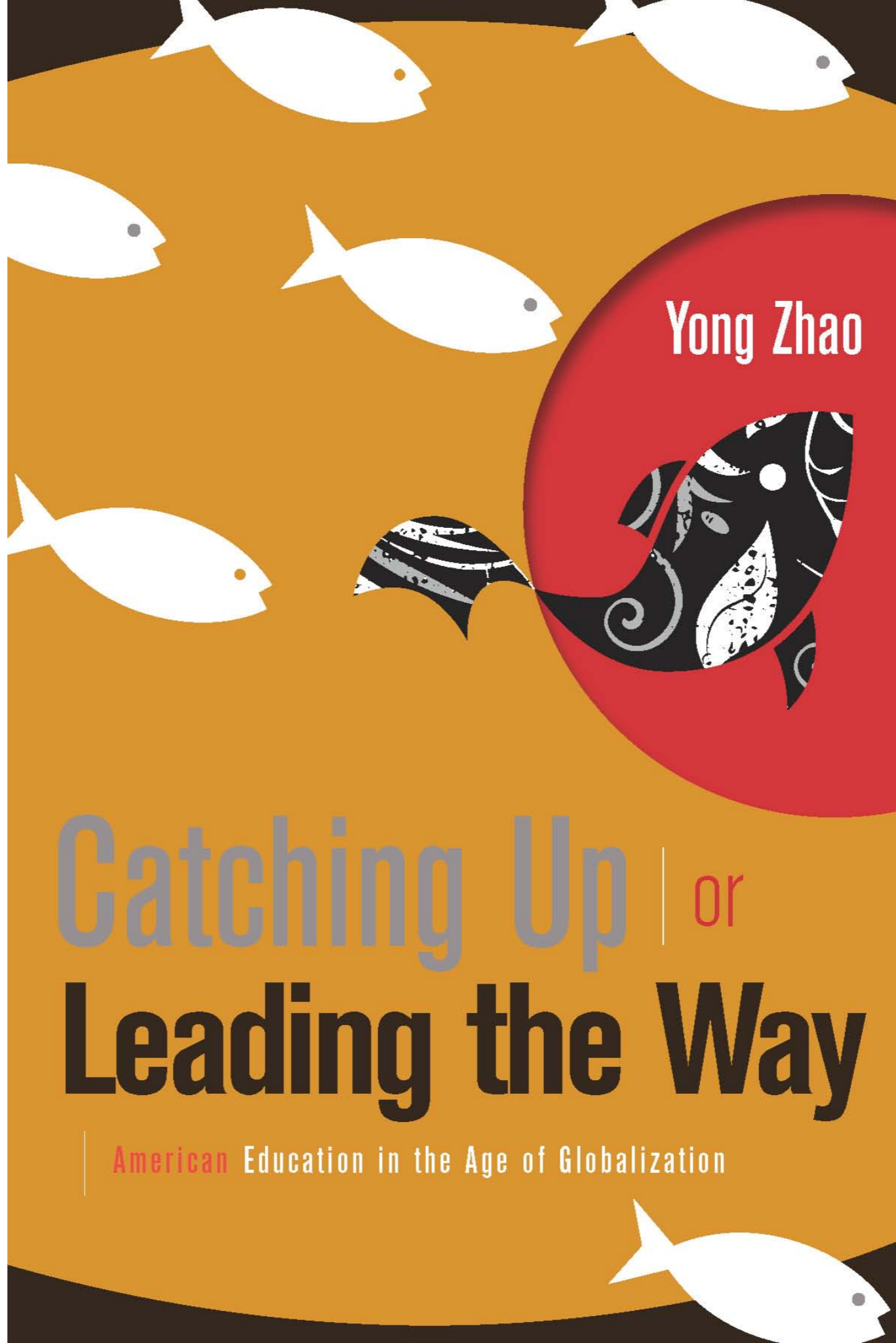




<http://zhaolearning.com>

# Achievement Gap vs. Opportunity Gap: Education That Matters

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Yong Zhao

Catching Up | or  
**Leading the Way**

American Education in the Age of Globalization

# Achievement Gap: Symptom

Right Diagnosis

Wrong Prescription

# Opportunity Gap: Cause

# **Wrong Prescription**

**Closing Achievement Gap**

**Widening Opportunity Gap**

**Opportunity to Learn What Matters**

**Opportunity to Develop Strength**

**Opportunity to Be Engaged**



**What matters?**

Lady Gaga

# Lady Gaga



Test scores



Asian Countries

USA

2003 TIMSS Results

Confidence



USA

Asian Countries

2003 TIMSS Results

# A Long History of Bad Test-takers

- **1960s**
  - FIMS: 12<sup>th</sup> out of 12 countries
  - FISS: 14<sup>th</sup> out of 18 countries
- **1970s/1980s**
  - SIMS: 12, 14, 12, 12 out of 15 (number systems, algebra, geometry, calculus)
  - SISS: 14<sup>th</sup> (biology), 12<sup>th</sup> (chemistry), 10<sup>th</sup> (physics) out of 14
- **1990s—2007: TIMSS (8<sup>th</sup> graders)**
  - 28<sup>th</sup> out of 42 in 1995
  - 15<sup>th</sup> in 2003
  - 9<sup>th</sup> in 2007

Inside  
photos Alexei vs Stephen: Curriculum and Time  
showed  
Alexei doing  
complicated  
experiments  
in physics  
and  
chemistry  
and reading  
aloud from  
*Sister Carrie*.

1958



Stephen, by  
contrast,  
retreated  
from a  
geometry  
problem on  
the  
blackboard  
and the  
caption  
advised,  
"Stephen  
amused



Our Nation is at risk. Our once unchallenged preeminence in commerce, industry, science, and technological innovation is being overtaken by competitors throughout the world.

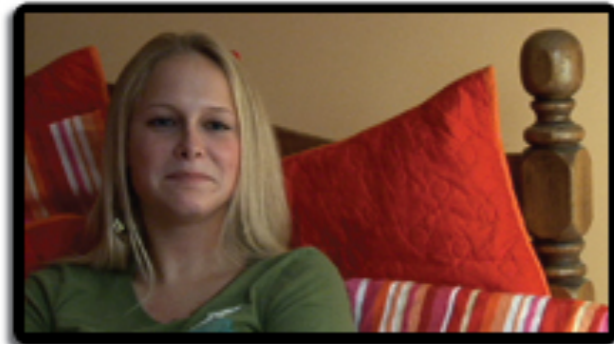
the educational foundations of our society are presently being eroded by a rising tide of mediocrity that threatens our very future as a Nation and a people.

**We are raising a new generation of Americans that is scientifically and technologically illiterate.**

*To Glenn Seaborg  
With appreciation*

**1983 Japan**

# Elephant vs. doctor: Aspirations



## 2 Million Minutes

*Bob Compton*

Source: <http://www.2minutes.com/pressblog6.html>

**...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

## Patent filings in 2008

U.S.A. 400,769 filings  
Japan 502,054 filings  
China 203,481 filings

Europe 14,525 filings  
U.S.A. 14,399 filings  
Japan 13,446 filings  
China 473 filings

In 2010 China accounted for

20% of the world's population

9% of the world's GDP

12% of the world's R&D expenditure

1% of the patent filings with or patents granted by any of the leading patent offices outside China.

50 % of the China-origin patents were granted to subsidiaries of foreign multinationals

Source: Chinese Innovation is a Paper Tiger [http://online.wsj.com/article/SB10001424053111904800304576472034085730262.html?mod=googlenews\\_wsj](http://online.wsj.com/article/SB10001424053111904800304576472034085730262.html?mod=googlenews_wsj)

# Gaps that Don't Matter



# The First International Mathematics Study

- 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.”**

Baker, Keith (2007). Are International Tests Worth Anything?  
*Kappan, October, 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.**

# 40 years later: Productivity

There is no relationship between FIMS scores and hourly output,  $r = -.03$ . In 2004, the average hourly output of those nations that outscored 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  $r = -.49$ .

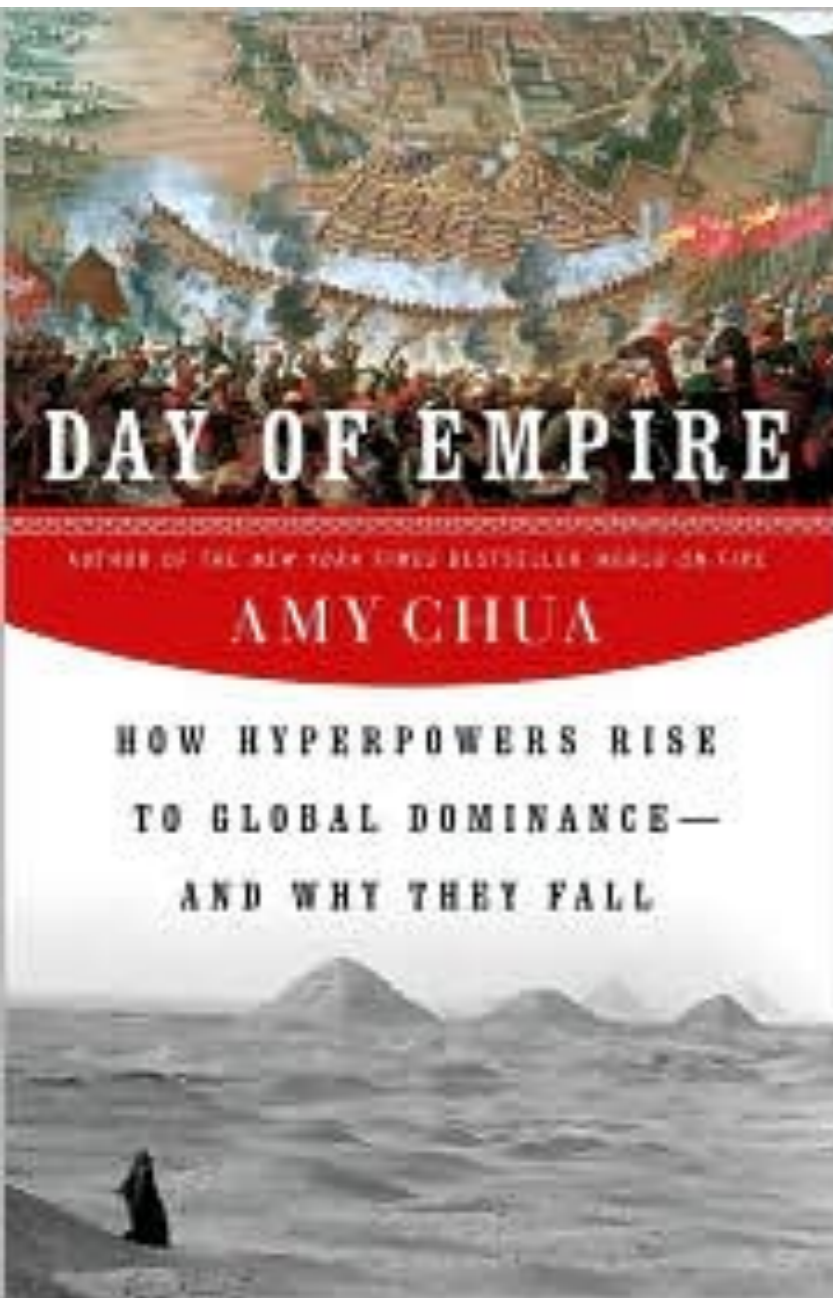
# 40 years later: Creativity

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.

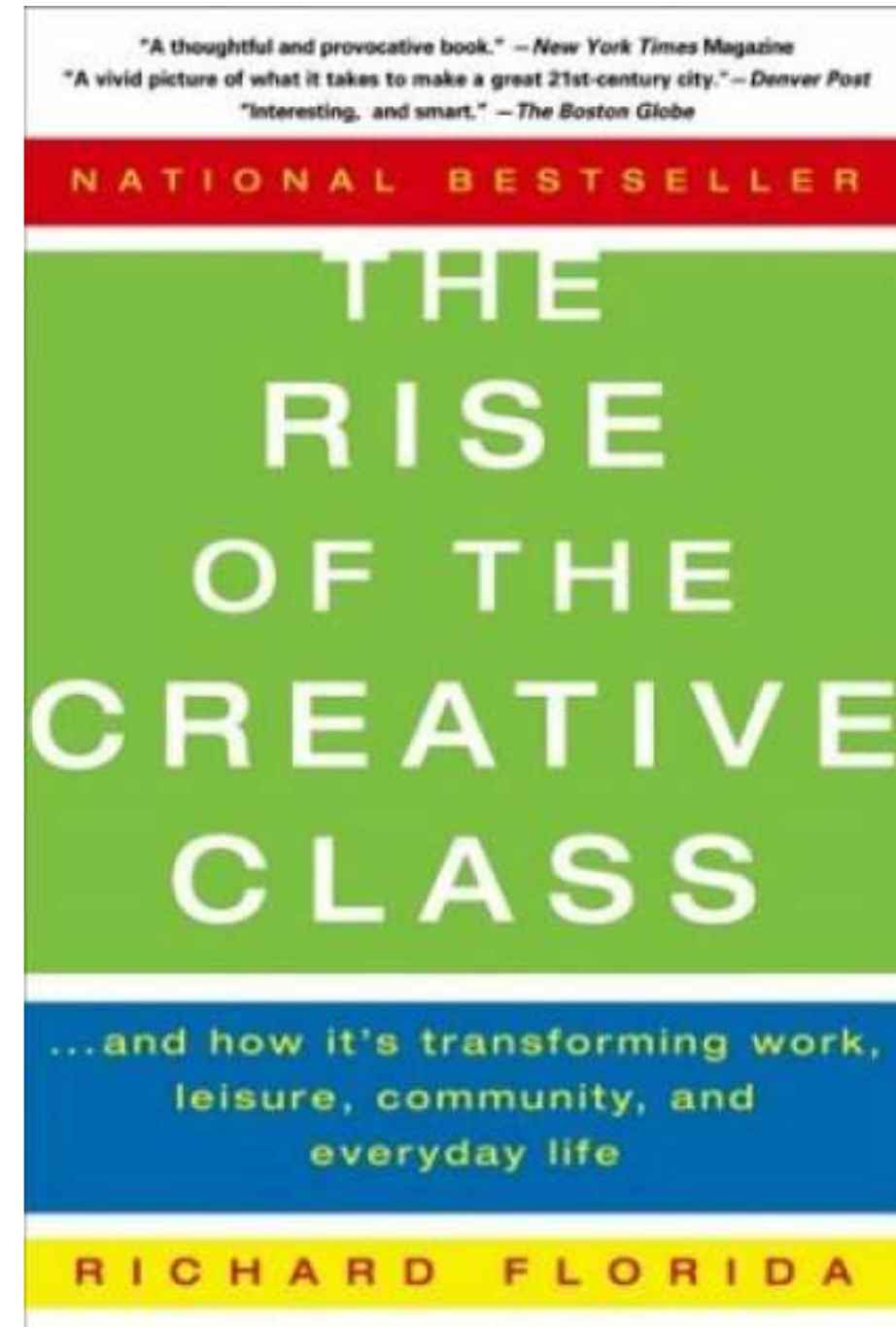
One of psychology's open secrets is the relative inability of grades, IQ, or SAT scores, despite their popular mystique, to predict unerringly who will succeed in life. . . . At best, IQ contributes about 20 percent to the factors that determine life success, which leaves 80 percent to other forces.

---Daniel Goleman *Emotional Intelligence: Why It Can Matter More Than IQ*

# What Matters?



Diversity of talents  
Creativity  
Entrepreneurship  
Passion



# Side Effects

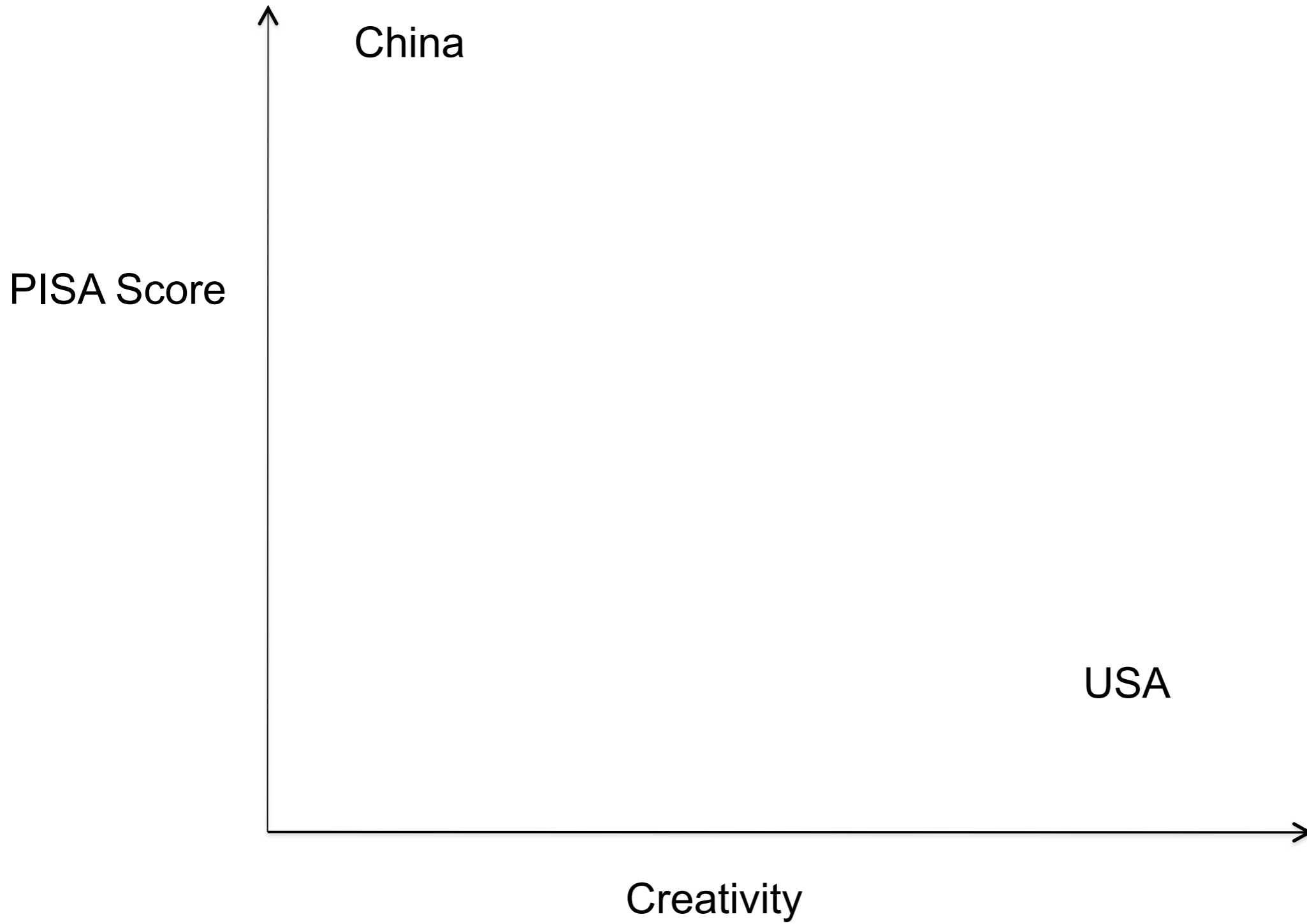
# Costs of High Scores

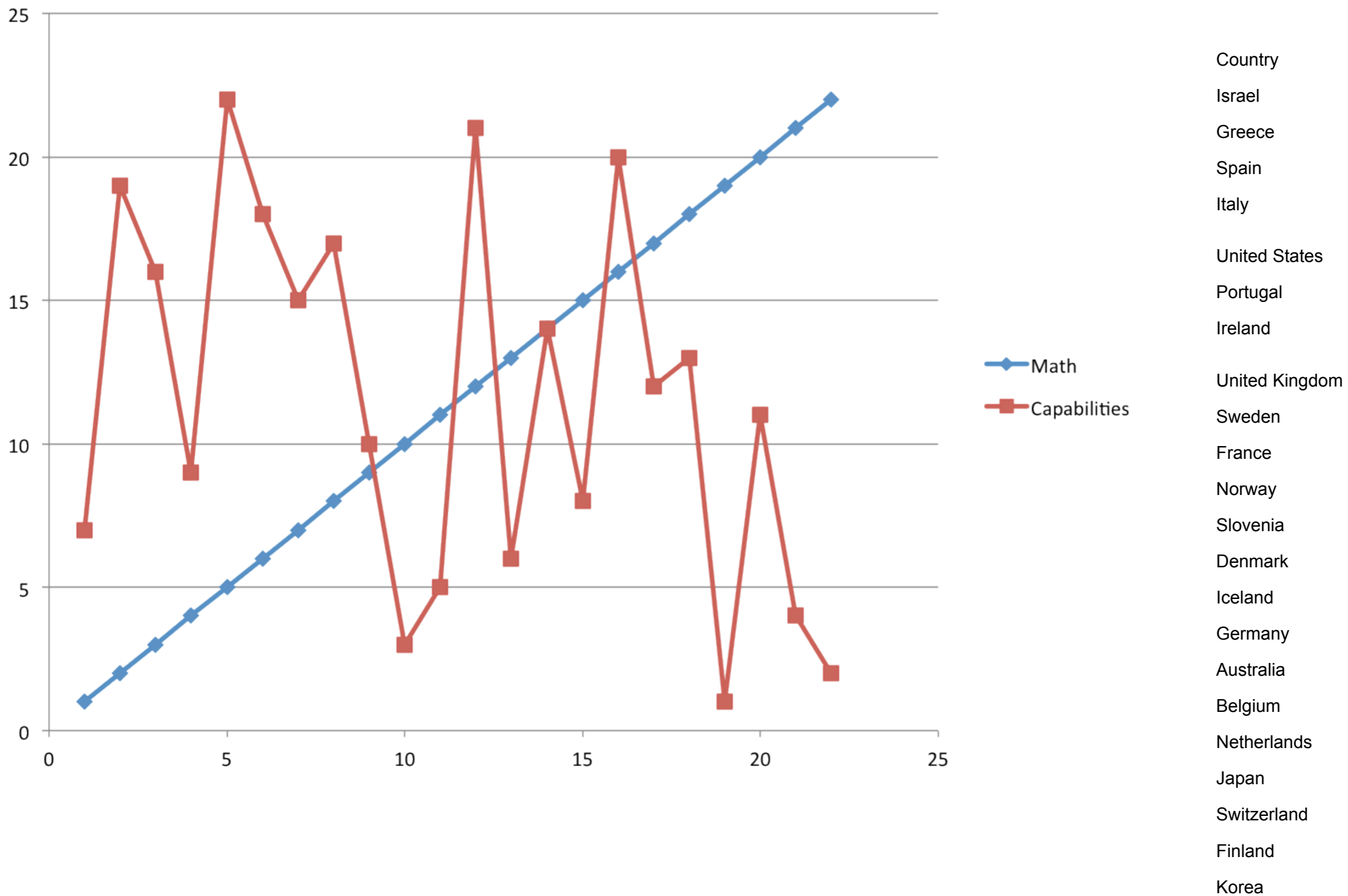
When test scores go up, we should worry, because of how poor a measure they are of what matters, and what you typically sacrifice in a desperate effort to raise scores.

Alfie Kohn

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





Rankings of 21 Countries on PISA Math and Perceived Entrepreneurial Capabilities

Data source: OECD PISA 2010, Global Entrepreneurship Monitor, 2010

# Correlations between PISA and Entrepreneurship Indicators

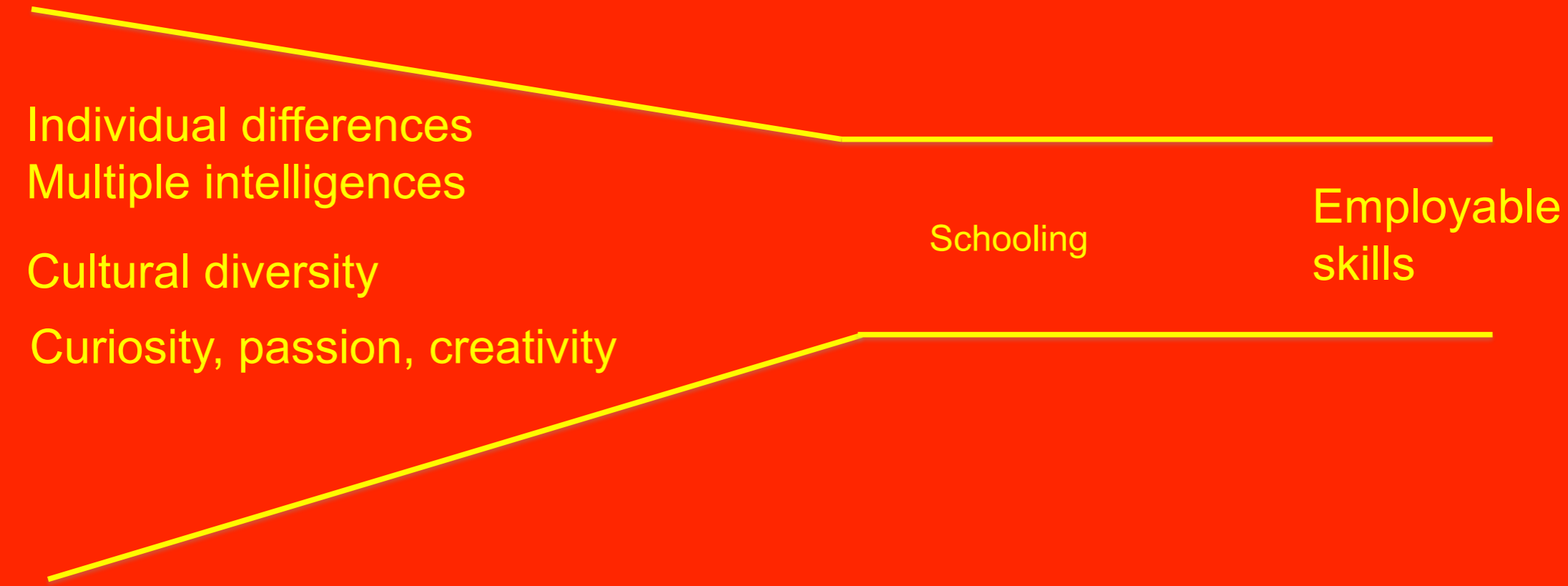
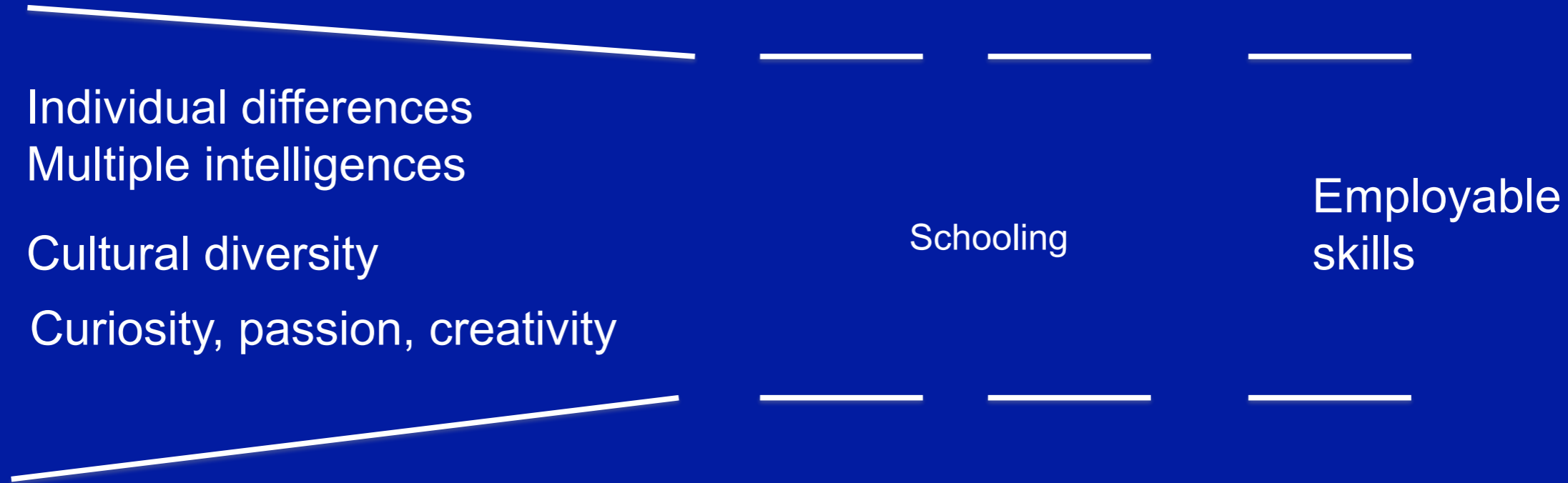
	PISA Reading	PISA Math	PISA Sciences
Perceived Capabilities	-.595**	-.586**	-.608**
Nascent Entre Rate	-.693**	-.636**	-.678**
New Biz Ownsp Rate	-.371*	-.374*	-.392*
Total Early Stage Entre Activity	-.658**	-.620**	-.658**

Data source: OECD PISA 2010, Global Entrepreneurship Monitor, 2010

Individual differences  
Multiple intelligences  
Cultural diversity  
Curiosity, passion, creativity

Schooling

Employable skills



# The Traditional Strengths of American Education

- Philosophical strengths
  - School Talent Shows: Broad definition of education
  - Children are like pop-corn: Individual differences
- Structural strengths
  - Local control
  - Professional autonomy
- Resource strengths
  - Public libraries, museums, galleries, etc.
  - Technology, arts and sports facilities, musical instruments

## 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](http://www.msnbc.msn.com/id/41057676/ns/business-bloomberg_businessweek/from/toolbar)

# The future?



The stone age did not end because they  
ran out of stones

# Global Entrepreneurship

Confidence

Friends

Risk-taking

Passion

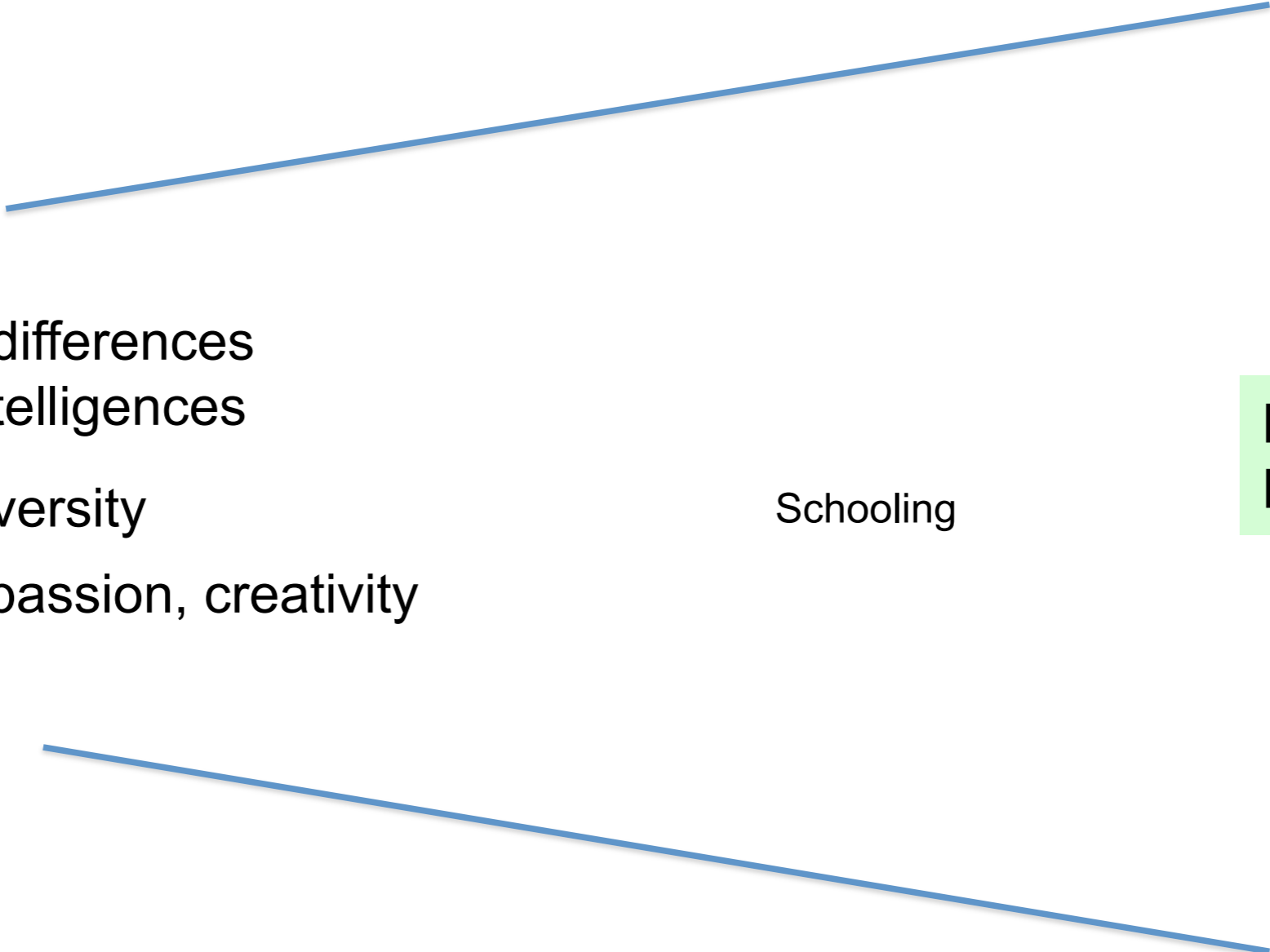
Unique ideas  
Innovation

Motivation

Individual differences  
Multiple intelligences  
Cultural diversity  
Curiosity, passion, creativity

Schooling

Enhanced  
Human Talents



# Strength-based Personalized Learning

<http://zhaolearning.com>