Data Changes Everything

REFLECTIONS ON LEARNING ANALYTICS, DATA DECISION-MAKING AND BUSINESS INTELLIGENCE

ELLEN WAGNER
EXECUTIVE DIRECTOR, WCET
SENIOR ANALYST, SAGE ROAD SOLUTIONS LLC
Data Applications in Daily Life

- Profiles
- Search
- Progress Tracking
- ROI
- Infographics
- "Push" Services
- Personalization
- Ratings
- Mash-Ups
- Dashboards
- Check-Ins
- Friend-Ing
Analytics – The next “Web 2.0”? 
“Indeed, no other institution faces challenges as radical as those that will transform the school. The greatest change, and the one we are least prepared for, is that the school will have to commit itself to results.”

PETER DRUCKER, 1993, P. 209
Higher Ed Challenges in Search of Analytical Answers

- ROI
- Student Engagement
- Completion
- Institutional Sustainability
- Retention
- Progression
- Recruiting
- Learning Effectiveness
- Student Success
IN A BLUEPRINT FOR REFORM, THE DOE SAYS OF THE 10 COUNTRIES WHO HAVE SURPASSED THE US IN COLLEGE COMPLETION: “IT IS NOT THAT THEIR STUDENTS ARE SMARTER THAN OURS. IT IS THAT THESE COUNTRIES ARE BEING SMARTER ABOUT HOW TO EDUCATE THEIR STUDENTS.”

LEADERS IN DATA-DRIVEN DECISION-MAKING DON’T NECESSARILY HAVE BETTER DATA, THEY ARE SIMPLY SMARTER AT HOW THEY ANALYZE WHAT THEY HAVE AND HOW THEY MAKE THEIR RESULTS ACTIONABLE
Interesting Data – but are this actionable?

Percent of faculty who

Never use it | Use it at least some | Do not know what it is

Course management systems
WebCT, Blackboard, Desire2Learn, Sakai, etc.

Plagiarism detection tools
Turnitin, DOC Cop, etc.

Collaborative editing software
Wikis, Google Docs, etc.

Blogs

Student response systems
Clickers, wireless learning calculator systems, etc.

Videoconferencing or Internet phone chat
Skype, TeamSpeak, etc.

Video games, simulations, or virtual worlds
Ayiti, EleMental, Second Life, Civilization, etc.
Analytics in Higher Education

- Uncertainty about where to start
  - No established industry best practice about what to measure (which variables have the most meaning)
  - No established industry best practice around methodology (what types of analysis to perform)
- Higher Educational Culture and Status Quo
  - Institutional concern about what the data will show
    - Potential to illustrate weaknesses for schools/departments within an institution
    - Opportunity to illustrate weaknesses across institutional groups
  - Competing institutional priorities and lack of incentive for collaboration between different groups
    - Recruiting is not rewarded to collaborating with Registrar, etc
- Siloed data across the campus and campus systems
  - Uncertainty about how to bring the data together
- Lack of viable, comprehensive solutions from existing enterprise providers to address analytics across key campus areas
The Problem – Siloed Data, competing institutional priorities

- Pedagogical Effectiveness and end of course surveys
- COI
- Student engagement
- Major field tests

- Google Analytics
- Omniture
- (Cost/Lead & Cost.)
- Experience oriented approach that doesn’t reach individual student level

- Star Banner, Campus View, etc.
- Student demographics, financial aid, academic affairs
- Meaningful but needs to be combined with other data points
- Descriptive dash boarding

- Blackboard, D2L, eCollege, Fronter, etc.
- Transactional data related to student / instructor behavior
- Descriptive in raw form

- Meaningsful but needs to be combined with other data points
- Descriptive dash boarding

Unless analysis includes key data from multiple sources, it will fail to provide predictive modeling capabilities
What Education Decision Makers Are Looking For

- Assessment and evaluation that integrates contemporary innovations in technology, pedagogy, accountability, and applied research
- Actionable data visualization and reporting
- Technological, organizational and methodological scaffolding to effectively inform the efficacy of all aspects of teaching and learning
Continuum of Analytics Programs

- **Descriptive Statistics (90%)**
  - Geared primarily to end-users, and comprise the majority of visual information communicated via dashboard

- **Inferential Statistics (9%)**
  - Geared primarily to end-users and decision-makers. Requires reasonable caution when inferences/predictions are made for individual students.

- **Exploratory Data Analyses/Pattern Recognition (1%)**
  - Geared primarily for high-end decision-makers, as results may have implications for complex policy issues. Provides viable framework for predictions.
  - Not commercially available – “Build-Only”
Assessment of existing commercial analysis solutions

- Primarily performing independent silo analysis
- Provide only on rudimentary descriptive and basic inferential statistics
- Rely heavily on user threshold setting – which is largely based on best guesses
- Lack ability to explicitly identify the impact of numerous variables and the degree of change in predictability accounted for by each required for deep and actionable understanding of retention and progression.
Data-Driven Decision-Making is here to stay.

A perfect storm of technological advances in data analysis, the economic downturn, expectations for increased transparency is leading to increased demand for data utilization.
It’s Not About the Data.
It’s What We Do With Them
Universities already have more data than they can shake a stick at.

Universities need to transforming data and information systems to produce actionable formats (e.g. federating disparate data silos). An ounce of actionable data is worth a ton of interesting yet unutilized information.
Higher Education needs Holistic Data Analysis Models

IT’S TIME TO APPROACH ASSESSMENT AND EVALUATION FROM A HOLISTIC APPROACH THAT INTEGRATES:

Student Learning Assessments
   In The Classroom
   In Student Affairs Activities and Programming
   Through Informal Learning

Faculty assessment productivity and efficacy for promotion and tenure

Institutional benchmarking, forecasting, “future-proofing”
Ellen D. Wagner, Ph.D.

- ewagner@wiche.edu
- ellen@sageroadsolutions.com
- edwsonoma@gmail.com
- http://elearningroadtrip.typepad.com
- http://twitter.com/edwsonoma
- +1.415.613.2690 mobile