IT and Education: Game Changers

Diana G. Oblinger, Ph.D.
President and CEO, EDUCAUSE
Topics

- Context
  - Education trends
  - Rethinking the rules
- Emerging models
  - Do it yourself
  - Student empowerment
  - Tools of the discipline
  - New value chains
  - Inside the “black box”
Education Trends
Educational imperative

• Intellectual and human capital paramount
• Worldwide demand for well-educated workers
• Benefits health, civic engagement society
• Decline of the “traditional” student
• Post-secondary education is the new baseline
Unsettled environment

- Challenging economic environment
- Threat of regulation
  - Cap on tuition
  - Performance-based funding
  - Program elimination
- External forces
  - Governors launching charter universities
  - Philanthropists supporting new institutions
  - Non-traditional students opting for for-profit institutions or non-traditional certifications
Rethinking the Rules
The connected age

• Everything (and everyone) is interconnected
• Individuals are empowered with information
• Everyone can participate
• It is easy for people to find each other
Do-it-yourself learning

- Digitized and indexed books (28 million volumes)
- Data, archives, media
- Content, exercises
- Peer-to-peer support
- Communities
Everyone can participate

• Innovation is “outsourced” to the community
• Community members respond to challenges
  — Minimizing water used for cleaning, sanitizing
  — Making packaging material more recyclable
• Sponsored by Global 5000 companies and non-profits
• Pay-for-performance (e.g., prize of $50,000)
• Expands innovation capacity beyond internal R&D teams
Personalization due to “big data”
Do-It-Yourself
Self-service learning

• “Learn almost anything for free”

• Khan Academy
  — 5 million unique users (in March 2012)
  — 3,000 videos
  — 150 million lessons delivered online
  — 400 million exercises completed
  — Analytics engine

• Translating into 12 languages
Trigonometry

\[ \sin \theta = \frac{3}{5} \]
\[ \cos \theta = \frac{4}{5} \]
\[ \tan \theta = \frac{4}{3} \]

**Definitions:**
- **Soh:** \( \sin \theta = \frac{\text{opp}}{\text{hyp}} \)
- **Cah:** \( \cos \theta = \frac{\text{adj}}{\text{hyp}} \)
- **Toa:** \( \tan \theta = \frac{\text{opp}}{\text{adj}} \)

**Right Triangle:**
- Hypotenuse
- Opposite
- Adjacent

\[ 3^2 + 4^2 = 5^2 \]
Adaptive

- Knewton Math Readiness
- Allows students to go at own pace
- Personalized
- Short videos; explanations
- Test skills
- Points and badges encourage completion
- Faculty access to class or individual student trends
MOOCs

• Massive scale
• Self-organized study and discussion groups
• Data collection may change pedagogy
• Emerging revenue models
• Brand extension
• A global university?
Student Empowerment
OpenStudy

- Ask questions
- Give help
- Connect with others anywhere in the world
- Earn badges for helpful answers
Demystifying education

• Personal recommendations tailored to
  — Program of study
  — Abilities

• Keyed to degree program and course sequencing, not “liking”

• Deans use to target course availability

• Faculty use to target interventions

• Degree Compass

—Denley, 2012
STAR

• Cross-institutional online advising/degree attainment support system (10 campuses of University of Hawaii)

• Real-time “academic journey system”
  — Course choices and effect of choices on degree program
  — Courses from other campuses that meet degree requirements
  — Lets advisors know which students are off-track
  — Increases transfers from community colleges to 4-year programs
  — Automatically transfers credits from 4-year institution back to community college

• Decreased time to graduation and increased graduation rate reducing cost on student, state and support programs
Nudges

- “Weight-watchers” of college completion
- Behavior interventions, “nudges”
  - Study skills
  - How to deal with academic setbacks
  - Organize time and responsibilities
- Positive peer academic pressure
- Data identifies students who need active outreach
Tools of the Profession
Undergraduate research

• An inquiry or investigation conducted by an undergraduate student that makes an original intellectual or creative contribution to the discipline

• A “high-impact” practice

• Within their research discipline, students demonstrate improved:
  — Oral and written communication skills
  — Creativity, problem-solving and troubleshooting
  — Understanding of how knowledge is generated and validated
Complex analysis

• Big data
• Analysis; modeling
• Visualization
• Decision-making
Learn to do what you do

• SimSchool
• Classroom management techniques
• Analyze student data
• Understand diverse learning styles
New Value Chains
Value chain to value web
Putting data to work

• Share transcripts
• Predict where you might be accepted for college
• How to improve odds of acceptance (e.g., take calculus)
• Eventually businesses may use credentials in hiring
Course providers

• $99/month (+ $39/course) or $999/year for 10 courses
• Required college courses
• Start any time; no required meeting times
• Individualized, on-demand support (online)
• Transfer credits to partner college(s)

Introductory Algebra, College Algebra, Precalculus, Business St Developmental Writing, English Composition I, English Compos Economics I, Economics II, Accounting I and Accounting

NEW! StraighterLine for $99

The Shortest Distance Between You and Your College Degree
Joint ventures

- Increasing number of public-private joint ventures
- Augment existing skills, resources
- 2tor: online platform to expand graduate programs
  - Technology and infrastructure
  - Fieldwork sites
  - Creates instructional material with faculty
  - Capital investment
- Shares tuition revenue
Study support

- Tutoring and mentoring
- Available on demand, 24x7
- Matches mentors and mentees; flexible scheduling
- Shared live experiences; whiteboarding
Pathways from military to career

- Designed for veterans
  - Veteran unemployment 20%
  - Veteran under-employment 50%
  - 75% of veterans who begin college don’t graduate

- Online coaching platform
- Partner with universities, veterans organizations, corporations
- Hybrid and F2F experience
- Transition coaching
- Mentoring
- Gamification; badges
Badges: Credit decoupled from courses

- Learning happens everywhere, not just classroom
- Recognition for skills and achievements
- Earn and display badges on the web
- Skills and experience can come from
  - Online courses
  - Peer learning
  - Volunteering
  - After-school work
Redefining roles

• Credit for prior learning; competencies developed with industry experts
• Objective and performance-based assessment of competencies
• WGU faculty identify best existing courses; acquire rights to use them
• Faculty serve as mentors, also peer mentoring
• Accelerated degree options
• 30% growth rate
Free, open and peer-led

- University of the People
- Tuition-free online university
- For students with financial, geographic, societal constraints
- Open educational resources
- Volunteers
- Peer learning
- Text-based
- Students in 126 countries
Inside the “Black Box”
“Big data” enables personalization

- Tailor the approach to each learner
- Focus on areas of weakness
- Adapt to personal aspirations
- Personalize advice, counseling, degree planning

—Smith, 2010
Module 1
Examining Distributions

Learning Objectives

- Summarize and describe the distribution of a categorical variable in context.
- Generate and interpret several different graphical displays of the distribution of a quantitative variable (histogram, stemplot, boxplot).
- Summarize and describe the distribution of a quantitative variable in context: a) describe the overall pattern, b) describe striking deviations from the pattern.
- Relate measures of center and spread to the shape of the distribution, and choose the appropriate measures in different contexts.

Estimated Learning by Student

Class Accuracy by Sub-Objective

- Predicting...
- Mean vs median
- Compute median
- Identify outlier
- Select appropriate...
eAdvisor

What is eAdvisor?

We are committed to ensuring our students reach their academic goals and graduate in four years. Read more about how we monitor student progress, provide academic resources, and use personalized tools to advise students and ensure they get off to a good start on day one and stay on track towards graduation.

eAdvisor: Improving Retention

ASU’s focus on improving individual student success is resulting in more students persisting to graduation. See more on the plan and our progress.
Students know where they stand
Prediction and intervention

• Identify struggling students
• Alert student to problems
• Direct to resources
• Improves success by up to 28%

STOP! You need to get help in this class

Based on your use of online resources and assignments, and according to our expectations, you are performing well below the level you need to succeed in this course. If you continue at this low level of effort, it is likely that you will not do as well as you could in this class and get help, now!

To get help, please do one or all of the following:
1. You can get help by staying after your scheduled lab meets to get help from your TA.
2. You can go to the weekly help session at the help center in LILY.
3. You can make an appointment for help with your TA.
4. You can meet with me during my office hours, MW 1-2pm.

http://www.itap.purdue.edu/tlt/signals/
Peer comparisons

- **Check-My-Activity; “How am I doing?”**
- Students compare their online course activity with peers:
  - Higher grade
  - Same grade
  - Lower grade
- Allows student to link behaviors with performance
Closing Thoughts
Change is a choice. The best choice is an informed choice.
Our greatest challenge is to unlearn our assumptions about teaching, learning, and education.
IT is a game changer.
GAME CHANGERS

EDUCATION and INFORMATION TECHNOLOGIES

Edited by DIANA OBLINGER