Future of University technology in a world of collaboration and social technology

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CBMI 2018
What will happen to your position in 10 years
A decade of transformation

2008
- Local applications
- Local servers & staff
- Capital budget
- Strong central IT
- Text based/Local
- Traditional lecture instruction
- Application centric

2018
- Cloud applications
- Cloud services
- Operating Budget
- Departmental/Student
- Video/mobile
- Student centered instruction
- Analysis of data for decisions
2018-2026
Top University Technology Issues

1. Wireless Technologies
2. Cyber-Infrastructure
3. Mobility
4. Cloud Computing
5. Social Networking
6. Cloud Virtualization
7. Identity Management
8. eLearning
9. Analytics
10. Virtual Reality & Augmented Reality
11. Artificial Intelligence
12. World Cup Soccer in North America
2018-2026
Top Technology Issues

Cyber Infrastructure

- computational resources
- network resources
- campus based resources
- cloud resources

**WHAT IS THE DARK WEB?**

**World Wide Web**
Only 4% of the content on the internet is on the deep web and is not accessible by surface web crawlers. However, it doesn't mean that they're dark web areas -- they're just one layer removed from the public web that's searchable through search engines.

**Deep Web**
Over 90% of the information on the internet is in the deep web, but it requires specific software for access and is not indexed by search engines to ensure anonymity. The stolen data is traded, sold and used for financial, political or personal gain.

**Dark Web**
Top Technology Issues

1. Mobility
• 96% of students own a laptop
• 89% of students own a smartphone
• 34% of the students own a tablet
• Consumerization

2018-2026
Top Technology Issues
• Cloud Computing

2018-2026 Top Technology Issues
Types of Cloud Computing

- **Private**
  - Off site managed services
    - IBM
    - Dell
    - HP

- **Public**
  - Amazon AWS
  - Google Compute
  - Microsoft Azure

- **Hybrid**
  - ERP, Salesforce, Recruitment
  - Amazon, Azure, Google
    IBM & others
2018-2026 Top Technology Issues
Social Networking
Mary Meeker “Internet Report 2018”
• Identity Management

2018-2026 Top Technology Issues
2018-2026 Top Technology Issues

eLearning

- future directions
- Growth in online courses
- eLearning compliments new pedagogy
- Anywhere & Anytime
WILL NOT BE THOSE WHO CANNOT READ AND WRITE, BUT THOSE WHO CANNOT LEARN, UNLEARN, AND RELEARN."

eLearning growth
Competency Based Education, MOOCs & code academy's
2018-2026 Top Technology Issues
Analytics
2018-2016 Top Technology Issues

- CUSTOMER SUPPORT
NMC Horizon Report Preview > 2018 Higher Education Edition

The NMC Horizon Report Preview provides summaries of each of the upcoming edition’s trends, challenges, and important developments in educational technology, which were ranked most highly by the expected panel. For more than a decade, EDUCAUSE has partnered with the New Media Consortium (NMC) to publish the annual Horizon Report – Higher Education Edition. Earlier this year, EDUCAUSE acquired the rights to the NMC Horizon project. In the interest of both honoring and working actively with the NMC’s Horizon legacy, EDUCAUSE is publishing this preview and will publish the complete 2018 Horizon Report in the summer.

I. Key Trends Accelerating Technology Adoption in Higher Education

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Dr. Clayton Christensen
Disruption in higher education - YouTube
hyper connectivity
Today’s University
COMMUNITIES WILL BE ABLE TO INTERACT AT ANYTIME WITH ANYONE HAVING THE SUPPORT OF ALL ONLINE RESOURCES.
Trends

Enterprise IP infrastructure
Cellular growth in data areas
Collaboration everywhere
Mobility
Commons, Chaos & Clouds
App Stores
Consumerization
The Student

Case study:
Stanford d.school
The Student

- 2018-2021 Social networking – Facebook, Twitter, Pinterest, Snapchat, Whisper, Tumbler & LinkedIn
  - Mobility
  - Collaboration, texting & IM (teaming)
  - LMS - trends
    - Canvas, Blackboard, Desire to Learn
    - UniZen
    - Market Fragmentation
  - Alternative Learning influences
- 2021-2026 Interactive learning groups
  - Information Commons – Physical or Virtual study environment
  - Active learning classrooms
  - Student Study Places
  - Research Commons
  - Maker Spaces (multi disciplinary)
- Information literacy
Higher Education

[Diagram showing the evolution of technology in higher education, with milestones such as Classroom 3D Printing, Exostructure Strategy, Affective Computing in Education, Virtual Reality/Augmented Reality, Blockchain in Education, Digital Assessment, SaaS SIS, Learning Analytics, Competency-Based Education Platforms, Bluetooth Beacons, Citizen Developers, Institutional Analytics, Open Microcredentials, Cloud Office, Gamification, Student Retention CRM, IDaaS, Adaptive E-Textbooks, Integration Brokerage. The chart indicates time in plateaus of innovation, trigger of inflated expectations, peak of disillusionment, slope of enlightenment, and plateau of productivity, with icons representing different outcomes such as less than 2 years, 2 to 5 years, 5 to 10 years, more than 10 years, and obsolete before plateau.]

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The Faculty

2018-2021
- Online friendly
- Information Commons & Library
- Liberal use of active learning
- Academic & peer advising
- Tenured faculty diminishing
- Collaborative learning and study spaces

2021-2026
- Digital tool friendly
- Online literate
- Learning Commons
- Discipline collaboration centered
- STEM+H focus
The Staff

- 2018-2021
  - Real-time online all the time
  - Introduce social networking centric support
  - Data based decision making vs. legacy knowledge
  - Virtualized Technologies
  - Mobility w/smartphones & tablets

- 2021-2026
  - Centralization of staff resources work at home encouraged
  - Click to support everything
  - YouTube training
  - Centralization of administrative systems – the cloud
Classrooms

• 2018-2021
  • Wireless (cellular & 802.x) laptop?? Smartphone?? tablet??
  • Collaboration intensive & online enabled – group focused
  • Interactive (universal interactive click systems)
  • iPhones, iPad, Android & others
  • YouTube, Khan’s Academy, iTunes & Podcasts
  • Mobile & Integration of Digital Assistants

• 2021-2026
  • Universal library search
  • Active Learning (ScaleUP, Tile, ACL)
  • Blackboard, Open Class, Instructure & MOOC’s
  • Cameras everywhere
  • Sensors galore
  • Simulations
  • Student & Faculty Analytics
  • Augmented Reality
Research

• 2018-2021
  • Increased use of computational resources and collaboration
  • Virtual Labs
  • Reclaim the campus core
  • Virtual research groups spanning campus boundaries
  • Computational Research v. Wet Labs
  • Separate growth universities from others

• 2021-2026
  • Virtual research teams & Interdisciplinary Research
  • Cloud HPC Computing
  • IP to Optics & Regional Research Networks
  • Maker Spaces
  • Healthcare growth
  • Virtual Reality Labs
• 2018-2021
  • University – Facebook, SnapChat, Instagram, LinkedIn, Pinterest
  • Unified Communication
  • Google & Microsoft collaboration
  • Video rich (SnapChat, WhatsApp, Facetime)
  • Broadcast (YouTube, Facebook, Snapchat)
  • Facetime Groups (32)
  • iPhones, iPad, & Android tablets

• 2020-2026
  • Federated directories
  • The future by Microsoft, Cisco, Intel & Google
  • Mobile everywhere
  • Cloud services
  • eLearning classrooms and meetings
  • Video on demand - cable
Residence Halls

- **2018-2021**
  - Academic peer advising
  - Living learning communities
  - Mobility enabled & cellular friendly
  - Wireless
  - Virtual Services
  - On Demand rules (Netflix, Amazon, YouTube)

- **2021-2026**
  - Wireless centric – cellular & 802.x
  - Outsourced Residence Halls
  - On Demand generation
  - 5G Cellular Networks (1+ gig anywhere)
Fall 2018

- Internet 2
- Quilt
- Net+ Services

- Common Research Network
- Commercial vs. University
evolutionary
Social Media Landscape 2017
16-24 year olds really stand out in their active use of multiple sites

Activ use (last 30 days)

- Total
- Male
- Female
- 11-15
- 16-24
- 25-34
- 35-44
- 45-54
- 55-64
- 65+

- Facebook
- YouTube
- Twitter
- Google+
- LinkedIn
- Instagram
- Pinterest

Average

- 2.6
- 2.8
- 2.5
- 3.2
- 4.2
- 3.0
- 2.3
- 1.8
- 1.8
- 1.5

Among social media users aged 11+

© Harris Interactive

#SocialLife4
E-books
$13.99
Average Sale Price

$2.27
Author Royalties

$6.54
Publisher Profit

$0.78
Marketing

$3.90
Design, Editing, & Typesetting

Retailer Profit

$3.90

$13.00
Printing, Storage, & Shipping

$26.00
“Real” Books
Average Sale Price

$3.90
Author Royalties

$4.05
Publisher Profit

$1.00
Marketing

$0.80
Design, Editing, & Typesetting

Retailer Profit

$13.00

$3.25
Printing, Storage, & Shipping

Source: The New York Times
Cloud Computing = Completely Outsourced IT Infrastructure

- Internet
- Virtualized Firewalls
- Client Connectivity
- High Speed Low Latency (HSSL) Network Connectivity
- Dedicated Virtual Environments
- Virtual CPU and Memory Capacity
- Hardware Acceleration
- Virtualized Storage
- Server
- Load Balancers
- Firewalls
- Software
- Storage
- Networks
clouds & university

IT does not mandate what happens on every desktop...

IT does not manage 100% of the campus network...

IT are known for telling others what they cannot do...
future leadership

- Innovator
- Team Builder
- Business Strategist
- Project Driver
- Change Agent
Imagine

• What would a university look like if you were building it today, a look at what Cornell is doing in New York
The future

• Expanded personalization
• Increased use of web 2.0 & 3.0 technologies
• Greater collaboration between universities and business
• Lifelong living partnerships with alumni
The Future