You’ve Got Data; Now Use it!

“Without data you’re just another person with an opinion.”

-W. Edwards Deming, Data Scientist
Did you know effective presentations are...

- 55% non-verbal communication
- 38% your voice
- 7% your content
Session Speakers

Melissa Hortman, EdD
Assistant Professor
Director of Instructional Technology
Medical University of South Carolina

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Senior Manager
Global Client Programs
Blackboard
Session Objectives

• Understand how to make data part of the ongoing cycle of instructional improvement

• Compare the current and future business culture of using data to higher education

• Create realistic use cases of data for meaningful course improvements
Presentation Outline

Past

Present

Future
Remember When...
Data Informed Changes
Data Informed Changes in Teaching

• Facilitation of Learning/Scaffolding
• Chunking Content
• Flipped Classroom
• Student Centered
• Problem-Based Learning
• Applied Learning
Data Informed Changes in Technology

- Multimedia use
- Simulation
- Augmented Reality
- Virtual Reality
- Personalized learning
- Web-based tools
- Virtual Classrooms
- Extending classroom communities
DIKW Pyramid

Source: Original source unknown, Zins (2007)
Big Data (in Higher Education)
Finding, Understanding, and Using Data
Big Data Today

- Over 2.5 quintillion bytes of data are created every single day
- 90% of the world's data has been created in the last two years
- By 2020, 1.7MB of data will be created every minute for each person

Source: Digital Information World (2018)
The unprecedented explosion of data means that the digital universe will reach **180 zettabytes (180 followed by 21 zeroes)** by 2025. Today, the challenge with data volume is not so much storage as it is how to identify relevant data within gigantic data sets and make good use of it.

**Velocity**

Data is generated at an ever-accelerating pace. The challenge for data scientists is to find ways to collect, process, and make use of huge amounts of data as it comes in.

**Variety**

Data comes in different forms. **Structured** data is that which can be organized neatly within the columns of a database. This type of data is relatively easy to enter, store, query, and analyze. **Unstructured** data is more difficult to sort and extract value from.

Source: University of Wisconsin Data Science, [What is Big Data?](https://www.wisc.edu/data-science/about/what-is-big-data/)
Adoption of Big Data by Industry

Source: Agrawal, V. JaxEnter (2019)
## Challenges Higher Education Faces Around Data

### Culture
- Data intimidation
- Data security risks and integrity
- Perceived sensitivity of data

### Availability
- Availability of useful data that can actually inform
- “Ownership” of data vs distributed to diverse expertise
- Rarely available to faculty/students

### Understanding
- Reigning in big data
- Making sense of the data we do have
- Standard data visualization with insight built in

### Democratization
- No gatekeepers or bottlenecks in access
- Slow to change, no expedited-decision making
- Diverse thinkers breeds innovation/competition
<table>
<thead>
<tr>
<th>Customize Your eLearning Approach</th>
<th>Identify Common Threads</th>
</tr>
</thead>
<tbody>
<tr>
<td>How can data help you change your teaching and use of technology?</td>
<td>How can data help to inform me of common threads over time in my teaching and specific student’s learning?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Keep Goal Oriented</th>
<th>Create a Continual Improvement Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the most important data that I need to be looking at right now for just-in-time teaching?</td>
<td>How can I continue to use data to inform and enhance my teaching?</td>
</tr>
</tbody>
</table>
Ideas We Can Take From Business
Finding Success Through Data Use
Some Businesses Are More Successful Than Others

- “Culture of analytics”
- Allows data to pervade every aspect of their business
- Focus on achievable results
- Customer-focused data and customer-focused decisions
- Agile and open for change
Have a Purpose

• Start with tangible objective
  – Complete and clearly defined plan
  – End users must be part of the analytics strategy from day one
  – Realistic picture of how analytics would/could fit into the applications and processes that end users rely on every day to do their jobs

“Before I write my name on the board, I’ll need to know how you’re planning to use that data.”
Rebuilding From the Ground Up
Link “Insight” to Action

• Focused on solving a business need
• Insight must be predictive in nature and drive action quickly, seamlessly and automatically
• Connects analytics to actual results demands “high resolution” data
• Provides analysis that prompts action
• Must have simple, seamless integration to make it possible
Information Decay and Decision Delay

Source: Dr. Richard Hackathorn of Bolder Technology Inc. (BTI)
Create Feedback Loops

• A strategy is never “done”
  – Analytic climates are always changing as new data sources become available, and as business opportunities, challenges and priorities evolve
  – Focus on a flexible analytics infrastructure to meet a number of diverse requirements across the enterprise and nimble enough to adapt quickly to the needs of the business
Factorized Variational Autoencoders (FVAEs)
Blackboard Tools Providing Data for the User

From Three Business Objectives
1. Have a Purpose
   Intelliboard
2. Link “Insight” to Action
   Blackboard Ally
3. Create Feedback Loops
   Exemplary Course Program
Have a Purpose
Intelliboard
Have a Purpose (1 of 3)

• Complete and clearly defined plan
  – Data to inform better teaching

• Alter online programs to meet growing and changing population
  – Data to look at usage of specific features/tools
  – Data to give to leadership
Have a Purpose (2 of 3)

• End users part of the analytics strategy
  – Buy-in to meet needs for future teaching and learning initiatives
  – Part of a strategy to bring data to the user
  – Bringing useful data to different levels of users that needed/wanted more

• Leadership, instructors, and students
Have a Purpose (3 of 3)

• Realistic picture of how analytics would/could fit into the applications and processes
  – Dashboard for students/instructors
  – Reporting for specific initiatives
• Wellness site for all students (3,000) and employees (16,000)
Link “Insight” to Action
Blackboard Ally
Link “Insight” to Action (1 of 3)

• Drive action quickly, seamlessly and automatically
  – Data and action right in the hands of instructors to make changes
  – Exact issues with exact directions to remediate issues
• Team of 1 able to reach 1,200+ faculty
Link “Insight” to Action (2 of 3)

• Connects analytics to actual results demands “high resolution” data
  – Longitudinal data to share with leadership

• Data from pre-Ally, implementation, and past
  – High sensitivity, high impact for change
Link “Insight” to Action (3 of 3)

• Provides analysis that prompts action
  – Data connected to targeted coaching
• Data on files enhanced by instructors
  – “Go green” campaigns
Create Feedback Loops

Exemplary Course Program
Create Feedback Loops

• A strategy is never “done”

• Analytic climates are always changing

• Flexible analytics infrastructure nimble enough to adapt quickly to the needs of the business
  • Exemplary Course Rubric UPDATES coming soon
  • Exemplary Course Rubric Review Process UPDATES coming soon
The Future of Using Data in Business
Amazon is making a voice-activated wearable device that can recognize human emotions.
Whole Foods – AI-powered Chatbot

- Chatbot for Whole Foods Market
- Features include searching for recipes
- Example interaction:
  - User: What do you have in mind?
  - Chatbot: Mincemeat Cookies
  - Chatbot: A reader came up with this recipe when she wanted to create a holiday cookie fre...
Walmart – Intelligent Retail Lab
Xinhua – Virtual News Anchor
The Future of Using Data in Higher Education
Imagine a world...
What should the future of data at Blackboard look like?
(to impact the ongoing cycle of instructional improvement)
What does the future of data at Blackboard look like?
(to impact the ongoing cycle of instructional improvement)
Don’t forget to rate this session in the BbWorld app.