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Catching up or Leading the Way:

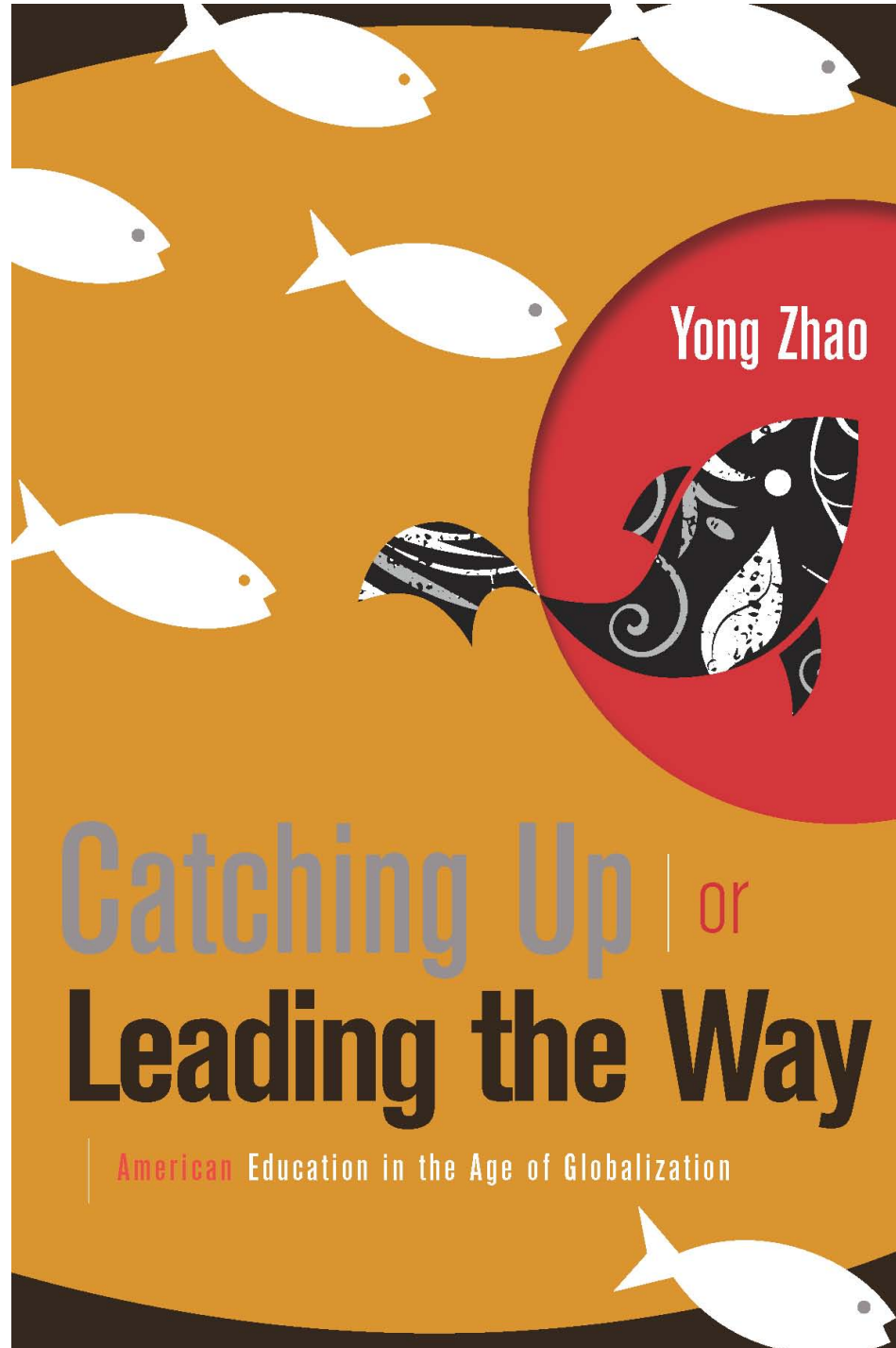
American Education in the Age of Globalization

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Catching UP: Education Reforms in the U.S.

- Standards
- Standardized Testing
- Accountability
- Science, Technology, Engineering, and Math (STEM)



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Race to the Top

- Standards
- Charter Schools
- Accountability
- Data systems



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NGA/CCSSO Common Core Standards Initiative

Why is this initiative important?

Currently, every state has its own set of academic standards, meaning public education students in each state are learning to different levels. All students must be prepared to compete with not only their American peers in the next state, but with students from around the world. If all 49 states and territories adopt the common core state standards, this initiative will affect 43.5 million students which is about 87 percent of the student population (Source: SchoolDataDirect.org; 2007).

Why is a common core of state standards good for students?

These standards will help prepare students with the knowledge and skills they need to succeed in college and careers and to be prepared to compete globally. Additionally, expectations for students will be consistent across all states and territories; this consistency will support students transitioning between states. Also, clearer standards will help students better understand what is expected of them and allow for more self-directed learning.

<http://www.corestandards.org/Files/CCSSOne-Page.pdf>



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21st Century Challenge(s)



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Globalization



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When I was growing up, my parents told me, “Finish your dinner. People in China and India are starving.” I tell my daughters, “Finish your homework. People in India and China are starving for your job.”

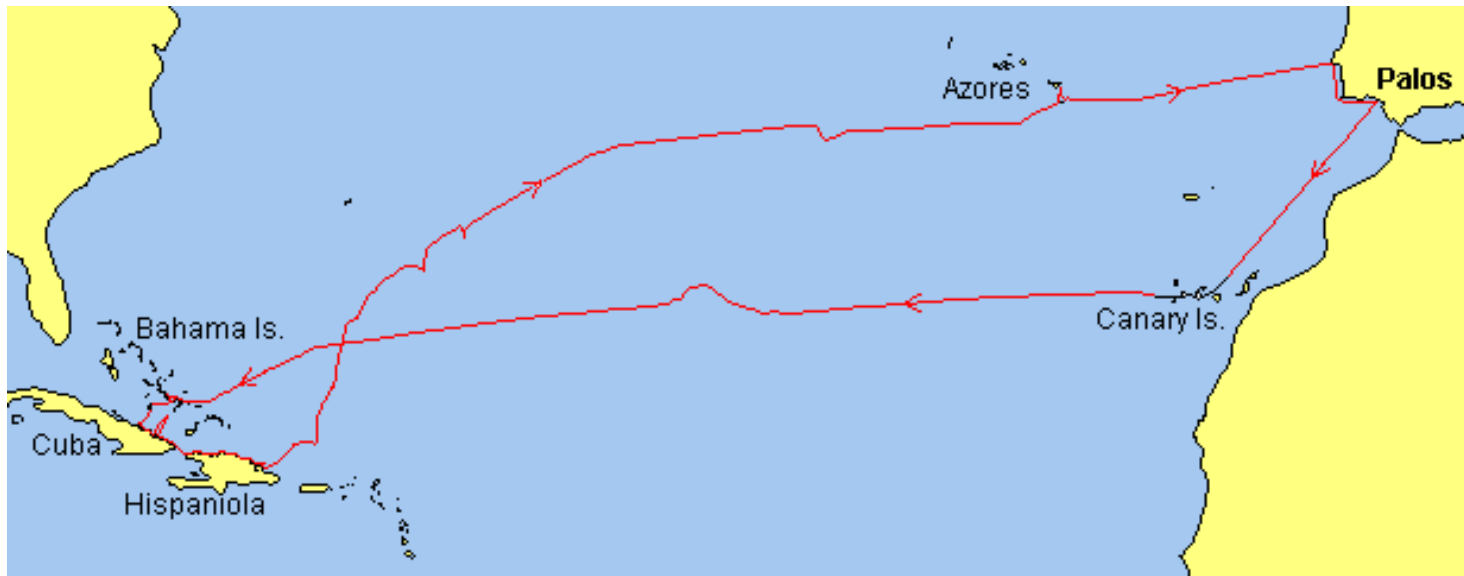
---Thomas Friedman, 2005



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1492: about 3 months



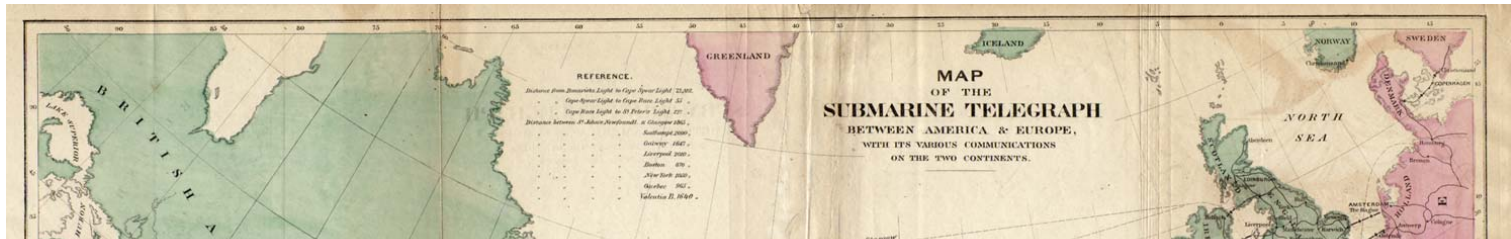
2009: about 13 hours



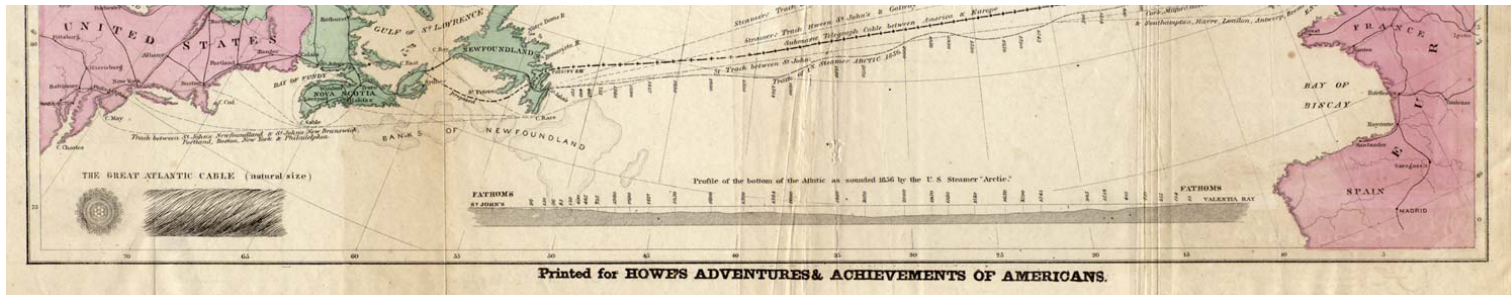
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1858: 17 hours



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



2009: less than 1 minute



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1927: \$65 (about \$1,000)



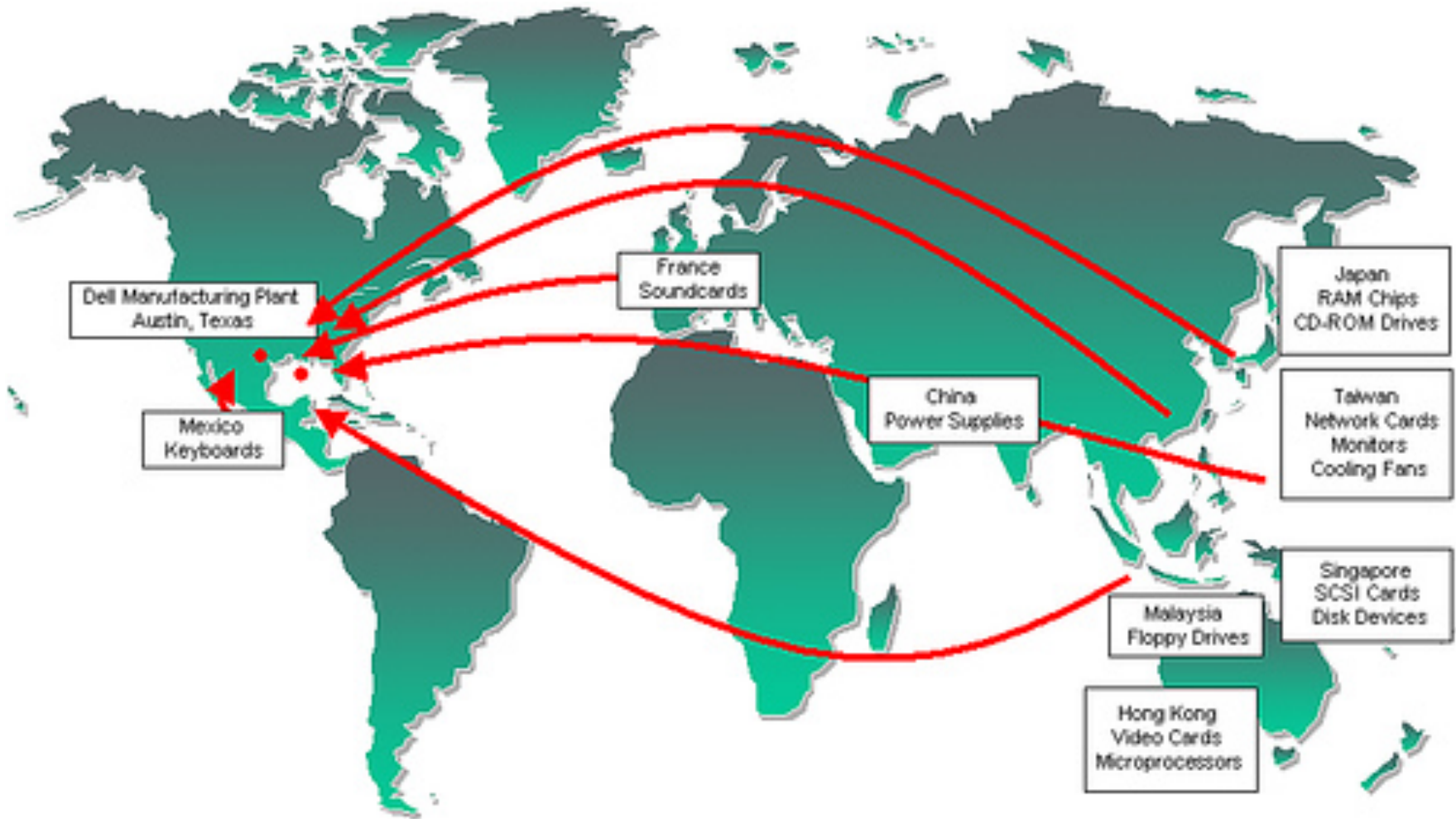
2009: about \$0.02



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Death of Distance



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Achievement Gap

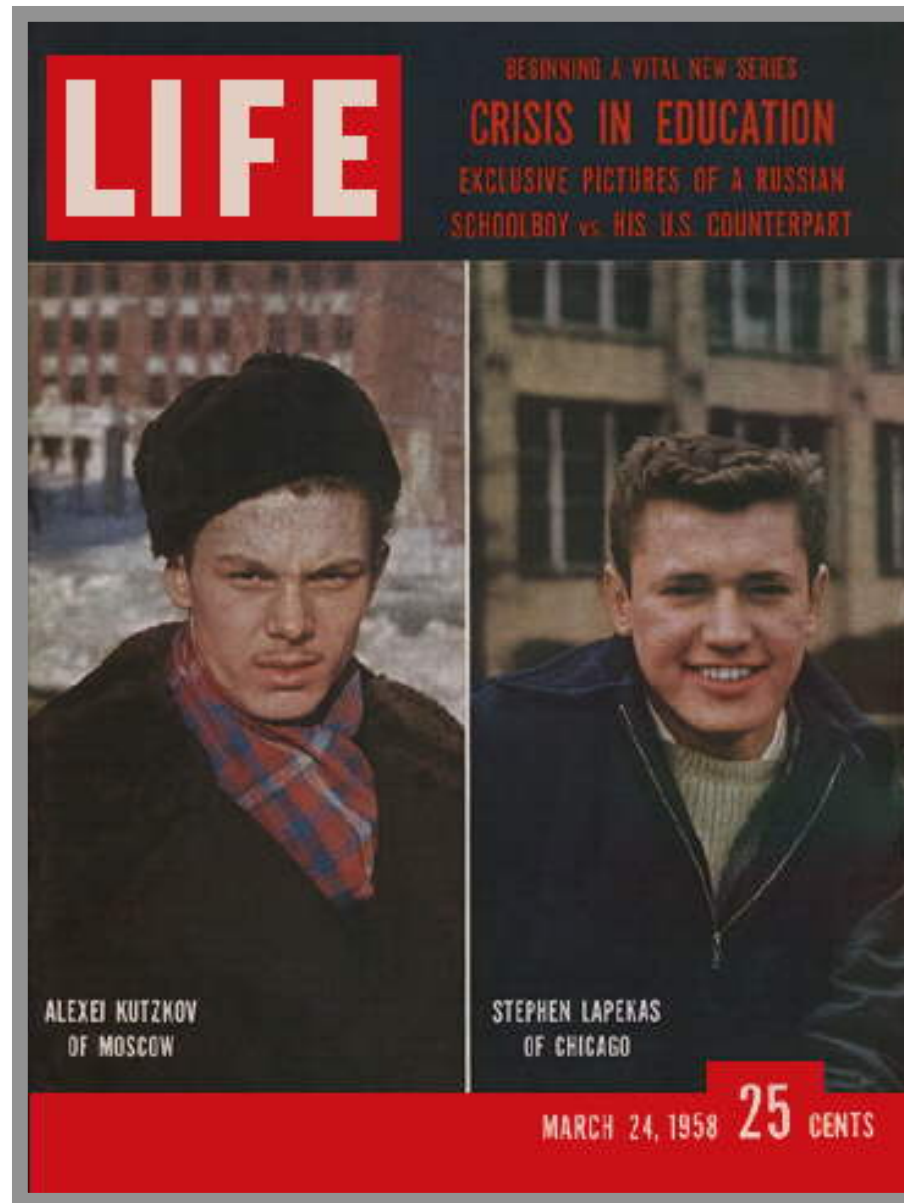


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Inside photos showed Alexei doing complicated experiments in physics and chemistry and reading aloud from *Sister Carrie*.

1958
USSR



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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.

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



*To Glenn Seaborg
With appreciation*

1983 Japan

1995 TIMSS Grade 8 Mathematics Performance

Nations with Average Scores Significantly Higher than the US	
Nation	Average
Singapore	643
Korea	607
Japan	605
Hong Kong	588
Belgium (Fl)	565
Czech Republic	564
Slovak Republic	547
Switzerland	545
(Netherlands)	541
(Slovenia)	541
(Bulgaria)	540
(Austria)	539
France	538
Hungary	537
Russian Fed.	535
(Australia)	530
Ireland	527
Canada	527
(Belgium (Fr))	526
Sweden	519

Nations with Average Scores Not Significantly Different than the US	
Nation	Average
Thailand	522
Israel	522
(Germany)	509
New Zealand	508
England	506
Norway	503
(Denmark)	502
United States	500
(Scotland)	498
Latvia (LSS)	493
Spain	487
Iceland	487
(Greece)	484
(Romania)	482

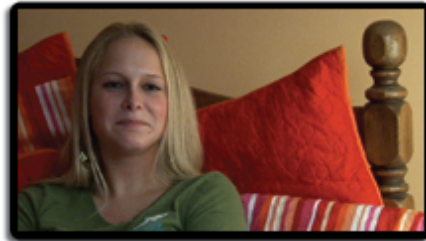
Nations with Average Scores Significantly Lower than the US	
Nation	Average
Lithuania	477
Cyprus	474
Portugal	454
Iran, Islamic Republic	428
(Kuwait)	392
(Columbia)	385
South Africa	354



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1995
Singapore

Two Million Minutes, vividly reveals that American students are no longer “at risk” of falling behind -- they are now clearly behind even Third World students in India and China, in addition to being in 24th place among developed countries.



By comparing how these students prioritize their time (approximately four years or “two million minutes” of high school), the film demonstrates that the typical student in the U.S. spends much less time on his/her education and gives less thought to future career opportunities than his/her global peers in India and China.

--2 million minutes

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



2007 China India

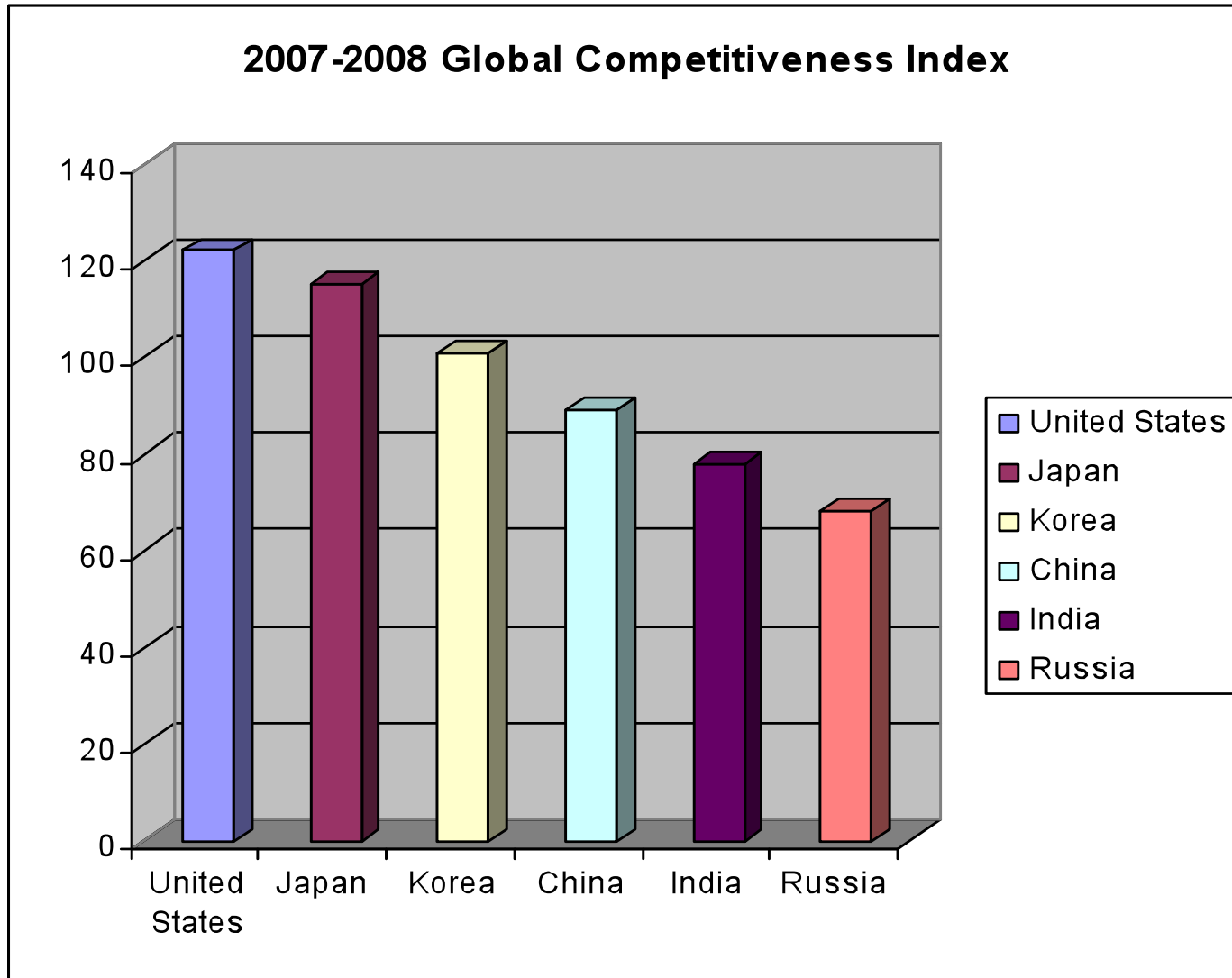


But...



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http://www.weforum.org/pdf/Global_Competitiveness_Reports/Reports/gcr_2007/gcr2007_rankings.pdf



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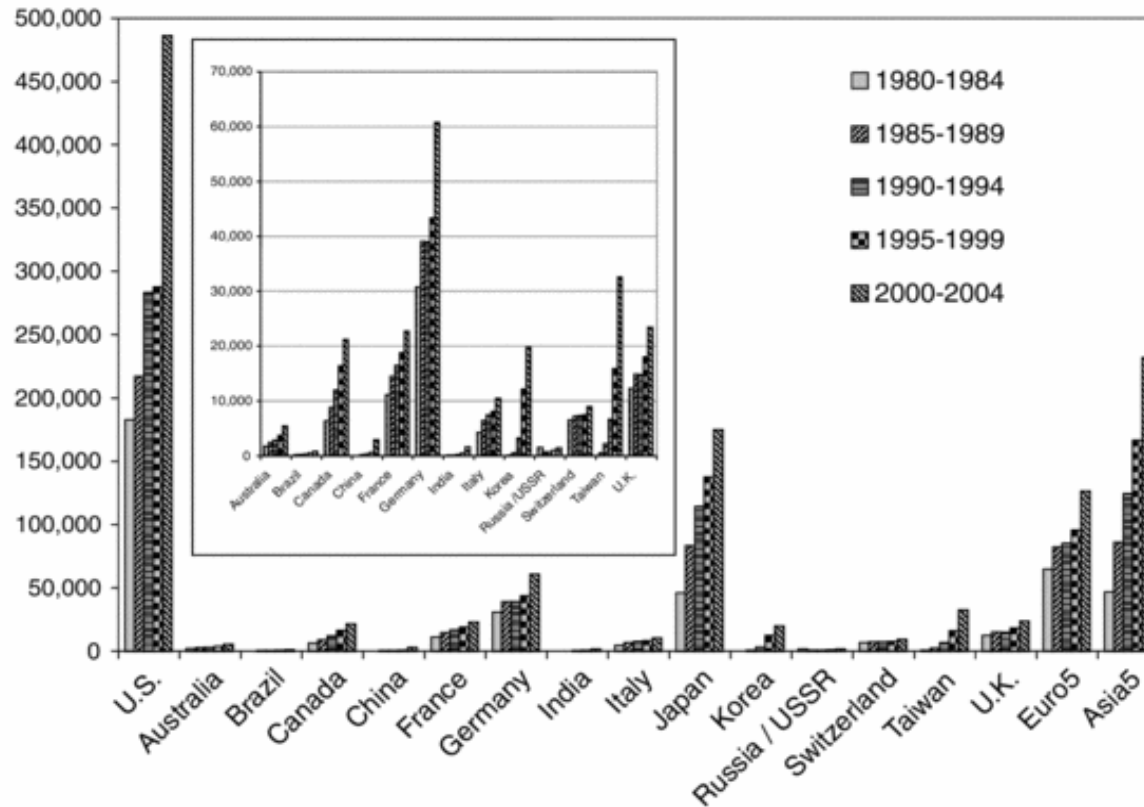
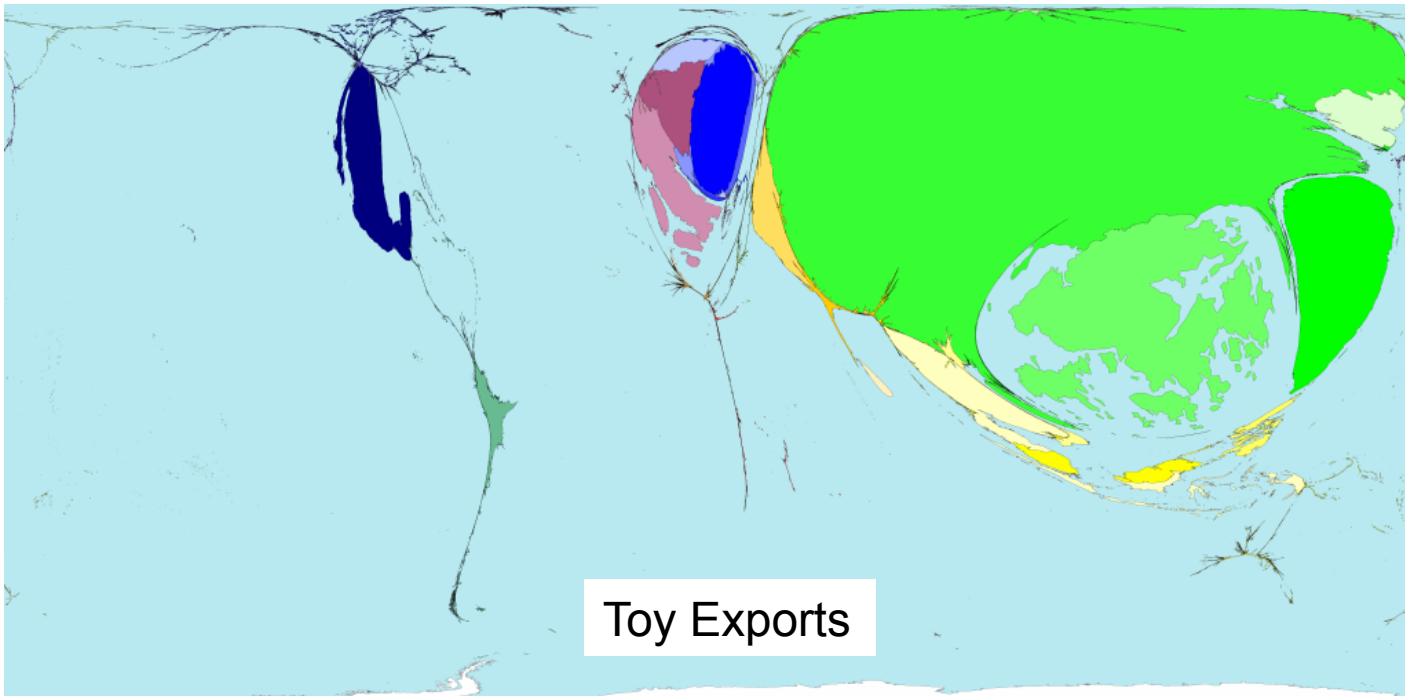
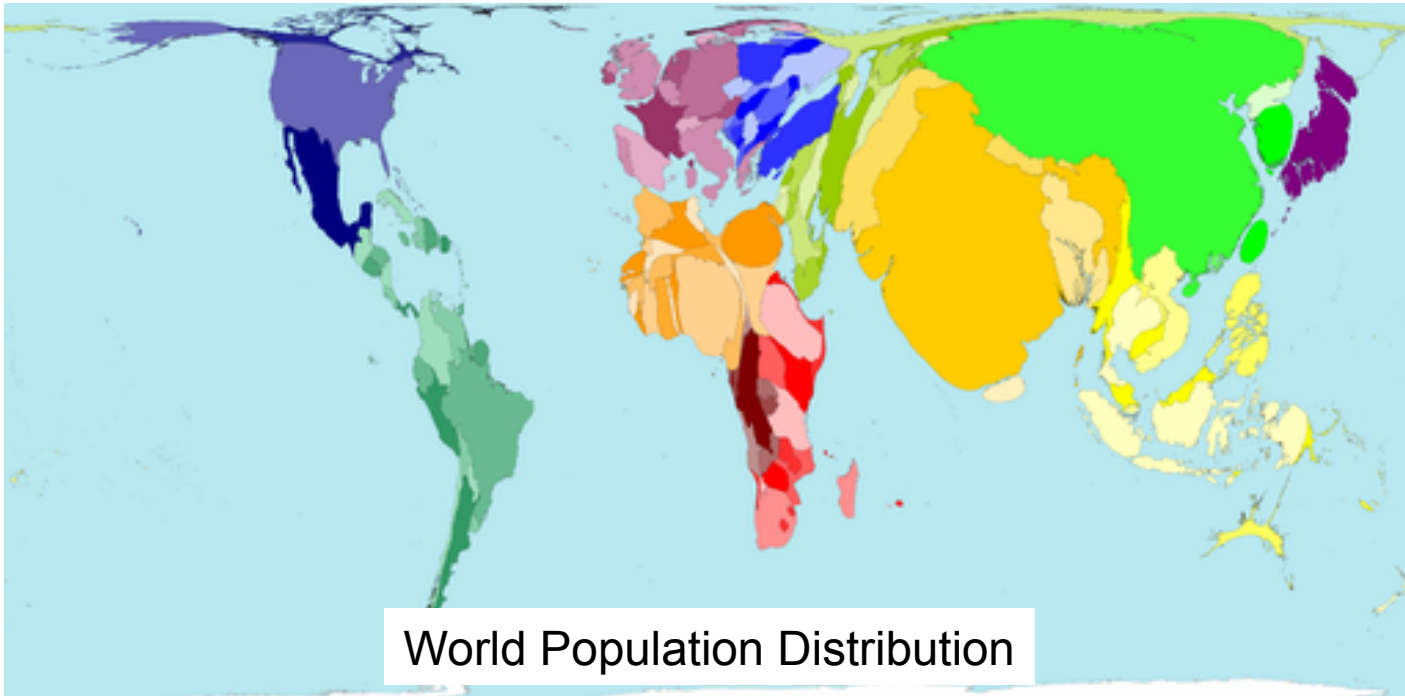


FIGURE C.1 Number of U.S. patents in all classes awarded between 1980 and 2004 (up to October 21, 2004). The Euro5 data combine the data for the five West European countries, and the Asia5 data combine the data for the five Asian countries. The insert shows the data without the data from Japan, the United States, and the Euro5 and Asia5 groups. SOURCE: USPTO.





And



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[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)



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)



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).



[Korea 2000]

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 will 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.



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Why?



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Achievement Gaps



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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)



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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.



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



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Not everything that can be counted
counts, and not everything that counts
can be counted.

--Albert Einstein



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Schools have not necessarily much to do with education. – Winston Churchill

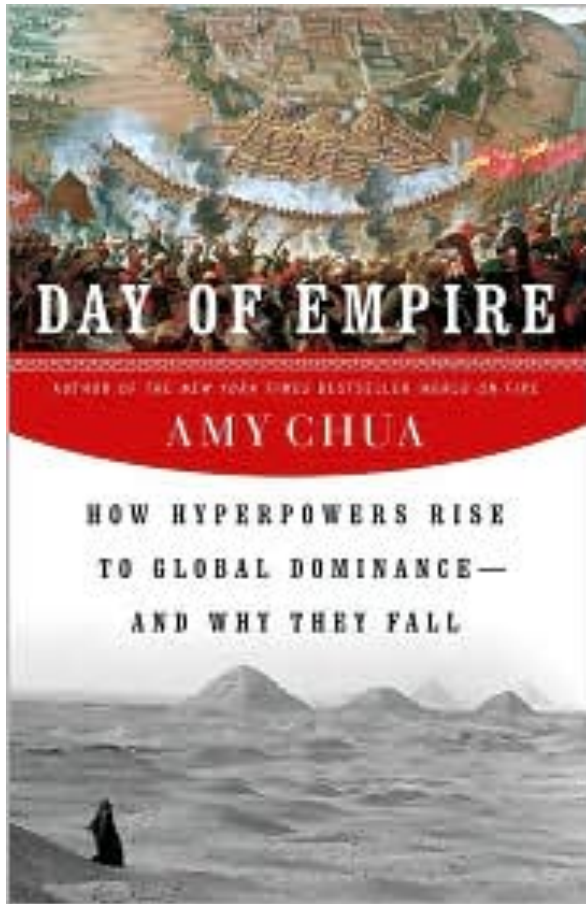
The only time my education was interrupted was when I was in school. – George Bernard Shaw

What does education often do? It makes a straight-cut ditch of a free, meandering brook. – Henry David Thoreau

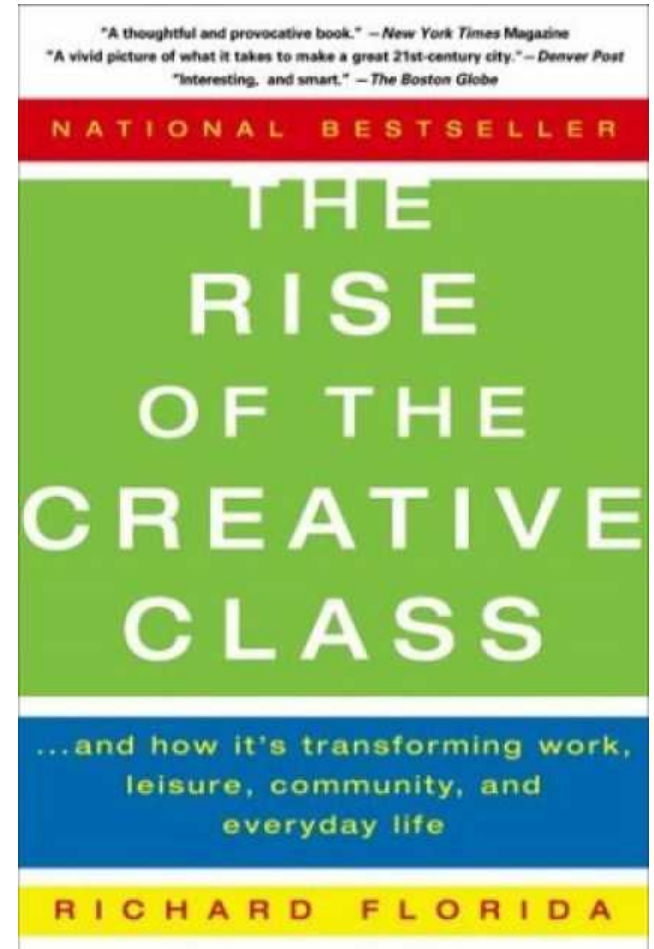
My grandmother wanted me to have an education, so she kept me out of school. – Margaret Mead



What Matters?



Diversity of talents
Creativity
Entrepreneurship
Passion



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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



Achievement Gap vs. Creativity Gap: The Mismeasure of Education



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Challenges of Globalization



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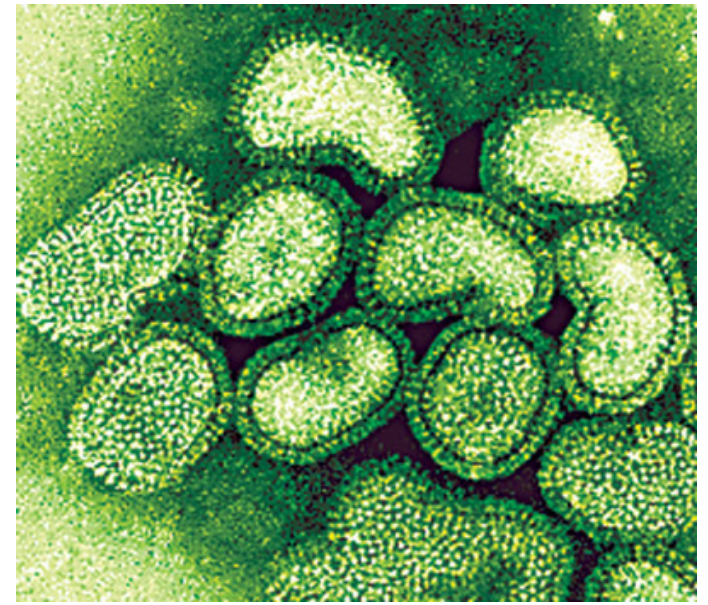
Today, Indian engineers make \$7,500 a year against \$45,000 for an American engineer with the same qualifications. If we succeed in matching the very high levels of mastery of mathematics and science of these Indian engineers — an enormous challenge for this country — **why would the world's employers 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.

--New Commission on the Skills of the American Workforce (2007). Tough Choices or Tough Times

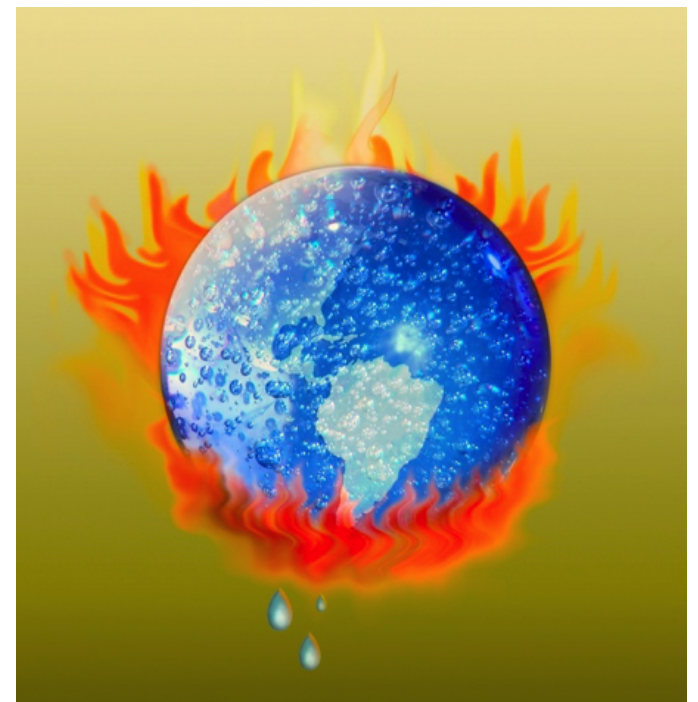


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Automation

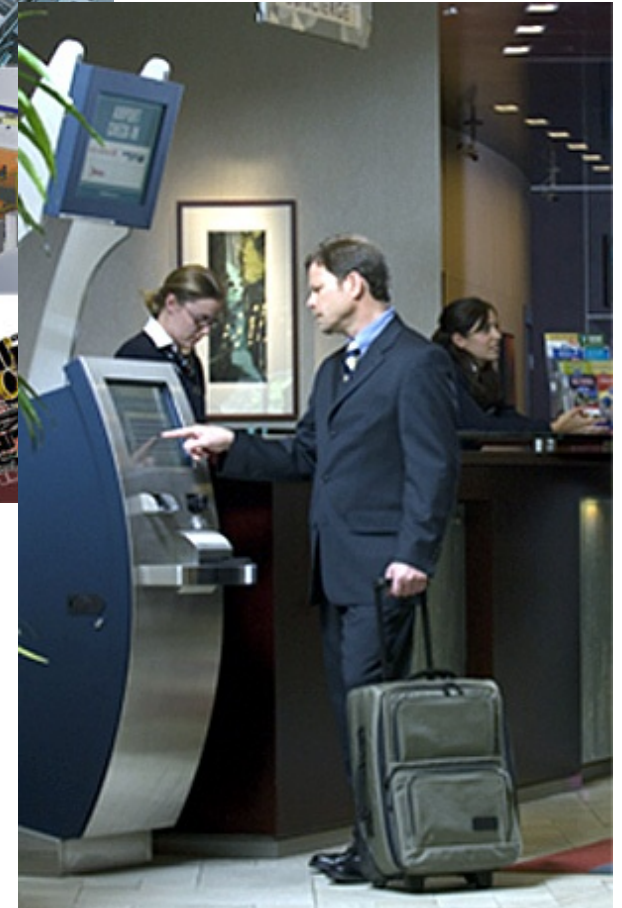


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Over 10 million jobs lost due to automation in last 10 years



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New Hope



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The eBay Phenomenon: Expanded Market



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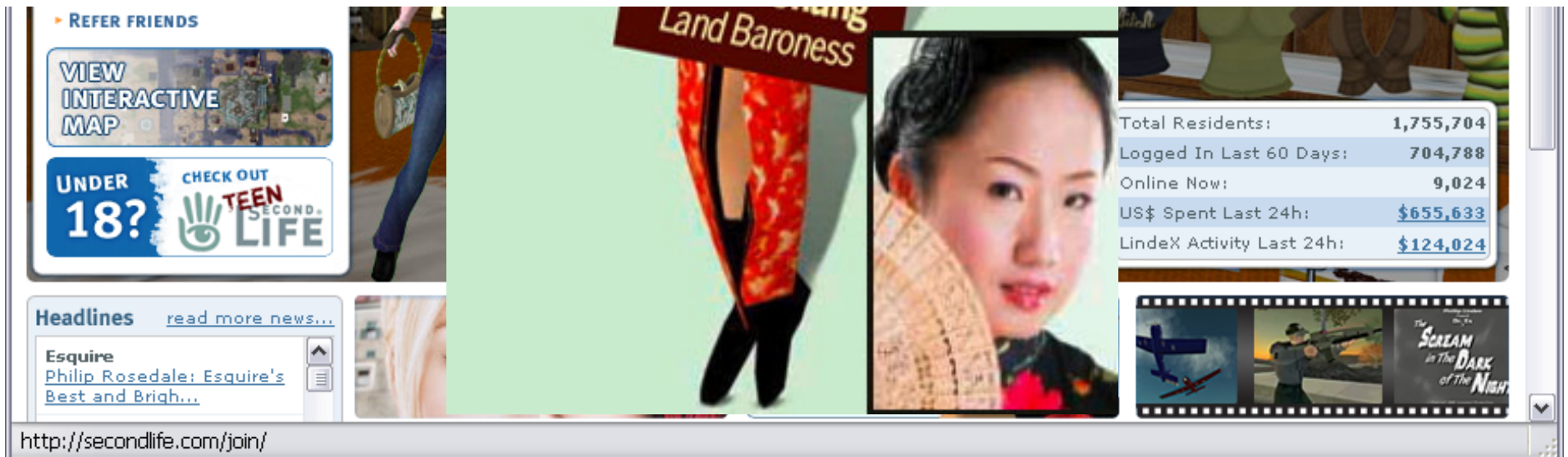






Anshe Chung has become the first online personality to achieve a net worth exceeding one million US dollars from profits entirely earned inside a virtual world.

--Business Week, May, 2006



Real-money trade of virtual items (RMT)

“I estimate the total worldwide RMT volume to reach **2,090M**”

Virtual Economy Research Network:

http://virtual-economy.org/blog/how_big_is_the_rmt_market_anyw

Source	Year	RMT volume (M USD)	Estimate type	Scope	Property included	Notes
Castronova	2001	5	academic	secondary market	MMOG-related	eBay-sales of Everquest II items
Castronova	2004	100	academic	secondary market	MMOG-related	eBay and Itembay sales
Salyer (IGE)	2004	880	industry	worldwide secondary market	MMOG-related	-
KGDI	2006	830	government	Korean secondary (+primary?)	All (?)	some uncertainties
China govt	2006	901	government	Chinese domestic consumption	All (?)	some uncertainties



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Daniel H. Pink (2005). A Whole New Mind: Moving from the Information Age to the Conceptual Age. New York: Penguin.

Information Age: L-Directed Thinking

- Sequential
- Literal
- Functional
- Textual
- Analytic

**Asia
Automation
Abundance**

Conceptual Age: R-Directed Thinking

- Simultaneous
- Metaphorical
- Aesthetic
- Contextual
- Synthetic

Can someone overseas do it cheaper?
Can a computer do it faster?
Is what I am offering in demand in an age of abundance?



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Essential Aptitudes in the Conceptual Age

- Design
- Story
- Symphony
- Empathy
- Play
- Meaning



The European Parliament and the Council of European Union (2006)

key competences necessary for personal fulfillment, active citizenship, social cohesion and employability in a knowledge society

- 1) Communication in the mother tongue;
 - 2) Communication in foreign languages;
 - 3) Mathematical competence and basic competences in science and technology;
 - 4) Digital competence;
 - 5) Learning to learn;
 - 6) Social and civic competences;
 - 7) Sense of initiative and entrepreneurship; and
 - 8) Cultural awareness and expression.
- critical thinking, creativity, initiative, problem solving, risk assessment, decision taking, and constructive management of feelings are important across all domains.



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Framework for 21st Century Learning (Partnership for 21st Century Skills, 2007)

- *Core Subjects* (English, reading or language arts, World languages, Arts, Mathematics, Economics, Science, Geography, History, Government and Civics) and *21st Century Themes* (Global awareness, Financial, economic, business and entrepreneurial literacy, Civic literacy, Health literacy)
- *Learning and Innovation Skills* (Creativity and Innovation Skills, Critical Thinking and Problem Solving Skills, Communication and Collaboration Skills)
- *Information, Media and Technology Skills* (Information Literacy, Media Literacy, ICT Literacy)
- *Life and Career Skills* (Flexibility & Adaptability, Initiative & Self-Direction, Social & Cross-Cultural Skills, Productivity & Accountability, Leadership & Responsibility)



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Leading the Way



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Therefore we need to move into niche areas where they will not be able to completely replace us for quite some time.

---Lee Kuan Yew, 2007



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The American Education Ecosystem

- 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



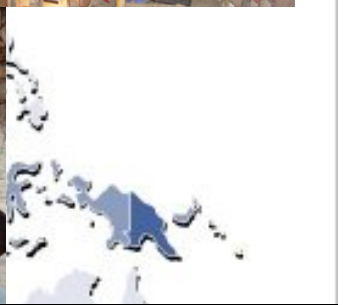
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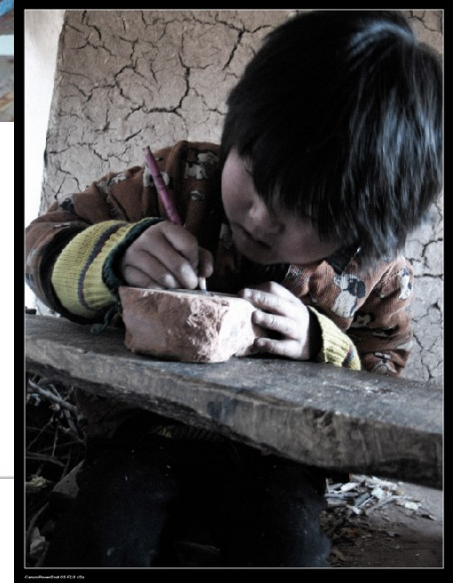
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- 50% and more
- 30% to <50%
- 10% to <30%
- less than 10%
- data not available

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The Strengths Movement

Your Child's Strengths, Discover Them, Develop Them, Use Them, by Jenifer Fox, M-Ed.
(Viking, 2008)

<http://www.strengthsmovement.com/>



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Global Competences

- Culture Intelligence (CQ)
 - Skills
 - Attitudes
 - Perspectives
 - Values/identity
- Knowledge of the Globe
 - Global economics
 - Global problems
 - Interdependence
- Languages and cultures



Digital Competencies

- Living in the digital world
 - Consumers
 - Citizens
 - Community leaders
- Making a living in the digital world
 - Digital workers
 - Global workers
- (Re)Creating the digital world
 - Innovators
 - Entrepreneurs



How Can We Do It?



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Personalized Learning:

the drive to tailor education to individual need, interest and aptitude so as to fulfill every young person's potential (Department for Education and Skills (UK), 2004)



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Nine Gateways (Hargreaves, 2004)

- Curriculum: More choices
- learning to learn: Love and ability to learn
- workforce development: PD
- assessment for learning: Formative
- school organisation and design: Structural changes
- new technologies
- student voice: What do I want?
- advice and guidance
- mentoring: Personal relationships

<http://www.clusterweb.org.uk/docs/HargreavesPersonalisedLearning.pdf>



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Schools as Global Enterprises: Re-imagine Education in the Age of Globalization



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Unique qualities
Creativity, passion
R-directed thinking skills
Global Competences

Global products

Global resources

Schools as Global Enterprises

Global market

Global staffing



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Never Send a Man to Do a Machine's Job: Reconsider the Human-Machine Relationship in Education



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Physical environment

Leadership

Learning facilities

Teacher quality

Input-based Accountability

Student voice

Diverse opportunities

Tolerance

Global connections



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