

BROOKINGS INDIA

QUALITY. INDEPENDENCE. IMPACT

Development Seminar @
Brookings India

The Industrial Organization of Online Education

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SCALE



Time Savings, Better Teaching

Time Chunking

- Typical Class: 1 hour to 2 hours, 50 min
- TED Talk: 18 minutes
- Television Drama Segment: 12 Minutes
- Popular YouTube Videos: 3-4 minutes

- Optimal Human Attention Span: 3-18 minutes

Time Shifting

SAT

CRN	CRS	NUM	SEC	CRS
90007	ACCT	100	A	0
90031	ACCT	100	B	0
90074	ACCT	100	C	0
90244	ACCT	100	D	0
90008	ACCT	101	A	3
90010	ACCT	101	AR	3
90011	ACCT	102	A	3
90012	ACCT	203	A	3
90013	ACCT	303	A	3
90245	ACCT	401	X	3
90246	ACCT	403	A	3



FACULTY	
ym	Barbara A. Donn (P)
um	Barbara A. Donn (P)
ym	Barbara A. Donn (P)
ym	Barbara A. Donn (P)
ym	Mary Gettler (P)
um	Barbara A. Donn (P)
ym	George R. Corbett (P)
um	Barbara A. Donn (P)
um	Ronald B. Smith (P)
ym	George R. Corbett (P)
ym	George R. Corbett (P)

Online Education Does for Education What Tivo Has Done For Television

ONLINE ECONOMICS COURSES

Learn, Teach, and Share



Development Economics



Why are some countries rich and others

Great Economists: Classical Economics and its Forerunners



Why is Adam Smith the greatest economist

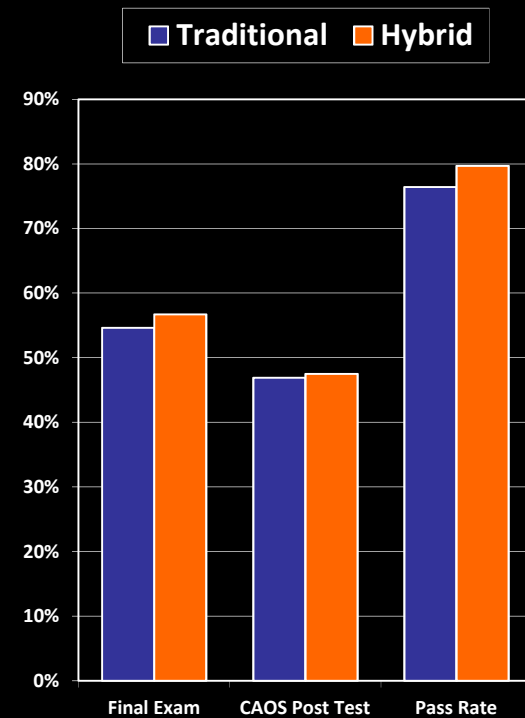
International Trade



Trade shapes the fortunes of nations. What

Online Education Trumps the Cost Disease

- In a large, randomized experiment Bowen et al. found that students enrolled in an online/hybrid statistics course learned just as much as those taking a traditional class.
- The online model was 36% to 57% less costly to run than a course using a traditional lecture format.
 - In other words, since outcomes were the same, online education increased productivity by 56% to 133%! Online education trumps the cost disease!
- ...hybrid-format students took about one-quarter less time to achieve essentially the same learning outcomes as traditional-format students.





Georgia
Tech



College of
Computing



ONLINE MASTER OF SCIENCE IN COMPUTER SCIENCE

Offered in collaboration with Udacity and AT&T

A Top Ten Computer Science Program in the United States

Annual Admittance Online ~1,700, traditional ~120

Largest Masters in Computer Science in the World (~7% of all MS CS grads)

No Distinction between Online and Residential Students

Grading was Blind : Online Students Performed Better

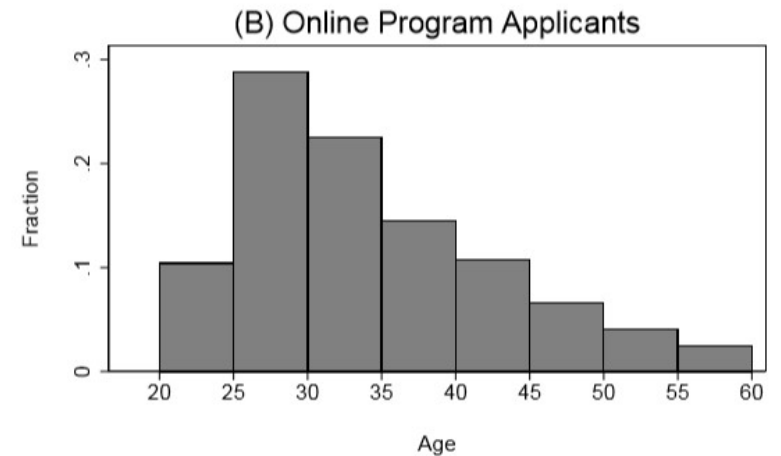
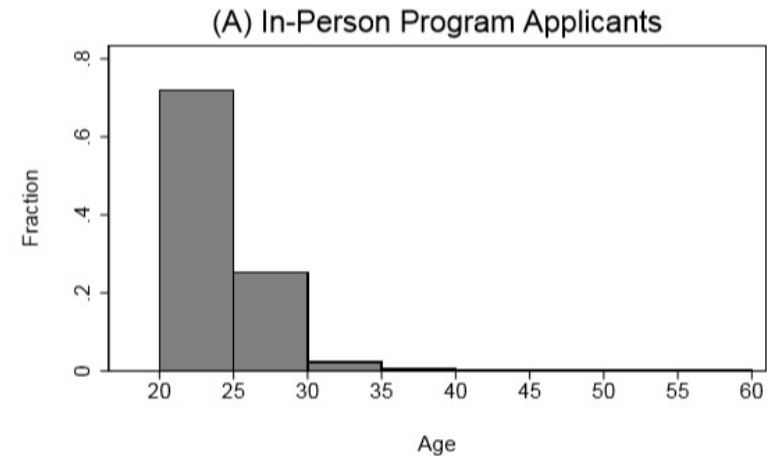
Cost \$7,000 < \$45,000

Lifetime Learning

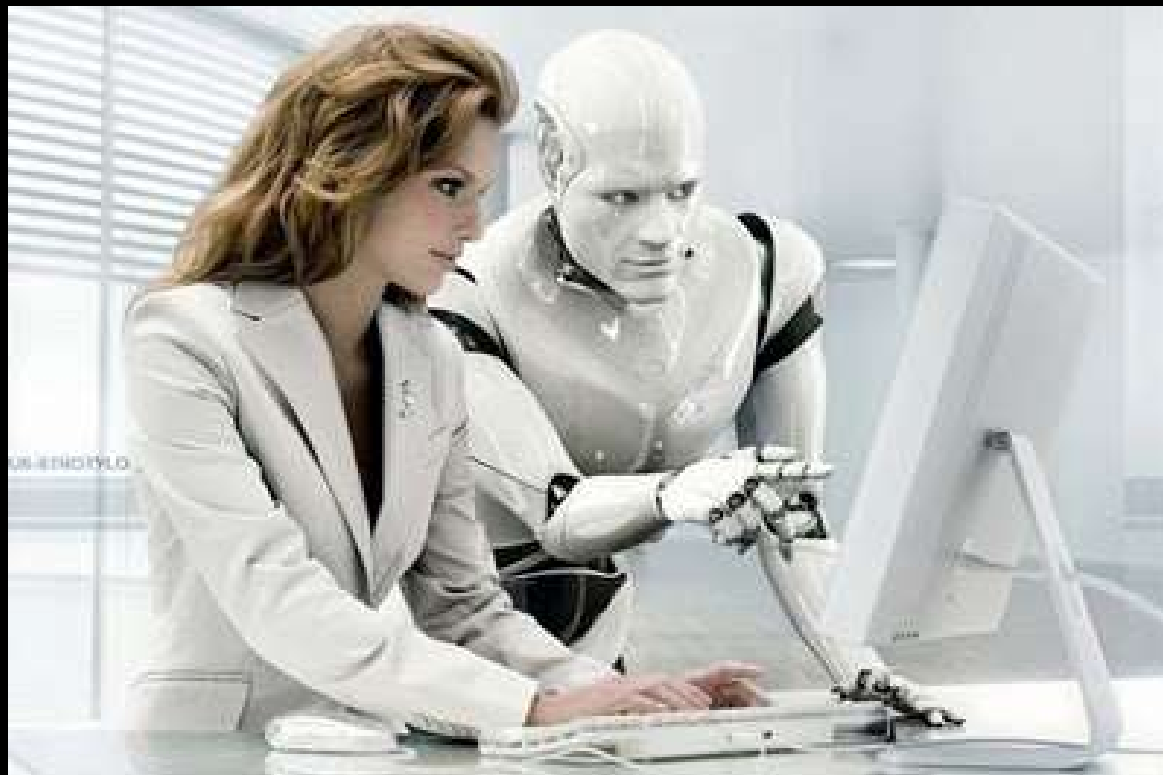
Online Students in the GA Tech Program Were Older but Less Well Educated

Online students often have children of their own!

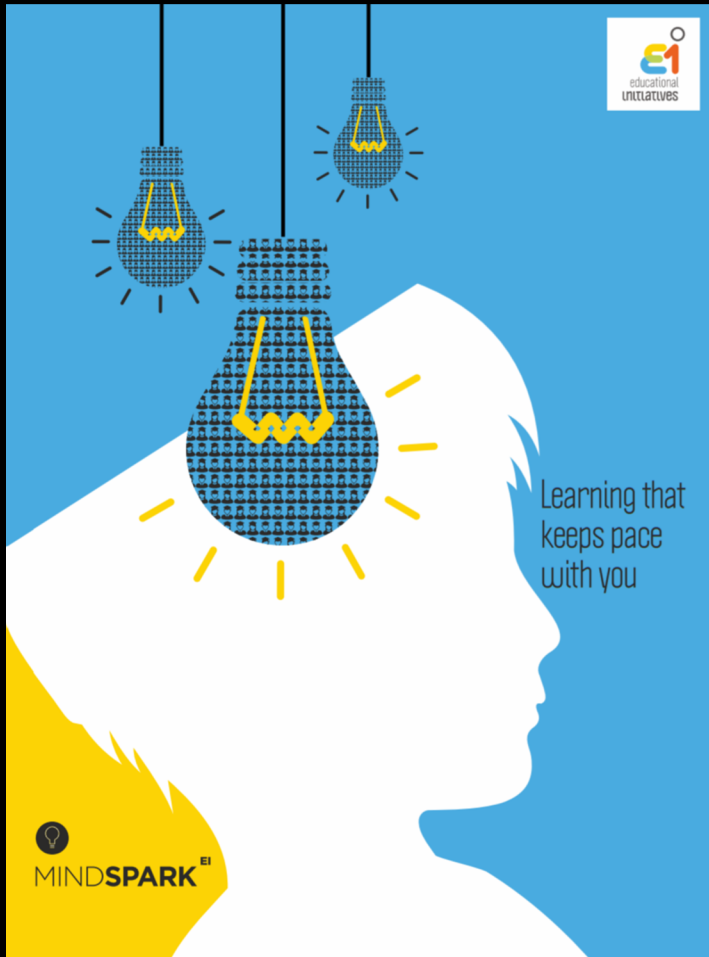
Online learning is the only credible lifetime learning.



Computer-adaptive learning

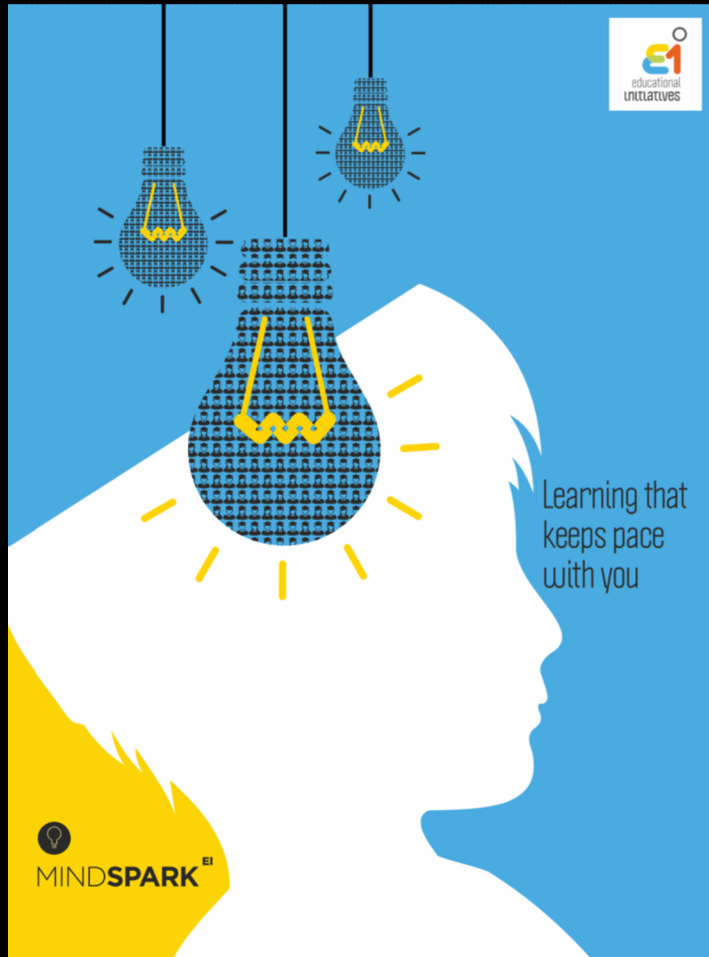


The adaptive textbook
will read you as you
read it.



MINDSPARK

- Online learning system
- 45,000 Test Questions
- Used by 400,000 students in centers, schools and homes.
- Dynamically customizes the material shown to students according to the level and rate of progress of the individual student.
- Identifies student errors and targets material designed to address those errors.

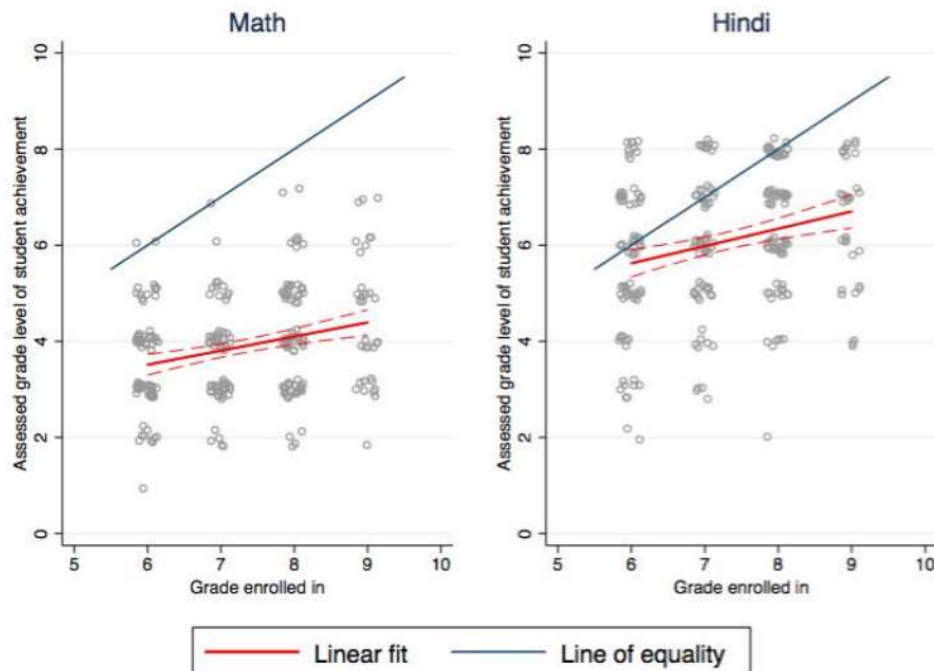


MINDSPARK

- A RCT of voucher winners (free 4.5 month, in center program) versus losers found that voucher winners increased by .36sd in Math and by .22sd in Hindi.
- Very large effects especially given these are ITT effects reflecting an average attendance rate of 58%.
- Greater learning at lower financial and time cost than default public spending.

Muralidharan, Karthik, Abhijeet Singh, and Alejandro J. Ganimian. 2016. "Disrupting Education? Experimental Evidence on Technology-Aided Instruction in India." Working Paper 22923. National Bureau of Economic Research. <http://www.nber.org/papers/w22923>.

MINDSPARK



Note: This figure shows, for treatment group, the estimated level of student achievement (determined by the Mindspark CAL program) plotted against the grade they are enrolled in. In both subjects, it shows three main patterns: (a) there is a general deficit between average attainment and grade-expected norms; (b) this deficit is larger in later grades and (c) within each grade, there is a wide dispersion of student achievement.

- Personalization was one key to Mindspark's success.
- Personalization is especially important in the Indian context where there is a very wide difference in abilities within the same classroom.

Muralidharan, Karthik, Abhijeet Singh, and Alejandro J. Ganimian. 2016. "Disrupting Education? Experimental Evidence on Technology-Aided Instruction in India." Working Paper 22923. National Bureau of Economic Research. <http://www.nber.org/papers/w22923>.

Creative Destruction

○ Superstar teachers in winner-take-most markets.



Kim Ki-Hoon
Superstar

©Wall Street Journal

Low Marginal Cost, High (Endogenous) Fixed Cost

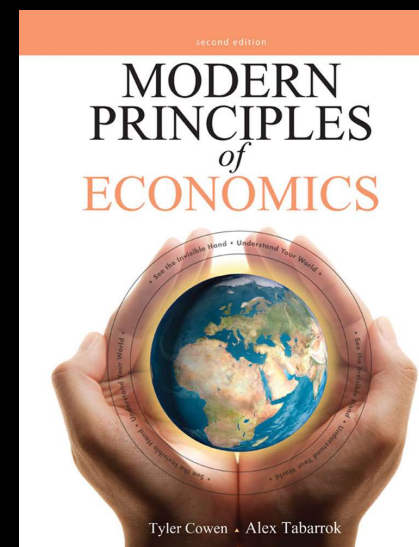
- Low marginal costs – low cost of additional student and low cost of teaching the course the second, third and fourth time.
- High fixed costs – quality. Animations, guidance, teaching assistants (a.i).
- Price will be low. Competition will be in quality.
 - The fixed costs will be *endogenous*, they will grow by competition.
 - Competition ala newspapers rather than ala restaurants.

The Textbook Market and the Market for Courses

Courses
~8000

Textbooks
Top 4 share 50% of the market.

Prediction: Courses will be produced much more like textbooks.



The Future of Education

Alex Tabarrok
George Mason University
and MRUniversity.com

