Innovative Technologies for Higher Education

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What is **driving change** around teaching and learning in Higher Education?
The way we work and learn is changing at a dramatic pace

Technology improves by 10x every 5 years and with new technologies like AR, VR, smart offices, IOT, the rate of change is accelerating.

Yet the PC remains the center of how work gets done.
When we work + how we work has changed

- 60% work after hours
- 2/3 do some work from home
- 42% would quit a job with poor technology
- 82% say technology influences the job they take

And will continue to change
44% of millennials think their workspace isn’t smart enough
By 2030 ...

- **125 billion** devices & objects will be Internet connected
- **50%** of cars will be driverless
- Decoding a human genome will cost **$1** & take **94 seconds**
- AI will be capable of cognitive **intelligence**
Dramatically changing jobs and workforce skills

2030 Jobs
- Personal medical interpreter
- Human-technology integration specialist
- Autonomous transportation specialist
- Self-driving car mechanic

2030 Skills*
- Contextualized intelligence
- In-the-moment learning
- Automation literacy
- Entrepreneurial mindset
- Personal brand cultivation

85% 35%

Jobs available in 2030 not yet invented.
Skills important today that will change in 5 years.

THE ABILITY TO GAIN NEW KNOWLEDGE WILL BE VALUED HIGHER THAN KNOWLEDGE PEOPLE ALREADY HAVE.

*5 Crucial Skills Your Employees Will Need By 2030
Student expectations

- 79% of students prefer blended learning environments
- 69% of the younger workers expect to be working in a smart office in the next five years
- 82% state that workplace technology influences their choice of employer

Source: Dell/Intel Future Workforce study 2016 and Educause 2017 Student survey
## Educause 2018 top 10 IT issues

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Educause 2019 top 10 IT issues

1. Information security
2. Student success
3. Privacy
4. Student-centered institution
5. Digital integration
6. Data enabled institution
7. Sustainable funding
8. Data management & governance
9. Integrative CIO
10. Higher education affordability

Source: EDUCAUSE
Digital learning

SHIFT TO MEET STUDENTS WHERE THEY ARE

• Less than 20% of higher education students fit the traditional profile today.

• Shift to “meeting students where they are”

• When students take course that engage digitally and in person:
  – Content mastery can occur 2x as fast
  – Pass rates for at-risk student can increase by 1/3
  – Degree completion can increase

• Digital learning benefits:
  – Adapting to student capabilities
  – Promoting active and collaborative learning
  – Supporting learners with timely feedback and individual support
How is Dell Technologies anticipating the needs of Higher Education?
# Digital Transformation in Higher Education

**DRIVING INNOVATION AND STUDENT SUCCESS THROUGH DIGITAL TRANSFORMATION**

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## ENGAGING LEARNING ENVIRONMENTS
- Active learning spaces
- Immersive learning AR/VR
- Collaboration solutions
- Predictive analytics

## DATA-INFORMED DECISION MAKING
- Digital Campus & IOT
- Data lakes
- Campus safety
- Virtualized labs & environments

## HIGH PERFORMANCE COMPUTING
- Integrated compute clusters & network fabrics
- Research storage
- Tools to support IRODS

## MODERN IT PLATFORMS
- CI/HCI
- Scale out
- Multi-cloud
- Software defined

## BALANCE ACCESS & PROTECTION
- Information security
- Data Management
- Identity & access management
- Data governance
Five Priorities in Higher Education

- Digital Transformation
- Simplify systems & processes
- Student success & workforce readiness
- Transform IT
- Transform cyber security
- Accelerate research
# Digital Transformation in Higher Education

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Dell Customer Communication - Confidential
Student success and workforce readiness

ENGAGING LEARNING PLATFORMS

• Active learning spaces
• Immersive learning
• Collaboration solutions
• Analytics: Education Data Management
Redesigning Learning Spaces

Immersive Learning
We believe we’re at a turning point

In this new world, the computer isn’t just sitting on a desk or in your hand. It’s all around you. Thoughtfully designed to make you more productive and your life easier. Letting you engage in more immersive ways. Inspiring you to collaborate more naturally. Even predicting things you need, before you know you need them.

Destination

Wave 1

Portable

Wave 2

Immersive

Wave 3

VR & AR are part of a story of changing usage patterns to increase productivity

STUDENT SUCCESS
Deeper look at VR Training

Learning by doing at 75% retention has one of the highest effectiveness ratings

Greater value/return of VR training

- Limited or expensive resources
- High-risk situations
- Cost effective (e.g., limit travel)
- Detailed analytics

Learning is not just for new or acquired employees. There is also application for customers, external partners and their clients

Source: National Training Laboratories
Virtual Reality

- “Virtually” attend live lectures, concerts and sporting events
- Simulate real world learning
- New worlds for people with disabilities

Source: Dell/Intel Future Workforce study 2016
PTS Virtual Reality Exposure Training

Dell Precision powers Project Bravemind at the University of Southern California.

Project Bravemind is designed to help sufferers of PTSD, through Exposure Therapy, to reenact situations in VR under the control of a trained specialist that recreates the environment in VR and introduces vibration and smell to enhance immersion.
Augmented Reality

- Live direct environment with supplemented computer generated sensory input
- Simulate real world learning applications
- Collaborative learning
- IDC anticipates sales of AR devices to skyrocket to 15M by 2020
New ways to work
Collaboration Solutions
Innovative collaborative technologies

Dell 86” Interactive Digital Display

Secure collaboration with Intel™ Unite
Predictive Analytics
Student success is driving analytics

WHAT DRIVES INSTITUTIONS TO INVEST IN ANALYTICS?

Learning Analytics

- Improve student retention
- Improve student success
- Showcase educational effectiveness
- Reduce students’ time to degree
- Better understand students

Institutional Analytics

- Optimize resources
- Showcase institutional effectiveness
- Improve student retention
- Contain or reduce costs
- Enhance transparency
Digital Transformation in Higher Education

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Simplifying Systems & Processes

- Data-informed Decision Making
- Digital communities & Internet of Things
- Data lakes
- Campus safety
- Virtualized labs & environments
IOT – Advancing Smart Campuses
Implementing IOT across the campus supports institutional and learning decision making and improves the overall experience of students, faculty, and administrators.
Arizona State University
Future of classrooms

Analyze facial expression recognition in a class to measure overall sentiment to gauge engagement.

Anonymous polling to measure comprehension in real time.

Sensor data can help answer questions:
• How long was a student engaged in an activity?
• How does the student engage in activities the demonstrate subject mastery?
Arizona State University
Wayfinding

Today: Custom event maps
• Relevant POI
• Custom information for events
• Internal building maps
• Real Time parking

Future: Take navigation indoors.
• Take students to the right building, the right room on the right day.
• Campus navigation through mobile app maps, integrated digital kiosk or personal assistant.
Data Lakes
Campus Safety
San Jose State University
Campus Safety

• Self powered outdoor security and computing platform
  - Truly portable
  - Intelligent multi sensors
  - Real time edge analytics

• Campus Challenges
• Situational awareness, chemical and gunshot detection
• Security in areas around campuses without power access
Virtualized labs and environments
The Evolution of VDI as a Crucial Technology in Higher Education

Desktop Virtualization Technologies:
• Impacts student work-study habits
• Use and purpose of computer labs
• IT support workloads

Online courses / MOOCS via desktop virtualization environments are
• Faster, easier, A
• Allows students to leverage their own hardware

Hyper-Converged Infrastructure VDI appliances
• Scalable, Flexible infrastructure
• Supports both remote and on-premise students and staff
• Building block architecture that provides
  - Data Security
  - Scalable software licensing
  - Cost effective compared to cloud solutions
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### For What purpose?

- **TEACHING & ADMINISTRATION**
  - **Student Success**
  - **Simplify Systems and Process**

- **RESEARCH**
  - **Accelerate Research**

- **CAMPUS INFRASTRUCTURE**
  - **IT Infrastructure**
  - **Cyber Security**

**Modern IT Platforms**

- **CI/HCI**
- **Scale out**
- **Multi-cloud**
- **Software defined**

**Balance Access & Protection**

- **Information security**
- **Data Management**
- **Identity & access management**
- **Data governance**
Accelerating Research

HIGH PERFORMANCE COMPUTING

- Integrated compute clusters & network fabrics
- Research storage
- Tools to support IRODS

VxRail
hyper-converged

Converged blocks,
appliances and racks
Digital Transformation isn’t just about **technology**, it’s about empowering learning in ways never before **imagined**.
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- CI/HCI
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**IT Infrastructure**

**Cyber Security**
- Information security
- Data Management
- Identity & access management
- Data governance
Transforming IT

MODERN IT PLATFORMS

• All flash
• Scale out
• Multi-cloud
• Software defined
• Trusted

PowerEdge 14th Generation Servers  Public cloud  Private cloud  Converged & hyper-converged
Why Dell Technologies?

ESSENTIAL INFRASTRUCTURE SOLUTIONS FROM THE CITIZEN TO THE DATA CENTER TO THE CLOUD
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Transform Cyber-Security

BALANCE ACCESS AND PROTECTION

- Information security
- Data Management
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HI-ED constituents create risk as they access and share a broad range of information across multiple devices.

All want data to be available, accessible, mobile and timely. Even if the path to access the data is secure, users create risks by downloading, manipulating and forwarding information.
Dell EMC leadership in Education

65
Youth Learning programs globally

#1
Client device sold to education organizations

+300K
Classrooms worldwide leveraging Dell EMC solutions for education

8
Generations of student designed devices

+170
CERN-affiliated schools globally enabled with High Performance Computing (HPC) Research

+65K
Dell EMC Professional Learning Services hours delivered to positively impact student learning and teaching practices

1M
Children around the world with access to Dell Classroom and Learning

+14K
College and university campuses worldwide leverage Dell EMC Solutions
Thank you