What is Learning Analytics:
An Introduction for Everyone
Presentation Summary

✓ Introduction to Learning Analytics
  ✓ Basic Terms, Definitions, Processes
✓ Case Studies in Learning Analytics
  1. BMS305 – *the need for better data*
  2. Literatures, Languages, & Cultures *and* McGraw Hill
  3. TILT Faculty Fellows
  4. Analytics Dashboards
✓ Q&A/Discussion
Introduction to Learning Analytics

Analytics: “identifying patterns in data”
Introduction to Learning Analytics

Learning Analytics has been defined as:

“measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimizing learning and the environments in which it occurs.”

Source: Society for Learning Analytics Research (SoLAR)
Learning Analytics as a Process

Student Completes Lesson in Canvas

Activity Data Stored in Database

Instructor Reviews Dashboard

Analytics!
Learning Analytics as a Process

Instructor Uses Information to Help Students and Improve Pedagogy
What does building a learning analytics look like?

- Data Access
- Data Warehousing
- Analysis
- Reporting

Security, Compliance, Institutional Policy, Ethics
Who does Learning Analytics?

- Database Engineer
- Statistician
- Data Analyst/Scientist
- Educational Theorist
- Applications Developer
What is the state of learning analytics?

- Learning analytics is moving from hype and talk of potential to showing pockets of success.
- Many universities do not have the technical infrastructure or the resources (money and people) to build learning analytics on their own.
- Third parties promise to host and deliver learning analytics for universities (e.g., Educational Advisory Board, Civitas, B&N LoudCloud, Blackboard, Pearson, McGraw Hill, Saba, and many others).
- Technology that underlies analytics has gotten better and faster.
- Digital learning tools are more responsive and powerful—and they are delivering better data.
What is the state of learning analytics at CSU?

- President Frank’s 2020 Strategic Plan
- Provost Miranda approves Pat Burn’s “An Institutional Framework for Learning Analytics” in Summer of 2015, creating the Learning Analytics Working Group and Learning Analytics Steering Committee
- CSU has formed partnerships: Educational Advisory Board, Unizin, McGraw Hill, and B&N LoudCloud
- IR, TILT, R&A, and C-ALT are actively pursuing projects to build analytics capacity:
Analytics in Four *Directions*

- BMS 305 – *Early TILT Assessment*
- Literatures, Languages, & Cultures and McGraw Hill Learning Sciences
- TILT Faculty Fellows Study: Online Economics Courses (2017-18)
- Dashboards and Data-Informed Pedagogy
Biomedical Sciences 305, Domestic Animal Anatomy

- Three hours lecture & two hours lab per week
- Material scaffolds within each unit – students cannot fall behind
- Flipped/hybrid model
- Available resources:
  - Virtual Anatomy Software
  - Video and Written “Tours”

Who are the students?
- 50% are pre-professional in veterinary medicine
- Most are BMS majors or have a BMS minor
- Sophomores, Juniors, and Seniors
- Driven, engaged
Biomedical Sciences 305, Domestic Animal Anatomy

- TILT Provost’s Course Re-Design, Spring 2014
- **Thirteen** digital learning tools

**Challenge:**
What’s working?

- Organization
- Clarity and Communication
- Varied Learning Resources
- Motivation
- Self-Efficacy
- Academic Challenge
- Use of Interactive Learning Objects
- Engagement
- Time-On-Task
- Critical thinking
**What resources helped you learn? (Scaled/Ranked response/Likert-Type)**

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How many hours/week did you spend on assignments, readings, studying, etc.?

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Which majors perform best?
How good was our assessment? (Only so good, really . . .)

• Organization
• Clarity and Communication
• Varied Learning Resources
• Motivation
• Self-Efficacy
• Academic Challenge
• Use of Interactive Learning Objects
• Engagement
• Time-On-Task
• Critical thinking

• Self-Report Data
  • Levels of unreliability

• Manual data work – definitely not scalable
1. Label the parts of the cell that interact with the Golgi apparatus.

- Transport vesicle
- Nucleus
- Trans face
- Golgi apparatus
- Secretion
- Saccules
- Transport vesicles
- Cis face
On the trunk of the body, a structure that is located below another (closer to the feet) is said to be _____ to it.

Click the correct answer

- superior
- deep
- inferior
- medial

Do you know the answer?

I KNOW IT  THINK SO  UNSURE  NO IDEA
McGraw-Hill Research Collaborative, Spring 2017

- Literatures, Languages & Cultures (1st-year courses in German, Spanish, and French)
- Principles of Economics 202 (online and residential)

Project 1: Retention Analytics for LLC (predicting stop-outs and drop-outs)

Project 2: How can engagement data be connected to metacognitive factors such as motivation, self-direction, and self-regulation?
Karen Gebhardt’s Study: Measuring Learning-Related Behaviors in Online Economics Courses

- Courses enroll over 900 students
- Courses use robust set of online tools
  - Canvas
  - McGraw-Hill’s adaptive learning platform
  - Pearson’s MyEconLab
  - YouSeeU
  - Echo360
Provost’s Faculty Fellows Study: Online Learning Behaviors

Study Goals:

• Identify student behaviors in online learning tools that predict academic success
• Develop and test interventions with students expected to struggle
• Track online learning behaviors to target interventions to students needing them (online and F2F Economics courses)
• Consider implications for courses in other disciplines
**Goal:** Faculty Interactive Analytics Dashboards

![Dashboard Image]

**Student Risk Analysis**

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<th>Composite Risk Score</th>
<th>Performance Risk Score</th>
<th>Participation Risk Score</th>
<th>Cohort Risk Score</th>
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<td>Miles Davidson</td>
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<td>Shirley Temples</td>
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<td>Amber Ambrosia</td>
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<td>Michael Quicksilver</td>
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<td>87</td>
<td>73</td>
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<td>Alexandra Driscotte</td>
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<td>Olivia Kendra</td>
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<td>0</td>
<td>70</td>
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**Missed Due Dates**

**Cumulative Score < 75%**

- **All**: [Dropdown]
- **Last Two**: [Dropdown]
- **Current Score**: [Dropdown]
When do students do the majority of their reading?
Questions & Discussion
Thank you!

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PDI Analytics Series

Analytics Part 2: Ethics & Learning Analytics,
LSC 304-06, Tues., 9:45 – 11:45 am

Analytics Part 3: Unizin Initiatives,
LSC 300, Wed., 1 – 2 pm