Disrupting Class: How Disruptive Innovation Will Change the Way the World Learns

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Disruption in computing
Disruption = affordability, accessibility

**Yesterday**
- GM
- Dept. Stores
- State universities
- Digital Eqpt.
- Delta
- JP Morgan
- Xerox
- IBM
- Cullinet
- AT&T
- Sony DiskMan

**Today**
- Toyota
- Wal-Mart
- Community colleges
- Dell
- Southwest Airlines
- Fidelity
- Canon
- Microsoft
- Oracle
- Cingular
- Apple iPod
Disruption of Toyota

Think About It

ISN'T IT TIME SOMEONE DID TO LEXUS WHAT LEXUS DID TO MERCEDES?

Narrower gaps between body panels, better mileage, and roomier than the Lexus LS 460.

The new Hyundai Genesis is our first luxury car, and believe it or not, it's about to give the market its biggest shake-up since 1989.

The Genesis will take you from zero to 60 in a head-spinning 5.7 seconds—and has more horsepower per liter than a Lexus GS 460. Imagine producing that much power while still getting better mileage than any car in its class.

Impeccable details abound. Example: gaps between body panels are tighter than those found on the standard-bearer for tight tolerances, the Lexus LS 460.

And the Genesis cabin is among the quietest and most spacious available. It’s equipped with a Lexicon® 7.1 discrete surround sound system (shared only with the Rolls-Royce Phantom). And puts you in a driver’s seat that is cooled for summertime, heated for winter.

In a luxury car, there’s no such thing as getting too comfortable. Although—don’t say we didn’t warn you.
Disruption = affordability, accessibility

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<th>Yesterday</th>
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Prime examples of nonconsumption

- Credit recovery
- Drop outs
- AP/advanced courses
- Scheduling conflicts
- Home-schooled and homebound students
- Small, rural, urban schools
- Unit recovery
- Disaster preparedness
- Tutoring

- Professional development
- Pre-K
- After school
- In the home
- Incarcerated youth
- In-school suspension
- School bus commute
- Summer school
- Teacher absenteeism
- Migrant worker families

Looming budget cuts and teacher shortages are an opportunity, not a threat
Substitution follows S-curve pattern

% new

% old

0.001

0.01

0.1

1.0

10.0

03 05 07 09 11 13 15
Online learning gaining adoption
Different learning needs @ different times

Multiple intelligences
Learning Styles
Talents
Motivations/interests
Aptitude
Depends on subject/domain
Different paces
Ongoing neuroscience research
Built to standardize
Online learning inherently modular

Image courtesy of Khan Academy
Technology predictably improves
Definition of blended learning

A formal education program in which a student learns at least in part through online delivery of instruction and content with some element of student control over time, place, path and/or pace

and

At least in part in a supervised brick-and-mortar place away from home
Blended learning is not...
Emerging blended-learning models

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<th>Flex</th>
<th>Self-Blend</th>
<th>Enriched Virtual</th>
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<td>Station rotation</td>
<td>Online platform with F2F support &amp; fluid schedules, teacher on site</td>
<td>Students attend physical school &amp; take 1 or more courses online</td>
<td>Students learn sometimes at a physical school, other times remotely</td>
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<td>Lab rotation</td>
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<td>Individual rotation</td>
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<td>Flipped classroom</td>
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</tbody>
</table>
Station-rotation model: Los Altos School District

Khan Academy Goals

Khan Academy Challenges

Group projects/instruct

26:1

26 students per math class
1 teacher (T)
Station-rotation model: KIPP Empower

- Individualized Online Instruction
- Teacher-led Instruction
- Collaborative activities & stations

Source: Education Elements
Lab-rotation model: Rocketship Education

Direct Instruction
Math/Science

Direct Instruction
Literacy/Social Studies

Direct Instruction
Literacy/Social Studies

Learning Lab
Reading, Math

Teacher (T)
Paraprofessional (P)

Source: Alex Hernandez, Charter School Growth Fund
Flipped-classroom model: Stillwater Area Public Schools
Individual-rotation model: Carpe Diem

Source: Alex Hernandez, Charter School Growth Fund
Flex & self-blend model: SF Flex Academy

- **P** = paraprofessional
- **T** = teacher

**History Room**

**English Room**

**Math Room**

**Science Room w/ Lab**

**Computer Lab**

**Study Room**

**Lunch/Social Area**

**Collaboration Area**
Self-blend model: Quakertown Community School District
Enriched-virtual model: Albuquerque eCADEMY
Technology predictably improves
Practical implications

• Begin at the end. Define outcomes.
• Make technology the slave to your strategy, not the other way around.
• Harness the power of time, place, path, and pace for student personalization.
• Personalize for your circumstances, too. Think in terms of “SWOT.”
• Take advantage of rapidly improving content and communication tools.
• Shift to outcome accountability, not input-based rules.
Practical implications

- Not beholden by the old metrics
  - Seat time ➔ Competency-based
  - Geographic boundaries
  - Teacher certifications
  - In general, move beyond focus on inputs/processes
- Self-sustaining funding
- Human resources pipeline & PD
- Broadband/wireless infrastructure
- Portal/Based on usage and what works
- Treatment and use of data
- Early childhood
Fixed time, variable learning

Deliver content to students → Testing & assessment → Progress to next grade, subject, or body of material → Receive results
Competency-based learning

Offer learning experiences for students

Testing & assessment

Receive real-time interactive feedback

Progress to next body of material
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Education technology categories

→ Digital content including: online courses, test prep, tutoring, specialized providers, and edu-games.

→ Classroom learning and academic solutions including: learning management systems, assessment systems, gradebooks, sharing and collaboration tools, and social learning systems.

→ Systems which manage student demographics, achievement scores, and provide analytics and reporting.

→ Applications which support professional development and teacher effectiveness as well as human resource systems.
Instructional Systems

- Assessment Systems
- Communication
- Collaboration
- LMS
- Teacher Tools
- Social Learning
Proliferation of content options
WGU models a competency-based system

Front End:
Student Control
Students use an online portal to view and manage their individual degree plans

Back End:
Assessment System
WGU stores over 800 assessments that students can take to demonstrate mastery

Objective Assessments
Performance Assessments
## WGU System Architecture

**Position of Software Relative to Students**

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<th>Functional Job</th>
<th>Pre-enrollment</th>
<th>Student-facing Front End</th>
<th>Back-end Hub</th>
<th>Data Outputs</th>
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<td>Learning Resources</td>
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<td>Luminis (a Banner module)</td>
<td>LRPS</td>
<td>Embedded links to outside resources</td>
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<tr>
<td>Learning Communities</td>
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<td>COS authoring system</td>
<td>Courses of study for students</td>
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<td>Assessments</td>
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<td>JIVE</td>
<td>Performance assessment results</td>
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<td>Student Services</td>
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<td></td>
<td>Adobe Connect</td>
<td>Objective assessment results</td>
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<td>Relationship Management</td>
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<td>CARE</td>
<td>TaskStream</td>
<td>Registration data and academic history</td>
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<td>Kryterion</td>
<td>Transcripts and enrollment verification</td>
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<td>Banner</td>
<td>Financial aid and accounting reports</td>
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<td>Third-party email</td>
<td>Talisma</td>
<td>CRM data</td>
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<td>Qualtrics</td>
<td>Student satisfaction data</td>
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Incumbents nearly always win

Sustaining innovations

Pace of Technological Progress

Performance that customers can utilize or absorb
Disruptive innovations

Incumbents nearly always win

Pace of performance improvement

60% on $500,000

Performance that customers can utilize or absorb

45% on $250,000

Entrants nearly always win

40% → 20% on $2,000

Disruptive Innovations: Competing against non-consumption

Different measure of performance

Performance

Time

Non-consumers or Non-consuming occasions
Understanding how users experience life

“The customer rarely buys what the company thinks it is selling him” - Peter Drucker
What's the job-to-be-done?
(Each job has functional, emotional & social dimensions)

What experiences in purchase & use must we provide to do the job perfectly?

What and how to integrate?
The right product architecture? It depends...

- Compete by improving speed, responsiveness, and customization
- Compete by improving functionality & reliability

IBM Mainframes, Microsoft Windows

- Proprietary, interdependent architectures
- Modular open architectures

Dell PCs, Linux
It’s not a technology problem

- Pocket radios
- Portable TVs
- Hearing aids
- Tabletop Radios, Floor-standing TVs

Path taken by vacuum tube manufacturers

Time

Performance

Different measure of performance

Non-consumers or Non-consuming occasions
Crammed computers historically

Different measure of performance

Performance

Time

Core curriculum
Path taken by most schools, foundations and education software companies

Non-consumers or non-consuming occasions

InnoSight Institute
Sustaining the chalkboard

Performance

Time

Performance is what customers can utilize or absorb

INNO
SIGHT
NSTITUTE
Different system architectures

Proprietary, interdependent architectures:
- Microsoft Windows;
- Apple products

Customization is very expensive

Modular, open architectures
- Linux;
- Dell PCs

Customization is straightforward
10 Elements of High Quality Digital Learning

1. Student access
2. Barriers to access
3. Personalized learning
4. Advancement on competency
5. Quality content
6. Quality instruction
7. Quality choices
8. Assessment and accountability
9. Funding
10. Infrastructure