Future Trends in Technology and Education
January 2015

A monthly futures report for higher education, compiled by Bryan Alexander.

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Editorial notes: winter greetings to you all from FTTE headquarters in Vermont, where temperatures fall as low as -22 °F. I hope you're all staying warm.

Three items to share: first, many thanks for everyone who contributed to supporting FTTE through donations. Each contribution is very appreciated, be it financial or reflective. Your generosity helps keep this report going. As the sustainability experiment proceeds a bit further I'll update you on its progress.

Second, the two social media discussion groups are growing, especially the Facebook one. They can be found in the following locations:

- Facebook, "Future Trends in Technology and Education", https://www.facebook.com/groups/634235413353661/.
- LinkedIn, "Future Trends in Technology and Education", https://www.linkedin.com/groups?home=&gid=8210415

Third, http://ftte.us is the official homepage for Future Trends as of January. Update bookmarks accordingly.

Thank you all for your feedback and recommendations. As ever, contact me with more thoughts at bryan.alexander@gmail.com.

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I.   Education and contexts

Changes in international education. UNESCO is considering launching a global convention on higher education.[1] Russia has launched a program to improve its universities, Project 5-100.[2] China's education minister, perhaps partially motivated by American criticism of Confucius Institutes, called for new regulations restricted American academic content.[3]

In the United States, business schools are increasing international student enrollment to cope with a decline in American applications.[4]

Alternative certification. The Carnegie Foundation argued for maintaining the Carnegie Unit, while acknowledging its weaknesses and limitations.[5]
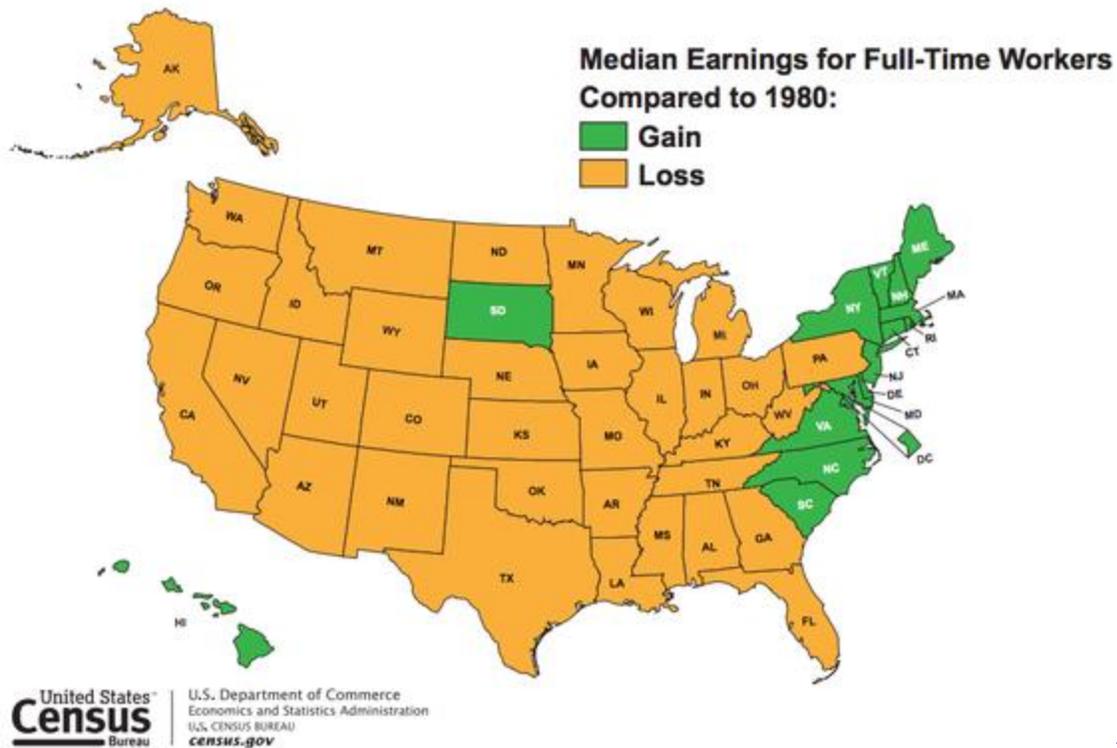
Campuses and sexual assault controversy. Local police cleared a University of Virginia fraternity of rape charges, based on 2014's since-retracted *Rolling Stone* report.[6] Dartmouth University issued new policies on sexual assault, launched a new residence life initiative, and banned hard liquor from campus.[7]

Demographics. A class-driven gap in K-12 extracurricular participation has widened over the past four decades, worsening the academic chances of poor and working-class youth.[8]

Enrollment. The 10% of American colleges and universities that offer early admissions are increasingly populating them with students from wealthy families, according to recent research.[9]

At least one account claims that campuses are increasingly requesting qualitative application materials from prospective students while downplaying the SAT.[10]
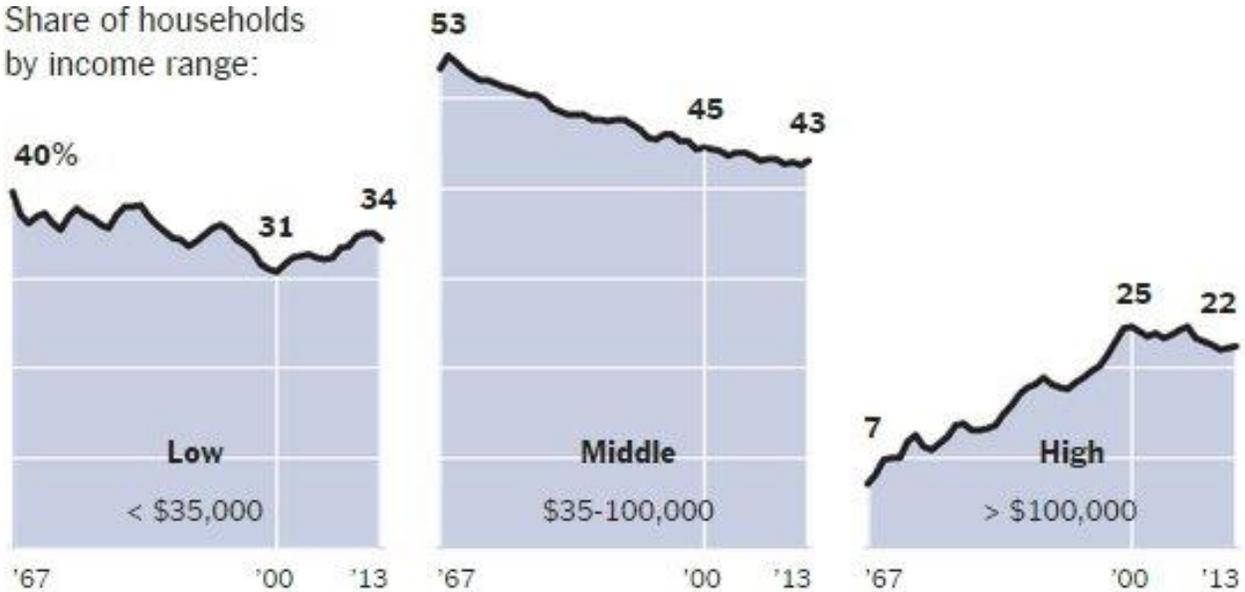
Macroeconomic indicators. Millenials make $2000 less per year than did their predecessors in 1980, and "[t]he earnings drop has been particularly steep in the rust belt and across the northwest," according to new Census data. The major exception to this trend is on the east coast:

Median Earnings for Full-Time Workers Compared to 1980:

Gain
Loss

U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU
census.gov

The majority of students attending public K-12 schools are now from low income families.[12] The size of the American middle class continues to shrink, due largely to families dropping down from it into lower socio-economic strata, and as the proportion of population in the upper levels declines:

Share of households by income range:

Low	Middle	High
< $35,000	$35-100,000	> $100,000

Low: 40%, 31, 34 ('67, '00, '13)
Middle: 53, 45, 43 ('67, '00, '13)
High: 7, 25, 22 ('67, '00, '13)

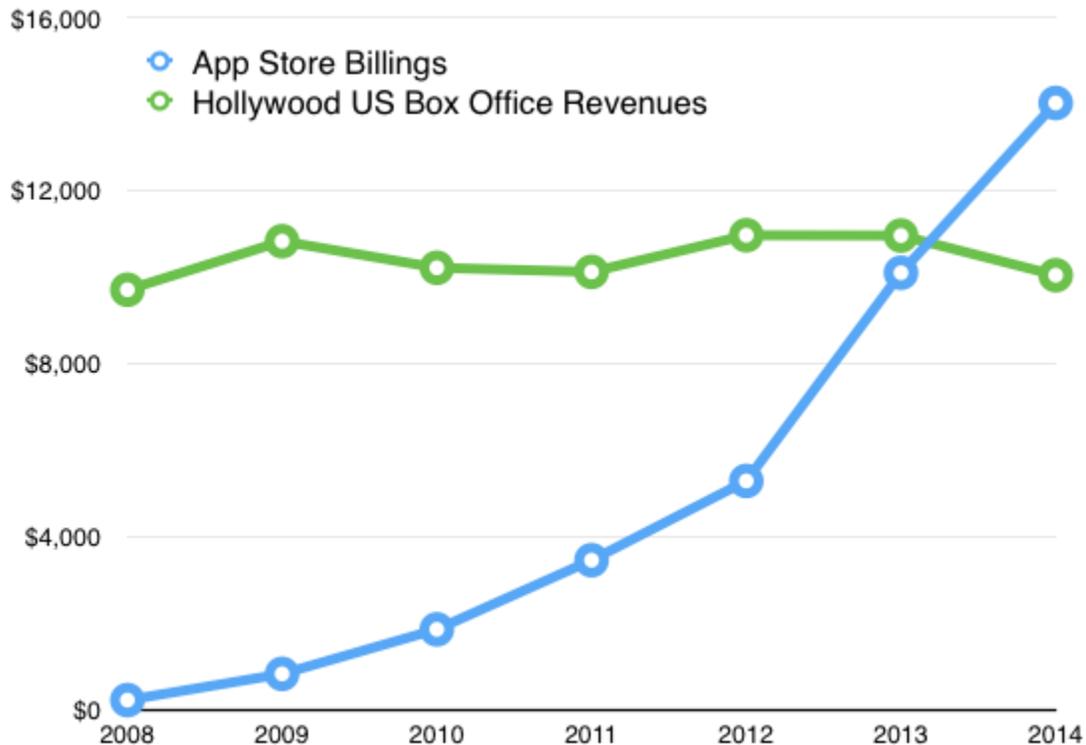Sources: U.S. Census Bureau; Minnesota Population Center/IPUMS

Athletic budgets doing well. Televised college football scored very high ratings for January playoffs – "the largest audience in the history of cable television", according to one reporter.[14] Yet a group of university athletics leaders, the "Coalition to Save College Sports," organized to defend what they see as threats to that institution.[15]

II.   Technology

3d printing continues to innovate and grow. Patent and copyright battles are now being fought over 3d printing processes and artifacts.[16]

Device ecosystem keeps growing.

- The mobile app market continued to grow, with Apple paying developers $10 billion during the last quarter of 2014. This puts app earners on a par with Hollywood box office take:

[17]

- iOS users increased their app purchases through 2014, and are on track in January for spending still more in 2015.[18]
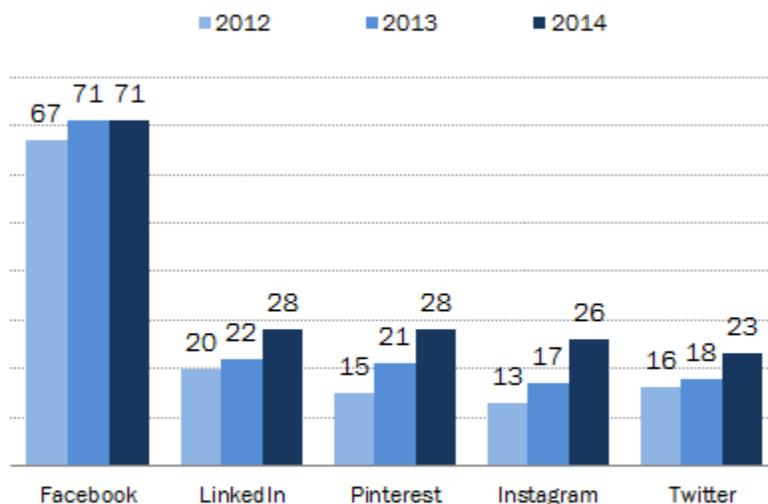
Automation's promise. Google and Microsoft released improved automatic translation software for Google Translate on mobile devices[19] and Skype[20], respectively. Sweden has deployed an unstaffed air traffic control center, and the American armed forces will trial one this year.[21]

Counter-trend: a series of influential scientists and entrepreneurs are speaking against possible dangers to humanity posed by artificial intelligence.[22]

Social media. More Americans participated in social media platforms in 2014 than in 2013, preferring Facebook, although the majority used two or more. Seniors increased their use of social media, and women continue to predominate as Pinterest users:

Social media sites, 2012-2014
% of online adults who use the following social media websites, by year

■2012 ■2013 ■2014

	2012	2013	2014
Facebook	67	71	71
LinkedIn	20	22	28
Pinterest	15	21	28
Instagram	13	17	26
Twitter	16	18	23

Pew Research Center's Internet Project Surveys, 2012-2014. 2014 data collected September 11-14 & September 18-21, 2014. N=1,597 internet users ages 18+.

PEW RESEARCH CENTER

[23]

(See "Open source" below)

A fragmented internet? Mobile app developers and technology investment firms express concerns about the inability of apps to perform Web-like functions of linking and addressability.[24]

Ebooks. Publishers increasingly moved books towards digital formats and production, according to a Pearson executive.[25] Several potential presidential candidates for 2016 are publishing campaign ebooks along with, or instead of, print books.[26]

New interfaces. A device to enable brains to control devices wirelessly is being tested.[27]

Open source. Facebook open sourced an artificial intelligence project.[28]

III. Education and Technology

More MOOCs and online learning. The University of Pennsylvania's Modern Poetry MOOC continues, and has spawned similar classes.[29] A political activism group launched a mini-MOOC to read Martin Luther King's "Letter from a Birmingham Jail."[30] An entrepreneur launched a program to support college students through their first year off-campus, using edX content to boost them towards an on-campus sophomore year.[31]

Harvard continues to run a MOOC program for alumni, the "Harvard Class of Forever".[32] Colgate University, a liberal arts institution, is offering for the second time a class on America's development of the atomic bomb. The class occurs both in-person and on-line, and targets Colgate alumni.[33]

Open education possibilities. Two open access initiatives appeared from the University of California Press: "Collabra (an open access megajournal) and Luminos (open access monographs)".[34]

Video and education Some instructors are using video instead of text to provide feedback on student work.[35]

Educational entrepreneurship. Venture capital continues to flow into education-related startups.[36]

Mobile devices in education. New York City's mayoral office overturned a ban on mobile devices in K-12 schools.[37]

Rise of the net.generation (See first entry in "Macroeconomic indicators" above)

Big data and data analytics. President Obama proposed a law to expand student data protection.[38] Eleven social science researchers called for improved ways to handle and analyze big data.[39]

IV. The higher education bubble, continued.

"The heightened youth unemployment situation is common to all regions
and is occurring despite the trend improvement in educational attainment,
thereby fuelling social discontent."
-International Labour Organization report[40]

This concept, which we began to track in early 2012, continues to build across multiple fronts. It holds that colleges are overpriced, that student demand is questionable, and both could drop together:

- Grad school crisis: New York state law schools saw the number of incoming 1L students decline once more, marking a 20.8% decrease since 2011.[41] Meanwhile some law schools have begun lowering their requirements for prospective students, apparently accepting lower LSAT scores in order to try to fill classes.[42] Business schools may be facing a decline of applicants, as fewer people take the GMAT exam.[43] (See also "Changes in international education" above)
- Politics, bipartisan: leading Democrat Bill Clinton and likely Republican presidential candidate Jeb Bush both recommended a book on Arizona State University's reforms.[44] New York state's Democratic governor slammed teachers unions in a call for reform.[45]

Countervailing trends:

- State appropriations for public higher education are improving overall.[46]

Other trends. We have been tracking the following additional trends since early 2012, but found no new developments during this month. Possible explanations: one or more are fading as future trends; some may be building slowly over time; some stories were underreported.

Those trends include:

Education: open education; adjunctification; alternative certification; alternative degrees; enrollment decline continues ; K-12 and higher education; possible intergenerational tension; executive compensation controversy; library changes; shared academic services; remedial classes; challenges to internships.

Technology: copyright battles continue; digital security threats expanding; internet of things; digitization; new forms of creativity; augmented reality's steady march; cloud computing; a shift in Moore's Law? open source; new interfaces; crowdfunding growing; the limits of the Web; onshoring hardware production; office versus Web office; digital video rising; shopping continues to migrate online.

Education and technology: flipped classroom/blended learning; the LMS world; social media in education; gaming in education; crowdsourcing in academia; ebooks in higher education; badges; big data and data analytics develop; Maker movement; shared academics; campus digital security threats growing; digital humanities develops; faculty criticizing deployment of technology; 3d printing across the curriculum; automation in education.

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About Future Trends in Technology and Education

Future Trends in Technology and Education (FTTE) is a monthly report. It surveys recent developments in how education is changing, primarily under the impact of digital technologies. Its purpose is to help educators, policy-makers, and the public think about the future of teaching, learning, research, and institutions.

Every month FTTE aggregates recent developments, checking them against previously-identified trend lines. As certain trends build in support and significance, the report recommends watching them for future impact. FTTE also notes trends which appear to be declining in significance. Every single item is backed up by footnoted research, often accessible through the open Web. Trends are also aired for feedback and development via the author's Twitter (https://twitter.com/bryanalexander) and blog (http://bryanalexander.org/).

Subscriptions are free, and open to any interested person or institution.

For more information, see http://ftte.us*.*

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Endnotes

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