Learning analytics in universities
The narrative of developing learning analytics at one UK University – lessons learned

The University of Wolverhampton
Learning analytics

‘the collection, analysis, use and appropriate dissemination of student-generated, actionable data with the purpose of creating appropriate cognitive, administrative and effective support for learners.’

(Slade and Prinsloo, 2013)
Attendance and engagement

2009 - 2010 key issues identified within one area of applied sciences – students’ activity changes – fewer attending and this was seen to be associated with lower achievement.

3 data areas were ‘mined’:
1. VLE usage and 2. Library usage 3. Student attainment
Findings

Students who frequently engaged with the library linked to good attainment but students who engaged very frequently with the VLE were likely to have lower attainment and this established that patterns of activity might be used as predictors.

Using the student database and the data from the library (Talis) with access to the activity logs of the VLE (bespoke system – the Wolverhampton Online Learning Framework) WOLF we developed with Tribal – the student learning analytics software – now known as Student Insight.
Partnership with Tribal

The software was built using the data warehouses within the University (inclusive of the student management system). This led to the focus on student achievement and prediction of future success – the planned use for the software was with students and their personal tutors.

Personal tutoring is defined as group or individual guidance given to students by academic staff, with a focus on personal and academic development and progression on their overall programme of study.
Factors affecting student success and proxy measures of these (Tribal)

- Academic Integration
  - Module results
- Circumstances
  - Social background
  - Proximity
  - Student debt
- Social Integration
  - VLE and Library activity
  - Engagement
  - Forum/societies interaction
  - Social networks
- Preparation for HE
  - Demographics
  - Qualifications
# Student Insight (Tribal)

## Focus areas

<table>
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<tr>
<th>Category</th>
<th>Analytical Areas</th>
<th>Benefits</th>
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| **1. Academic performance** | • Student module academic performance risk  
• Understand factors affecting academic performance | Improve student grades and drive overall degree success                   |
| **2. Retention**       | • Student course withdrawal risk  
• Understand factors affecting retention | Increase retention for first year students                                |
| **3. Intervention**    | • Pinpoint issues much earlier  
• Target interventions  
• Strategic intervention planning | Target interventions on the right students                               |
| **4. Cohort monitoring** | • Monitor risk for different cohorts of students  
• Compare history, actual and predicted outcomes  
• Help plan intervention strategies | Identify cohorts of students at risk                                     |
| **5. Engagement**      | • Understand student patterns of engagement  
• Identify students showing poor levels of engagement | Improve student engagement                                               |
Tribal Student Insight: key features

- Data/Integration
- Predictive modelling
- Institution structure
- Administration
- Intervention
- Open API*

- Learns patterns in student and activity data
- Provides transparent predictions to help understand underlying issues
- Customisable models can be adapted to suit institution characteristics and data

*Application process interface
Benefits of Student Insight (Tribal)

1. Fully utilise student data resources
2. Identify student cohorts at risk
3. Understand what factors affect outcomes
4. Identify students with poor engagement
5. More strategic and targeted intervention
Selfie time

Increased focus on institutional self-study post 2010
Our student body changing – commuters, very diverse, from wide range of backgrounds – traditional school and local college – mix of entry qualifications and family engagement in higher education
Re-focus on the current and future generation of students

What will our students need, what does our data tell us, what do our students tell us, what activities are changing and what seem stable?
How will our students benefit from our investment in learning analytics?
What are the most appropriate software and products available?
What will our students and staff be satisfied with?
Developing a strategic ethical framework for the use of learning analytics in one university

Move to consider all types of analytics possibilities – we moved away from the development of Student Insight – staff consultation indicated unease ethically with the use of student data solely for the purpose of predicting achievement.

Co-incidentally, bi-annual review of all student life-cycle data started to reveal specific issues that might be helped with the use of learning analytics.
‘the role of power, the impact of surveillance, the need for transparency and an acknowledgment that student identity is a transient, temporal and context-bound construct.’

1. The location and interpretation of data
2. Informed consent, privacy and the de-identification of data
3. The management, classification and storage of data

Ethical considerations

- **Type of data** - principles for collection and use.
- **Education mission** - underlying issues of learning management, including social and performance engineering.
- **Motivation for development of analytics** – combination of corporate, individual and general good.
- **Customer expectation** – effective business practice, social data expectations, cultural considerations of a global customer base.
- **Obligation to act** – duty of care arising from knowledge and the challenges of student and employee performance management; this applies to things a student or employee may wish action to be taken on, and equally to things they may not. For example, a claim by a failed student that the institution should, through analytics, have predicted failure and therefore taken remedial action.

JISC CETIS Analytics Series: Vol.1 No.6 Legal, Risk and Ethical Aspects and Analytics
The framework for using learning analytics

- Student profile
- External landscape
- Internal landscape
- Student achievement
External landscape

- Availability of analytics products
- Focus of analytics software: Improving retention, achievement, employability and personalising learning
- Collaboration – JISC
- Global, national and regional student voice (NUS)
- Global and national political determination of employment and higher education policy
- Regional and national job market for graduates
Internal landscape use of the data provided through analytics

- University mission and strategic goals
- Strategic approach to learning and teaching
- Systems alignment and integration of analytics product(s)
- Student support mechanisms - people
- Unintended consequences – reduced contact
- Learning gain
- Perverse activity patterns – playing the system
Student profile

What do our students want and what do we think they need?
Conclusions - principles

- Learning analytics should function primarily as a moral practice resulting in understanding rather than measuring (Reeves, 2011).
- **Students as agents**: learning analytics should engage students as collaborators and not as mere recipients of interventions and services (Buchanan, 2012; Kruse & Pongsajapan, 2012).
- Student identity and performance are temporal dynamic constructs - learning analytics provides a snapshot view of a learner at a particular time and context.
- Student success is a complex and multidimensional phenomenon our data is incomplete (e.g., Booth 2012; Mayer-Schönberger, 2009; Richardson, 2012a, 2012b), “dirty” (Whitmer et al, 2012) and our analyses vulnerable to misinterpretation and bias (Bienkowski et al 2012; Campbell et al, 2007; May, 2007).
- Analytics should be transparent regarding the purposes for which data will be used, under which conditions, who will have access to data and the measures through which individuals’ identity will be protected.
- Higher education institutions cannot afford to not use learning analytics.

Based on the work of Slade and Prinsloo (2013)
Generation selfie!

An instant visual communication of where we are, what we’re doing, who we think we are, and who we think is watching.

Selfies have changed aspects of social interaction, body language, self-awareness, privacy, and humor, altering temporality, irony, and public behavior (Saltz 2014).
Use of learning analytics in universities with the selfie generation

‘The real problem here is that statistical probability within a matrix of academic prediction can have massive consequences for institutions and individual students alike.’ (Willis, 2013)

To avoid the worst of negative consequences we will:

- Keep our students in the centre of the frame: Partnership and collaboration
- Embrace student self(ie !)-agency: Informed opt-in
- Develop, procure and implement learning analytics to suit the needs and aspirations of our students

http://docs.lib.purdue.edu/idcpubs/1
QUESTIONS?
EMEA REGIONAL COUNCIL MEETING 2016
1-2 March MADRID

THE SELFIE GENERATION

Their digital lives, social spaces and education needs

#EMEARC16
A selfie – from not quite
The Selfie Generation...

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What Students Want
Digital lives – social spaces – education needs

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Comprehensive Qualitative Study

• The Faculty Library of Social Sciences and Copenhagen University
• 30 interviews with social science students (anthropology, economics, political science, psychology and sociology)
• Typical atypical students – A-graders
• Study part of a larger project
Student Characteristics

• Accelerating, intense and short interaction
• ‘The exponentials’
• Our biggest customers
• Happy
• Loyal to a point
• Methodological – more so than the professors
Student Characteristics Revisited

• Adaptive and resilient
• Highly competitive
• Demand excellence
• Custom customers – individual in their library needs
• Look for specialist guidance and courses
Digital Lives?

- Paper over digital – for now
- Laptops
- Waiting for the ketchup to come out of the bottle
- ‘Super-E’
- E-resources are internalised surprisingly rapidly
Social Spaces

- 250,000 visitors yearly
- One size does not fit all – sofa kings!
- Broad social spaces spectrum
- Digital Social Sciences Lab with special tools
What Have We Really Learned?

- Embrace The Hygiene Factor (Herzberg)
- Of toilet paper and can openers
- Knowledge and service sector
- Ask, ask, ask!
And the Library

• The monopoly is over
• Streaming – oh, yes
• A very interesting point in time
• Re-embedding?
• ‘We make studying easier’
Thank You for Your Time

• Any questions?

• Do also watch our brand new Coursera MOOC Academic Information Seeking
  www.coursera.org/learn/academicinfoseek
See You at the Library