Welcome to our 5th annual UW TechConnect Conference

Key points to remember:

> Networking event starts at 3:45 in the HUB Ballroom
> Use uwtechconnect to connect on social
> Be sure to check-in with your Husky Card
Strategic Approach to Using and Protecting Student Data:
“Ignite-Style” Presentations

Moderator: Zane Kelly
Improving Student Experience Through Data-Informed Choices

Sridhar Komandur, PhD
Student Information Systems UW-IT

UNIVERSITY of WASHINGTON
Why Data-Informed Strategy?

> Data-Informed Vs Data-Driven
The Fear of Machine Learning/AI!

Source: YouTube/Human Vs Porsche Turbo S Drag Race!
Why Data-Informed Strategy?

REVERSE ENGINEERING THE BRAIN: RECONSTRUCTING NEURAL CIRCUITS
*Jeff Dean, Google at Strata Data Conference, Mar 8, 2018

Metric: Expected Run Length (ERL)
"mean microns between failure" of automated neuron tracing
Why Data-Informed Strategy?
Why Data-Informed Strategy?

Data-Informed Vs Data-Driven

.... Big Data powered ML blurs the distinction between quantitative and qualitative decision making
Why Data-Informed Strategy?

> *Bayesian inference* is widely recognized as the perfect inference /guessing engine ... bedrock of many machine learning techniques
Why Data-Informed Strategy?
Why Data-Informed Strategy?

> Data-Informed Vs Data-Driven

.... Data aids qualitative decision making

.... Big Data driven ML may gradually close the gap between quantitative and qualitative decision making
The overall goal of Student Program Analytics is to enhance Students’ UW academic experience:

- Create tools for Advisor community to effectively help students
- Support admins/staff with institutional analytics
- Make data insights helpful to students available as appropriate
- Enable *data-informed* decisions in the Student Program (planning, design, operations)

Value will be delivered in an incremental fashion, working closely with our business partners.
Based on our interaction with our partners, our analytics effort can be broadly classified into the following categories.

– Advisor Analytics
– Institutional Analytics
– Student Analytics
Example 1

Data-Informed Design: Course Search

Areas of Knowledge
Example 1
Data-Informed Design: Course Search

Top 10 Searches (2017)
Example 2
Data-Informed Enrollment Planning
Example 3
Data-Informed Design: Plan Creation

Cohort Engagement Tracking
Example 4 Data-Informed Registration Experience Design
Example 5  Data-Informed Registration Experience Design

Spring/Summer QTR Time Schedule Published
Example 6  Data–Informed Registration Experience Design

SPR QTR REG IN PROGRESS
Example 7 Data-Informed Registration Experience Design

Source: Webstats Data for the entire 2017

<table>
<thead>
<tr>
<th>Code</th>
<th>Freq</th>
<th>Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>108998</td>
<td>1578924</td>
<td>&quot;Schedule not updated. Resolve errors listed below and resubmit.&quot;</td>
</tr>
<tr>
<td>108000</td>
<td>60375</td>
<td>&quot;No changes were made to your schedule.&quot;</td>
</tr>
<tr>
<td>108033</td>
<td>47295</td>
<td>&quot;Your registration period has not started.&quot;</td>
</tr>
<tr>
<td>108035</td>
<td>38107</td>
<td>&quot;trigger displayAddress&quot;</td>
</tr>
<tr>
<td>108018</td>
<td>31314</td>
<td>&quot;(voter registration notice)&quot;</td>
</tr>
<tr>
<td>108085</td>
<td>21964</td>
<td>&quot;Over credit limit: Your request cannot be processed because it would</td>
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<tr>
<td></td>
<td></td>
<td>take you over the maximum credits allowed during this registration period:</td>
</tr>
<tr>
<td>108034</td>
<td>16600</td>
<td>&quot;Your registration period has not started.&quot;</td>
</tr>
<tr>
<td>108025</td>
<td>9160</td>
<td>&quot;You may not register before your Orientation day or your advising</td>
</tr>
<tr>
<td></td>
<td></td>
<td>and registration appointment day.&quot;</td>
</tr>
<tr>
<td>108083</td>
<td>8101</td>
<td>&quot;Registration Capacity Reached&quot;</td>
</tr>
<tr>
<td>108005</td>
<td>6231</td>
<td>&quot;Due to excessive use of system resources your access to the Registration service has been disabled.&quot;</td>
</tr>
<tr>
<td>108006</td>
<td>3306</td>
<td>&quot;Registration has not started.&quot;</td>
</tr>
<tr>
<td>108288</td>
<td>2802</td>
<td>&quot;You have an administrative hold on your record which must be removed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>before you may add courses to your schedule. However, you may drop</td>
</tr>
<tr>
<td>108024</td>
<td>2798</td>
<td>&quot;Immunization for measles is required before you can register.&quot;</td>
</tr>
<tr>
<td>108022</td>
<td>1770</td>
<td>&quot;You are not eligible to register using this service.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Contact the office of your major program for registration information.&quot;</td>
</tr>
<tr>
<td>108287</td>
<td>1687</td>
<td>&quot;You have an administrative hold on your record which must be removed</td>
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<tr>
<td></td>
<td></td>
<td>before you may register.&quot;</td>
</tr>
</tbody>
</table>

TODOs/Follow-ups work being tracked as part of BA/UX/Data Scientist collaboration framework in place

Key metric to measure RegXP success!
Upcoming: Course Demand Through MyPlan

> Students would benefit a lot from knowing which courses fill-up fast

- Students and Advisors can work together in coming up with backup course options
- Raise visibility for taking appropriate steps
- Help navigate Program path better
How Do I Engage?

> What data analytics could help you become effective?
> Any other comments/thoughts?

Feedback on Student Program Analytics
Thank You
Surfacing Insight from Unused Institutional Data: A User-Centered Approach

Henry Lyle & Tom Lewis

UNIVERSITY of WASHINGTON
Unused Institutional Data
Academic Experience Design & Delivery

User Centered, Data-Driven & Iterative
Student Success & Retention
What is a student’s intended major?

What are admission outcomes for capacity constrained courses?

What are the happy paths to a degree?

When does a student need a lifeguard?

Is there grading consistency?

Is there course to degree correlation?

What are the schedule dependencies?

Are there toxic course mixes?

What are the bottleneck courses?

What are the degree exceptions?

Are retention policies effective?

Degree nudges!
Our approach

> Research and business analysis

> Data science

> Application development

> Implementation and service management
Improving Academic Pathways
> Student experience research
  > The apply-reject loop

> Impact on student success
  > Retention and student success

> How can we support students?
  > Transparency; help develop a back-up plan
Pivot

> A homegrown tool for academic advisers
Instructor experience research

> Challenges
  - Engaging students
  - Teaching a new course and course prep
  - Assessment
Course Dashboard

> A homegrown tool embedded in MyUW to help improve teaching and learning <Go>
Learning Records Store
Black lines are data that's encrypted in transit.
Red lines are data that's "not" encrypted in transit.

Data in the RDS is encrypted at rest.
Data in the SQS queue is "not" encrypted at rest.
Questions?

Contact us at:

lyle3@uw.edu
tomlewis@uw.edu
View Major GPAs

Select a college to view all of its majors OR enter the name of a major to view its median GPA.

Enter: e.g. Computer Science, Art History

Showing median cumulative GPAs of...

<table>
<thead>
<tr>
<th>College of Engineering - Seattle</th>
<th>Median GPA</th>
<th>Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Science</td>
<td>3.80</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The Information School - Seattle</th>
<th>Median GPA</th>
<th>Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informatics</td>
<td>3.42</td>
<td></td>
</tr>
</tbody>
</table>

> View most commonly taken courses in this major

W
View Course GPAs

Enter a major name to view most commonly taken courses among declared students.

[Search field for major name]

Most commonly taken courses among students who declared

Informatics

<table>
<thead>
<tr>
<th>%</th>
<th>Code</th>
<th>Most Commonly Taken Courses</th>
<th>Median Course Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>92%</td>
<td>INFO 201</td>
<td>Intellectual Foundations of Informatics</td>
<td>3.00</td>
</tr>
<tr>
<td>89%</td>
<td>CSE 143</td>
<td>Computer Programming I</td>
<td>3.30</td>
</tr>
<tr>
<td>83%</td>
<td>CSE 143</td>
<td>Computer Programming II</td>
<td>3.00</td>
</tr>
<tr>
<td>61%</td>
<td>MATH 126</td>
<td>Calculus with Analytic Geometry II</td>
<td>3.00</td>
</tr>
<tr>
<td>50%</td>
<td>MATH 125</td>
<td>Calculus with Analytic Geometry III</td>
<td>2.90</td>
</tr>
<tr>
<td>40%</td>
<td>PHYS 121</td>
<td>Mechanics</td>
<td>3.00</td>
</tr>
<tr>
<td>40%</td>
<td>ENGL 131</td>
<td>Composition: Exposition</td>
<td>3.70</td>
</tr>
<tr>
<td>40%</td>
<td>INFO 380</td>
<td>User-Centered Design</td>
<td>3.60</td>
</tr>
<tr>
<td>40%</td>
<td>PSYCH 101</td>
<td>Introduction to Psychology</td>
<td>3.50</td>
</tr>
</tbody>
</table>
Course Dashboard - Winter 2018
BIOL 118 A

Survey of Physiology

Current Quarter Data for BIOL 118 A
- Median Cumulative GPA: 3.27
- Currently Registered: 341/345
- Repeating Students: 0

Concurrent Courses
- 23% BIOL-119
- 8% PSYCH-101
- 6% PSYCH-210
- 6% CHEM-220
- 5% PSYCH-202
- 4% STAT-220
- 4% PSYCH-209
- 4% NURS-201
- 4% NUTR-200
- 3% PSYCH-322

Declared Majors
- 27% pre science
- 12% pre major (a&b)
- 11% pre nursing
- 10% pre social science
- 10% psychology
- 8% pre health sciences
- 4% pre engineering
- 3% extended pre major
- 3% pre public health
- 2% biochemistry

Historical Student Data for BIOL 118 A
- Median Course Grade: 3.10
- Students / 20 Offerings: 5509
- Percent Failure: 2%

Declared Majors
- (when taking the course)
  - 13% pre science
  - 12% pre nursing
  - 12% psychology
  - 7% pre major (a&b)
  - 6% pre health sciences
  - 4% pre social science
  - 3% biochemistry
  - 2% extended pre major
  - 2% public health
  - 2% pre engineering

Declared Majors
- (upon graduation)
  - 15% psychology
  - 5% public health
  - 4% biochemistry
  - 3% biology (general)
  - 2% anth med anth & glob hl
  - 2% sociology
  - 2% early child & family st
  - 2% biology (physiology)
  - 2% communication
  - 1% nursing
Thank You
Integrating with the UW Canvas LMS

William Li, Sr. Security Advisor, UW-IT
Ann Nagel, UW Privacy Official, ASA
Karin Roberts, Canvas Service Manager, UW-IT AXDD

UNIVERSITY of WASHINGTON
Overview

- In 2012 we adopted a central, elearning platform that had the capability to integrate with educational technology vendor systems
- Overtime, we recognized the need to strengthen student privacy protections, with a scalable, systematic approach
- In 2017, we developed a new, comprehensive approach that balanced security and privacy concerns with support for teaching practices

We will describe the approach, and offer some takeaways for vendor selection.
Canvas Adoption 2012 – 2017

Dashboard

Number of courses using Canvas over time

Percentage of courses using Canvas over time

Quarter

Campus

Dashboard

Inbox

Help
Canvas eLearning platform: a strategic choice

Minimum requirements
- Strong Feature Set
- Good user experience
- Stable hosted infrastructure (AWS)
- Attractive total cost of ownership

Distinguishing attributes
- Vendor’s product vision is to support teaching and learning
- Alignment with UW values:
  > An active community member striving to further educational technology
  > Easy integration with other vendor systems - an overall commitment to openness
What is LTI?

IMS GLOBAL Learning Consortium
Better Learning From Better Learning Technology

LTI® Advantage
Provide the best user experiences with your teaching and learning solutions.

How Does IMS Enable Better Digital Learning Experiences?
App Center: One-Click Integration with Canvas

Pearson

Pearson offers integration between Canvas and its MyLab and Mastering products...

SmartEvals

SmartEvals provides course evaluations, retention and learning outcome tools with...

Examity

Examity
Remote proctoring.

Dropout Detective

Dropout Detective™ identifies students that are most at risk of dropping out of or failing courses.

Instructure Launches App Center To Let Teachers, Students Install Third-Party Apps Across Learning Platforms
Canvas content is sensitive

> LTI enables access to
  > Personal identifiers
    > Name, email, RegID
  > Membership in class
  > Grades on assignments
  > Instructor feedback
> Raises FERPA compliance issues
Problem Statement for LTI Integrations with UW Canvas

> Too much of a good thing?
  – Since launch in 2012 over 25,000 LTI tools added to courses at UW
  – For 2-year period from Au 2016 - Wi 2018 -- 4776 vendor LTI tools

> So what?
  – Broad sharing and use of data with no written understanding between vendor and UW
  – Working with vendors to set up integrations for individual courses isn’t scalable or flexible
  – Inconsistent contractual protections for faculty and student data
Data Security & Privacy Agreement, Standard Contract

**Goal:**
- Expedite contract negotiations with vendors in order to meet UW learning needs, create efficiencies for instructors
- Get as many vendors as possible on board
- Create a scalable solution

**Solution: LTI Proforma Contract for Data Security and Privacy**
- Enterprise-wide agreement with each vendor for all UW
- Reasonable and pragmatic information security terms
Solution -- Vendor Program

UW LMS Vendor Integration Program

Canvas supports LTI (Learning Tools Interoperability®), an IMS standard that makes it possible to integrate third-party or vendor tools with your Canvas course, or enhance the course with other Web applications and Internet resources.

The vendors listed below have enrolled in UW-IT’s Vendor Integration Program. This means they have signed a pro forma contract and data security and privacy agreement with UW, which protects the privacy of any student data exchanged with the vendor’s systems.
Comprehensive approach

Canvas LMS: Integration, Development, and Data Access

The Canvas learning management serves as a platform to support integration between teaching and learning tools and systems. Canvas supports integration through three methods:

- **Learning Tools Interoperability (LTI)** is a standard that enables integration of third-party or vendor tools with your Canvas course, or allows you to enhance the course with other Web applications and Internet resources.
- **Developer Keys** provide developers the ability to build an application that can access the Canvas API as the user (e.g., the student or the teacher).
- **API Access Tokens** can be used to programmatically access the API.

Follow the links to learn more about these methods, and the process of obtaining access to Canvas.
Goal: Inform UW units and employees of responsibilities with Canvas data

Solution: Internal data sharing MOU

Memorandum of Understanding for Internal Data Sharing via Canvas API Access

1. Overview

1.1. This is the University of Washington [University] interdepartmental Data Sharing Memorandum of Understanding (MOU) between UW-IT Academic Experience Design and Delivery (AXDD) and [Data Consumer] that addresses data sharing, within the University, via the Application Program Interface (API) for AXDD’s central academic learning management platform.
Personal API Tokens

> Goal: Educate user of best practices for leveraging technology and protecting data

> Solution:
- Customized text on token form
- Annual notification to remind users
- Deleting tokens that aren’t needed
Guidance for faculty (in progress)

- **Goal:** Assist faculty in adoption educational technology tools that don’t provide LTI integration with Canvas

- **Solution (in progress):** Provide best practices
  - Align with goals for LTI Proforma Contract and Internal Data Sharing
  - Evaluate risk for faculty IP and student data
  - Consistent principles for protecting data
  - Gain efficiency so faculty don’t have to reinvent the wheel
Takeways for Vendor Selection

- Functionality of product
- Alignment with UW values
- Protection of student and faculty data
- Use of standard agreement and guidelines

We’re here to help -- contact us
Canvas content is sensitive

> LTI enables access to
  > Personal identifiers
    > Name, email, RegID
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Thank You