement in the first year.

Shanghai Education Commission
The Shanghai Education Commission is responsible for basic, higher, and vocational education and lifelong learning for 22 million people. The delegation met with Director General Xue Mingyang who pointed out that the meeting was taking place at the Jin Jiang Hotel, where President Nixon had signed the Shanghai communiqué, normalizing relationships between the US and China. Mr Xue emphasized the importance of communication between the education systems of the U.S. and China in order to draw the best from east and west and so that American and Chinese students could get to know each other at a deeper level. The discussion with the Commission focused on the key factors in Shanghai’s success to date and its directions for the future; policies on improving teaching; the balance between central management and school autonomy; and its experience with school turnaround.

Shanghai has had thirty years of educational expansion and improvement. In the 1970s and 1980s, the focus was on expanding access to basic education. Then in the 1990s, the focus shifted to quality. A major curriculum reform effort, piloted in Shanghai and then spread around the country, broadened the curriculum beyond its traditional focus on math and science to include more arts, humanities, and languages, and initiated the move towards more active forms of pedagogy. A major emphasis was also placed on upgrading the quality of teachers and reducing examination pressure - Shanghai abolished the end of primary school examination and moved to a system of choice among neighborhood schools. Efforts to close the gap between low and high performing schools also began in this period. Shanghai’s 2009 PISA results – it came first in all three areas, reading, math, and science, were attributed by Mr. Xue to this long-term process of ‘balanced improvement’. In fact, Shanghai had the lowest gap between the highest and lowest performers of any system participating in PISA.
Looking to the future, China has a 2020 National Education Plan, which was drafted with online input from millions of people, and which aims to make upper secondary education universal; to reduce the gap between richer urban and poorer rural areas and between top and weaker schools; to reduce examination pressure by diversifying the university entrance examination; and to expand higher education enrollment to 40% of an age cohort. Shanghai has its own 2020 plan within this framework, with a major emphasis on making higher education widely accessible. The Commission is therefore focused on the challenges of financing and faculty recruitment.

Teachers have always been respected in China but since Shanghai is the major commercial center of China, education has to compete with other sectors for talent. To attract high-quality people into teaching, Shanghai has raised salaries, and academic requirements for entering teachers while providing early admission to universities for people who want to teach. Once employed in schools, there is a step-by-step process of professional development that is linked to a career ladder of beginning, middle and senior/lead teachers. In addition, all teachers are required to take 360 hours of professional training over a five-year period in order to be promoted or recertified. Shanghai follows the Chinese tradition of apprenticeship in which the school’s master teachers mentor, observe and meet weekly with newer teachers so that teachers “stand on the shoulders of giants.” Also all teachers must have several open classrooms each year so that other teachers can learn from them. This practice also puts a subtle pressure on teachers to improve since, in principle, anyone can walk into any class at any time. Finally, following the Chinese tradition of teacher research, there is a teaching and research panel with 900 members throughout the city where senior teachers work on improvement of practice and through which best practices are disseminated across the system.

On the question of how to manage such a large system to get consistent quality while also allowing schools the autonomy to develop their own character, the Commission inspects each school every 3 years using two sets of measures – one set is standard across all schools and one set is specific to the goals the school has set itself. The Commission also gets feedback from teachers and parents and also has research data on every school.

Shanghai could also provide an example of how the assessment tools used by OECD for PISA can inform the process of educational improvement. In 2006, Shanghai borrowed from OECD the papers for PISA and tried to use it in a small sample. They found the approach an advanced way of promoting cultivation of ability rather than gathering information. Hence, they tried to adopt similar approaches in their school assessments.

Finally, recognizing the huge SES differences in Shanghai, in part due to enormous migration to the city from rural areas, Shanghai has put a major focus on improving lower-performing schools. The essential strategy is to get principals and teachers from high-performing schools working with weaker schools on management, school culture and teaching quality. This can take a variety of forms. A principal of a successful school can be asked to manage several schools, not just one. Schools in a geographic area may be formed into clusters to share teaching resources and best practices. Under the “empowered management” policy, another school, including entities outside the Shanghai public system, can receive funds from the Commission to improve the management and teaching in a low-performing school. Teachers from the lower-performing school may spend time observing
in the higher performing school and principals and lead teachers from the high-performing school will spend time each week in the weaker school. Two-year contracts for approximately $500,000 per year depend on performance. So far, Shanghai has had three 2-year rounds of such “empowered administration,” involving about 60 weaker schools. If a school does not improve after this intensive support, the Commission can close or restructure it.

East China Normal University
East China Normal University (ECNU) is one of the top 16 universities in China. Originally a teacher education institution, it is now a comprehensive university but still plays a major role in teacher education, especially in math, science, and languages and it is one of three national in-service training centers for principals. ECNU trains teachers for Shanghai but also for more rural provinces, whose students receive tuition and board in exchange for teaching in a rural area for a number of years. The university also trains faculty for many universities in China, an area that has become increasingly important since higher education expanded rapidly from 1999-2009, increasing from serving 10% to 24% of the age cohort.

The main complaint about Chinese education, whether in schools or universities, is that it is too exam-oriented and deadens student interest. The university is grappling with changing its curriculum to keep its academic rigor while expanding the capacity of its faculty and teacher candidates to employ instructional practices that foster critical thinking, problem-solving and creativity, as demanded by the new national education reforms. The biggest challenge is the resistance of current faculty to change.

Internationalization is a major part of ECNU’s strategy for modernization. Faculty are now expected to have studied abroad in order to be promoted. ECNU trains many teachers who go to the U.S. each year as Chinese language teachers but also learn American teaching methods at the same time. ECNU has many partnerships with universities in the US, Europe and Australia, including joint degree programs with Cornell in social sciences, with Colorado State on energy and climate change, and a summer program at Teachers College, Columbia, for teachers. A Global Education Center on the campus houses many of its international programs, including the nascent joint degree program with NYU which will open a new campus in Shanghai next year, offering bachelor degrees in six areas.
According to ECNU President Yu Lizhong, the goal of these joint programs is “for Chinese students to know more about the world and for students from other countries to understand China.” ECNU’s goal is for 25% of its students to have a study abroad experience (up from 16% now) and for all faculty to do so.

In response to a question about rates of student attrition in Chinese universities compared with American ones, president Yu said that they are negligible, perhaps 100 students per year in a student body of 27,000. Counselors have responsibility for keeping in touch with and helping students and Chinese universities, including the president, are held responsible for graduating their students.

**KEY LESSONS FROM SHANGHAI**

Although the delegation’s experience was limited to a relatively small number of meetings and visits in a very large city, which itself is part of the education system of an enormous country, certain features of the system seem clearly to have contributed to Shanghai’s high performance.

**Serious, Long-Term Vision for Education**
Chinese wants to make the transition from being an agricultural and low-wage manufacturing economy to being a world leader in a range of fields. China’s long-term goals include universal 12 years of education by 2020; 100 first-class universities; science parks to develop products from university research; and a modernized curriculum aimed at developing students’ creativity and ability to apply knowledge, their skill in technology use and proficiency in English. China has set its sights not just on mass education but on a world-class education and is committed to making the investments to get there. Shanghai is the leading edge.

**Rigorous Standards and Core Curriculum, especially in Math and Science**
Like most Asian countries, China puts greater emphasis on math and science than American schools. This is implemented through a core curriculum, strong subject matter preparation of teachers, specialized math and science teachers as early as first grade, and a strong societal emphasis on math and science, including in the university entrance examinations. As a result both girls as well as boys do well in science.

**Coherent Teacher Development System**
Teaching is still a desirable profession in China; there appears to be a refreshing lack of a ‘blame the teachers' culture. Policymakers focus on attracting people into teaching, and once on the job, there is an intense focus on the quality of classroom instruction. Making classroom practice visible, peer-to-peer assistance to newer teachers, and the system of lead teachers, teacher research and teacher study groups provide a highly organized system for gaining consistent quality and disseminating innovation. The trade-off for this systematic professional development is larger class sizes.

**Equity**
There are enormous equity challenges in China. In Shanghai, the migration of millions of workers from the countryside to the city has posed significant challenges to the schools.
The pairing of principals and teachers from stronger schools with weaker schools to improve school management, culture, and classroom instruction, with clear performance expectations, seems a promising strategy. Peer assistance from stronger schools seems a better strategy than state takeover or expecting low-performing schools to improve themselves.

**Strong Cultural Commitment to Education**

Respect for education is deeply ingrained in Chinese society, going back to the meritocratic Imperial Civil Service Examination. Students in China work very hard in school and spend far more time out of school studying than do their American peers in the U.S. While this produces a lot of stress and many parents complain about the amount of time devoted to exam prep, the belief that effort and hard work pay off is a powerful driver of student achievement.

**Global Orientation**

Chinese education leaders routinely use international benchmarking to improve their system. China’s curriculum reforms, for example, are attempting to broaden the curriculum beyond math and science and move China away from its traditional didactic classroom practices, with their heavy emphasis on memorization, to more Western approaches that incorporate inquiry methods and greater student participation in classroom discussion. Chinese schools and universities also actively pursue international opportunities for faculty and students.

**Challenges to China**

Despite its impressive educational developments, China faces huge challenges as it seeks to turn its enormous population from a burden into an asset. The gap between the poorer rural areas and the increasingly affluent cities is a significant threat to China’s peaceful development and the massive migration to the cities poses serious challenges to city school systems. (Not all cities have attempted to integrate migrant students into city schools as Shanghai has). The national university entrance examination (the “bad master”) is another obstacle, and this university-developed examination is at odds with the goals of curriculum reform to promote creativity and critical thinking. The government is trying to reduce the influence of the exam by allowing provinces to develop their own and to experiment with allowing some students to enter university by alternate routes. But the belief in examinations as the guarantor of meritocracy is very strong and this examination cult means that high schools are very exam-focused and that students, while working hard, are spending a great deal of time with tutors on preparation and memorization for exams. Finally, as the system expands at breakneck speed, there are problems with capacity at every level, from the shortage of English teachers to the lack of well-trained faculty for the new universities.

**Implications for the U.S.**

Education in Shanghai shows what the rest of China might become. And it is possible that in a few years, if there remains little progress in high school graduation in the U.S., that China might be graduating a higher proportion of a high school cohort than we do – and, of course, the numbers are immensely larger. China has huge economic, environmental and
political problems to solve, but it is certainly stiffening the global competition for high-skill and high-wage jobs. The U.S. economic and educational system has many advantages that can be built on to create an innovation-oriented economy and society, but only if we take seriously the challenge of building a world-class education system for all of our students. The U.S. relationship with China is likely to be its most important relationship in the 21st century yet our students know very little about China. We need to engage with China so that our students will have the knowledge and skills to be successful in the globalized world of the 21st century.

With respect to educational practice, there are many aspects of Chinese education that would not be attractive in the US, including the heavy exam focus, the restrictions on students’ opportunities to follow different interests, and the more didactic style of pedagogy. However, there are transferable lessons for the US. Specifically, in terms of teaching, the systematic school-wide attention to the quality of classroom instruction and the ways in which teacher study groups and lead teacher/researchers can both develop consistent quality and act as a mechanism for disseminating innovation are certainly relevant to American schools. Shanghai’s success in raising the achievement of weaker schools by pairing them with higher-performing schools involving some of the best teachers in those turnaround efforts also warrants a deeper look in the U.S.

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