The Digital Revolution in Education
How the Internet of Everything is Changing Everything

Renee Patton
US Public Sector Director of Education

@patton_renee
history | trends | solutions | cases
Schools, colleges, and universities around the world are becoming digital to leverage the unprecedented opportunities brought about by the Internet of Everything.

By 2020, 75% of organizations will be digital or will be preparing to become digital.

Digitization of learning stems from the need by academic institutions to more effectively compete and create better learning outcomes.
Which regions have the largest number of mobile students?
A. North America and Western Europe
B. East Asia and the Pacific
C. Central and Eastern Europe
North America and Western Europe: 57% of total mobile students*

* - The term mobile student refers to a student enrolled in a distance or online learning class.
What is ranked as the #1 priority for schools and universities worldwide?
A. Improving learning outcomes

B. Increasing administration and management efficiency

C. Better safety and security
All are important, but improving learning outcomes is ranked as the #1 priority.
What percentage of all IT spend in education will either be directed by line of business (LOB) with the CIO or executed by the LOB on their own?
A  10%
B  35%
C  52%
D  75%
52% of all IT spend in education will either be directed by line of business (LOB) with the CIO or executed by the LOB on their own.
Top Three Session Take-Aways

• #1 – Understand the historical context of education
• #2 – Outline current trends impacting education
• #3 – Identify ways that the Internet of Everything is changing everything in education
Education Engagements Around the World

1. University of San Francisco
   Safe Campus
2. Keller ISD
   (Keller, TX-North Texas)
3. City of Glasgow College
   EMEAR: Hamburg
4. Department of Education
   Teacher’s College
5. Thailand Ministry of Education
6. Univeristy of San Francisco
   Safe Campus
7. Peel
8. Littleton
9. EMEAR: Hamburg
10. Thailand Ministry of Education
11. QLD
12. Camberwell Girls Grammar School
13. Mexico: eBook
   (Office of the President Pilot Program)
14. Monterrey
15. Mexico: eBook
   (Office of the President Pilot Program)
16. Monterrey
17. Mexico: eBook
   (Office of the President Pilot Program)
Jean Marc Cote, the classroom of 2000, predicted in the late 1800s
Major Industry Transitions

Pre-Industrial
- Rural/Agrarian

Industrial Revolution
- Steam Power 
- Water Wheels

Digital Age
- First Programmable Microprocessor Chip
- Social, Mobile, Video

Social Networking
- Before the Internet

Analog

All trademarks are the property of their respective owners.
World Per-Capita GDP, 1500 – 2000

Figure 1 World per capita GDP, 1500–2000

Data source: Lucas (1998) and Maddison (1995), updated by ACIL Tasman
IN 60 SECONDS...

- 1 NEW DEFINITION UPON UPDOCK
- 1,600+ READS ON SCRIBD
- 13,000+ HOURS MUSIC STREAMING ON PANDORA
- 12,000+ NEW ADS POSTED ON CRAIGSLIST
- 370,000+ MINUTES VOICE CALLS ON SKYPE
- 98,000+ TWEETS

- 20,000+ NEW POSTS ON TUMBLR
- 13,000+ IPHONE APPLICATIONS DOWNLOADED
- 320+ NEW TWITTER ACCOUNTS
- 100+ NEW LINKEDIN ACCOUNTS
- 6,600+ NEW PICTURES UPLOADED ON FICKR

- 70+ DOMAINS REGISTERED
- 60+ NEW BLOGS
- 50+ WORDPRESS DOWNLOADS
- 125+ PLUGIN DOWNLOADS

- 600+ NEW VIDEOS
- 694,445 SEARCH QUERIES
- 695,000+ FACEBOOK STATUS UPDATES
- 79,364 WALL POSTS

- 1,500+ BLOG POSTS
- 168 MILLION EMAILS ARE SENT
- 1,700+ FIREFOX DOWNLOADS
- 510,040 COMMENTS

QUESTIONS ASKED ON THE INTERNET...

- 25+ HOURS TOTAL DURATION

© 2013 - 2014 CISCO AND/OR ITS AFFILIATES. ALL RIGHTS RESERVED.
The Demise of the Traditional Newspaper
Does Anyone Remember How to Load Film?
Other Examples of Disintermediation

Characteristics:

- Greater user control
- Ease of use
- Perception of greater value
- Less red tape
- More choice
- More broadly accessible
- More direct means to an end
- Fewer middle-people
- Users define the experience
- All enabled by digitization
Companies that are Disrupting the Disruptors

- Expedia
  - Last-minute bookings

- Facebook
  - Ad-free social networking

- eBay
  - Personalized bidding
Education is Being Similarly Disrupted
Cisco Education

Learn Without Limits
Powered by the Internet of Everything
history | trends | solutions | cases
50 Billion Things will be Connected to the Internet by 2020

Timeline

2010 2015 2020

World Population

Billions of Devices

Inflection Point

6.8 12.5 25

50 Billion
“Smart Objects”
The World Generates More Than 2 Exabytes of Data Every Day

Connected Objects Generate Big Data

- 46 million smart meters in the U.S alone
- 1.1 billion data points (.5TB) per day
- A single consumer packaged good manufacturing machine generates 13B data samples per day
- A large offshore field produces 0.75TB of data weekly
- A large refinery generates 1TB of raw data per day
- 10TB of data for every 30 minutes of flight
- With >25,000 flights per day, petabytes daily
IoE Transforms Data into Wisdom

Big Data becomes Open Data for Faculty/Admin to Use
The Millennial Generation
Growing up visual, virtual, social, mobile
You are Largely Driving the Change
You are Demanding Flexibility

flipped learning network

Khan Academy

MOOC

© 2014 Cisco and/or its affiliates. All rights reserved. Cisco Confidential
And Engagement in Immersive Next-Generation Learning Environments
You Expect to Learn Anytime, Anywhere, on Any Device
Challenges for Education

- Brand preservation
- Securing research funding & resources
- Providing quality access
- Student expectations
- Protecting IP, students, data, and the campus
- Competitive differentiation
- Shrinking Budgets
history | trends | solutions | cases
Digital Strategy
The Internet of Everything

People
Connecting People in More Relevant, Valuable Ways

Process
Delivering the Right Information to the Right Person (or Machine) at the Right Time

Data
Using Data in to Create More Useful Information for Decision Making

Things
Physical Devices and Objects Connected to the Internet and Each Other for Intelligent Decision Making (Internet of Things)

$19T
A Day in the Life of a Digital School/Campus

Energy Management
BYOD
Intelligent Digital Signage
Campus Operations Center
Campus Lighting
Campus Wi-Fi
Building Optimisation/Analytics
Smart Parking
Webex

Cloud and Campus Wi-Fi
Introducing Cisco Spark
For agile team collaboration

An app that instantly creates a place for teams to work together, where their work can live, and a way to stay connected to it all.

- Instantly create a place to work together
- Persistent messaging and file sharing
- See and hear everyone and everything
- Superior business class experience
Education Case Studies

- **4 Virginia Initiative**: Increasing the Number of Grads with Telepresence
- **San Jose State University**: Creating Fully Immersive Next-Gen Learning Environments with Telepresence & WebEx
- **Wharton School of Business**: Launching a Silicon Valley Campus with Telepresence
- **University of San Francisco**: Creating a safer and more secure campus with the Internet of Everything
4-VA: Increasing the Number of Graduates
Wharton School: Fully Immersive, High-Definition Classrooms
University of San Francisco: Improving Residence Hall Security
Georgia Tech: Anytime, Anywhere, Any Device Learning
TOMORROW starts here.
Cloud Market Insight
Guidance for inserting into presentations

See Usage Rules
Released: March 11\textsuperscript{th} 2015 (valid to March 10\textsuperscript{th} 2016)
Usage Rules

These quotes/excerpts have been approved by Gartner Quote Requests for use for 12 months* from the date of publication or last review date (for “Gartner Foundational” research). All quotes/excerpts are subject to the Gartner Copyright and Quote Policy on gartner.com. The quotes/excerpts are approved for the following contexts only:

- Press Releases
- Presentations
- Proposals

The quotes/excerpts are not approved for use in brochures, white papers, data sheets, flyers, advertisements, event booth signage, legal or financial documents, newsletters, promotional materials, websites, or e-blasts. Use of quotes/excerpts in these contexts requires approval in each instance.

NOTE: Stand-alone use of these slides is not approved and must be incorporated into a larger document (presentation or proposal) ensuring Gartner materials and references do not exceed 30% of the total content. Title slides are not considered content slides. All quotes/excerpts must be lifted verbatim from research published within the past 12 months or otherwise marked by Gartner as “Gartner Foundational”. Full attribution (title, author and publication date) must be included.

* valid for use to March 10th 2016
“75% of organizations use public cloud services today, although sparingly, and 78% plan to increase their investment in cloud services in the next three years.”

Gartner
“91% of organizations across all industries plan to use external providers to help with cloud adoption.”

Gartner
“Cloud adoption is growing at a phenomenal rate. IT spending on public cloud infrastructure as a service (IaaS), platform as a service (PaaS), software as a service (SaaS) and business process as a service (BPaaS) is growing at a five-year compound annual growth rate of 18% through 2018, more than six times the growth rate of IT spending generally (2.7%) over the same time period”

Gartner
“When asked what percentage of their organization's IT budget is allocated for cloud services, including all services from external service providers that are related to cloud design, deployment or integration, respondents told us 33% of their total IT budget is allocated to cloud services, and 67% is allocated to noncloud systems.”

Gartner