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OPINION PIECES AND BRIEF POSITION PAPERS

The potential and pitfalls of learning analytics as a tool for supporting student wellbeing

Samantha, J., Ahern[1]

[1] s.ahern@ucl.ac.uk, Information Services Division, University College London

Abstract

Learning Analytics is a growing field in UK Higher Education Institutes (HEIs) with many implementations focusing on Early Alert and Student Success, but is this putting the cart before the horse? In the 2017 #StepChange report Universities UK suggested that learning analytics should be aligned to student wellbeing. With reported increases in incidents of student mental ill-health and extra demands being placed on student support services as a consequence this seems an appropriate application of this technology. However, there are a number of concerns related to student privacy and the interpretation and presentation of the analytics. Also, who will be designing and performing interventions? At a time when there is growing concerns around the wellbeing of staff, should we be adding a further burden? Do we risk being eaten by the analytics crocodile? It is clear that to utilise learning analytics in this way poses a number of challenges, but in the information age, when this data is available to us is it moral or legal to remain the caterpillar, knowing nothing of who our students are? With Institute for Public Policy Research stating that "…a majority of HEIs should take measures to ensure that the nature of course content and delivery does not result in academic rigour being sought at the expense of students' mental health and wellbeing." we should be doing all we can to adequately and pro-actively support our students.

Keywords: learning analytics, student well-being

Introduction

Learning analytics are defined as "the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimising learning and the environments in which it occurs." (Siemens & Gasevic, 2012). This is a growing field in the UK, with a national project being developed by Jisc in collaboration with pathfinder institutions (JISC, n.d.). Applications of learning analytics include: Early Alert and Student Success, Course Recommendation, Adaptive Learning and Curriculum Design (Sclater, 2017). Many UK implementations predominantly focus on Early Alert and Student Success, with increased student retention rates being a key aim.

In response to a growth in the incidence of mental ill-health amongst students, in September 2017 Universities UK (UUK) published the #StepChange (Universities UK, n.d.), inclusive of a recommendation to align learning analytics to student wellbeing. This coincided with the publication of the Institute for Public Policy Research's report Not By Degrees (IPPR, 2017) , which stated that "…a majority of HEIs should take measures to ensure that the nature of course content and delivery does not result in academic rigour being sought at the expense of students' mental health and wellbeing." Byrd and McKinney (2012) found that the combined effects of both individual and institutional level measures were associated with student mental health, accounting for 49% of the variance in mental health after controlling for background and demographic characteristics. There is therefore indication that Higher Education Institutions (HEIs) have a role to play in student mental health, and could in part be responsible for student mental ill-health and poor wellbeing.

In this paper we will discuss the role of HEIs in student wellbeing, focusing on the role of the personal tutor, why learning analytics may be a useful tool for supporting students plus the potentials issues in doing so.

The role of Higher Education Institutions

The QAA report "What Students think of their Higher Education" (n.d.) identifies that positive and supportive relationships with a personal tutor are essential for successful learners. However, inconsistencies in students' experiences continued to be problematic with one student commenting that:

> The personal tutor organisation has been really poor. After four years at […] I am now on my seventh personal tutor, who doesn't know anything about me and I don't feel very supported in my final (and very stressful!) year. I'm not very happy at the idea of this person writing a reference for me for a future job as they will only have the basic information that is on my student record.

The work of Byrd and McKinney is further supported by O'Keefe (2013) who states that student wellbeing can be seriously compromised if the university is unable to create a caring environment, develop a sense of belonging amongst students and provide adequate campus-based counselling support. In a speech at the Office for Students conference the Minister for Universities, Science, Research and Innovation, Sam Gyimah, stated with some subsequent controversy that:

> When these students arrive, for some this will be the first time they are away from home, the 'uni experience' can be disorientating and demanding, as it should be. But, in this the universities need to act in loco parentis, that is to be there for students offering all the support they need to get the most from their time on campus.

In loco parentis, “in place of the parent”, is often used to describe the duty of care of teachers to their pupils in compulsory education settings set out in the Children Act 1989, attending to students’ moral development as well as educational. As most students have reached the age of majority upon enrolment in courses at HEIs, such a duty of care is perceived as inappropriate as it goes beyond the perceived levels of duty of care towards learners in an adult learning environment and may lead to an interventionalist approach towards students. Concerns were voiced both on social media (Jamdar, 2018) and via sector commentary (WONKHE 2018). However, is a university acting ‘in loco parentis’ truly controversial? The Higher Education Policy Institute (HEPI) seem to think not, stating the following points:

- Until 1970, when the age of majority fell from 21 to 18, a high proportion of students were not yet adults and, even today, they and their pathway partners educate a number of students below the age of newer lower majority.

- The current student funding system still does not regard young students as independent: entitlement to student support depends on one’s parental income until they are aged 25 at the time of initial enrolment.

- New students themselves think universities have wide-ranging duties towards their welfare: three-quarters of applicants think their future university should contact their friends or family if they suffer an episode of mental ill-health (which is currently illegal for students aged over 18 because they are adults). Applicants do not want to be seen as entirely independent beings when they reach university (Comment, 2018)

Research conducted by Student Minds found that academics are increasingly responding to student mental health issues (Hughes, Panjwani, Tulcidas, & Byrom, 2018), but the higher education sector does not have the appropriate structures or cultures to assist them. It is these structures that are criticised by Sir Anthony Seldon, vice-chancellor of the University of Buckingham: "We are obsessed by reactive policy once students hit the bottom of the waterfall; we need to be putting preventative policies in place to prevent them ever tipping over the edge"(Coughlan, 2018).

A role for Learning Analytics?

In this context learning analytics have a role to play. Changes in wellbeing are often signalled by changes in behaviour (Anderson, 2015), and some of these changes may be apparent in the data traces from university systems with which students interact.

For instance, from even an early stage of a module it is possible to identify those students who exhibit greater levels of interaction that their peers with the institutional virtual learning environment (VLE). This could be for a variety of reasons, such as being anxious about keeping up, due to a need to re-visit learning materials, as a display of perfectionist tendencies or simply because they are highly engaged in the module they are studying. Perfectionist tendencies are of particular concern due to the relationship between maladjusted perfectionism and suicide and depression. Due to the stability of perfectionism over time it has been suggested that students who might be expected to develop perfectionism-related difficulties are provided support earlier in the academic year (Rice, Leever, Christopher, & Porter, 2006).

Alternatively, the data may show that a student(s) are accessing the system later and later into the evening. Research into the use of social media has found that distinct shifts in the time of day in which a service is used is an indicator of the onset of an episode of mental ill-health (De Choudhury et al, 2013). In a similar sense, access data for libraries may indicate students spending long periods

of time in the library. This may be expected at certain times of the academic year but not at others, and could again be related to the student feeling anxious about keeping up, it may be that they are unable to study elsewhere or that the library is warmer and/or safer than their accommodation. All of these reasons indicate a need for support in some form, whether it be additional support materials to aide understanding or re-assessment of a student's work-life balance.

If we can provide these types of data to student support teams, including personal tutors, pro-active interactions can take place with students. It may therefore be possible to identify an area of concern and intervene at an earlier stage, thereby alleviating or removing potential triggers for a decrease in student wellbeing and mental health.

Something as straightforward as providing a personal tutor with a copy of an incoming student's UCAS personal statement and asking them questions based on their interests from that statement may have a positive impact on the students' sense of belonging. A sense of belonging is a key factor in student retention (O'Keeffe, 2013), and personal tutoring has been identified as contributing to students sense of belonging (Thomas, 2012). In addition, the What Works project found that students value relationships with staff where the staff know their name and view them as individuals.

Interventions

The data in itself is of little use without effective interventions. Examples of the interventions deployed as part of learning analytics implementations have included: sending an email to the student to ask how they were getting on where there were concerns about the student's progress, posting a traffic light signal on a student's page, prompts to visit further online support resources, and invitations to meet with a tutor to discuss progress (Sclater, 2017).

An ongoing concern is the lack of evidence to support the use of learning analytics. A systematic review by the University of Exeter (Sonderlund & Smith, 2017) only identified 4 studies that evaluated the effectiveness of learning analytics interventions, noting a lack of empirical testing and evaluation.

As noted by Prinsloo and Slade (2017), inter and intra-departmental operational fragmentation and the constraints imposed by changing funding regimes may have a negative impact on our ability to facilitate and fund such interventions. However, if we fail to act on the data available to us are we breeching a moral and legal obligation to act? If we act, do we remove a sense of agency from the students and does this impact on self-regulation and self-regulated learning?

Such questions are coupled with concerns around student privacy and consent to the analysis of the data generated by students, especially in the wake of GDPR. The guidance to HEIs from Jisc has been that consent should be sought for the collection and use of sensitive personal data and to make interventions directly with students on the basis of the analytics. The use of non-sensitive data for analytics can be considered as of legitimate interest or public interest (JISC 2017).

One concern is centred around students' understanding of what it is they are consenting to. Research conducted by the Royal Society and Ipsos MORI showed that only 9% of people recognise the term machine learning, yet we interact with forms of it on a daily basis through social media, online shopping and media streaming services. It is not only a case of understanding that these techniques are being used but being able to interpret the outputs of these systems.

Ethical Considerations

There are also a number of considerations to be made around the ethics of learning analytics and how these data will be used. Recent publications such as Weapons of Math Destruction (O'Neil, 2016) and Automating Inequality (Eubanks, 2018) have highlighted the potential for big data and AI based systems to do more harm than good. A learning analytics implementation could be perceived as Lewis Carroll's Little Crocodile, who while beguiling, will welcome little fishes – whether students or institutions in with gently smiling jaws, and thus needs to be treated with due care and attention.

It is therefore unsurprising that some university student unions have concerns about data collection and this data's subsequent ability to be used to profile or potentially be used punitively against groups of students. In one example the University College London Student Union held a referendum about attendance monitoring in the context of an active campaign around Tier 4 visa compliance regulations and amidst claims that 83% of the university's international students felt discriminated against (Students' Union UCL, n.d.).

To counter these concerns Jisc have worked with the National Union of Students to develop a Code of Practice for Learning Analytics (JISC, 2015), while the University of Edinburgh have developed clearly defined Learning Analytics Principles and Purposes (The University of Edinburgh, 2017). In addition, the University of Edinburgh were heavily involved in the Erasmus+ Programme funded SHEILA project (SHEILA, n.d.) which produced a policy framework for the development of learning analytics.

Bias and Interpretation

The data itself is not free from bias or apolitical. In her book White Privilege Prof Kalwant Bhopal describes how the UK education system is institutionally biased against non-acceptable white minorities and those from BME backgrounds (Bhopal, 2018), with the implication that discrimination is inherent in the data captured about these groups. Almost all the data currently used in learning analytics implementations were originally captured for an alternative purpose. Therefore, this data will be affected by the assumptions and limitations imposed on the initial data collection design. Additionally, there is a known BME attainment gap. The 2015/16 data for England shows a 15.6 percentage point gap between students from white backgrounds and those from BME backgrounds in obtaining a first or upper second-class degrees (Equality Challenge Unit, n.d.). If these issues are not considered in the context and development of predictive systems, BME students will be forecast to have lower outcomes than their white peers. This may then have an impact upon interventions and student behaviours.

How data is presented can have a large impact on its interpretation. It is therefore unsurprising that data visualisation and dashboard design are active areas of research in the learning analytics community. Recent research has found that students' responses to dashboards are highly individual and that their use needs to be treated cautiously whilst recognising the power and potential impact that these tools may have on students' well-being (Bennett, 2018). This has impacted on the debate about what, if any data should be shared directly with students and in what format. An option is that the data only be presented to and discussed with students by their personal tutors, however, this would require the tutors to undertake training on interpreting the analytics and framing discussions with students in a compassionate manner. In addition, time would also be required to meet for longer or more regularly with students and to instigate or chase-up meetings with students.

In a time of growing concern about the workload and welfare of academic staff with 37% suffering from common mental health disorders (Times Higher Education, n.d.), should extra burden be

placed upon them? Considering that students are already coming to academic staff with wellbeing concerns, with many feeling ill-equipped to deal with those concerns (Hughes et al., 2018), shouldn't staff be provided with the best tools available to better support students? Should student support models be rethought, with efforts made to split out the roles of academic advisor and pastoral support? Either way, a major rethink is required with regard to time allocation and funding for effective student support, and at present tutoring responsibilities are often assigned to staff without time allocated to fulfil that role and adding to existing workloads. Also important is funding to support staff who are supporting students, as this can affect their wellbeing with them finding it difficult to switch off and impacting negatively on their mental health (Hughes et al., 2018).

What is clear is that for any learning analytics implementation to have meaning, time and funding need to be allocated and safeguarded to provide staff with the ability to develop meaningful relationships with students.

Conclusion

This paper has identified the potential usefulness of learning analytics as a tool to assist staff in supporting students effectively. However, there are also a number of concerns that need to be addressed as part of the development of any such system, in collaboration with all key stakeholders.

I am a sceptical optimist, therefore despite these concerns I strongly believe that learning analytic should be used to inform pro-active student support. As a bare minimum any learning analytics implementation should be designed to be in alignment with both staff and student wellbeing policies. Unintentionally, or not, we should not be causing harm to our students nor to our staff. However, if we fail to address them then there is a risk that analytics systems will become the eponymous crocodile drawing us in with shiny features and catching us in its gently shining jaws. Potentially producing a system that is not meaningfully used and may cause more harm to our institutional communities.

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