Learning Analytics: Benefits for Teaching Staff

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This **Forum Insight** stems from the National Forum project *Learning Analytics and Educational Data Mining for Learning Impact*, which runs from September 2016 to June 2017. The insight is intended for those who teach in higher education. It explains what learning analytics is and shows the type of questions analytics can answer to assist teachers with their delivery of an excellent learning experience. It also responds to some of the concerns staff may have and provides a list of further resources that may be beneficial.

What is Learning Analytics (LA)?

LA is an evidence-based methodology that employs the principles and technology of data analytics to enhance students' learning experiences. It uses the banks of data that institutions amass on an ongoing basis to provide institutions and staff with insights into their students' engagement and actions that can be used to give a better understanding of students' current status with regard to their learning. It can also predictively identify students with a low probability of success and automatically prescribe resources and courses of action with the best probability of helping individual students.

How Does it Work?

LA normally draws student data from a range of sources across the campus. These can include the Student Information System and real-time activity data from the VLE, eLibrary system, attendance system, IT logs, etc. LA uses these sources to build up a picture of the student and their current engagement. It can also compare them to previous students with similar levels of activity and use this to predict their likely results. This means that lecturers and institutions no longer have to wait until a student fails a module to know that they are experiencing difficulty. This enables them to offer proactive support leading to a potential change in the student's academic trajectory before it's too late.

Sample Questions and How LA Can Help

I have more and more commitments every day. How can I give each of my students personalised feedback when my time is so constrained?

LA can provide automated, personalised support to students by enabling Adaptive Learning Environments (ALEs). These are online platforms where students can follow course materials and are given opportunities by the system to practice what they have learned along the way. Based upon their performance in these formative assessments, LA can offer students feedback which is tailored to address their specific needs. These needs are identified by analysing students' successes and non-successes to find patterns of students' understanding of the course material to date. The feedback they are given can also include direction to specific resources that they can use to fill in the gaps.

Setting up such an environment can take time but once that is done, the automated feedback can help to address minor issues in students' understanding, leaving lecturers more time to support those who may need more in-depth assistance.

Which of my students do not yet have the understanding I'd expect at this point?

Much of this information may already be available from within the institution's VLE. By using it to host continuous formative assessments, lecturers can use the VLE reporting to see how students are doing and get a better understanding of which students may need further support.

VLE reporting can also provide considerable insight into how the whole class are doing; knowing in real time, for example, that a large number of students are having difficulty with the same types of questions enables lecturers to identify subject areas that may require a greater focus within the classroom. See the section on useful resources for further details.

Which students are less engaged or are currently likely to fail my module?

One of the powers of LA is its predictive analytics whereby it can identify students whose patterns of engagement show them to be at risk of underperforming or withdrawing early. This can enable lecturers to know in real time which students are most at risk or, through looking at students' online activity, which are less engaged than their peers.

Knowing this, sometimes months ahead of the end of semester, gives lecturers and students a very real opportunity to put foundations in place that may lead to better outcomes for students and may also make more efficient use of lecturers' time. The Retention Center feature in Blackboard can be a useful tool to this end and it is already available to Blackboard users. Further details on this are also available in the useful resources section.

Are students using the resources I've made available through the VLE? If so, which ones?

This information is also available from many standard VLEs. Having this information in real time gives lecturers far greater insight into their students' behaviour. Knowing this also gives lecturers the opportunity to make informed choices in supporting their students.

Possible Concerns

- **Will my institution use this functionality to keep tabs on my teaching?**

  The function of LA is to help students through the collection and analysis of data relevant to their learning. Assessing staff performance is not the purpose of LA.

  LA does not give institutions any greater ability to compare module outcomes than they already possess. Many institutions that have not yet begun a strategic adoption of LA already compare module grading curves to identify outlying modules with higher-than-average fail or pass rates.

  Because concerns regarding surveillance or judgement may make staff reluctant to engage with LA, institutions are strongly advised to adopt a collaborative approach to LA that includes stakeholder representation from across the campus and to be open and transparent from the start about how they plan to use analytics.

- **Is this an invasion of student privacy?**

  Every institution's implementation of LA must be compliant with the Irish Data Protection Acts 1988 & 2003. Institutions are also strongly recommended to adopt practices that are also compliant with the EU's General Data Protection Regulation (GDPR) because this will be adopted into law across the EU from May 2018. LA, when implemented in an ethical, secure and transparent way, is entirely consistent with both the spirit and letter of these laws.

  International research has indicated that students, who are accustomed to publicly sharing their information, for example through social media, tend to have few concerns about data privacy. While no data yet exists regarding whether this trend is also true of the Irish higher education context, the National Forum recently hosted a workshop on LA at the USI National Congress attended by over 30 higher education students from across the sector. The students were highly engaged with the subject and asked many questions, but none pertained to privacy. On the contrary, it was clear that they were more concerned that their institutions would not adopt LA than that they would. When asked whether they had any privacy concerns, three students indicated that this was something that concerned them. However, all students attending expressed a desire that their institutions adopt LA.

  It is good practice that any use of LA by an institution involve students in the design and implementation of such planned use from the outset.

- **Is there a perception that LA could attempt to replace teachers?**

  LA systems have tremendous power and potential to assess students' needs and offer targeted feedback and guidance but they can only do this effectively when directed by the experience, expertise and discretion of teaching staff. LA platforms support traditional face-to-face teaching, they are not an attempt to replace it. Even online teaching and eLearning, which does not use traditional classroom environments, relies upon the expertise, design, direction and continuous support of professional educators.

- **Is there a risk that LA will 'spoon-feed' our students and undermine the goal of higher education to develop self-directed learners?**

  As highlighted above, one of the primary aims of the adoption of LA by higher education institutions is to identify and support students at risk of underperforming or withdrawing. The key window in which to reach such students is during their first semester in the institution, giving them the opportunity to develop effective and appropriate learning skills at an early stage that they can call upon throughout their programmes and beyond.

  References to self-directed or self-motivated learners are common in the language of graduate attributes. If these are skills we expect students to develop over the course of their studies, it is important to provide them with the building blocks of such skills during the early stages of their programmes.

Useful Resources for Blackboard and Moodle VLEs

Patrick Walsh of Dublin Institute of Technology has conducted considerable research into the reporting features that exist in Blackboard that can enable lecturers to undertake their own LA approach. He has created a resource (available at **https://webcoursesanalytics.wordpress.com/module-reports/**) that gives users all of the information needed to get up and running.

Dr Mark Glynn of Dublin City University has considerable expertise in using Moodle to provide useable learning information. He has compiled a useful guide, available at **http://bit.ly/2oLjmu5**

Further information on the analytics capabilities of Excel is available here:

(https://www.youtube.com/watch?v=i5WiYh2jmG8)

and here:

(https://www.youtube.com/watch?v=yjASjwJCIxA)