Education Post COVID: Students as Change Partners

Yong Zhao
@yongzhaoEd
http://zhaolearning.com/
University of Kansas
University of Melbourne
30 Years of Reforms

• Excellence?
• Equity?
FIGURE | Changes in twelfth-grade NAEP mathematics average scores, by selected student groups

<table>
<thead>
<tr>
<th>Student group</th>
<th>2019 score</th>
<th>2019 score compared to</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2015</td>
</tr>
<tr>
<td>All students</td>
<td>150</td>
<td>❝</td>
</tr>
<tr>
<td>Race/ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>159</td>
<td>❝</td>
</tr>
<tr>
<td>Black</td>
<td>128</td>
<td>❝</td>
</tr>
<tr>
<td>Hispanic</td>
<td>138</td>
<td>❝</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>173</td>
<td>❝</td>
</tr>
<tr>
<td>American Indian/Alaska Native</td>
<td>136</td>
<td>❝</td>
</tr>
<tr>
<td>Two or More Races</td>
<td>157</td>
<td>❝</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>152</td>
<td>❝</td>
</tr>
<tr>
<td>Female</td>
<td>149</td>
<td>❝</td>
</tr>
</tbody>
</table>

- Score increase in 2019
- Score decrease in 2019
- No significant change in 2019
### FIGURE | Changes in twelfth-grade NAEP reading average scores and scores at selected percentiles

<table>
<thead>
<tr>
<th></th>
<th>2019 score</th>
<th>2019 compared to</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2009</td>
<td>2002</td>
</tr>
<tr>
<td>Average score</td>
<td>285</td>
<td>↓ 3</td>
</tr>
<tr>
<td>Percentile score</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10th</td>
<td>228</td>
<td>↓ 10</td>
</tr>
<tr>
<td>25th</td>
<td>258</td>
<td>↓ 6</td>
</tr>
<tr>
<td>50th</td>
<td>288</td>
<td>↓ 2</td>
</tr>
<tr>
<td>75th</td>
<td>315</td>
<td>◆</td>
</tr>
<tr>
<td>90th</td>
<td>338</td>
<td>◆</td>
</tr>
</tbody>
</table>

\(^1\) Accommodations not permitted.
FIGURE | Changes in twelfth-grade NAEP reading average scores and scores at selected percentiles, by selected student groups

<table>
<thead>
<tr>
<th>Student group</th>
<th>2019 score compared to 1992¹</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average score</td>
</tr>
<tr>
<td>All students</td>
<td>↓ 7</td>
</tr>
<tr>
<td>Race/ethnicity</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>↓ 2</td>
</tr>
<tr>
<td>Black</td>
<td>↓ 10</td>
</tr>
<tr>
<td>Hispanic</td>
<td></td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>↑ 8</td>
</tr>
<tr>
<td>American Indian/Alaska Native</td>
<td></td>
</tr>
<tr>
<td>Two or More Races</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>↓ 8</td>
</tr>
<tr>
<td>Female</td>
<td>↓ 5</td>
</tr>
</tbody>
</table>

↑ Score increase in 2019  ↓ Score decrease in 2019  ◆ No significant change in 2019

‡ Reporting standards not met. Sample size insufficient to permit a reliable estimate.

¹ Accommodations not permitted.
The Big Five Personality Dimensions

- **Extraversion**
  - Low: Quiet, withdrawn, unassertive
  - High: Outgoing, energetic, gregarious

- **Agreeableness**
  - Low: Aloof, easily irritated
  - High: Warm, considerate, good-natured

- **Conscientiousness**
  - Low: Impulsive, carefree
  - High: Responsible, dependable, goal-oriented

- **Emotional Stability**
  - Low: Moody, tense, lower self-confidence
  - High: Stable, confident

- **Openness to Experience**
  - Low: Narrow field of interests, likes the tried-and-true
  - High: Imaginative, curious, open to new ideas

(Tuples & Christal, 1961, as cited by Daft, 2007)
The 16 basic desires

**Power**
Influence others, Create

**Independence**
Self-reliance

**Curiosity**
Understanding

**Acceptance**
Avoid failure/criticism

**Order**
Structure, Orderliness

**Saving**
Collect things

**Honor**
Upright character

**Idealism**
Social justice

**Social contact**
Peer companionship

**Family**
Raise a family

**Status**
Respect based on Social standing

**Vengeance**
Confront those who offend, frustrate & annoy

**Romance**
Beauty & Sex (libido) Art & Music

**Eating**
Food & Appetite

**Physical activity**
Muscle exercise

**Tranquility**
Safety Free of anxiety & pain

Source: Steven Reiss, PhD.
Diverse Experiences:
Family and Community
Jagged Profile: Everyone can be great (All are above the Average)
Schooling

Individual differences
Multiple intelligences
Cultural diversity
Curiosity, passion, creativity

Employable skills
What do we have?

- Natural Born Learners
- Naturally Diverse Learners
- Naturally Intentional Learners
<table>
<thead>
<tr>
<th>Math</th>
<th>Sciences</th>
<th>Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shanghai, China</td>
<td>Shanghai, China</td>
<td>Shanghai, China</td>
</tr>
<tr>
<td>Singapore</td>
<td>Finland</td>
<td>South Korea</td>
</tr>
<tr>
<td>Hong Kong, China</td>
<td>Hong Kong, China</td>
<td>Finland</td>
</tr>
<tr>
<td>South Korea</td>
<td>Singapore</td>
<td>Hong Kong, China</td>
</tr>
<tr>
<td>Taiwan</td>
<td>Japan</td>
<td>Singapore</td>
</tr>
<tr>
<td>Finland</td>
<td>South Korea</td>
<td>Canada</td>
</tr>
<tr>
<td>Liechtenstein</td>
<td>New Zealand</td>
<td>New Zealand</td>
</tr>
<tr>
<td>Switzerland</td>
<td>Canada</td>
<td>Japan</td>
</tr>
<tr>
<td>Japan</td>
<td>Estonia</td>
<td>Australia</td>
</tr>
<tr>
<td>Canada</td>
<td>Australia</td>
<td>Netherlands</td>
</tr>
</tbody>
</table>
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, 12out 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
Why Is the U.S. Still Here?
Test scores

Asian Countries

USA

Confidence

USA

2003 TIMSS Results

2003 TIMSS Results

Asian Countries
“It may be wrong, but it’s how I feel.”
### TIMSS 2011 Math Scores vs. Confidence of Select Countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Math Scores</th>
<th>Confidence (%)</th>
<th>Value Math (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korea</td>
<td>613</td>
<td>03 (11)</td>
<td>14</td>
</tr>
<tr>
<td>Singapore</td>
<td>611</td>
<td>14 (21)</td>
<td>43</td>
</tr>
<tr>
<td>Chinese Taipei</td>
<td>609</td>
<td>07 (20)</td>
<td>13</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>586</td>
<td>07 (24)</td>
<td>26</td>
</tr>
<tr>
<td>Japan</td>
<td>570</td>
<td>02 (09)</td>
<td>13</td>
</tr>
<tr>
<td>United States</td>
<td>509</td>
<td>24 (40)</td>
<td>51</td>
</tr>
<tr>
<td>England</td>
<td>507</td>
<td>16 (33)</td>
<td>48</td>
</tr>
<tr>
<td>Australia</td>
<td>505</td>
<td>17 (38)</td>
<td>46</td>
</tr>
</tbody>
</table>
Correlations between TIMSS Math Score and Confidence and Enjoyment

<table>
<thead>
<tr>
<th>Grade</th>
<th>Confidence</th>
<th>Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>4</td>
<td>-0.58</td>
</tr>
<tr>
<td>8</td>
<td>8</td>
<td>-0.64</td>
</tr>
<tr>
<td>4</td>
<td>8</td>
<td>-0.67</td>
</tr>
<tr>
<td>8</td>
<td>8</td>
<td>-0.75</td>
</tr>
</tbody>
</table>

Tom Loveless (2006): How Well Are American Students Learning

http://www.brookings.edu/~media/Files/rc/reports/2006/10education_loveless/10education_loveless.pdf
WHAT WORKS MAY HURT
SIDE EFFECTS IN EDUCATION
YONG ZHAO
## Correlations between PISA and Entrepreneurship Indicators

<table>
<thead>
<tr>
<th></th>
<th>PISA Reading</th>
<th>PISA Math</th>
<th>PISA Sciences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Capabilities</td>
<td>-.595**</td>
<td>-.586**</td>
<td>-.608**</td>
</tr>
<tr>
<td>Nascent Entre Rate</td>
<td>-.693**</td>
<td>-.636**</td>
<td>-.678**</td>
</tr>
<tr>
<td>New Biz Ownsp Rate</td>
<td>-.371*</td>
<td>-.374*</td>
<td>-.392*</td>
</tr>
<tr>
<td>Total Early Stage Entre Activity</td>
<td>-.658**</td>
<td>-.620**</td>
<td>-.658**</td>
</tr>
</tbody>
</table>

Data source: OECD PISA 2010, Global Entrepreneurship Monitor, 2010
“At the system level, the greater the fear of failure expressed by students, the higher the reading scores in that education system” (OECD, 2019, p. 193).

A large number of English-speaking and East Asian education systems were amongst those whose students were both more likely to report a fear of failure and to be high performers in reading. (OECD, 2019, p. 193).

The strongest positive associations between general self-efficacy and reading performance were observed largely in countries and economies whose average reading performance was below the OECD average, whereas the weakest associations were observed often in education systems whose reading performance was at or above the OECD average. In Beijing, Shanghai, Jiangsu and Zhejiang (China) and Japan, students who expressed more self-confidence in their ability to succeed and accomplish tasks scored lower than students who expressed less self-confidence. (p. 190-191).
students in low-achieving countries tended to report higher levels of life satisfaction than students in high-achieving countries... Moreover, in most East Asian countries and economies, such as Beijing, Shanghai, Jiangsu and Zhejiang (China) (hereafter “B-S-J-Z [China]”), Hong Kong (China), Japan and Macao (China), students scored above the OECD average in reading, but reported lower levels of life satisfaction than the average 15-year-old student in OECD countries” (OECD, 2019, p. 160).

“students who were classified as ‘very satisfied’ with their lives scored 16 points lower in reading than more dissatisfied students, after accounting for students’ and schools’ socio-economic profile. In Hong Kong (China), Malta and the United States, ‘very satisfied’ students scored at least 30 points lower in reading than other students.”
Short-term vs. Long Term

- Productive failures
- Unproductive successes
Teacher Effects on Student Achievement and Height: A Cautionary Tale

Marianne Bitler, Sean Corcoran, Thurston Domina & Emily Penner
creativity, 5

collaboration, 40

critical thinking, 45

communication, 10
Correlation $r = 0.5$
Evidence-based Practice

• Multiple outcomes
• Short-term vs. long-term outcomes
• Instructional vs. educational outcomes
• Cognitive vs. non-cognitive
Estimated lifetime earnings by educational attainment (in millions of dollars)

**Men**
- Less than high school: 1.13 (Gross), 1.18 (Net)
- High school graduate: 1.54 (Gross), 1.53 (Net)
- Some college: 1.76 (Gross), 1.70 (Net)
- Bachelor's degree: 2.43 (Gross), 2.19 (Net)
- Graduate degree: 3.05 (Gross), 2.68 (Net)

**Women**
- Less than high school: 0.51 (Gross), 0.59 (Net)
- High school graduate: 0.80 (Gross), 0.87 (Net)
- Some college: 1.01 (Gross), 1.04 (Net)
- Bachelor's degree: 1.43 (Gross), 1.32 (Net)
- Graduate degree: 1.86 (Gross), 1.69 (Net)

Changes in real wage levels of full-time U.S. workers by sex and education, 1963–2012

Real weekly earnings relative to 1963 (men)

- Bachelor's degree
- > Bachelor's degree

Real weekly earnings relative to 1963 (women)

- Some college
- High school graduate
- High school dropout
Relative earnings from employment by level of educational attainment for 25-64 year-olds (2009 or latest available year) (upper secondary and post-secondary non-tertiary education = 100) – OECD (2012)
Figure 4. Standardized AI exposure, 2017

Note: Figures smoothed using a LOWESS regression
Source: Brookings analysis of Webb (2019) and OES data
Figure 3. Average standardized AI exposure
By education level, 2017

Source: Brookings analysis of Webb (2019) and IPUMS-USA ACS 1-year microdata
AI may not spare any demographic, but exposure levels will vary

Average standardize AI exposure by sex, age, and race-ethnicity, 2017

American Indians and Alaskan Natives, Native Hawaiians and Pacific Islanders, and people indicating they are two or more races are not shown due to limited data availability.

What do we need?

- Creative, entrepreneurial, globally minded
- Diverse and unique
- Social and emotionally healthy
THE TALENT CODE

GREATNESS ISN’T BORN. IT’S GROWN. HERE’S HOW.

DANIEL COYLE

author of the New York Times bestseller The Little Book of Talent

3 Ts: Talent, Time, & Teaching
Everyone Needs to be Great

A musician must make music, an artist must paint, a poet must write, if he is to be ultimately at peace with himself. What a man can be, he must be.

--Abraham H. Maslow
Creating value for others: Entrepreneurial Mindset

Use your signature strengths and virtues in the service of something much larger than you are." ~ Martin Seligman
Great/unique

Creative and Entrepreneurial

Passionate  ↔  Valuable
Three Principles

- Personalization
- Product oriented
- Globally connected
HIP
Human Interdependent Project
An Education Crisis Is a Terrible Thing to Waste
How Radical Changes Can Spark Student Excitement and Success

Yong Zhao, Trina E. Emler, Anthony Snethen, and Danqing Yin
The Crises

• The Pandemic
• Geo-politics
• Social Unrest
• Climate and Environment
• Education
  – Past
  – Present
  – Future
Nepali High School Students in MOOCs: Scalable Results Lending to an Optimistic Future
The Forces...

• Education Failures
  – Equity
  – Excellence
• The Future is Waiting
  – Technology
  – Globalization
• The Human Nature
  – Natural born learners
  – Diverse learners
  – Intentional learners
• The Homogenous and Homogenizing Education
School within a School

• The Independent Project
  – https://www.youtube.com/watch?v=RElUmGl5gLc
• The Staff Project
• The School Project
Curriculum and Pedagogy

• School Level
  – A student day
  – A student project
  – Seeking students’ vote for courses

• Classroom Level
  – Allow student choices
  – Enable student course offerings
  – Product-oriented learning
  – Connect globally