Future Trends in Technology and Education
April 2014

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

Table of Contents:

Editorial note: would you like to see a graphic or infographic about FTTE findings? I've received several requests for such, and would like to know if the general readership is interested. If you are, please tell me what you'd like to see from such a visual representation.

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I. Education

Demographics. American 2013 birthrates were the lowest since the 1990s, according to census data. Major urban areas and North Dakota showed the relatively highest birthrates.[i]

Changes in international education. Companies are rising to help American institutions better integrate foreign students into campus culture.[ii]

Library changes. Academic libraries continue to transition from print to electronic journals, but move more slowly towards ebooks.[iii]

Athletic budgets. A National Labor Relations Board official allowed Northwestern University student-athletes to unionize.[iv]

Open education. The New York Public Library released more than 20,000 cartographic images as open education content.[v]
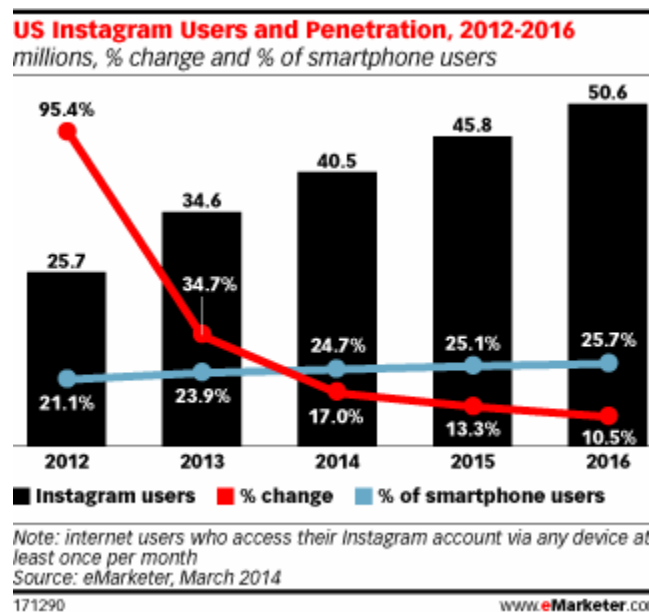

II.   Technology

3d printing continues to innovate and grow. A Dutch medical team successfully printed and implanted most of a replacement skull for a woman with bone and brain issues.[vi]

Device ecosystem keeps growing.

- Wearable computing: Google expanded its body-based computing efforts, launching Android Wear with an initial focus on watches.[vii] Facebook purchased the Oculus startup, makers of a virtual reality headset called Rift.[viii] Sony launched a Rift competitor, larger than the Rift, and named Morpheus.[ix]

Social media. The number of active Instagram users is now on par with Twitter's, as the user base for that photo sharing service for mobile devices grew by 35% over 2013, according to a new study:

US Instagram Users and Penetration, 2012-2016
millions, % change and % of smartphone users

	2012	2013	2014	2015	2016
Instagram users	25.7	34.6	40.5	45.8	50.6
% change	95.4%	34.7%	17.0%	13.3%	10.5%
% of smartphone users	21.1%	23.9%	24.7%	25.1%	25.7%

Note: internet users who access their Instagram account via any device at least once per month
Source: eMarketer, March 2014
171290   www.eMarketer.com

The majority of Instagram users remain female, and trend younger (Millenials, Generation X).[x]

Facebook spent $19 billion to control a messaging service aimed at mobile devices, WhatsApp.[xi] (See also wearable computing under "Device Ecosystem", above)

Automation's promise. The Los Angeles Times now publishes earthquake reports written by a computer program.[xii]

III.   Education and Technology

More MOOCs and online learning. A free, online academy offered to teach science.[xiii]

Rise of the net.generation. First-year undergraduate students have a growing amount of experience with online education, but expect their college experience to involve face-to-face interaction, according to a new survey.[xiv] Millenials use social media more frequently and more extensively than do their elders, according to recent surveys.[xv]

Ebooks in higher education. A leading e-textbook company, CourseSmart, was purchased by a large textbook business, Ingram.[xvi]

Mobile devices in education. A Vietnamese English language class used Google Glass to create learning content.[xvii]

Educational entrepreneurship. Cultural entrepreneurship seems to be growing, including work in education .[xviii]

Social media in education. Social media-based activism is building attention and pressure on Dartmouth officials for sex assault issues.[xix] Criticism of a Maine university's plans to cut faculty and programs appear on a Facebook event page.[xx] An overwhelming majority of campus advancement agencies use social media, with Facebook the most popular.[xxi]

Maker movement. More public libraries are opening up maker spaces.[xxii] A Baltimore initiative uses maker spaces for teacher training.[xxiii]

IV. The higher education bubble, continued.

"Erica is truly a perfect fit for us: Not only does she show sufficient academic potential, but her parents are two highly successful professionals capable of paying the school's annual $47,000 in tuition plus $13,000 in room and board in their entirety," assistant admissions director Stacey Wright said, adding that she was left in awe after reading Allson's near flawless income disclosure form.

-The Onion[xxiv]

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:

- First-year undergraduate students are increasingly selecting schools based on financial packages, according to a new survey.[xxv]
- Two campuses are attempting to exit Pennsylvania's state university system, seeing themselves as financially sound as compared to their peers.[xxvi]
- Grad school crisis: law schools suffer financially as applicant numbers continue to fall.[xxvii] Several research-1 universities won a large grant to train humanities PhD students for non-academic careers.[xxviii]
- Graduate student debt has been rising sharply over the past eight years:

[xxix]

- The decline of federal and state funding to higher education for research purposes has led to an uptick in private support, leading some to see a new trend: the privatization of American research and development.[xxx]
- Several state governments are considering making community college tuition free.[xxxi]
- Politics, bipartisan: more liberal politicians called for reducing student debt and college costs, launching a Web-based campaign.[xxxii] [xxxiii]

Countervailing trends:

- Tenure-track faculty salaries saw a general rise of 2.1%, just above inflation, for the first time in years.[xxxiv]

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: alternative certification; possible intergenerational tension; adjunctification; executive compensation controversy; enrollment decline continues; shared academic services; challenges to internships; possible intergenerational tensions.

> Technology: New forms of creativity; new interfaces; crowdfunding growing; copyright battles continuing; cloud computing; ebooks; the durability of Moore's Law; the limits of the Web; onshoring hardware production; augmented reality's steady march; office versus Web office; digital video rising; shopping continues to migrate online; open source software keeps growing.

> Education and technology: open education possibilities; badges; the LMS world; flipped classroom; shared academics; gaming and education; education and entrepreneurship; mobile devices for teaching; gaming in education; campus digital security threats growing; educational entrepreneurship; video in education; big data and data analytics develop; digital humanities develops; faculty criticizing deployment of technology; 3d printing across the curriculum; blended learning; crowdsourcing research.

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<p align="center">*About Future Trends in Technology and Education*</p>

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://bryanalexander.org/future-trends-in-technology-and-education/ or http://bryanalexanderconsulting.com/ftte-report/.

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Endnotes

[i] John McCormick, "U.S. Has Fewest Births Since 1998 After Recession, Census Shows", Bloomberg News, March 27, 2014, accessed April 3, 2014, http://www.bloomberg.com/news/2014-03-27/u-s-has-fewest-births-since-1998-after-recession-census-shows.html.

[ii] Richard Pérez-Peña, "Universities Try a Cultural Bridge to Lure Foreign Students", New York Times, March 11, 2014, accessed March 15, 2014, http://www.nytimes.com/2014/03/12/education/universities-try-a-cultural-bridge-to-lure-foreign-students.html?ref=us.

[iii] Roger C. Schonfeld , Matthew P. Long, "Ithaka S+R US Library Survey 2013", Ithaka S+R, March 11, 2014, accessed March 14, 2014, http://www.sr.ithaka.org/sites/default/files/reports/SR_LibraryReport_20140310_0.pdf.

[iv] Alejandra Cancino, "Northwestern ruling could 'rattle the universe of universities'", Chicago Tribune, March 26, 2014, accessed March 27, 2014, http://www.chicagotribune.com/business/chi-northwestern-union-bid-20140326,0,6454823.story.

[v] Matt Knutzen, "Open Access Maps at NYPL", New York Public Library blog post, March 28, 2014, accessed April 1, 2014, http://www.nypl.org/blog/2014/03/28/open-access-maps.

[vi] James Eng, "Medical First: 3-D Printed Skull Successfully Implanted in Woman", NBC News, March 27, 2014, accessed March 29, 2014,http://www.nbcnews.com/science/science-news/medical-first-3-d-printed-skull-successfully-implanted-woman-n65576.

[vii] "Sharing what's up our sleeve: Android coming to wearables", Google Official Blog post, March 18, 2014, accessed March 19, 2014, http://googleblog.blogspot.com/2014/03/sharing-whats-up-our-sleeve-android.html.

[viii] Cade Metz, "Facebook Buys VR Startup Oculus for $2 Billion", Wired, March 25, 2014, accessed March 27, 2014, http://www.wired.com/business/2014/03/facebook-acquires-oculus/.

[ix] Chris Kohler, "Oculus and Sony Throw Down With Competing VR Headsets at GDC", Wired, March 19, 2014, accessed March 27, 2014, http://www.wired.com/gamelife/2014/03/project-morpheus-oculus/.

[x] "Instagram Usage in the US Surges 35% in 2013, Rivals Twitter for Smartphone Audience", eMarketer, March 27, 2014, accessed March 29, 2014, http://www.emarketer.com/Article/Instagram-Usage-US-Surges-3537-2013-Rivals-Twitter-Smartphone-Audience/1010713.

[xi] Peter Schiff, "WhatsApp With That?", Euro Pacific Capital blog post, February 21, 2014, accessed March 4 2014, http://www.europac.net/commentaries/whatsapp.

[xii] Will Oremus, "The First News Report on the L.A. Earthquake Was Written by a Robot", Slate, March 17, 2014, accessed March 20, 2014, http://www.slate.com/blogs/future_tense/2014/03/17/quakebot_los_angeles_times_robot_journalist_writes_article_on_la_earthquake.html.

[xiii]http://www.worldscienceu.com/. John Timmer, "World Science University wants to teach you physics for free", Ars Technica blog post, March 11 2014, accessed March 15 2014, http://arstechnica.com/science/2014/03/world-science-university-wants-to-teach-you-physics-for-free/.

[xiv] Kevin Eagan, Jennifer B. Lozano, Sylvia Hurtado, Matthew H. Case, "The American Freshman: National Norms Fall 2013", 2013, Higher Education Research Institute monograph, accessed March 10, 2014, http://www.heri.ucla.edu/monographs/TheAmericanFreshman2013.pdf.

[xv] "Millennials in Adulthood", Pew Research Social & Demographic Trends, March 7, 2014, accessed March 19, 2014, http://www.pewsocialtrends.org/2014/03/07/millennials-in-adulthood/.

[xvi] Steve Kolowich, "QuickWire: E-Textbook Provider CourseSmart Is Bought by Ingram", Chronicle of Higher Eduction, March 3, 2014, accessed March 5, 2014, http://chronicle.com/blogs/wiredcampus/quickwire-e-textbook-provider-coursesmart-is-bought/50831.

[xvii] Anh Vu, "GoogleGlass v1 0", YouTube, March 5, 2014, accessed March 14, 2014, https://www.youtube.com/watch?v=ZVifrF1Z9W0&feature=em-share_video_user.

[xviii] Center for the Future of Museums, "TrendsWatch 2014", 2014, accessed March 19, 2014, http://www.aam-us.org/docs/default-source/center-for-the-future-of-museums/2014_trendswatch_lores-with-tracking-chip.pdf?sfvrsn=0.

[xix] Tara Culp-Ressler, "50,000 Activists Demand Sexual Assault Reform At Dartmouth After Student Publishes A 'Rape Guide'", ThinkProgress blog post, March 14, 2014, accessed March 15, 2014, http://thinkprogress.org/health/2014/03/14/3404111/dartmouth-rape-culture-petition/.

xx "University of Southern Maine Alums: Write to the President and Provost", Facebook Event, accessed March 24, 2014, https://www.facebook.com/events/1412159992377323/.   Thanks to Sean Andrews for bringing this to my attention.

xxi "Social Media Survey", Council for Advancement and Support of Education, n.d., accessed March 28, 2014, http://www.case.org/Samples_Research_and_Tools/Benchmarking_and_Research/Surveys_and_Studies/Social_Media_Survey.html.

xxii Katharine Q. Seelye, "Breaking Out of the Library Mold, in Boston and Beyond", New York Times, March 7, 2014, accessed March 14, 2014, http://www.nytimes.com/2014/03/08/us/breaking-out-of-the-library-mold-in-boston-and-beyond.html.

xxiii Jason Tomassini, "Head of the class", Johns Hopkins Magazine, March 10, 2014, accessed March 14, 2014, http://hub.jhu.edu/magazine/2014/spring/digital-harbor-foundation.

xxiv "College Admissions Office Finds Ideal Applicant Capable Of Subsidizing Tuition Of 3 Low-Income Students", The Onion, March 24, 2014, accessed March 27, 2014, http://www.theonion.com/articles/college-admissions-office-finds-ideal-applicant-ca,35605/?ref=auto.

xxv "The American Freshman", http://www.heri.ucla.edu/monographs/TheAmericanFreshman2013.pdf.

xxvi Ry Rivard, "Pulling Out in Pennsylvania?" Inside Higher Ed, March 21, 2014, accessed March 23, 2014, http://www.insidehighered.com/news/2014/03/21/universities-want-out-pennsylvanias-higher-ed-system#ixzz2wo5SXUZQ.

xxvii Jonathan Berr, "Shrinking Law Schools Face Financial Devastation", The Fiscal Times, March 13, 2014, accessed March 17, 2014, http://www.thefiscaltimes.com/Articles/2014/03/13/Shrinking-Law-Schools-Face-Financial-Devastation.

xxviii Scott Jaschik, "A Broader History Ph.D.", Inside Higher Ed, March 20, 2014, accessed March 21, 2014, http://www.insidehighered.com/news/2014/03/20/historians-association-and-four-doctoral-programs-start-new-effort-broaden-phd.

xxix Jason Delisle, "The Graduate Student Debt Review", New America Foundation, March 25, 2014, accessed March 28, 2014, http://www.newamerica.net/publications/policy/the_graduate_student_debt_review.

xxx William J. Broad, "Billionaires With Big Ideas Are Privatizing American Science", New York Times, March 15, 2014, accessed March 18, 2014, http://www.nytimes.com/2014/03/16/science/billionaires-with-big-ideas-are-privatizing-american-science.html?ref=science&_r=0.

xxxi Steven Dubois, "States looking at $0 community college tuition", Associated Press, March 18, 2014, accessed March 27, 2014, http://news.yahoo.com/states-looking-0-community-college-tuition-055227772.html.

xxxii Michael Stratford, "Progressive Push on Debt", Inside Higher Ed, March 7, 2014, accessed March 10, 2014, http://www.insidehighered.com/news/2014/03/07/progressive-groups-launch-new-campaign-tackle-student-debt-college-affordability.

xxxiii http://highered notdebt.org.

xxxiv Scott Jaschik, "Actual Raises for Faculty", Inside Higher Ed, March 17, 2014, accessed March 18, 2014, http://www.insidehighered.com/news/2014/03/17/study-tenure-track-professors-saw-21-average-raise-year.