Using Student Feedback in Analytics Frameworks to Improve Teaching and Learning: The Dalhousie Journey

Brad Wuetherick
Executive Director, Learning and Teaching
I would like to begin by acknowledging that the land on which we gather here in Illinois is the ancestral lands of the Peoria, Kaskaskia, Piankashaw, Wea, Miami, Mascoutin, Odawa, Sauk, Mesquaki, Kickapoo, Potawatomi, Ojibwe, and Chickasaw Nations. (from the University of Illinois System)
Dalhousie University

Halifax, NS, Canada
Medical-Doctoral Research (member of U15)
19,000+ students (~15,000 undergrad)
~1100 faculty + ~300 part-time academics
13 faculties -- 180+ degree programs
Dalhousie University

Student Evaluations on campus (average term)

Courses evaluated:
2300 course-instructor combinations

Invited:
~70,000 forms

Responses:
~30,000 completed
When we create a culture of feedback, they send a strong signal to students that they care about their point of view, while also creating opportunities to model how to productively receive and respond to feedback.

So what is the role of analytics in this process?
1. Creating an Analytics Framework for your Campus:
Academic Analytics
(as an aspect of Learning Analytics)

A plethora of data about learners
+ Tools to analyse, cluster, model and predict
Deeper personalized information about learners
How are Academic Analytics being used?

- Improve administrative data for strategic enrolment management
- Provide personalized support, inform holistic advising and early alerts initiatives
- Improve quality of communication between learners, teachers, and advisors.
- Guide and inform course and program design
- Improve quality and accuracy of student assessment & program evaluation
Why Academic Analytics?

• Increased focus on retention and student success (Campbell, DeBlois, and Oblinger, 2007).
  • what motivates institutions?

• Focus on desire for understanding, developing and sustaining a high quality education to help students towards their individual goals and ambitions

• Focus on practical realities that retention and student success impacts - rankings, reputation, recruitment, and revenues
Ethics and the Privacy of Data

• Knowledge of student risk factors can result in bias (even if unintentional) from advisors, instructors, etc.
• Profiling can be discriminatory and prejudicial
• Students have a right to keep personal information private – and a right to be given appropriate notice about the use of their data for institutional purposes
• BUT ... Institutions have an ethical responsibility to act in the best interest of students based on the data they gather
Academic Analytics

- Understanding the data about our students and faculty is only useful if we use that information to make better decisions about how we design learning experiences, support students, and support faculty/instructors/academic leaders.

- Who should have access to the data?
- Under what conditions?
Faculty Perceptions of Academic Analytics

• several studies report faculty skepticism and uncertainty about using such data to inform changes to teaching, learning, and curriculum practices (Andrade, 2011; Dykoff, 2011; Parry, 2012)
  • Uncertain about the motivation behind the initiative
  • Concerns about ethics and privacy
  • Data literacy
  • Complex to understand, and requires changes in faculty behaviour
Ethics and Academic Analytics

Needs of the Learner

‘Balanced’ Approach to Academic Analytics

Needs of the Institution*

Students’ rights to privacy

Institution’s responsibility to act
June 3, 2014 | presented by Jane Smith

PRESENTATION TITLE

'Balanced' Approach to Academic Analytics

Needs of the Learner

Students’ rights to privacy

Institution’s responsibility to act

Needs of the Institution*

Vendor Interests*

Ethics and Academic Analytics

Needs of the Institution*
## Academic Analytics – Required Steps

<table>
<thead>
<tr>
<th><strong>DATA ACCESS</strong></th>
<th>THE POLICY FRAMEWORK AROUND ETHICAL ACCESS AND USE OF ANALYTICS DATA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DATA VERIFICATION</strong></td>
<td>ENSURING APPROPRIATE DATA STANDARDS ARE IN PLACE ACROSS INSTITUTIONAL DATA SETS</td>
</tr>
<tr>
<td><strong>DATA INTEGRATION</strong></td>
<td>BRINGING TOGETHER DISPARATE INSTITUTIONAL DATA INTO COMMON DATA SET</td>
</tr>
<tr>
<td><strong>DATA ANALYSIS</strong></td>
<td>ANALYZING DATA APPROPRIATELY AND EFFECTIVELY (INCL. PREDICTIVE MODEL)</td>
</tr>
<tr>
<td><strong>DATA SUPPORT</strong></td>
<td>PROVIDING THE RIGHT SUPPORT FRAMEWORK FOR THE EFFECTIVE USE OF DATA</td>
</tr>
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</table>
2. Using Analytics with Student Feedback to Improve Teaching and Learning
Understanding Your Data – What Matters:

Internal consistency in the questionnaire? (looking at the likelihood of impacting the overall question)

1. Stimulated Learning – 3.61x
2. Organization – 2.05x
3. Communication – 3.06x
4. Enthusiasm – not a significant predictor
5. Fairness – 3.21x
6. Feedback – 2.09x
7. Concern for Student – 1.69x
8. Overall
Understanding Your Data – What Matters:

1. Instructor Demographics – Rank (Assistant Prof – probationary tenure track), Age (below 30 and above 50), Education level
2. Course Characteristics – Winter/Summer; Grad vs Undergrad; class size
3. Student Demographics - International Students; Gender; Discipline (almost all high compared to Arts and Science)
4. Student Grades – C+ or above (high) vs C and below (low)
5. Term/Cumulative GPA (higher GPA rates lower – ie. more discerning)
6. Students’ previous ratings – 3 or lower (low) vs 3.5 or higher (high)*

☆ Note: Neither gender of instructor, nor whether an instructor was racialized is significant in this model
Understanding Retention at Dalhousie

Remembering that the vast majority of Dalhousie’s students are successful, we explored:

• **Retention patterns:** Who is leaving?

• **Retention Analysis:** Who is at the highest risk of leaving?

• **Retention Analysis:** Why do students leave? What are the common characteristics of students who leave?

• **Predictive Modelling:** What have we learned to help us support potentially ‘at-risk’ incoming students?
Student Evaluations and Retention:

• Part of a larger academic analytics initiative to support our understanding of student retention

• Added four variables to our retention model
  1. Low SRI Course (below 3.5) – (1.3x more likely to leave)
  2. Net Promoter – (3x more likely to stay)
  3. Net Demoter – (1.7x more likely to leave)
  4. Students who don’t fill out SRI - (3x more likely to stay)
Student Evaluations and Retention:

- Changed our overall retention model
  1. Risky courses (DFW) – Protective** (1.8x less)
  2. Residence – Protective (~10x less)
  3. Nonlocal – Risky** (3.4x more)
  4. Rural – Risky (1.3x more)
  5. Region (Province) -- Risky/Protective**
  6. Loan – Risky (1.3x more)
  7. Accept-Reject – Risky** (1.5x more)
  8. Low Fall GPA (below 2.0) – Risky (2.9x more)
  9. Low Fall GPA (below 1.0) – Risky (>10x more)
Student Evaluations and Retention:

- Low DFW Rate
  - Average to High SRIs
    - Highly Protective

- Low DFW Rate
  - Low SRIs
    - Slightly Protective

- High DFW Rate
  - Average to High SRIs
    - Very Risky
Student Evaluations and Retention:

- **Local**
  - Average to High SRIs: Highly Protective
  - Low SRIs: Slightly Protective
- **Non-local**
  - Average to High SRIs: Slightly Protective
  - Low SRIs: Very Risky
Student Evaluations and Retention:

- **No Accept-Reject**
  - Average to High SRIs: Highly Protective

- **No Accept Reject**
  - Low SRIs: Slightly Risky

- **Accept-Reject**
  - Average to High SRIs: Very Risky
  - Low SRIs: Very Risky
So What?

Two example interventions based on this analysis:

• Paying attention to who is teaching first year courses – particularly if they are historically difficult (High DFW)

• Trying to enhance the ‘stickiness’ of non-residence, non-local students
Text Analytics at Dalhousie

BTA Introduced in summer 2015

- Three qualitative questions
  - Positive
  - Negative
  - Open-ended

- Before implemented did an investigation into the accuracy of the BTA analysis
- High satisfaction with the accuracy of the first question
- Tested BTA reporting with administrative users (Department Head/Dean) - asked for feedback on the value of the reporting

The accuracy of the analysis of all three varied based on question asked
Blue Text Analytics

Attributes
- Relevant, Helpful, Difficult, Engaging, Expensive ...

Elements
- Students, Professors, Subject Matter, Technology, ...

Alerts
- Suicide, Racism, Sexism, Aggression ...

Sentiment
- Positive, Negative

Cross-Tabulations; Gap Analysis; Potential Issues ...
# Department/Faculty Level Reports

<table>
<thead>
<tr>
<th>Attributes [No. of comments]</th>
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<th>Faculty [3518]</th>
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![Bar chart showing gap analysis for different attributes across institutions]
Department/Faculty Level Reports

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Below Faculty Percentage Above Faculty Percentage
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Department/Faculty Level Reports

QUANTITY
- Faculty
- Dalhousie

PACE
- Faculty
- Dalhousie

TIME_ISSUES
- Faculty
- Dalhousie

VOICE_ISSUES
- Faculty
- Dalhousie

WORKLOAD
- Faculty
- Dalhousie

KIND / PERSONABLE
CLEAR
IMPORTANT / RELEVANT
ENJOYABLE
ENGAGING

Gap 2.52%
Gap 1.68%
p -0.09%

Below Faculty Percentage
Above Faculty Percentage
Alerts

Immediately after the close of the evaluation period, run the BTA for Alerts as part of overall institutional mental health strategy

- Looking for alerts associated with suicide, aggression, or other potential student-in-crisis signs
Other Possible Uses for BTA

• Instructor-level reporting (particularly over time)
• Alerts for potentially harmful comments (our policy allows for the deletion of harmful – racist, sexist – comments)
• Other qualitative data sets for surveys (other evaluation projects) on campus
3. Moving Forward Analytics with Student Feedback
Importance of Data Visualization

- Visualization – Data is only useful if we can support faculty data literacy (particularly through intuitive data visualization)

From UBC CTLT:
Importance of Data Support

- Support – The people who support academic leaders and faculty need to be ready to understand and interpret data.
Academic Analytics

Lead for Academic Analytics

Institutional Research Office
Academic Analytics

Lead for Analytics

Institutional Research Office

Student Affairs
(Registrar, Advising, Student Life, etc)
Academic Analytics

Lead for Analytics

Institutional Research Office

Student Affairs (Registrar, Advising, Student Life, etc)

Centre for Learning and Teaching
Academic Analytics

Lead for Analytics

Institutional Research Office

Academic Units

Faculty and Instructors

Students

Student Affairs (Registrar, Advising, Student Life, etc)

Centre for Learning and Teaching
Providing the Appropriate Supports

- For academic and administrative leaders
- For faculty
- For other professionals on campus (student affairs, etc.)
- For the students themselves

- For institutional researchers and educational developers (and other expected support roles)

Are we ready to do this?
Questions

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