http://zhaolearning.com
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K-12 reforms:
Surprising lessons from the East

Yong Zhao, Ph. D
College of Education
University of Oregon
zhaoyong@uoregon.edu
http://zhaolearning.com
Education Reforms in the U.S.

Test-based Accountability

Centralization

- Federal mandates
- State Standards & Curriculum
- State Standardized Tests

Standardization

- Curriculum Standards
- Standardized Testing
- Standardized Curriculum

Goals 2000--1994
NCLB -- 2002
Race to the Top--2009
... nations like China and India realized that with some changes of their own, they could compete in this new world. And so they started educating their children earlier and longer, with greater emphasis on math and science.

--President Obama, 2011 State of the Union Address
[China 2002]
In December 2002, the Chinese Ministry of Education issued a policy designed to reform assessment and evaluation in elementary and secondary schools. This document, entitled Ministry of Education’s Notice Regarding Furthering the Reform of Evaluation and Assessment Systems in Elementary and Secondary Schools, calls for alternative assessments that go beyond simply testing academic knowledge. It specifically forbids ranking school districts, schools, or individual students based on test results or making test results public.

[China 2005]
High school curriculum reform
Among the problems targeted by the reforms:
• Overemphasis on knowledge transmission
• Too many required and uniform courses, which limited students’ individual development
• Too much overlapping content, resulting in excessive coursework burden on students
• Overemphasis on the value of individual discipline, resulting in too little interdisciplinary and social integration
Remedies:
• Credit system
• More electives, fewer required courses
• Local subjects/school based curriculum
• Integrated studies
• New subjects (art, environment, technology, etc)
China’s education reform since 1999...

- **380** instructional hours reduced for grades 1 to 9
- **140** instructional hours reduced for math (grades 1 through 6)
- **156** instructional hours added for PE (grades 1 through 6)
- **347** instructional hours reduced for required courses in high school (grades 10 to 12)
- **410** instructional hours added for electives
Revised 7th National Curriculum

The ultimate goal is to cultivate creative, autonomous, and self-driven human resources who will lead the era's developments in information, knowledge and globalisation.

• Promote fundamental and basic education that fosters sound human beings and nurtures creativity
• Help students build self-leading capacity so that they well meet the challenges of today's globalisation and information development
• Implement learner-oriented education that suits the students' capability, aptitude and career development needs
• Ensure expanded autonomy for the local community and schools in curriculum planning and operation.
All this energy has been spent on raising test scores, not nurturing creativity or any other aspect of human nature.

--Lee Ju Ho, Minister of Education, Science, and Technology
Jan 28, 2011, Chronicle of Higher Education
Singapore

Since 1997, Singapore another frequent high flyer in international comparative studies, has engaged in a major curriculum reform initiative. Entitled *Thinking Schools, Learning Nation*, this initiative aims to develop all students into active learners with critical thinking skills and to develop a creative and critical thinking culture within schools. Its key strategies include:

- The explicit teaching of critical and creative thinking skills;
- The reduction of subject content;
- The revision of assessment modes; and;
- A greater emphasis on processes instead of on outcomes when appraising schools.

In 2005, the Ministry of Education in Singapore released another major policy document *Nurturing Every Child: Flexibility and Diversity in Singapore Schools*, which called for a more varied curriculum, a focus on learning rather than teaching, and more autonomy for schools and teachers (Ministry of Education, 2005).
Japan

• Since 2001, Japan has been working to implement its Education Plan for the 21st Century, which has three major objectives:
  • The first is “enhancing emotional education,” that is, cultivating students as emotionally well-rounded human beings.
  • The second objective is “realizing a school system that helps children develop their individuality and gives them diverse choices” by moving towards a diverse, flexible educational system that encourages individuality and cultivates creativity.
  • The third is “promoting a system in which the school’s autonomy is respected” through decentralizing educational administration, enhancing local autonomy, and enabling independent self-management at the school level. (Iwao, 2000)
Why?
Top Test Scores From Shanghai Stun Educators
By Sam Dillon
December 7, 2010

A Sputnik Moment for U.S. Education
China delivers another wake-up call to those who think American schools are globally competitive.
By Chester E. Finn Jr.
December 8, 2010

The Wall Street Journal

Why Chinese Mothers Are Superior
Can a regimen of no playdates, no TV, no computer games and hours of music practice create happy kids? And what happens when they fight back?
By Amy Chua
January 8, 2011
The survey covering 21 countries, conducted by International Educational Progress Evaluation Organization, showed Chinese students excelled at math, beating their peers from other countries. But when it came to using their imagination, they were tied for the last place. And in creativity, they were fifth from the bottom.

The survey results are not shocking, given the way our children are taught in schools and at home. But they are a stern reminder to our educators and parents to change their ways.

The global study should make us swing into action and help our students to throw open their young minds to imagination and creativity. It is time our education officials and educators asked themselves what they should do to let our children's imagination and creativity blossom.

Who is right?
Global Achievement Gap
Inside photos showed Alexei doing complicated experiments in physics and chemistry and reading aloud from *Sister Carrie*.

Stephen, by contrast, retreated from a geometry problem on the blackboard and the caption advised, "Stephen amused class with wisecracks about his ineptitude."

Seated at a typewriter in typing class, Stephen tells us "I type about one word a minute."
Our Nation is at risk. Our once unchallenged preeminence in commerce, industry, science, and technological innovation is being overtaken by competitors throughout the world.

the educational foundations of our society are presently being eroded by a rising tide of mediocrity that threatens our very future as a Nation and a people.

We are raising a new generation of Americans that is scientifically and technologically illiterate.
Elephant vs. doctor: Aspirations

2 Million Minutes

Bob Compton

Source: http://www.2mminutes.com/pressblog6.html
A Long History of Bad Test-takers

• 1960s
  – FIMS: 12th out of 12 countries
  – FISS: 14th out of 18 countries

• 1970s/1980s
  – SIMS: 12, 14, 12, 12 out of 15 (number systems, algebra, geometry, calculus)
  – SISS: 14th (biology), 12th (chemistry), 10th (physics) out of 14

• 1990s—2007: TIMSS (8th graders)
  – 28th out of 42 in 1995
  – 15th in 2003
  – 9th in 2007
...America still has the largest, most prosperous economy in the world. (Applause.) No workers -- no workers are more productive than ours. No country has more successful companies, or grants more patents to inventors and entrepreneurs. We’re the home to the world’s best colleges and universities, where more students come to study than any place on Earth.

--President Obama, 2011 State of the Union Address
Achievement Gaps
The First International Mathematics Study (FIMS)

- Year data collected: 1964
- Target Population: 13 year olds
- Participating Countries: Australia, Belgium, England, Finland, France, Germany (FRG), Israel, Japan, Netherlands, Scotland, Sweden, United States.
- US finished second to last (Sweden)
Jefferson told us where to look to see if a nation is a success. He did not say to look at test scores. Instead, he said to look at “life, liberty, and the pursuit of happiness.”

--Keith Baker (2007)
40 years later: Wealth

FIMS scores in 1964 correlate at $r = -0.48$ with 2002 PPP-GDP. In short, the higher a nation’s test score 40 years ago, the worse its economic performance on this measure of national wealth.
40 years later: Rate of Growth

The nations that scored better than the U.S. in 1964 had an average economic growth rate for the decade 1992-2002 of 2.5%; the growth rate for the U.S. during that decade was 3.3%. The average economic growth rate for the decade 1992-2002 correlates with FIMS at $r = -0.24$.

Like the generation of wealth, the rate of economic growth for nations improved as test scores dropped.
There is no relationship between FIMS scores and hourly output, $r = -.03$. In 2004, the average hourly output of those nations that outsored the U.S. in 1964 was 3.4% lower than U.S. productivity, though the three nations with higher hourly output all had higher test scores than the U.S.
40 years later: Quality of Life

The average rank on the Quality of Life Index for nations that scored above the U.S. on FIMS was 10.8. The U.S. ranked seventh (lower numbers are better). FIMS scores correlated with Quality of Life at $r = -0.57$. 
40 years later: Democracy

On the Economy Intelligence Unit’s Index of Democracy, those nations that scored below the median on FIMS have a higher average rank on achieving democracy (9.8) than do the nations that scored above the median (18). Once again, the U.S. scored higher on attaining democracy than did nations with higher 1964 test scores.
40 years later: Livability

An alternative to the Quality of Life Index, the Most Livable Countries Index, shows that six of the nine countries that scored higher on FIMS than the U.S. are worse places to live. Livability correlates with FIMS scores at $r = -0.49$. 
40 years later: Creativity

The number of patents issued in 2004 is one indicator of how creative the generation of students tested in 1964 turned out to be. **The average number of patents per million people for the nations with FIMS scores higher than the U.S. is 127. America clobbered the world on creativity, with 326 patents per million people.** However, FIMS scores do correlate with the number of patents issued: $r = .13$ with the U.S. and $r = .49$ without the U.S.
*Kappan, October, 2007*
What Matters?

Diversity of talents
Creativity
Entrepreneurship
Passion
What correlates with business growth?

- The Bohemian index
- The Melting pot index
- The Gay index
The Strengths of American Education (at least BN)

• School Talent Shows
  – Value individual talents
  – Inspires passion and responsibility
  – Tolerate deviation
  – Cultivate entrepreneurship

• Children are pop-corn
  – Respect individual differences
  – Have faith in every child
  – Second, third, fourth chances
Costs of high scores:

When test scores go up, we should worry, because of how poor a measure they are of what matters, and what you typically sacrifice in a desperate effort to raise scores.

--Alfie Kohn
Rankings of 21 Countries on PISA Math and Perceived Entrepreneurial Capabilities

Data source: OECD PISA 2010, Global Entrepreneurship Monitor, 2010
Rankings of 21 Countries on PISA Reading and Perceived Entrepreneurial Capabilities

Data source: OECD PISA 2010, Global Entrepreneurship Monitor, 2010
U.S. Schools Are Still Ahead -- Way Ahead

By Vivek Wadhwa
Business Week
updated 1/13/2011 7:00:00 PM ET

The independence and social skills American children develop give them a huge advantage when they join the workforce. They learn to experiment, challenge norms, and take risks. They can think for themselves, and they can innovate. This is why America remains the world leader in innovation; why Chinese and Indians invest their life savings to send their children to expensive U.S. schools when they can. India and China are changing, and as the next generations of students become like American ones, they too are beginning to innovate. So far, their education systems have held them back.

http://www.msnbc.msn.com/id/41057676/ns/business-bloomberg_businessweek/from/toolbar
The future?
The future?

The stone age did not end because they ran out of stones.
No company loves us enough to stay forever..

• 40-50 years, average life expectancy of Fortune 500 companies
• 12.5 years, average life expectancy of all firms
• 3,000,000 jobs lost annually by existing US companies
• 50% increase in labor force in developing countries by 2050

Sources:
• http://www.businessweek.com/chapter/degeus.htm
• http://www.kauffman.org/
• http://www.economist.com/node/18227144
Death of Distance
1492: about 3 months

2009: about 13 hours
1858: 17 hours

Glory to God in the highest; on earth, peace and good will toward men.

2009: less than 1 minute
1927: $65 (about $1,000)

3 minute phone call

2009: about $0.02
Expanded primary living space
Challenges to live in the expanded living space...
Today, Indian engineers make $7,500 a year against $45,000 for an American engineer with the same qualifications. If we succeed in matching the very high levels of mastery of mathematics and science of these Indian engineers — an enormous challenge for this country — why would the world’s employers pay us more than they have to pay the Indians to do their work? They would be willing to do that only if we could offer something that the Chinese and Indians, and others, cannot.

World Language Families 2006

Invent a job, not find a job: Students as Global Entrepreneurs

Employees ➔ Entrepreneurs
Managers ➔ Entrepreneurs
Global Entrepreneurship

Confidence    Friends    Risk-taking

Passion      Unique ideas    Motivation
    Innovation
Capitalize on Strengths: The Strengths Movement


http://www.strengthsmovement.com/
Teach Global Competences

• Culture Intelligence (CQ)
  – Skills
  – Attitudes
  – Perspectives
  – Values/identity

• Knowledge of the Globe
  – Global economics
  – Global problems
  – Interdependence

• Languages and cultures
Who will invent the next Apple or Google?

If Lady Gaga Can Be Useful?