

How do we in IT enable transformative 21st Century pedagogy and student learning?



A DISCUSSION FOCUSING ON CHANGING IT
ORGANIZATIONAL PRIORITIES, THINKING
AND PRACTICE

EDIT CONFERENCE
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Principles of Transformation



- Concept of service to students, staff, and community must drive the work we do.
- IT team process :
 - Continually consider how to remain innovative
 - Articulate a vision
 - Communicate direction
 - Set priorities accordingly
- Strategic planning must be cohesive utilizing educational needs as the key driver.

“...user networks will democratize development and purchase decisions to the end users in the system—students, parents and teachers.”



FROM

***DISRUPTING CLASS—HOW DISRUPTIVE
INNOVATION WILL CHANGE THE WAY THE
WORLD LEARNS***

BY CLAYTON M. CHRISTENSEN

How do we meet our responsibility in providing a core service-oriented infrastructure platform for schools that is flexible, scalable, and customizable?



“...can't schools customize their teaching?”

—Clay Christensen

We must provide customizable, robust and secure IT platforms enabling seamless:

- Services
- Menus
- Modules

Consider household telephone service as a platform. Users are comforted by the fact they can buy whatever phone device they like, plug it into the wall outlet, and it will work. They do not, nor should not care about what is going on behind the wall. Students and educators should enjoy the same expectation from IT services in their schools.



Transformation K-12: Visions for 21st Century Learning Environments

Model Schools Matrix: Core Platform Layer

Robust Infrastructure Layer

Yellow

Infrastructure Platform	Additional Platforms	Instructional/School Administration Hardware	DOE Services	Professional Development	School-Based Tech Support	Policy-Based Standards
Secure Access from the Home to the DOE / School Network (Extranet Services Architecture): allowing secure access to selected terminal services for teachers and students into appropriate network segments—"DOE Public Education Zone"—of DOE/School network.			DOE Portal: Access, control, identity and security management. Organized around Content and Services: For principals, teachers, students, parents, staff, with links to Data Systems, Knowledge Management Environment, Software Portal, Tech Support Portal, Resources, Content Management portal, vendors, etc., with links to individual, interactive school web pages.	Build and maintain a model classroom and training facility geared around tools in "Core Platform."	Central DIIT Help Desk: Provides Level 1 support.	Social, ethical and legal issues: Internet Acceptable Use Policy (IAUP), Cyber Safety, Cyber Bullying, etc.
Consolidated Computer Room: Delivers high-level content.			Interactive School Web Page: for school-based content.		Borough Technology Support: located in ISCs	Security, Standards and Policies: for infrastructure.
Wireless Access: Delivers high-level content.			Remote login access: to school network for students and staff.		DIIT Level 2 & 3 Support: Escalations from the DIIT Help Desk.	
Sufficient Electrical System: to provide power to consolidated computer room environment and equipment.			Provide DOE Email access for administrators, teachers, students, parents & Central staff.		Managed Services: including technical resource package offerings to schools.	
Sufficient Bandwidth: Delivers high-level content at high speeds.			Software Management System: to install, maintain and troubleshoot a commonly used group of instructional and administrative software products.		DIIT-Certified training for onsite staff in Level I/II tech support	
Sufficient servers and storage: to support in-school network(s).			Multi-Year Technology Plan: developed with schools. (Merges Yellow and Blue Layer)			
Sufficient switches, routers: to support in-school network(s).						
Sufficient communications systems access.						

Schools need informed choice in growing technology programs in their schools based on the needs of their community. Many school leaders need guidance in making these choices.



Transformation K-12: Visions for 21st Century Learning Environments

Model Schools Matrix: Selection Layer Blue

Options to Robust Infrastructure Layer for Individual School Procurement

Infrastructure Backbone	Additional Platforms	Instructional/ School Administration Hardware	DOE Services	Professional Development	School-Based Tech Support	Policy-Based Standards
	Instructional LAN	1 to 1 computing device program.	Video conferencing: inter-classroom, inter-school, inter-city, international.		Full or part-time onsite DIIT-Certified technician(s).	Policies, standards and procedures for connecting wired and / or wireless computing devices into DOE network and physical environments.
	School-Based Video-Enhanced Instruction (Video Conferencing, Video Streaming, etc.)	Thin Client computing devices.	Video Streaming: providing access to 3 rd party content across the Web. (Ex. National Geographic, Discovery Channel.)		MOUSE Squad	
	Instructional Applications Server	Mobile computing device or fixed desktop lab solutions: 20 laptops & cart 8-pack laptops per classroom	Content Management/Delivery Platform: for local storage of locally developed or purchased content for direct use in classrooms and / or other school facilities.		CUNY Interns (DIIT Certified)	
	Lab Environment for Specific Instructional Scenarios: Science Lab, Digital Graphics Studio, Robotics, Simulations, etc.	6 desktops or thin clients per classroom	Access to DOE school-based applications currently under production: (Ex. CAAS, POS, etc.)			
	School Web Page Server.	Interactive Whiteboard: with, or without options including: projectors, speakers, wall mounted, rear projection, mobile.	Unified communications platform.			
	Library/Media Research Center: 10-40 machines, server, storage, automation.	****Special Education Devices	Digital Video Surveillance			
		School-wide audio enhancement system.				
		Supported Handheld Technologies				
		Computer-compatible projection devices.				
		1 computer or PDA for school staff members.				



Customized School Technology Planning

*Includes all
stakeholders...*

- **Considerations:**
 - School vision, goals, and culture
 - Student needs
 - Staff skill set
 - School infrastructure
 - Past investments
 - Hardware inventory
 - Support capacity
 - Funding sources
- **Interdependent components of plan:**
 - School leadership
 - Professional development
 - Onsite technology support
 - Ongoing funding



Mobility, Virtualization and the Cloud

School learning environments are changing and evolving—physically and virtually.

- How do we provide enterprise-wide strategic direction, structure, security, and support?
 - Mobility: devices—variety embracing what students use
 - ✦ We must plan for integration of innovative and ever-changing devices into infrastructure and pedagogy.
 - Virtualization to reduce energy use, waste and overlapping:
 - ✦ Need for data center best practices strategy to consolidate servers and information systems.
 - ✦ Look to virtual desktop solutions to provide anytime, anywhere, secure access to school network.
 - The cloud:
 - ✦ Services such as applications and storage will be provided by vendors set up to handle large environments.
 - Learning Environments:
 - ✦ Rethinking physical space and student placement
 - ✦ Virtual environments for learning, anytime, anywhere



Virtual Education Platforms

Learning Content
Management Systems

A single platform for:

SIS, HR, & Knowledge
Management Systems,
Instruction, and
Professional
Development

We will never make any progress through the traditional method of punishing faster learners by having them wait for others to catch up.

E-Learning can provide individualized learning experiences for all...including a vehicle for teacher-student mentoring

“...the demand for individual instruction could be met through infinitely customizable online computer-based instruction.”

—Clay Christensen


- Our goal is to translate educational requirements into modular eLearning architectures.
 - Proprietary -vs- open source
 - Avoiding one-offs
 - Consolidation and virtualization
 - Sharing of courseware within district externally.



IT Partnerships for Success

Bring all stakeholders
to the table.

- What can we do to cultivate ongoing productive partnerships between educators, IT staff, vendors, and others to meet converging goals?
 - Continually consider how to remain innovative
 - Articulate a vision
 - Communicate direction
 - Set priorities accordingly



NYCiSchool: Replicable Model for Success

Technology Platforms:

Unified Communications:

IP Telephony

Collaboration services

Video Conferencing

School Security and other services

Moodle Learning Content Management System

Virtual Desktops

Secure Systems Access:
Anytime, Anywhere

Ubiquitous Computer Access:
Sub laptops, Workstations,
Laptops

● NYCDOE

Facilitating School Environment Transformations:
No two schools need look alike.

○ Office of Portfolio Development:

- ✦ To meet the diverse needs and priorities of more than a million students and families in New York City, the Department of Education (DOE) provides a wide range of schools and programs throughout the City from which parents and students can choose. The DOE's Office of Portfolio Development (Portfolio) plans broadly for the equitable creation and long-term sustainability of new and effective programs that lead to higher academic achievement for all students.

Portfolio works collaboratively with principals and school planning teams, local communities, external partners, and other DOE departments.

Specifically, Portfolio is responsible for:

- The creation of [new schools](#).
- The authorization, monitoring, and support of [charter schools](#).
- The approval of school grade expansions.

○ Department of Instructional and Information Technology (DIIT)

- ✦ Working with our schools to realize individual and innovative visions.

● External Partnerships

- Cisco
- Mort Zuckerman
- Dell
- Intel
- Converge Magazine
- Gartner
- Microsoft
- Tequipment