Cisco Connected Learning Experience

Strategies for Higher Education

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Director, Education, Asia Pacific
6 March, 2015
Agenda

Trends In Education

Closing Thoughts

Strategies For Higher Education
What’s not right about Education Today?

- Little ability to personalise
- Class time not engaging for students
- Efficiency and Effectiveness issues
“There are so many things out there to learn that don’t fit into a certain subject.”

“Just adding technology is not good enough…a good user of technology makes that passion come alive.”

“My curiosity has been sparked by watching TED videos…you can really see and be inspired by people who have a real flame.”

“We’re still ‘schooling’ our kids. We’re not ‘educating’ our kids.”

“If you listen to what a student wants to say, you’ve got them and they will learn and grow with you.”

“I wish I had learned how to learn.”
Classrooms have not evolved
The Learner’s World has changed
A Generation ago…

The Learner

Teacher in Classroom

Library

Periodicals

Homework

Museum

Radio & TV

Telephone
The Learner’s Digital Nervous System
Millennials of Today…
Use of e-textbooks and digital content is expanding to become the primary learning resource.
“Bring your own device”, and 1-1 computing initiatives surging in education.
Video enriches learning — creating media-rich, blended learning environments.
Social networking and content sharing support student collaboration and teacher interaction.
“Flipping” and “Moocing”
What is Flipped Classroom?

In School

Traditional

Flipped Classroom

At Home

Definition:
Inverted Classroom - Lage et al., 2000;
Classroom Flip – Baker, 2000;
Inverted Lecture – Gehringer & Paddycord, 2012,
Flipped Classroom – Sams & Bergmann, 2012
Flipped classrooms – students listen to lecture at home, spending class time actively working with teachers and peers on projects, discussions, collaborative learning.
Revised Bloom’s Taxonomy – Instructional Focus

- Outside of Class
- In Class

Traditional Classroom

- Create
- Evaluate
- Analyze
- Apply
- Understand
- Remember
“Flipping” of Revised Bloom’s Taxonomy – Active Focus
The “Learning Pyramid”

Average Retention rates for material taught using various methods

(Dale, 1969)
MOOC (Massive Open Online Courses) – Scalable access to high quality content, and effective use of data to support teaching, learning – “distance learning on steroids”
## Benefits of a Flipped Classroom & MOOC

<table>
<thead>
<tr>
<th>Students</th>
<th>Teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Students learn at varying speeds</td>
<td>• Teachers focus on being the “Guide on the Side” not the “Sage on the Stage”</td>
</tr>
<tr>
<td>• Students are provided opportunities for review</td>
<td>• Teachers spend more time supporting students with practice</td>
</tr>
<tr>
<td>• Lessons front-load students for classroom activities</td>
<td>• Teachers are involved with student learning rather than lecture</td>
</tr>
<tr>
<td>• Materials are ready and prepared for students who are absent or sick</td>
<td>• Teachers spend less time on classroom management of student behaviours</td>
</tr>
<tr>
<td>• Parents can view lessons and better assist students</td>
<td>• Teachers are able to provide one-on-one and small group assistance</td>
</tr>
<tr>
<td>• Students do not struggle with completing homework because they ‘forgot’ how</td>
<td>• Teachers are not spending extra hours tutoring and re-explaining to students who didn’t understand the class lesson</td>
</tr>
<tr>
<td>• Students take ownership of their learning</td>
<td>• Teachers collaborate with peers in creating materials</td>
</tr>
<tr>
<td>• Students are actively working with their peers</td>
<td>• Teachers connect with students</td>
</tr>
</tbody>
</table>

(Scritchfield, 2013)
Educational Delivery Models

- **Lecture In School**
  - Traditional Schooling
    - (lecture-in-school, homework-at-home)
  - Boarding / Residential
    - (lecture-in-school/homework-in-school)

- **Lecture At Home**
  - Home School / MOOC
    - (lecture-at-home/homework-at-home)
  - Flipped Class
    - (lecture-at-home/homework-in-school)

- **Homework At Home**
- **Homework In School**
Strategies for Higher Education
## Evolution of Teaching and Learning
### Learning Theories vs Technology Use

<table>
<thead>
<tr>
<th>Tools For</th>
<th>Behaviourism</th>
<th>Cognitivism</th>
<th>Constructivism</th>
<th>Connectivism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curriculum</td>
<td>Textbooks, Paper notes, Drills &amp; practice</td>
<td>Critical thinking, Information processing</td>
<td>Knowledge based, Creativity, innovation, Socially situated</td>
<td>Diverse, Authentic, Global, Open courseware</td>
</tr>
<tr>
<td>Learning</td>
<td>Rote learning, Memorization, Face-face classes, Copying notes, Library books</td>
<td>Information processing, Understanding, Apply</td>
<td>Problem based, Analyze, synthesize, Social, communities, Interactive</td>
<td>Project based, Collaborative, Evaluate, Immediacy</td>
</tr>
<tr>
<td>Teaching</td>
<td>Lectures, Lab practices</td>
<td>Seminars, Tutorials, Lab practices</td>
<td>Facilitation, Experiential</td>
<td>Facilitation, Collaborative, Currency</td>
</tr>
<tr>
<td>Assessment</td>
<td>Paper exams, Lab practical tests</td>
<td>Paper exams, Critical thinking</td>
<td>Problem based, Open ended, Socially situated</td>
<td>Project based, Collaborative, e-Portfolio</td>
</tr>
<tr>
<td>Administration</td>
<td>Paper based</td>
<td>Computer based</td>
<td>Network based, LMS, CMS</td>
<td>Connected LE, Personalized LE</td>
</tr>
<tr>
<td>Technology</td>
<td>Pen &amp; paper, Calculator, Chalk board, Computer assisted</td>
<td>Rich media, Computer based, Web 1.0</td>
<td>Forums, Gaming, Web “1.5”</td>
<td>Internet, Virtual World, Web 2.0 &amp; 3.0</td>
</tr>
</tbody>
</table>
Cisco Connected Learning vision builds around the key concepts of connecting people to learning resources to connect ideas, to engage learners effectively and efficiently, to acquire relevant and impactful skills and knowledge they need to succeed in the connected economy.
San José State University Pioneers New Educational Methods Using Innovative Collaboration Technologies for the Classroom and Beyond

From virtual lectures and office hours to flipped classrooms and asynchronous learning, San José State University (SJSU) is seeing early success in deploying collaboration technologies to create unbounded learning.
San Jose State University

- **Flipped** - students review lecture content prior to class; class time focuses on discussion and application of lecture

- **Virtual** - face-to-face classroom experience is replaced with virtual classroom

- **Hybrid** - integration of multiple teaching methods into the course pedagogy

- **Online** - content delivered online; student self-study oriented approach with minimal teacher interaction (e.g., MOOC)

- **Traditional** - in-person, typically lecture-based courses
Cisco Methodology
Architecting Technological Transformation

**Smart+Connected Learning**

- Connecting People
- Connecting Resources
- Connecting Ideas

**Delivering the “Experience”**
- Reliable, highly available
- Ease of use, reach
- Safe, secure
- Effective, engaging

**Delivering with “Efficiency”**
- Scalable
- Sustainable
- Responsive
- Flexible

**Understand Business Models**

**Capabilities**
- What capabilities are required?
- What network services can be leveraged?

**Core Common Services**
- Formulate Services to support business models

**Design Services platform infrastructure**

**Products or Solutions**
- What technologies are available?

- Unified Communications
- Borderless infrastructure
- Virtualized resources
- Collaboration
- End to end management

- Virtual Meetings
- Collaboration Portals
- Video Sharing portal
- Integrated Content Capture
- Notification, Bulletin, Ads

- TelePresence
- WebEx
- LearningVision
- Digital Signages
- Active Collaboration Rm

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# Impact of technology on different aspect of Technology Trends

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<th>Administration</th>
<th>Collaboration</th>
<th>Distribution</th>
<th>Tools and Methodologies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning Management Systems</td>
<td>Student Information Systems</td>
<td>Social networking tools</td>
<td>Virtual learning environments</td>
</tr>
<tr>
<td>Admission systems</td>
<td></td>
<td>Webcast</td>
<td>Desktops, smart devices</td>
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<tr>
<td></td>
<td></td>
<td>Emails, Mobility</td>
<td>Knowledge management systems</td>
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- “Blended” learning, **learning spaces**
- Wireless and mobility, **data analytics**
- Data center, IT consolidation and desktop virtualization
- **Cloud-based** infrastructure
- Technology enhanced learning (digital content, video, web 2.0, collaborative), **data analytics**
- Physical security and notification services, **cyber security**
- Energy management and efficiency, **Internet of Thing, smart campus**
Learning Space Design
Learning Space Design: Traditional
Fuqua School of Business, Duke University

- Duke University - Fuqua School of Business
- Learning on a GLOBAL scale with access to the BEST & BRIGHTEST
  - Professors, Business Leaders & Guest Speakers
  - Lectures, Training, Brainstorming, Demonstrations, Recording
- TelePresence Lecture Hall
- First time anywhere in the world
Learning Space Design: Active Collaboration Room
General Electric (GE)
Learning Space Design: Global Classroom
Integrated Experience across Multiple Setup

TelePresence (HD) Rooms
Private on campus or Public rooms

PC/Smart Device Conferencing
Individual Participant

Collaboration Classrooms
20-30 participants

WebEx
Unified Communications with Cisco Jabber
Cisco WebEx, WebEx mobile app
Cisco Lecture Capture
Cisco Digital Media System (DMS)
Connected Classroom
Cisco Wi-Fi Solutions for 1:1/BYOD
Cisco High Density Experience (HDX)
Cisco Clean Air
Cisco ClientLink 3.0

Cisco Unified Computing System
Cisco Virtual Workspace (VXI)
Unified Communications with Cisco Jabber
Cisco AVC (Application Visibility and Control)
WLAN Controller Policy Classification Engine
Cisco Prime Infrastructure
Cisco Mobility Solutions
Cisco EnergyWise

Cisco Clean Air
Cisco ClientLink 3.0

Cisco Unified Communications Wireless Access Points
Wireless Access Points
Application Visibility Control (AVC)
Switches/Router
1:1, BYOD
Virtual Desktop

Cisco ASA 5500
AnyConnect

Cisco ASA 5500
AnyConnect

Transformative delivery models that improve student outcomes
Hosted Communications
Cisco WebEx
Cisco Meraki

Cloud Services
Transformative delivery models that improve student outcomes
Hosted Communications
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NREN Data Centres
Capture-Transform-Share
VCS (Expressway)
MCU/TelePresence Server
Connection to Business
TelePresence Exchanges

Application Servers
Data Centres

Campus Safety and Security
Cisco Unified Communications
Cisco Intelligent Cyber Security
Cisco Identity Services Engine (ISE)
Cisco Access Control
Cisco Video Surveillance
Cisco Instant Connect
Cisco Digital Media System (DMS)
Cisco IPICS

Campus Buildings
Campus Aggregation
MAN Edge
NREN
DC1
DC2

Unified Access Architecture
One Policy, One Management
Unified Communications
Cisco WebEx, WebEx mobile app
Cisco Lecture Capture
Cisco Digital Media System (DMS)
Connected Classroom
Cisco Wi-Fi Solutions for 1:1/BYOD
Cisco High Density Experience (HDX)
Cisco Clean Air
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Cloud Services
Transformative delivery models that improve student outcomes
Hosted Communications
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NREN Data Centres
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Application Servers
Data Centres
Closing Thoughts
Challenges in the present Education Ecosystem

- **High cost of new technology adoption**
  
  Implementation and deployment of new technologies enabling a Virtual Learning Environment.

- **Complexity to maintain**
  
  Apart from the huge capital investments that are required, managing changing technologies would be cumbersome.

- **Underutilization of technology resources**
  
  Inconsistent usage patterns in certain faculties and programs result in large expenditure on resources and the relative underutilization of resources.

- **Increasing cost of education**
  
  Increase in the cost of education are due to the labour intensive nature of delivering education sector and the increasing cost of technology.

(KPMG research, 2011)
Leveraging the Inflection Point Demands a New Technology Delivery Model – Fast IT

Fast Innovation

- Mobile
- Cloud
- New Breed of Apps
- Big Data & Analytics
- Connections

Fast IT

- Hyper-Aware
- Predictive
- Agile

- Infrastructure Automation
- IT as a Service
- Application-Centric
- Security
Simple: Reduce Complexity to Lower Costs

1. Unify
Converge and optimize discrete IT domains (network, security, storage, compute) to manage as a “pool” of physical/virtual, mobile/fixed, on- and off-premise resources.

2. Create Programmability
Enable open and programmable infrastructure, ready to respond intelligently to application requirements; accelerate provisioning of needed resources.

3. Automate
Use abstraction and programmability of resources across domains to automate and orchestrate manual, error-prone, and labor-intensive IT tasks and workflows and to drive down costs.

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## Smart: Capitalize on Intelligence for More Agile Operations

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<tr>
<th>Step</th>
<th>Action</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Drive Policy</td>
<td>Create centralized policy and management to streamline infrastructure changes, reduce errors, and drive repeatability.</td>
</tr>
<tr>
<td>2</td>
<td>Tap Intelligence</td>
<td>Use infrastructure analytics to optimize operations end to end so the infrastructure can respond intelligently and automatically to changing application and security demands.</td>
</tr>
<tr>
<td>3</td>
<td>Harness in Motion</td>
<td>Push compute and analytics capabilities to the network “edge”; correlate data in real time to respond to fast-moving changes.</td>
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Secure: Defend Against Attacks Dynamically

1. **Expand Security Perimeter**
   - Protect against advanced malware and threats across all infrastructure and the entire security continuum; detect and quarantine cyberattacks

2. **Improve Visibility**
   - Through analytics, increase visibility around threats, users, behavior, and infrastructure

3. **Respond Faster**
   - Use identity- and context-based information and behavior to improve security response
Fast IT: Three Key Principles

**SIMPLE**
Simplify your infrastructure and integrate across silos

**SMART**
Create intelligent capabilities and services that fuel growth

**SECURE**
Defend against attacks and mitigate threats dynamically
Thank You.