AGENDA

2016-20 Strategic Agenda Steering Committee

Council on Postsecondary Education
Tuesday, March 3, 2015
1:00 PM
Conference Room A

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1. Welcome and Opening Remarks
   -Sherrill Zimmerman, Steering Committee Chair
2. Overview of Kentucky Rising 2
   - *John DeAtley*, *Director of Field Services, The National Center on Education and the Economy*
3. Review and Discussion: Vision, Mission and Values 34
4. Update on Policy Forums 35
5. Other Business
6. Adjournment
   Next Meeting: April 16, 2015, 11:30-2:00 p.m., Morehead State University

KENTUCKY RISING

"Kentucky's first settlers brought with them a dedication to democracy and a sense of limitless hope about the future. They were determined to participate in world progress in science, education, and manufacturing. The early years of statehood were an era of great optimism and progress and the eyes of the nation often focused on Kentucky. … Globally oriented Kentuckians were determined to transform the frontier into a network of communities exporting to the world market. …"*

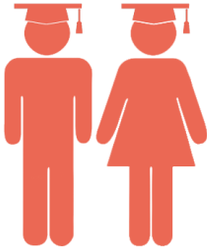
THE GOAL

Kentucky as a **world leader in high value-added international trade of goods and services** with broadly shared prosperity for its citizens

THE METHOD

Kentucky's **workforce** among the **world's most highly skilled,** globally aware **and globally competent**

THE STANDARD



New Bluegrass Diploma

- Builds on the **Common Core**
- Set to **global academic standards**
- **Globally literate** and aware
- **Performance-based** – Awarded when the student meets these high standards
- **Gateway to many pathways** to good jobs, further education

Mission of our schools: Make sure every student meets the standard for a Kentucky Bluegrass Diploma

FURTHER HIGH SCHOOL

AP Diploma
IB Diploma
Cambridge A Level Diploma

Internationally Recognized Vocational Qualifications

4 YEAR COLLEGE

COMMUNITY COLLEGE

2-year Transfer Programs

2-year Career and Technical Education Programs

Pathways after Kentucky Bluegrass Diploma

* James Ramage and Andrea Watkins, *Kentucky Rising*, Lexington: University Press of Kentucky, 2001.

KENTUCKY RISING

A FRAMEWORK

9 Building Blocks the Top Performers have used to create the world's most successful education systems

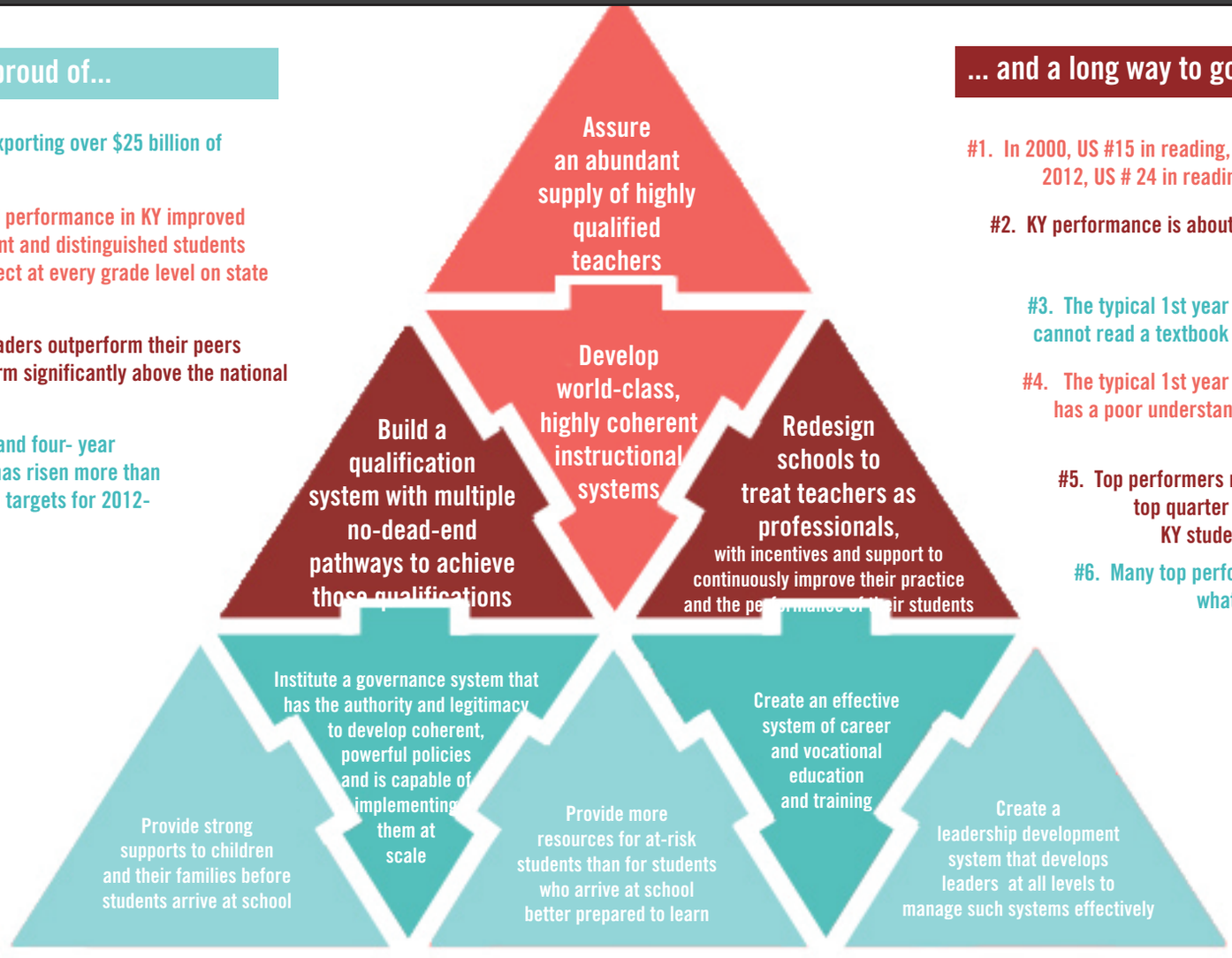
We have much to be proud of...

#1. KY has a global economy, exporting over $25 billion of products to 198 countries.

#2. In 2013-14, overall student performance in KY improved with the percentage of proficient and distinguished students increasing in nearly every subject at every grade level on state assessments

#3. On NAEP, KY 4th and 8th graders outperform their peers nationally in reading and perform significantly above the national average in science.

#4. In KY the percent of two- and four- year graduates with STEM degrees has risen more than 15 percent and exceeded state targets for 2012-2013.



... and a long way to go

#1. In 2000, US #15 in reading, #17 in math, #14 in science In 2012, US # 24 in reading, #36 in math, #27 in science

#2. KY performance is about average for US states in math and writing on NAEP.

#3. The typical 1st year US community college student cannot read a textbook written at the 12th grade level

#4. The typical 1st year US community college student has a poor understanding of elementary and middle school math

#5. Top performers recruit their teachers from the top quarter of college bound students, but KY students come from the bottom half

#6. Many top performers pay beginning teachers what they pay beginning engineers

QUESTION: How can we figure out how to match the performance of the top-performing countries?

ANSWER: By studying the strategies they used to get there.

January 28, 2015

KENTUCKY RISING

The Indicators Project

WHAT IS KENTUCKY RISING?

Kentucky Rising is a statewide initiative intended to enable our citizens to enjoy broadly shared prosperity in a fiercly competitive international economy. Reaching that goal requires a world class workforce.

Since the Kentucky Education Reform Act was passed in 1990, Kentucky has moved from close to the bottom of the states in school performance to the middle of the pack. The state is now committed to building on that achievement to reach the top of the pack, not just in the United States, but in the world.

That will require the state to carefully examine how Kentucky compares to the top performers in the United States and world on every major factor—from the quality of our teachers to the way we finance our schools—that affects the abiility of our schools to educate our students to the highest standards in the world and function well in a global economy.

Researchers at the National Center on Education and the Economy have been studying the stratgegies used by the countries with the best education systems for more than a quarter of a century. They have identified *Nine Building Blocks for a World-Class Education System*. Not all of the best-performing countries are equally strong in all of these areas, but, again and again, the researchers have seen that the stronger a country or a state is in these arenas, the more likely it is that they will find a very high performing system.

Through the winter and spring of 2015, Kentucky will be engaged in gathering data on its own performance in each of the Nine Building Blocks, comparing that data to the comparable data for the states and nations with the best-performing education systems. That information will be used to identify the gaps in the performance for each building block, and that information, in turn, will be used to involve citizens, agencies, and institutions all over the Commonwealth, both public and private in the development of a multi-year, comprehensive effort to position Kentucky to be a world-leader in the global economy and to enable its citizens to enjoy broadly shared prosperity for many years to come.

In the years ahead, Kentucky will revisit the indicators, tracking the Commonwealth's progress in putting these building blocks in place.

THE NINE BUILDING BLOCKS FOR A WORLD-CLASS STATE EDUCATION SYSTEM

Researchers at the National Center on Education and the Economy (NCEE) have been studying the education systems of the countries, provinces and states with the highest student achievement for a quarter of a century. The following nine points summarize what NCEE has learned about the steps that top performers have taken to get to the top of the world's education league tables:

1. Provide strong supports for children and their families before students arrive at school;
2. Provide more resources for at-risk students than for others;
3. Develop world class, highly coherent instructional systems;

4. Create clear gateways for students through the system, set to global standards, with no dead ends;
5. Assure an abundant supply of highly competent teachers;
6. Redesign schools to be places in which teachers are treated as professionals, with incentives and support to continuously improve their professional practice and the performance of their students;
7. Create an effective system of career and technical education and training;
8. Create a leadership development system that develops leaders at all levels to manage such systems effectively; and
9. Institute a governance system that has the authority and legitimacy to develop coherent, powerful policies and is capable of implementing them at scale.

KEY INDICATORS OF SUCCESS

The partners in Kentucky Rising have asked NCEE to identify key indicators for each of the Nine Building Blocks that will enable Kentucky to compare itself to the countries and American states with the most effective education systems. Over time Kentucky can track these indicators as it redesigns its education system. At the outset, after these indicators have been discussed, revised, and the data to support them has been documented, a gap analysis will be conducted by the Kentucky Rising partners, with help from NCEE, to understand where Kentucky stands on each indicator, how far it has to go to meet the targets represented by each indicator, and create strategies adapted to fit the Kentucky environment to achieve those targets.

WHICH STATES AND COUNTRIES IS KENTUCKY BEING COMPARED TO? WHY THESE STATES AND COUNTRIES?

The countries chosen for comparison were chosen on the basis of data collected by the Organization for European Cooperation and Development (OECD) by their Programme on International Student Assessment (PISA). This is the largest and most highly regarded comparative survey of student performance in the world. It is intended to measure not what students can recall from the curriculum they have studied, but what they can do with what they have learned. It is therefore the best data available anywhere on the kind of learning that is useful to young people as they enter the workforce. These surveys measure student achievement in mathematics, reading and science. NCEE takes the most recent data for each of these subjects and, taking an average of national performance in all three subjects, constructs a league table of national performance, identifying the top ten performers. We then took two of the top ten performers from Asia (Shanghai and Singapore), one from North America (Ontario Province in Canada) and one in Europe (Finland) for the comparisons with Kentucky. These choices were intended to produce a set of countries very different from each other in national culture, type of government, structure of the education system and so on. What unifies these countries is their top performance.

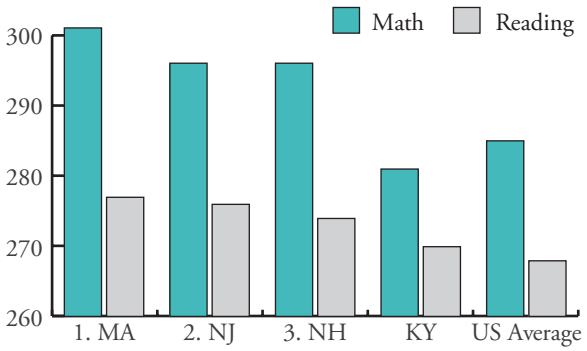
NCEE chose three states for comparison to Kentucky. These states are the three top achievers on the National Assessment of Education Progress, the survey that the United States Government uses to compare student achievement across the states. Massachusetts, New Jersey and New Hampshire scored at the top, 1st, 2nd and 3rd, in performance on reading and

math on the 2013 NAEP for 8th grade students. We did not include science as there was no 8th grade NAEP science exam administered in 2013, and not all states administer the NAEP science test in any case.

NAEP 2013 8th Grade

State	Math Score	Reading Score
1. MA	301	277
2. NJ	296	276
3. NH	296	274
KY*	281	270
U.S. Average	285	268

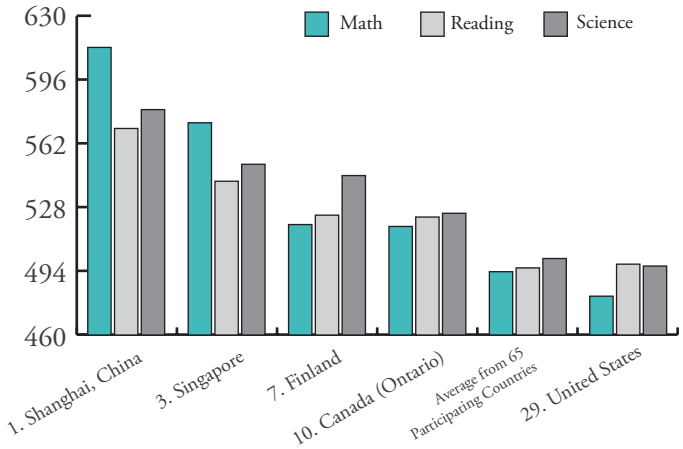
*Kentucky was ranked 32nd in mathematics and 13th in reading on NAEP 2013 for 8th grade.



The benchmark international jurisdictions (Shanghai, China; Singapore; Finland and Ontario, Canada) all scored in the top ten out of 65 jurisdictions in reading, mathematics and science on the 2012 PISA examinations and were specifically chosen to represent different models of education system design and governance models, all of which are highly successful.

PISA 2012

Country	Math Score	Reading Score	Science Score
1. Shanghai, China	613	570	580
3. Singapore	573	542	551
7. Finland	519	524	545
10. Canada (Ontario)	518	523	525
Average from 65 Participating Countries	494	496	501
29. United States	481	498	497



This document is organized into five major parts:

- A summary of the key indicators for each of the nine building blocks;
- Indicators that show how the benchmarked jurisdictions are doing in each of the Nine Building Blocks. Each indicator begins with some contextual information to set the stage;
- A sample indicator with international and national information drafted;
- Profiles of the jurisdictions being benchmarked that include information about their economy, demographics and education investments; and
- Background data from each of the benchmarked jurisdictions.

KENTUCKY RISING

Key Indicators Summary

1. Provide strong supports for children and their families before students arrive at school

- What proportion of children have access to high quality childcare options?
- What proportion of children have access to high quality early childhood education?

2. Provide more resources for at-risk students than for others

- Do at-risk students receive more or less resources than other students, and if so how much?

3. Develop world-class, highly coherent instructional systems

- To what extent are standards internationally benchmarked in the core subjects and in the competencies demanded of a 21st century workforce?
- To what extent are curriculum frameworks, syllabi and curriculum provided to guide teachers?
- Are high quality assessments that measure the knowledge and skills students will need to succeed in the 21st century being used?
- To what extent is the instructional system aligned?

4. Create clear gateways for students through the system, set to global standards, with no dead ends

- Are there clear gateways for students through the primary, secondary and post-secondary systems with no dead-ends?

5. Assure an abundant supply of highly qualified teachers

- Is there a balance between supply and demand of teachers?
- How qualified are the candidates admitted to teacher preparation programs?
- How rigorous is the program of instruction for teacher preparation?

6. Redesign schools to be places in which teachers will be treated as professionals, with incentives and support to continuously improve their professional practice and the performance of their students

- How competitive are teachers' salaries with the compensation in the high-status professions?
- Is there a career ladder for educators?
- Does the way the school is organized promote teacher growth and improvements in student learning?

7. Create an effective system of career and technical education and training

- Is there a Career and Technical Education (CTE) system that supports 21st century careers?
- Do CTE programs lead to industry-recognized qualifications?
- Is the CTE system attractive to a broad range of students and parents?

8. Create a leadership development system that develops leaders at all levels to manage such systems effectively

- Does the system prepare school leaders effectively?
- Does the system develop school leaders continuously throughout their careers?
- Are there systems in place for struggling leaders to learn from their most successful peers?

9. Institute a governance system that has the authority and legitimacy to develop coherent, powerful policies and is capable of implementing them at scale

- Are there shared goals across the system?
- Is there a place where the buck stops?
- Is there an effective way to hold all parts of the system accountable and to provide effective help to non-performing parts of the system?

KENTUCKY RISING

Key Indicators with Subquestions

1. Provide strong supports for children and their families before students arrive at school

Context: Information about the percentage of children in families in poverty; the percentage of children with one parent with a postsecondary degree; percent of working age women in the workforce; percent of children whose parents are fluent in the primary language; and the government investment in early childhood education per child.

What proportion of children have access to high quality childcare options?

- What percent of children ages 0-2 use childcare?
- Is childcare considered affordable?
- What public funding is provided for low-income families to obtain childcare?
- What is the quality of the childcare professionals (pay, qualifications, turnover)?

What proportion of children have access to high quality early childhood education?

- What percentage of children are enrolled in preschool?
- What is the preschool enrollment rate for low income students?
- How is preschool funded: is preschool universally funded or income-based?
- What percentage of preschool students attend full-day programs?
- What are the qualifications for preschool teachers?
- What systems are in place to ensure preschool quality?

2. Provide more resources for at-risk students than for others

Context: Information about spending per students; the percent of low income students who do well on NAEP (US) or PISA; and the percent of variance in performance explained by socio-economic status.

Do at-risk students receive more or less resources than other students, and if so how much?

- Do at risk students receive more funding?
- Do at risk students receive more teachers?
- Do at risk students receive better teachers?

3. Develop world-class, highly coherent instructional systems

Context: Description of instructional system

To what extent are standards internationally benchmarked in the core subjects and in the competencies demanded of a 21st century workforce?

- Are standards internationally benchmarked?
- Are standards set for a full range of core subjects?
- Are standards set for 21st century skills?

To what extent are curriculum frameworks, syllabi and curriculum provided to guide teachers?

- Are curriculum frameworks, syllabi and curriculum provided to teachers?
- Are teachers trained in how to use those materials?

Are high quality assessments that measure the knowledge and skills students need to succeed in the 21st century being used?

- Do assessments include a combination of summative and formative assessments?
- Are the assessments used to provide incentives? For whom?
- Do the assessments have multiple formats which measure critical thinking skills, including essays and multi-step problems?
- Are past exam questions and samples of answers to those questions released so that teachers, students and parents are clear about the expectations?

To what extend is the instructional system aligned?

- Are standards, curriculum/frameworks and assessments aligned?
- Are exit standards for secondary school aligned to entrance requirements for tertiary/post-secondary?

4. Create clear gateways for students through the system, set to global standards, with no dead ends

Context: Description of systems of gateways, with links to state/country qualification systems, and information about the percent of students choosing each pathway.

Are there clear gateways for students through the primary, secondary and post-secondary systems with no dead-ends?

- Are there clear college and career readiness standards and gateway exams set to those standards?
- Does the system define courses and grades in those courses or cut scores on examinations necessary to move from one program of study or pathway to the next?
- To what extent are options available to students who do not meet those qualifications?
- Do all those options include a path to post-secondary education?
- To what extent are students prepared to enter college or career training without remediation?

5. Assure an abundant supply of highly qualified teachers

Context: Overview of teacher supply and demand in each state/nation.

Is there a balance between supply and demand of teachers?

- Does the state produce the appropriate supply of teachers annually? That is, how many are needed how many are produced, statewide and in certain programs?

How qualified are the candidates admitted to teacher preparation programs?

- From what quartile of college-bound high school graduates are teacher education students drawn?
- What are requirements for entry to the teacher preparation program?
- Are requirements for entry competitive? (E.g., how many people apply? What percent get in? How do admissions rates for teacher preparation compare to preparation programs for high-status professions?)

How rigorous is the program of instruction for teacher preparation?

- What is required for completion? (How many years and what kind of courses? Is there a clinical experience and if so, how long?)
- To what extent is teacher education being conducted in research universities?
- To what extent are teacher being provided with research skills & being taught diagnosis and prescription?
- To what extent are teachers required to have mastery of the subject(s) they will teach?
- What percentage of teachers are teaching without being traditionally prepared?

6. Redesign schools to be places in which teachers will be treated as professionals, with incentives and support to continuously improve their professional practice and the performance of their students

Context: Information about average class size; amount of time per week teachers spend on teaching and on planning; and retention of highly qualified teachers after one year.

How competitive are teachers' salaries with the compensation in the high status professions?

- What is teachers' starting salary? Is it competitive relative to high-status professions?
- What is a teachers' average salary? Is it competitive relative to high-status professions?
- Is there a career ladder for educators?
- How is the career ladder for teachers organized?
- What are the criteria for moving along these ladders?
- Is there a formal method for identifying first-rate teachers and for assigning them to mentor new and junior teachers for a significant period of time?

Does the way the school is organized promote teacher growth and improvements in student learning?

- Are there strong incentives for teachers to continuously improve their performance?
- Are there formal structures that provide the time and incentives for teachers to learn from other teachers?
- Is there substantial time available for teachers to work together in teams to improve instruction?
- Are there resources available to teachers to gain the knowledge they need to build their expertise and improve their practice?

7. Create an effective system of career and technical education and training

Context: Description of structure of CTE system.

Is there a Career and Technical Education (CTE) system that supports 21st century careers?

- To what extent is training available to students in a wide range of attractive careers?
- To what extent does training occur in authentic work environments with up-to-date equipment?
- To what extent are instructors familiar with state-of-the-art practices?
- To what extent is information available to students that will enable them to make informed career choices?

Do CTE programs lead to industry-recognized qualifications?

- Do all programs lead to qualifications that are widely recognized by industry?
- Are qualifications continuously adjusted to leading industries globally?
- Is the CTE system attractive to a broad range of students and parents?
- What proportion of students choose to pursue a CTE program of study?

8. Create a leadership development system that develops leaders at all levels to manage such systems effectively

Context: Description of state or national leadership development system and how it functions, if it exists.

Does the system prepare school leaders effectively?

- Are principals prepared to be instructional leaders?
- Are principals prepared to manage professionals effectively?
- Does the system develop school leaders continuously throughout their careers?
- Does a career ladder for school leaders exist that provides incentives for increasing roles and responsibilities? If so, what does it look like? Does it extend to district and state level? Who establishes it? Is it aligned with goals for improvement?

Are there systems in place for struggling leaders to learn from their most successful peers?

- Do state/national regulations ensure that highly effective leaders manage low performing schools? How?
- Do state/national regulations ensure that high performing leaders mentor low performing leaders? How?
- Do state/national regulations ensure that high performing school faculties mentor low performing school faculties? How?

9. Institute a governance system that has the authority and legitimacy to develop coherent, powerful policies and is capable of implementing them at scale

Context: Description of what entities oversee different parts of the system.

Are there shared goals across the system?

- Are goals known to all partners in the system?

Is there a place where the buck stops?

- Responsibilities for K12, teacher education, higher education and vocational education?
- Is it clear what the roles of various partners are?
- Are there clear lines of authority to make and implement policies?

Is there an effective way to hold the other parts of the system accountable and to provide effective help to non-performing parts of the system?

- Does the system have an effective way of identifying non-performing teachers, principals, schools, districts and schools of education?
- Does the system have a way to help less successful teachers and principals?
- Does the system have a way to help less successful schools and districts?

1. Provide strong supports for children and their families before students arrive at school

International Context:
Different countries organize supports for children and families differently from the United States, with most offering more extensive health services and social supports for families as well as additional support for low-income families. In many cases, preschool is defined differently than in the U.S., serving different age groups of children in childcare centers, preschools and kindergartens. Some examples follow. In Finland, primary school starts at age seven, but there is a free preschool for all children at age six and guaranteed childcare, heavily subsidized, for all children from age eight months (when parental leave ends) to six years. Therefore in Finland childcare is virtually free for most families.

Ontario offers free full-day kindergarten for all four and five-year-olds. In Shanghai, over 60 percent of preschools for four-to-six-year olds (called kindergartens) are public and charge different fees depending on their quality rating. Private preschools adhere to the same play-based curriculum as in the public preschools but can charge higher fees and often offer more academic enrichment. Fees for both public and private preschools are subsidized for low-income families. On the other hand, Singapore's early childhood system is primarily private, although they have recently begun several initiatives to expand access and raise quality, including creating a new Early Childhood Development Agency. They opened the first public kindergartens serving four- and five-year olds this year, and plan to expand the number of sites over the next three years. These are half-day programs with day care provided in the afternoons. There are fees for this program, but recently Singapore doubled the kindergarten subsidies for families to make preschool accessible to a broader range of families. Countries offer this wide range of different models for supporting young children's care and development despite the fact that women participate in the labor force at roughly comparable rates across all comparison countries. Singapore percent of women are economically active in Canada; 64 percent in China; 59 percent in Singapore; and 56 percent in Finland.

The benchmarked countries also vary in terms of the socioeconomic status and linguistic diversity of their student population. In Singapore, the rate of children living in relative poverty (defined as living in a household in which disposable income, when adjusted for family size and composition, is less than 50 percent of the national median income) is 26 percent, slightly higher than the U.S. average of 23 percent. In Finland, it is much lower at four percent. In Ontario, Canada, 20 percent of children live below the poverty line ($23,755 for a single parent with one child). In Ontario, 82 percent of children grow up in a home where the parents speak either English or French. The rest speak a foreign language. In Finland, 93 percent of children's families speak Finnish, four percent speak only Swedish, and three percent live in families where parents do not speak an official language. In Singapore, 83.4 percent of children aged five and over lived in homes where one of the official languages (English, Mandarin, Malay, Tamil) was "mostly frequently spoken" (2010). 14.3 percent of children aged five and over lived in homes

where Chinese dialects other than Mandarin were most frequently spoken; 2.3 percent lived in homes where other languages were most frequently spoken.

In terms of spending, Finland spent 342 million euros ($390 million) on pre-primary education in 2012. In addition to funding kindergarten, Ontario funds public childcare for three- and four-year-olds, spending a total of $801.8 million in 2009-2010. The Shanghai government invests RMB17000 per child ($2722) each year in preschool and RMB4.7 billion ($752 million) in the sector. In 2011, Singapore spent SIN$645.2 million ($515.8 million) on early childhood education.

State Context:

In most states, children are required to start school at age six but many start kindergarten at age five. In Kentucky and the benchmark states, districts are required to offer voluntary half-day kindergarten although some districts in these states offer full-day kindergarten. The exception is New Jersey where low-income districts (referred to collectively as the Abbott District) are required to offer full day kindergarten by court order. Kentucky has a relatively high rate of child poverty (26.5 percent) compared with the benchmark states (MA: 16 percent; NH: ten percent; and NJ: 17 percent) and a relatively low percentage of children in immigrant families (seven percent) compared with these states (MA: 27 percent; NH: 11 percent; and NJ: 36 percent). 22 percent percent of the immigrant families in KY have no parent who speaks fluent English compared with 19 percent of the families in both MA and NJ. There is no data on this measure for NH. Kentucky also has a high percentage of low-income (defined as twice the federal poverty level) students with one parent who has some college education (35 percent). In MA and NJ, this figure is 19 percent and it is 20 percent in NH. In 2013, state spending per child enrolled in early childhood education was $3,621 in KY; $3,966 in MA; $0 in NH and $12,070 in NJ. Total Pre-K funding for each state is $75,373,534 in KY; $53,887,295 in MA, $0 in NH; and $582,440,127 in NJ. All four states received Race to the Top Early Learning Challenge Grants that required the development of quality indicators and a quality monitoring system for early childhood education programs.

	International Data	State Data	KY Data
What proportion of children have access to high quality early childhood education?			
What percentage children are enrolled in preschool?	**Shanghai:** 98% of 0-6-year-olds **Singapore:** data not available **Finland*:** 59% 4-year-old 68% 5-year-olds 98% 6-year-olds **Ontario*** 48% 4-year-olds 92% 5-year-olds 99% 6-year-olds *OECD Education at a Glance (2013/2014)	**MA**: 59.5% 3-4-year-olds **NJ**: 63.1% 3-4-year-olds **NH**: 54.6% 3-4-year-olds (Education Week Quality Counts 2015)	43.1% 3-4-year-olds (Education Week Quality Counts 2015)
What is the preschool enrollment rate for low-income students?	No data available	Percent of 3-4 years olds in families at or below 200% of the federal poverty line in preschool: **MA**: 44% **NJ**: 53% **NH**: no data (KidsCount, Casey Foundation)	Percent of 3-4 years olds in families at or below 200% of the federal poverty line in preschool: 35%
How is preschool funded: Is preschool universally funded or income-based?	**Shanghai:** Fees range from $35 to $160/month depending on the "grade" of the kindergarten for public kindergartens for 3-6-year-olds. Private kindergartens charge monthly fees from $250 to $750. Any child from a registered household is guaranteed a place in a public kindergarten. Fees are waived for low-income families. **Singapore**: Public kindergarten for 4 and 5-year-olds. Kindergarten Fee Assistance Scheme in place for all families with incomes up to USD$4421/month on a sliding scale. Income based financial assistance for after-school care. **Finland**: All 6 years have access to full day free preschool. Children from eight months to age 6 are guaranteed access to childcare. Fees are income-based but highly subsidized. **Ontario**: Full day free kindergarten for 4 and 5-year-olds. Can use child care subsidies for private preschool for under 4s.	All states receive federal Head Start funds by application. Eligibility for services require children to live in families below the federal poverty line although up to 35% of slots can be reserved for children in families up to 130% of the federal poverty rate. Additional slots can be reserved for children with special needs. In addition, children in families who receive welfare benefits are eligible for free childcare/preschool and for subsidies for two years after leaving welfare. **MA**: The Universal PreK Program provides funds to improve the quality of PreK for children in low income and underperforming districts. In addition, childcare/preschool is subsidized for low-income non-welfare families who are working, in an education or job training program, or disabled. Childcare is provided for children under 13. Low-income is defined as families with incomes less than 50 percent of the state median income. The Department of Early Education and Care (EEC) is in charge of this program. **NJ**: The state Preschool Program offers universal eligibility to all 3 and 4-year-olds in economically disadvantaged school districts and all low income 3- and 4-year-olds in other districts. Families who were never on welfare also can receive childcare subsidies under the New Jersey Cares for Kids program. Families earning up to 200 percent of the federal poverty level qualify for subsidies. After one year, a family remains eligible with an income up to 250 percent of the federal poverty level. **NH**: No additional state funding	Kentucky's Preschool Program is available for all four-year-old children whose family income is no more than 150% of poverty; all three and four-year-old children with developmental delays and disabilities, regardless of income; and other four-year-old children as space is available.

	International Data	State Data	KY Data
What percent of preschool students attend full-day programs?	Data not available	Percent of 3-4-year-olds enrolled in preschool who are in full day programs: **MA**: 42% of 3-4-year-olds **NJ**: 58.8% **NH**: 37.8% (Education Week Quality Counts 2015)	Percent of 3-4-year-olds enrolled in preschool who are in full day programs: 47.1% (Education Week Quality Counts 2015)
What are the qualifications for preschool teachers?	**Shanghai:** Preschool teachers have college certification (2 year). About 60% of teachers have a BA. **Singapore**: Preschool/kindergarten teachers have a Diploma (2 year) in Early Childhood Care and Education. **Finland**: Preschool teachers have MA degrees. **Ontario**: Pre-Kindergarten teachers have primary teacher certification with a BA.	**MA**: Pre-K teachers in public schools need a teacher license; teachers in programs operated by the Office of Child Care Services need AA degree with 12 credits in ECE + practicum. By 2017, all ECE staff need BA degree with 14 credits in ECE + practicum. **NJ**: Pre-K teachers in public schools in NJ need elementary teacher certification/license **NH**: Voluntary state credentials in Child Care and Early Childhood Education.	Lead teachers in public preschools/pre-k need KY Teacher Standards for Preparation and Certification: Interdisciplinary Early Childhood Education in Birth to Primary
Are systems in place to ensure preschool quality?	**Shanghai**: Shanghai Municipal Education Commission audits all kindergartens, including private ones. Private kindergartens follow the official curriculum. **Singapore**: Public kindergartens operated by the Ministry of Education meet MOE standards. Singapore Preschool Accreditation Framework (2014) offers voluntary accreditation for private preschools. **Finland**: Ministry of Education oversees all preschools for 6-year-olds as well as all childcare for children under age 6 in municipal centers or home-based care. **Ontario**: Ministry of Education has Full Day Early Learning Kindergarten Program Standards.	**MA**: Developing Pre-K and kindergarten standards in social and emotional intelligence and play. Preschools receiving state funding need to meet Early Childhood Program Standards and Learning Guidelines. State is developing Quality Rating and Improvement system. **NJ**: New Jersey has Preschool Program Implementation Guidelines as well as Preschool Teaching and Learning Standards. Grow NJ Kids is a rating and improvement system designed to assess early care and education programs, provide training and incentives to improve them, and to communicate their level of quality to the public. This system is voluntary. **NH**: New Hampshire Department of Health and Human Services Division of Child Care Licensing licenses preschool programs. The state also has a Quality Rating and Improvement System for childcare centers, Head Start programs and public preschools.	Kentucky has a new Preschool Program Review Process. Programs are visited and reviewed on a set of indicators. Classrooms of excellence recognized as well as Preschool Centers of Quality for meeting needs of special education students. The state has preschool regulations.

Background Data for Benchmarked Jurisdictions

	Kentucky	Massachusetts	New Jersey	New Hampshire	U.S.	Shanghai	Singapore	Finland	Ontario
Population Data									
Population (2013)	4.4 million	6.7 million	8.9 million	1.3 million	316 million	23.9 million	5.4 million	5.4 million	13.6 million
Ethnic Makeup	86% White, 8% African American, 3% Hispanic, 1% Asian	76% White, 10% Hispanic, 7% African American, 5% Asian, 2% Other	59% White, 18% Hispanic, 14% African American, 8% Asian, 1% Other	92% White, 3% Hispanic, 1% African American, 2% Asian, 3% Other	64% White, 16% Hispanic, 13% African American, 5% Asian, 2% Other	92% Han Chinese, 8% Other	Chinese 77%, Malay 14%, Indian 8%, Other 1.4%	Finn 93%, Swede 6%, Russian .5%, Estonian .3%, Roma .1%, Sami .1%	British 28%, French 23%, Other European 15%, Native 2%, Other 32%
% of Population Living in Rural Areas (2010)	41.60%	8.00%	5.32%	39.70%	19.30%	10.70%	0%	16%	14% (2011)
Relative Poverty Rate (% of Population Below 50% Medium Income)	N/A	N/A	N/A	N/A	17%	16%* (China)	26%	7%	13.9% (2010)
Abolute Poverty Rate (US) 2010	18.8%	11.9%	11.4%	8.7%	15%	N/A	N/A	N/A	13.9% (2010)
Economic Data									
GDP (2013 in current dollars)	$170 billion	$421 billion	$509 billion	$64 billion	$16.7 trillion	$352 billion	$339 billion	$260 billion	$695 billion
Composition of Economy (US Data from 2009, International Data from 2011)	Services 31%, Manufacturing 16%, Trade 12%, Government 16%	Services 52%, Manufacturing 9%, Trade 10%, Government 9%	Services 48%, Manufacturing 8%, Trade 13%, Government 11%	Services 46%, Manufacturing 11%, Trade 13%, Government 10%	Services 80%, Industry 19%, Agriculture 1.2%	Services 46%, Industry 44%, Agriculture 10%	Services 71%, Industry 29%, Agriculture 0%	Services 72%, Industry 25%, Agriculture 3%	Services 70%, Industry 28%, Agriculture 2%
GDP Per Capita (US Data 2013, in 2009 $; Intl Data from OECD 2010, Strong Performers and Successful Reformers)	$38,830	$62,866	$57,203	$48,447	$47,495	$11,361	$37,293	$35,918	$46,304 (2010)
Unemployment Rate (2013)	8.30%	7.10%	8.20%	5.30%	7.40%	4.1%	1.90%	8.10%	7.50%
Youth Unemployment Rate (2012)	16.90%	12.20%	18.20%	13.40%	16.20%	9.70%	10.20%	17.70%	12.9% (2013)
Competitiveness Data									
World Economic Forum Global Competitiveness Rank (2014)					3rd	28th (China)	2nd	4th	15th (Canada)
Innovation and Entrepreneurship State Ranking (2013, US Chamber of Commerce)	47th	5th	14th	18th					
Dollar Value of Manufactured Exports Per Dollar of Gross State Product (2011)	8th	27th	25th	33rd					

	Kentucky	Massachusetts	New Jersey	New Hampshire	U.S.	Shanghai	Singapore	Finland	Ontario
Student Population Data									
Public School Enrollment (2011)	682,000	953,000	1,403,000	192,000	49,522,000	1,837,800 (2012)	522,000	542,100	2,000,000
Number of Schools (2012-13)	1,568	1,854	2,598	481	100,402	2,964 (2012)	365	3,347 (2005)	4,897
Average Class Size, Lower Secondary (2011-12)	27	25	25	24	26	35	35.5	17.8	25
% of Children Aged 0-17 living in households with equivalent incomes below 50% of national median (Intl) and % of Children Eligible for Free and Reduced Lunch (US states) 2011-12	54.4% FRL	35.1% FRL	35.5% FRL	26.3% FRL	49.6% FRL or 23% using 50% median income measure	29%* (China)	26%	3%	14%
% of Students Who Are Non-Native Speakers (2011-12)	2.50%	7.9%	4%	2%	9.1%	20% Migrant Students	16.6% Non-Official Language Speakers	5% Foreign-Born Students	27% Foreign-Born Students
Education Spending Data									
% of GDP Spent on Primary, Secondary, and Non-tertiary Education (US Data 2009/Intl Data 2010)	3.78%	3.87%	5%	4.22%	3.70%	3.5%**	2.80%	4.10%	4.10%
Annual Per Pupil Primary and Secondary Expenditures (US Data 2012/Intl Data 2011)	$9,391	$14,142	$17,266	$13,593	$11,841	$3,602	$7,602	$9,180	$10,273
Student Outcomes Data									
Percentage of students who complete secondary school (2012-13)	86.10%	85%	87.50%	87.30%	81%	79.2%***	98%	71%	83.10%
Percentage of adults ages 25-64 with a tertiary degree/ diploma (2012)	31.70%	50.50%	45.80%	46.70%	43.00%	8%****	25.8% (2008)	40%	53%

*Shanghai is a wealthy province so this rate may be overstated
**Calculated based on data from data from Shanghai's 12th Five-Year Plan for Educational Reform (2012)
***Enrollment rate for senior secondary (both general and vocational) from 2009
****Shanghai data is based on employed population

JURISDICTION PROFILE: KENTUCKY

On the 2013 NAEP assessment, eighth-grade students in Kentucky scored 270 in reading. This was higher than the average score of 266 for public school students in the U.S. The reading "score gap" between higher performing students in Kentucky and lower performing students was 44 points, not significantly different than what it was in 1992. On the math portion of the 2013 NAEP test, Kentucky 8th graders scored 281, below the national average of 284. The score gap between higher preforming and lower performing students in math was 46 points, not significantly different than what it was in 1990.

The coal industry in Kentucky, which has long been a central part of the state's economy, is declining. Kentucky does have a heavy concentration in durable manufacturing, including a strong presence in the motor vehicle industry. The state is recovering from the recent recession and its economy is forecast to grow roughly in line with the national economy.[1] The fastest growing counties in the state are in the area bounded by Lexington, Louisville, and Northern Kentucky, and that is where the majority of the jobs are. The rural areas in Eastern and Western Kentucky are losing residents, and therefore are not as prosperous.

Kentucky has been a leader in education reform for two decades. In 1990, it was the first state in the nation to create academic standards that included definitions of what students should know and be able to do. The state created an assessment system to measure student success on those standards using academic and non-academic indicators.

In February 2010, Kentucky was the first state to adopt the Common Core State Standards and incorporated them into the Kentucky Core Academic Standards. The state signed on to the Partnership for Assessment of Readiness for College and Career (PARCC), but withdrew in 2014. The state intends to issue a request for proposals for new tests.

Kentucky is one of the few states that recognizes the distinction between college- and career-ready measures, reports on both, and includes them within the statewide accountability system. Kentucky breaks down its indicators into College Ready (which is based on student achievement on the ACT or a college placement exam) and Career Ready (which is comprised of a "career-ready academic" and "career-ready technical" indicator). The state also assigns a bonus half-point to schools for students who meet both the college- ready and career-ready indicators. The state has seen significant gains in student college and career readiness, moving from 34 percent in 2010 to 62 percent in 2014.

Kentucky has one of the highest high school graduation rates in the country. In the 2013-14 school year, 87 percent of Kentucky students graduated on time. However, Kentucky lags way behind the national average of residents with at least a bachelor's degree. Only one in five Kentuckians (21.5 percent) have reached that level of educational attainment.

[1] Commonwealth of Kentucky, Quarterly Economic & Revenue Report, First Quarter Fiscal Year 2015, Governor's Office for Economic Analysis and Office of State Budget Director.

JURISDICTION PROFILE: MASSACHUSETTS

Since 2005, Massachusetts has led the nation in all but one NAEP math and reading exam given. The state's low-income and minority students performed above the national average on NAEP in 2012. If Massachusetts were a country, its 8th graders would have placed second in the world on the 2011 TIMSS science test and sixth in math among 63 countries.[1] On PISA 2012, if Massachusetts were a country, it would place 4th in the world in reading proficiency and 9th in math proficiency out of 65 countries and economies.[2] Driven by strong information technology and biotech industries and the presence of some of the world's best universities, Massachusetts has recently seen strong economic growth and an increase in high-wage jobs.

In the middle 1990s, Massachusetts' students were performing right in the middle of the pack on national tests. In 1992, 23 percent of the state's 8th graders met proficiency standards in math according to NAEP. Business leaders worried that students would not be globally competitive and pushed legislators to take action. In 1993, Massachusetts passed the Education Reform Act, which put in place rigorous, statewide standards in English language arts, math, history/social science, foreign languages, health, and science, technology and engineering. The Massachusetts Common Core of Learning outlined what students were expected to know and be able to do by the time they graduated from high school. The state also created a high school exit exam, known as the MCAS, which was first implemented in 1998.

The Education Reform Act also included a complex formula to address school funding inequities. Massachusetts' leaders changed the state's school funding formula so that more tax dollars would be invested in schools in low-income areas. The formula takes into account cost-of-living variances and a community's ability to fund schools.

Massachusetts recently rolled out a new educator evaluation system to integrate teacher and administrator performance with curriculum goals. This year, student performance, including MCAS year-to-year improvement scores, will be incorporated. In addition, the state made teacher certification more difficult and moved to hold colleges with teacher preparation programs more accountable for their graduates' performance in the classroom.

In 2009, Massachusetts was one of the first states to adopt the Common Core State Standards. The state is considering using the Partnership for Assessment of Readiness for College and Career's (PARCC) assessments in grades 3-8 as a possible replacement for MCAS English and Math tests. It continues to use its own state tests in other core subjects as well as continuing to administer high school leaving examinations.

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[1] Chang, Kenneth. Expecting the Best Yields Results in Massachusetts. New York Times. September 2, 2013.

[2] Crotty, James Marshall. If Massachusetts Were a Country, Its Students Would Rank 9th in the World. Forbes. September 29, 2014.

JURISDICTION PROFILE: NEW HAMPSHIRE

Eighth-grade students in New Hampshire ranked third in math and sixth in reading compared to other U.S. states on the 2013 NAEP test. On the 2011 TIMSS test, only Singapore outperformed New Hampshire in science and only 5 education systems outperformed the state in math.

Following the recent recession, New Hampshire's economic recovery remains slow, but steady. Manufacturing is the largest sector of the state's economy, accounting for 25 percent of all jobs in New Hampshire; the state's second-largest industry is year-round tourism. One of the projected fastest growing job markets is health care. With its proximity to Boston, southern New Hampshire is home to a number of information technology firms.

For more than ten years, New Hampshire held a top spot in a national survey of children's well being, however child poverty rate is on the rise.[1] New Hampshire is notable for the academic achievement of low-income and minority students. Thirty-eight percent of low-income 4th graders score at or above the proficient level on the NAEP math exam, 13 percentage points higher than the national average. The state gets high marks for its return on investment in education –student achievement is excellent relative to state spending.[2]

New Hampshire is the only state that prohibits the use of time-based credits. In 2005, New Hampshire eliminated the Carnegie Unit, the core unit around which U.S. schools typically measure credits for high school graduation. In its place, the state mandated that all public high schools measure credit according to students' mastery of material, rather than time spent in class. The state requires school districts to base students' advancement on their mastery of locally developed competencies. It created a statewide "Competency Validation Rubric" to help districts measure the quality of their assessments. Because New Hampshire is a strong "local control" state, the implementation of competency-based education varies from school to school.

In 2010, five New England states (Maine, New Hampshire, Rhode Island, Connecticut and Vermont) formed the New England Secondary School Consortium, a regional partnership to develop innovations in the design and implementation of secondary education. The consortium's goals include increasing five-year graduation rates, decreasing dropout rates, improving college readiness, and boosting the percentage of students enrolling in postsecondary education. As part of this work, the New Hampshire Department of Education is engaged in strategic planning to examine teacher quality, the distribution of teachers among schools, and teacher effectiveness.

[1] The 2014 KIDS COUNT Data Book. The Annie E. Casey Foundation.
[2] Leaders and Laggards. US Chamber of Commerce, 2012.

JURISDICTION PROFILE: NEW JERSEY

Eighth-graders in New Jersey ranked second in math and third in reading on the 2013 NAEP test. On the 2011 TIMSS test, only three education systems scored higher than New Jersey in science and five systems scored higher than the state in math. New Jersey is one of the most diverse states in the country and the state has struggled to close a persistent achievement gap. New Jersey saw some improvement with the 2013 NAEP, especially the gap between Latino and white students in eighth-grade reading (the gap closed by 10 points since 2011) and math (the gap closed by 11 points since 2011).

New Jersey's economy is driven by several major industries, including pharmaceuticals, financial, chemical development, and telecommunications. This correlates with the fact that the state has a large and well-educated labor pool. New Jersey ranks sixth in the U.S. in the percentage of the population with a bachelor's degree. New Jersey is also home to top universities, such as Princeton and Rutgers, and boasts a strong scientific community.

New Jersey spends $25 billion a year on education and has one of the highest per pupil expenditures. The School Funding Reform Act of 2008 was passed in an effort to end years of inequities in school aid. Allocations are based on a per-pupil adequacy budget, reflecting an analysis of what it should cost to educate a child in an efficiently functioning school district. At-risk students (those eligible for free or reduced lunch, with limited English proficiency status, and special education) are given additional funds. Because there are additional challenges in meeting students' needs in very poor communities, additional at-risk weight increases as the poverty concentration in a community increases, boosting overall funding. However, a recent study noted that the Garden State had dropped in fair school funding from second to 12th place nationally, citing budget cuts during the recession that disproportionately affected low-income districts.[1]

The New Jersey Core Curriculum Content Standards were first adopted by the State Board of Education in 1996. Curriculum is decided at the local level. In 2010, New Jersey adopted the Common Core State Standards. The Partnership for Assessment of Readiness for College and Careers (PARCC) assessment will be implemented during the 2014-15 school year.

New Jersey has recently made several changes to its accountability system. In 2012, the state passed a law, with bipartisan support, that would make it more difficult for teachers to earn tenure and requiring that teachers be evaluated on multiple measures, including student performance on standardized tests. Under the old law, tenure was awarded after three years on the job. Under the new law, teachers are required to work for four years, with one of those years under the guidance of a mentor, and consistently earn positive annual performance evaluations before attaining tenure. Teachers would also be held accountable for student performance. The original plan was to use student PARCC test results in teacher evaluations and school effectiveness designations, but those high stakes have been delayed.

[1] Is School Funding Fair? Rutgers Education Law Center, 2014.

JURISDICTION PROFILE: FINLAND

The world is catching up to Finland, but its student achievement scores are still very impressive. In 2012, Finland ranked fifth in science, sixth in reading, and twelfth in math on the PISA exams. This was a drop from 2009 when Finland ranked second in science, third in reading, and sixth in math. In 2006 and 2003, Finland ranked first or second in all three subjects. On the TIMSS assessments, Finland eight-graders placed fifth in science and eight in reading in 2011.

Finland underwent an economic transformation in the early 1990s. Once its major trade partner, the Soviet Union, collapsed, the government invested resources in developing its telecommunications sector. Now Finland is counted among the world's high technology leaders, with a very modern economy centered on the telecommunications, consumer electronics, forest products, and metals industries.

Finland's student achievement success is not the product of a particular initiative or investment. The country's modern education system was built over time. One critical element, however, is the quality of teachers. Teaching is Finland's "most respected" profession, and primary school teaching is the most sought-after career. Teacher education programs are highly selective, admitting only one out of every ten students who apply. Teacher education is heavily research-based, with a strong emphasis on pedagogical content knowledge. Students must also spend a full year teaching in a school associated with their university before graduating and earning a master's degree, which is required of all teachers.

Once on the job, teachers are given autonomy to plan their lessons and use their professional judgments when implementing the national curriculum. As such, teachers are happy in their jobs and the country has a very high retention rate with about 90 percent of teachers remaining in the professional for the duration of their careers.

Students do not take exams for accountability purposes. Schools are only formally evaluated periodically, with an exam administered to a sample of students in grades 6 and 9. Finnish schools are comprehensive and untracked until upper secondary school, at which point students may choose to attend either an academic or vocational school. Approximately 47 percent of graduates choose to enroll in vocational schools.

The only formal, national test is the university matriculation exam: a set of four open-ended exams that are based on problem-solving skills rather than subject mastery. Although most students who go on to university take this exam, it is not required for graduation from upper secondary school or even for university admissions—some universities admit students based on other standards.

JURISDICTION PROFILE: ONTARIO, CANADA

Fifteen-year-old students in Ontario placed 4th in reading, 11th in math, and 8th in science on the 2012 PISA. Ontario student achievement matched the Canadian average in all three subjects. On the 2011 TIMSS, eighth-grade students in Ontario placed 9th in math and 12th in science out of 63 participating countries.

Ontario has a population of approximately 13 million, making up 40 percent of the Canadian population. It is Canada's largest providence and has the largest economy, accounting for almost half of the country's manufacturing GDP. The main international export is motor vehicles. Ontario is projected to lead the provinces in average economic growth over the next few years.

In Canada, education is the responsibility of the ten provinces and three territories. Canada as a whole has one of the highest, if not the highest, rates of immigration per capita in the world. According to an OECD report, Canada takes in 40,000 newcomers to its public schools each year, 80 percent of which are non-English speaking. PISA results suggest that within three years of arrival in Canada, immigrants score an average of 500 on the PISA exam, a score well above the U.S. average and very strong by international standards. Canada is also one of very few countries where there is no gap between the performance of its immigrant and native students on the PISA.

The Ontario Ministry of Education oversees the provincial system. It provides 100 percent of school funding. Ontario has in place a province-wide curriculum, along with an aligned assessment and accountability framework. In recent years, the Ministry has chosen to hone in on a few clear goals: increasing the passing rate of literacy and numeracy in elementary schools from 55 percent to 75 percent and increasing the high school graduation rate from 68 percent to 85 percent A recent report notes that significant progress has been made to date: 71 percent of 3rd and 6th grade students are achieving provincial standards in literacy and numeracy, and the high school graduation rate has risen to 83 percent.[1]

Teacher candidates are drawn from the top-third of secondary school graduates and the province has invested in teacher development and support. The competence and professionalism of the teaching force has allowed the Ministry to avoid top-down school reforms and encourage local experimentation and innovation. The provincial government works collaboratively with administrators and teachers (including teachers' unions) to encourage experimentation and innovation. The role of the Ministry is to highlight best practices and serve as a clearinghouse. This approach has helped engender broad public support.

And, the reforms seem to be paying off. In 2012, more than nine out of ten people (91 percent) in Ontario aged 25 to 64 had completed high school. In that same year, 53 percent of Canadian adults held a tertiary qualification, the highest share among OECD countries (the OECD average is 32 percent). This high ranking is due in part to Ontario's high rate of vocational college attainment, in addition to university completion.

[1] Achieving Excellence: A Renewed Vision for Education in Ontario. April 2014.

JURISDICTION PROFILE: SHANGHAI, CHINA

First in 2009 and then in 2012, Shanghai's 15-year-old students ranked number one in the world on the PISA reading, math, and science exams.

Shanghai is China's largest city, with a population of over 20 million, and one of the largest cities in the world. It accounts for only one percent of China's population and less than one percent of its land area, but Shanghai produces one-eighth of China's income. Sitting at the mouth of the Yangtze River, Shanghai is an important economic, financial, trade, and shipping center. Key industries include telecommunication, car production, high-tech products, and steel production. It should be noted that Shanghai is wealthier than the rest of China and is not representative of the country as a whole.

In 1985, Shanghai, for the first time, set its own exams for entrance into its higher education institutions. This allowed Shanghai to make a critical shift in curriculum and assessment. It moved away from a heavy emphasis on memorization and rote learning to an emphasis on cross-disciplinary studies and the ability to solve real-world problems.

This was followed in 1998 by an integration of sciences and humanities and an even greater emphasis on active inquiry in the learning process. Over time, Shanghai produced a curriculum balanced between a core curriculum that is the same for all students, an enriched curriculum that permits students to choose their own electives and an inquiry-based curriculum, which is implemented mainly in extra-curricular activities.

Over the last two decades, Shanghai has worked to improve teacher capacity as well, raising the level of education required to teach. Many teachers now have master's degrees. All new teachers are assigned a mentor for about three years who provides support in instructional content and delivery. Every teacher is expected to participate in at least 240 hours of professional development every five years. Teachers are encouraged to lecture less and stimulate active student engagement more. Shanghai created a web platform to facilitate teacher collaboration and sharing of best practices. Shanghai also encourages school collaboration, pairing good schools with weaker ones and sending in handpicked leaders and teachers to transfer effective management practices.

While Shanghai has adopted a policy of integration, allowing migrant children to attend public schools alongside the children of Shanghai citizens, Shanghai continues to struggle with China's hukou policy where resident permit requirements often make it difficult for migrants to attend public schools. Reform of this policy is at the top of China's domestic policy agenda. This is part of the jurisdiction's focus on ensuring greater access to education for all students, as well as greater support for struggling students. By 2020, Shanghai hopes to create universal free preschool programs to give students a head start for primary school and put them on even footing with children who attend private preschools.

JURISDICTION PROFILE: SINGAPORE

In 2012, Singapore ranked number two in mathematics and three on science and reading on PISA.

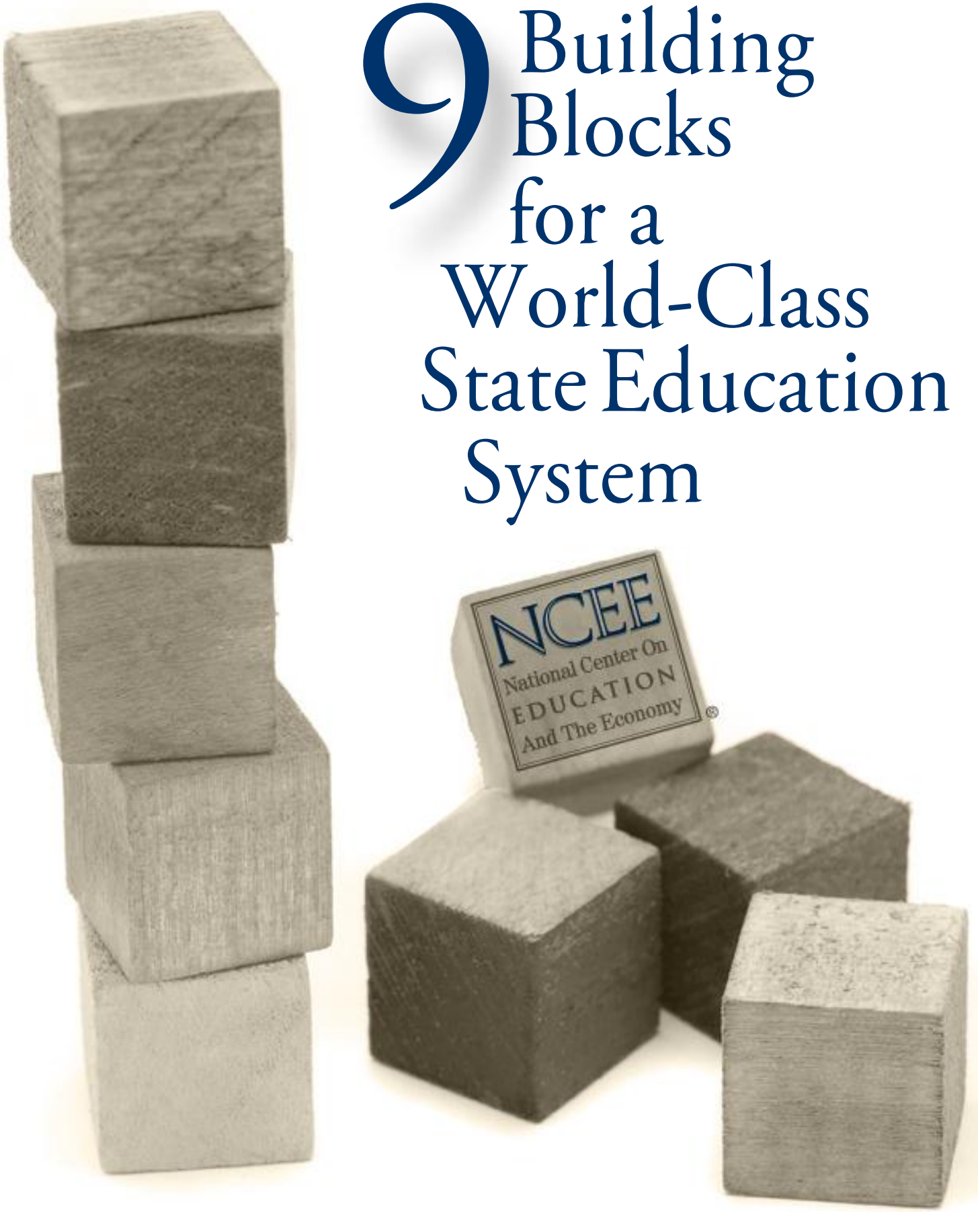
In less than 50 years, Singapore has gone from an impoverished island with no natural resources and a population a majority of whom were illiterate, to a country of 5.4 million people with living standards that match those of the most highly developed industrial nations. Today, Singapore is home to one of the world's largest and busiest ports. It is also one of the world's major telecommunications hubs and a leader in consumer electronics, pharmaceuticals, financial services and information technology.

Singapore's secondary education system is centralized, coherent, and well funded. There is a well-aligned system of curriculum, assessment, and instruction. In 2004, the government developed the "Teach Less, Learn More" initiative, which moved instruction further away from the rote memorization and repetitive tasks on which it had originally focused to deeper conceptual understanding and problem-based learning. In 2008, the practice of grouping students into ability-based tracks was abandoned with students now sorted into three different "bands" in secondary school based on their ultimate educational goal. Although students take the majority of their classes within their bands, there is more flexibility for students to take classes in other bands.

Singapore is also notable for its investment in building educator capacity, especially the selection, training, and ongoing professional development of principals and teachers. Singapore's teachers are drawn from the top-third of their secondary school class and entry is competitive. Beginning teachers are compensated at levels roughly equal to beginning engineers. They are trained in one of Singapore's most prestigious higher education institutions. Singapore goes to considerable pains to identify the teachers with the greatest potential and then give them the training and job opportunities they need to climb up well defined career ladders that offer a variety of career paths to top leadership positions in teaching, school management, or the Ministry of Education.

In 1992, the government created the Institute for Technical Education (ITE) where students learn vocational and technological skills in state-of-the-art facilities supported by international corporations. As of 2014, 87 percent of ITE graduates are hired in their fields within six months of graduation. Recently, the Singaporean government has sought to further strengthen its vocational education programs by articulating career pathways and further expanding workplace partnerships.

9 Building Blocks for a World-Class State Education System



By Marc Tucker and the Staff of the Center for International Education Benchmarking

1. Provide strong supports for children and their families before students arrive at school.

Some countries have extensive government supports for pre-natal care, mother and child nutrition, universal health care, high quality child care for working mothers, high quality pre-schools and family allowances for families with young children. Some others have little or no government programs of this sort, but do have cultures that work to provide many of the same kinds of supports. Either way, countries in which young children who come to school healthy, eager to learn and ready to profit from the instruction tend to be countries in which those children do well in school. In countries that have neither strong, universal government-provided programs to provide these kinds of support nor strong traditional cultures to provide much the same thing, especially those that are experiencing large and growing disparities in income, many children come to school with disadvantages that are very difficult to overcome, even in the best of circumstances.

2. Provide more resources for at-risk students than for others.

Countries whose students, on average, lead the world's league tables are countries that have made explicit decisions to create systems in which all students are educated to standards formerly reserved only for their elites. Formerly, it was their elites who got the best teachers and the best facilities. Policy makers in these countries know that, if less advantaged students are going to achieve at league-leading levels, they will have to have access to more resources than students who come to school with greater advantages. Most of these top-performing countries are providing more teachers to harder-to-educate students. Some are even providing strong incentives to their best teachers to work in classes and schools serving students from low-income and minority families.

3. Develop world-class, highly coherent instructional systems.

Top-performing systems typically have well-developed, highly coherent and very demanding instructional systems for all students. By "instructional systems" we mean systems that incorporate student performance standards, curriculum and assessments, as well as the use of instructional methods appropriate to the goals and standards of instruction. Top-performing countries are constantly benchmarking their standards, curricula and assessments to other leading countries. The standards might be expressed as stand-alone statements about what students should know and be able to do or might be incorporated in syllabi for courses, which would include all the courses in the core curriculum, including the native language, (almost always) English, sometimes other foreign languages, mathematics, the sciences, technology, their own history, world history, often geography, music and the arts, and physical education. In top- performing countries, the standards for these courses typically emphasize the acquisition of a wide range of complex knowledge, deep conceptual understanding of the subjects studied, the ability to write well, the ability to synthesize material from many disciplines to address real-world problems, strong analytical capacity and creative and innovative capacity. Ministry officials develop strong curriculum frameworks designed to specify in some detail what topics are to be taught at which grade levels, subject-by-subject and grade-by-grade. Though schools are expected to create their own lesson plans,

the state provides extensive guidance and curriculum support for teachers. Textbooks follow that guidance closely. Top-performing systems typically develop one to three summative assessments, designed to be taken by all students, in the core subjects in the curriculum listed above, during the course of their time in school. The assessments generally require students to respond with essays, or, in the case of mathematics, by showing how they went about solving multi-step problems. No top-performing country relies primarily on computer-scored, multiple-choice tests, because they do not believe such tests can adequately test for acquisition of the high-level cognitive skills they are aiming for. The summative assessments just described are typically used to hold students, not teachers, accountable for their performance. The options available to students as they proceed with their education or enter the workplace are significantly affected by their performance on these exams. Scores by school are widely published. The content of the entire examination is typically made public after the exam is given. Also, examples of high scoring student work are made public, in order to provide guidance to teachers and students in the future as to what kind of student work will win high scores. In some countries, low scores for schools on these tests can result in visits to those schools from inspection committees made up mainly of expert teachers and principals, for the purpose of determining whether there is a problem at a school and making recommendations as to what needs to be done to improve the performance of the school.

4. Create clear gateways for students through the system, set to global standards, with no dead ends.

The high school diploma—essentially a certificate of attendance—is virtually unknown in high performing countries. Instead, they issue qualifications: documents, often in the form of a laminated plastic card, that show what high school courses the holder has taken and the grades earned in those courses. Because the state has specified the content of the courses and because the exams are developed and administered by the state, not the school, everyone knows just what the student has accomplished. The students, teachers and parents know just which combination of courses and grades is required to go on to the next stage of one's education or to embark on a particular career. Students are highly motivated to take the necessary courses and do well in them, whether they want to be a brain surgeon or an auto mechanic. Countries with well-developed qualifications systems have arranged them into pathways such that an individual can always go back later and pick up a qualification that he or she missed earlier.

They have also created systems in which there are no dead ends, that is, a student who chooses one path can take a few extra courses and proceed down another path, and all paths can be linked up to others so that one can always go further in their education without having to go back to the beginning and start again. In systems of this sort, there are no fly-by-night operators, no courses offered where the content bears no relationship to the name of the course, and no disappointment suffered by the student who completes all the published requirements for going on only to discover that he or she does not have the requisite knowledge to do so. The qualification one receives at the end of a course of study is the ticket of admission to the next stage of one's education. They are one and the same.

5. Assure an abundant supply of highly qualified teachers

The top-performing countries believe it will be impossible to deliver to all their students the kind and quality of education formerly reserved for their elites unless they are able to put a very highly qualified teacher in front of all their students. This is not a slogan, but rather a system design goal. Some are recruiting their teachers from the upper third of high school graduates, many from the top quarter, some from the top 15 percent or, in the case of Finland, the top 10 percent. South Korea recruits from the top five percent. Ratios of applicants to acceptances in these countries range from 6 to 1, to 8 to 1, to 10 to 1. Many of these countries have created much more rigorous admissions screens. A typical pattern involves screening first for academic qualifications (high rank in class, high grades, high scores on standardized college admissions exams), then for ability to relate well to school-age students (sometimes by watching them do so in a controlled environment) and finally for their passion for teaching (determined by an interview by highly experienced teachers, principals and others). The countries have worked hard to develop very rigorous requirements for mastery of the subjects the prospective teacher will teach. In many of these countries, elementary school teachers are required to specialize in either mathematics and science or their native language and social studies and to at least minor in those subjects in college. Where specialization is not required at the elementary level, mastery of these subjects is still required. At least a year is given over to mastery of the craft of teaching, either as part of initial teacher preparation or as the objective of the first year of employment, which is typically designed as a year of apprenticeship of the new teacher to a Master Teacher. These countries do not allow, much less encourage, "alternative routes" into teaching that bypass these requirements. The top-performing countries are increasingly including instruction in research methods for prospective teachers so that they will be able to use those methods to determine the effectiveness of their work as teachers in developing and implementing improved curriculum, instruction and assessment in their schools. And they are also emphasizing instruction for these prospective teachers in both diagnosis and prescription as a key part of the teacher preparation curriculum, so that these new teachers will be able to quickly figure out why their students are not learning what they expect them to learn and quickly and accurately identify the most appropriate "treatment" for addressing the problems they identify. Some of the top countries are moving the function of teacher education out of their third tier institutions and into their research universities. The result of these policies and practices is that these countries typically have a surplus of first-rate teachers. It would, of course, have been impossible to greatly raise the standards for becoming a teacher in these countries unless they had made teaching a highly desirable career choice for young people whose academic record was strong enough to give them a good chance of being admitted to higher education programs leading to employment in a high status profession. That is why these countries have typically set beginning teacher compensation at about the same level as compensation for beginning engineers. Some offer a free college education to high-quality high school graduates who meet very high admissions standards for teacher preparation programs. But that has not been enough. They know they must also offer a real career in teaching. Many of the countries with the strongest teaching forces have very aggressive career ladders designed so that, as one moves up the career ladder, one gets higher compensation, greater responsibility, more authority and autonomy and higher status among one's colleagues and in the larger community.

6. Redesign schools to be places in which teachers will be treated as professionals, and will have incentives and support to continuously improve their professional practice and the performance of their students

A country that relies exclusively on a supply of new teachers to improve the quality of teachers and teaching in their schools would have to wait a long time before there were enough new teachers who had served long enough to have a big effect on student performance. So countries wishing to improve student performance at scale need to have strategies for improving the competence of their currently serving teachers. Here, too, the experience of other countries is instructive. Many observers of the top performing countries believe that the approach used in Shanghai, China, many elements of which are used by other Asian countries, is the most effective not only for developing the skills of the current teacher work force, but for establishing a culture and organization favoring and providing the support for a process of continuous improvement of the effectiveness of the school as a whole. There is a four-level career ladder, each level of which is broken down into four or more steps. Teachers at the upper levels of the teacher career ladder are expected to serve as mentors to new teachers and others lower on the ladder, identify areas in which the curriculum and instruction methods need to be improved, lead teams in the process of researching and then developing new lessons, materials and formative assessment techniques, demonstrating new lessons, revising them and implementing them. Teachers meet once a week by grade and by subject to participate in all these processes. The research, development, trial, revision and evaluation process is very disciplined and highly collegial. All except those at the top of the career ladders have teacher mentors. The message is that no matter how good you are, you can always get better. There is wide access to workshops for professional teachers, but this is not a workshop model of professional development. Professional development is an integral part, indeed a result, of how the work of the school gets done. The integrity of the whole system depends on the creation of powerful career ladders, which in effect define what it means to have a career in teaching and create an environment in which teachers come to be treated as leaders and as professionals. In most of the countries that have systems of the sort just described, the teacher/pupil ratio is about the same as in the United States. The time needed for teachers to work with one another is not produced by hiring more teachers, but by increasing the size of their classes. Teachers in these countries typically do not understand why American teachers want smaller class sizes because they need large classes in order to make their teaching methods effective. Those methods involve seeing how students use a variety of strategies to solve problems, and bringing those students to the front of the class to lead a discussion of their strategies. The aim is to understand why some strategies work and others don't, thus helping all students to understand the conceptual basis of the topics being discussed. This deep understanding is a primary goal of the curriculum in these countries and is a primary cause of their superior performance. Large classes are essential to this instructional strategy. Although the teacher/pupil ratio is about the same overall in these countries as in the United States, that ratio is a little higher in schools serving students from disadvantaged backgrounds and a little lower in schools serving others.

7. Create an effective system of career and technical education and training

In countries that have healthy economies, what you find is high levels of income across the board, high employment levels, low levels of unemployment, superior health care, strong competitiveness for business and a good balance between imports and exports. These are countries that have healthy, productive, effective systems of vocational education and training. Indeed, in our experience, countries in which enrollment in career and technical education and training falls below about 40 percent of total enrollment generally experience a collapse of their vocational education and training system, because that is the point below which vocational education and training is seen as a last resort for students who have no other option. For career and technical education and training systems to be attractive to a larger segment of their student populations, they must appear to offer a viable route not only to well-paying occupations requiring less than a four-year college degree, but they must also offer a way for students enrolled in career and technical education and training programs to acquire further education and training that will enable them, if they wish, to qualify for work in the professions and in senior management. That is, such systems must be no-dead-end systems. They must also offer high quality training that includes the opportunity to acquire strong modern technical skills on state-of-the-art equipment at the hands of teachers and mentors who are themselves deeply versed in the most up-to-date equipment and techniques in use in the industries for which the student is being trained. This can be accomplished by creating in schools settings that have all the attributes of real industrial settings, or by offering students an opportunity to study in real industrial settings, or both. In some cases, the real or simulated industrial sites actually sell the products and services made by the students. Much depends in such systems on having skill standards that reflect the state of the art in the industries being trained for, a high level of investment in the education and training of the students, a good match between the demand of industry for skilled workers in any and all industries served by the system and the supply being produced, the willingness of industry to involve itself in the provision of the up-to-date equipment and training staff needed to make the system work and sufficient demand for the newly trained students to ensure a smooth transition from schooling and training to employment.

8. Create a leadership development system that develops leaders at all levels to manage such systems effectively

Items number five and six in this list spoke of the quality of teachers in the schools. But great teachers will not accomplish much without effective leadership. And, indeed, the whole system, of which the schools are only a part, requires very capable leaders, especially in an era in which the whole system is being changed in fundamental ways. What is required are not leaders who are good at keeping school and making sure that the needs of all of the school's constituencies as they see them are being met, but rather leaders who can: get broad agreement on much more demanding goals for both the students and the staff; build the career ladders; recruit a highly capable staff; and finally, create a culture in the school founded on the belief that it is effort, not natural ability, that determines student achievement, and therefore that it is the obligation of the school not to sort students out into bins of the capable and the not-so-capable, but instead to get all students to high levels of performance, no matter what. That will take leaders who are far more than school administrators, but real leaders, people who can galvanize staff and students to achieve at

levels far above what we formerly expected. It will take a combination of strategic skills, self-knowledge, patience, drive, management skill, ethical roots, moral qualities and knowledge based on what is known world-wide about the management of professionals. This last is critical, because, in many countries, teachers are still managed and treated as blue-collar workers.

9. Institute a governance system that has the authority and legitimacy to develop coherent, powerful policies and is capable of implementing them at scale

Our research shows that the ability of a state or nation to develop a modern, high performance education system with high and internationally competitive levels of student performance and high levels of equity at reasonable cost depends on whether it has an institution comparable to a typical ministry of education in a high-performing country. Among the top performers, there are some with federal structures in which the national government has no authority in the field of education, and others with moderate authority at the federal level. In some countries, all the authority is at the national level and there are no subordinate state levels of authority. In one country, there is no intermediate level of authority between the national and school levels. The common feature among all these types of arrangements is that, either at the state or national level, there is a place where the buck stops that has effectively got responsibility for all the policymaking and management functions directly related to education and can therefore be reasonably held accountable for the design and functioning of the system as a whole. This turns out to be essential, because the central task of government in the field of education is to create new, modern systems that are highly coherent and effective. In countries in which the central authority at the state or national level is weak and responsibilities are widely dispersed, it is virtually impossible to construct and manage systems that can effectively manage the transition from the old system to the new one.

In all such systems, whether the center of gravity of authority for the education system is at the state or national level, elected officials decide on the policies that will govern the direction taken by the education system. But, in effective systems, education professionals in the ministry are responsible for planning and proposing policies that can then be debated by the responsible elected officials, and are then responsible for carrying out the decisions their legislatures make.

VISION:

All Kentuckians will be prepared to succeed in a global economy.

MISSION:

To deliver a world-class education to students, create and apply new knowledge, and grow the economy of the Commonwealth.

VALUES:

- The highest standards of excellence in teaching, research, and public service.
- Access for all who are committed to the pursuit of higher learning.
- Cooperation, teamwork, and mutual respect for the differing missions of institutions.
- A culture of inclusion that provides equitable opportunities and celebrates diversity in people and thought.
- A postsecondary experience that prepares individuals to be informed, competent, knowledgeable, and engaged citizens and leaders.
- Prudent fiscal, intellectual, and environmental stewardship that employs resources effectively and efficiently.
- A commitment to the continuous monitoring and improvement of performance.
- Creative and innovative approaches, including the use of technology, in meeting the needs of the Commonwealth.
- Engagement with business, industry, and other community partners to improve economic vitality and quality of life.
- The promotion of education as a public good and an investment in Kentucky's future.

2016-20 Strategic Agenda Policy Forums

What: Focused discussions with key stakeholders and subject matter experts around specific postsecondary/adult education policy areas or issues.

Why: To get broad stakeholder input into the challenges and opportunities in each policy area. The groups also will provide some input on appropriate objectives, strategies and metrics in each area. These conversations would occur in lieu of the policy area workgroups formed during the last planning process, and are designed to make more effective use of stakeholders' time.

When: Mid-March through early May

Format: Professionally facilitated, ½ day discussions using a common format/structure. The first part of the meeting will be focused on providing context (key challenges, progress, national trends, etc). The rest of the meeting will focus on getting input from the group through brainstorming activities. Lunch will be provided.

Role of CPE Staff: Each forum will be assisted by a CPE staff member who will help the Steering Committee identify the meeting participants, present contextual material, work with the professional facilitator on planning, and report on the results of the forum.

Participants: Approximately 30-40 participants will be invited representing a broad group of people inside and outside the higher education system. Each participant should have a specific stake in or knowledge of the policy issue. Existing committees or workgroups might serve in this role for some policy issues.

Deliverables: A brief written report and presentation on each forum to the Strategic Agenda Steering Committee.

Topics:

- College Access
- Academic Readiness
- Student Success
- Diversity
- Financial Barriers to College
- Postsecondary Education and the Workforce (two sessions: one with employers and one with education/training providers)
- Research and Innovation
- Regional and Community Development

Dates and Times			Policy Forum Topic	Description
Mar 20	Fri	10am-3pm	College Access	How can Kentucky strengthen its college-going culture, particularly in rural areas of the state with very low levels of educational attainment? Discussion topics may include effective and early college-going messages, financial aid information, career pathways, and college mentoring and advising opportunities.
Mar 24	Tues	10am-3pm	Diversity	How can Kentucky create a culture of inclusion on its campuses, so that all students feel supported, welcomed, and prepared to succeed? Discussion topics may include state diversity planning, closing achievement gaps, and broadening definitions of diversity.
Mar 25	Wed	10am-3pm	Regional & Community Development	What role should the postsecondary system and institutions play in regional and community development? How do you prioritize among competing needs and initiatives? Discussion topics may include regional stewardship, economic development, and entrepreneurship.
Apr 8	Wed	10am-3pm	Financial Barriers to College	How can Kentucky ensure college remains affordable? Discussion topics may include state financial aid policies, tuition setting, strategies to accelerate completion, and student debt levels.
Apr 9	Thurs	10am-3pm	Academic Readiness	How can the postsecondary and secondary sectors work together to help more students graduate from high school college-ready? How can postsecondary institutions get students up to speed most effectively and efficiently? Discussion topics may include transition and bridge programming, statewide placement policies, and redesigning or compressing the sequence of developmental education courses.
Apr 20	Mon	10am-3pm	Postsecondary Education & the Workforce - Employers	Are Kentucky's college graduates prepared to succeed in the workforce? Are employers satisfied with recent graduates, and is there more colleges could do to prepare students for careers? A group of business experts will offer suggestions for strengthening employer/educator partnerships.
Apr 27	Mon	10am-3pm	Innovation & Research	How can postsecondary institutions collaborate on research activities to increase productivity and impact? How do research priorities and goals differ by sector? Are there barriers that prevent the commercialization of research? Discussion topics may include promoting undergraduate research and communicating and measuring the return on investment to the state's economy.
Apr 29	Wed	10am-3pm	Student Success	How can Kentucky improve year-to-year retention and ensure more students--particularly from underserved populations--complete postsecondary degrees and credentials in a timely manner? Discussion topics may include closing achievement gaps, early warning and intervention strategies, first-year experience programs, guided/ accelerated pathways to degrees, flexible degree options, and credit for prior learning policies.
May 4	Mon	10am-3pm	Postsecondary Education & the Workforce - Education & Training	How can the postsecondary system be more responsive to regional and workforce needs? Discussion topics include aligning degree and credential production with workforce needs, more effective career development strategies, tracking employment outcomes and measuring employer satisfaction.