Student Wellbeing and Mental Health: the Opportunities in Learning Analytics

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Worldwide, an estimated 20% of children and adolescents are affected by mental and substance-use disorders, including depression, anxiety, schizophrenia and drug and alcohol abuse. Student mental health is a subset of this epidemic. In addition to the distress caused, poor mental health and a diminished sense of wellbeing have a significant effect on student academic performance and the ability to complete a course of study.

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Jisc

Student wellbeing and mental health: the opportunities in learning analytics

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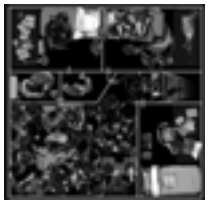
About this report

Jisc commissioned independent global HE expert Professor Martin Hall to examine how data and analytics could help promote student wellbeing and health. This report explores his recommendations at both an institutional and national level.

Summary



"There's a claustrophobia about student life; you work and eat and drink and dance and sleep together. It gives everything a painful intensity. But living back-to-back can leave you feeling so alone. I hate hearing the music coming through my neighbour's wall."

From Ella Baron, Eleven sketches inspired by the university mental health crisis – in pictures

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Worldwide, an estimated 20% of children and adolescents are affected by mental and substance-use disorders, including depression, anxiety, schizophrenia and drug and alcohol abuse. Student mental health is a subset of this epidemic. In addition to the distress caused, poor mental health and a diminished sense of wellbeing have a significant effect on student academic performance and the ability to complete a course of study.

Data is central to the analysis of student wellbeing, mental health and achievement, and to public health in general. To date, Jisc's focus within learning analytics has been on retention and academic achievement. However, key elements of established practice in learning analytics also have the potential to contribute to other aspects of student wellbeing, and for improving the efficacy of interventions that can address mental health issues. This will require the full and effective integration of academic and professional services – a "whole university" approach. It will also require co-working across institutional boundaries such as the integration of data managed by universities with data from independent providers of student accommodation.

To be effective, such a whole university approach must recognize the diversity of universities and colleges and the wide variation in the circumstances of their students. Assuring student wellbeing by engendering positive mental health will require different responses according to the location of a university and the community of students that it serves. By bringing together data from multiple institutions, subject to bilateral agreements that meet data protection requirements and provide defined and guaranteed dis-identification, national-level planning can be informed by real and diverse institutional needs. Jisc's Learning Data Hub will be a repository for millions of completed student journeys through all kinds of colleges and universities, secured with required permissions and protections, and owned by the higher and further education sectors. This will provide unique opportunities for assurance, management and planning.

Overall, there are clear opportunities for Jisc's current and proven expertise in learning analytics to be expanded and applied in the broader area of student wellbeing, and specifically to the current crisis in student mental health.

Mental health: epidemic and crisis

Some 20% of young people are affected by mental disorders. The World Health Organisation estimates that mental disorders account for 30% of non-fatal disease burden worldwide and 10% of overall disease burden, including death and disability. Mental disorders cause a significant economic burden and are associated with chronic medical conditions such as cancer, cardiovascular disease, diabetes, HIV and obesity. The global cost of mental disorders was estimated at $2.5 trillion in 2010; rising to $6 trillion by 2030. In high-income countries the costs associated with mental disorders total between 2.3 and 4.4% of GDP[1].

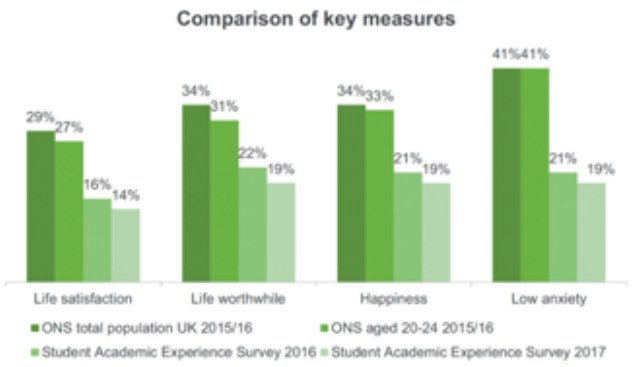
Student mental health is a subset of this epidemic. In a 2015 survey by the National Union of Students, 78% of students said they had experienced mental health issues in the last year. 33% said they had had suicidal thoughts[2]. In 2017 the Institute for Public Policy Research (IPPR) reported that there had been a fivefold increase in the number of students who had disclosed a mental health condition to their college or university over the past decade. In the 2015/16 academic year, 15,395 UK-domiciled first-year university students in Britain disclosed a mental health condition[3].

The challenge of addressing student mental health in colleges and universities is a key dimension of "wellbeing": "wellbeing relates to the extent to which an individual is feeling good and functioning positively. It is generally taken to be measured across four key indicators – happiness, life satisfaction, feeling things done in life are worthwhile, and low anxiety"[4]. Young adults aged between 20 and 24 are less likely than any other age group to record high levels of wellbeing. In 2017, less than 1 in 5 students reported high levels of each of these four key wellbeing indicators[5].

Poor mental health and a diminished sense of wellbeing can have a significant effect on student academic performance and the ability to complete a course of study. The 2017 Student Academic Experience Survey by the Higher Education Policy Institute (HEPI) and the Higher Education Academy (HEA) suggested both that students' sense of wellbeing was less than the population as a whole, and that there had been a year-on-year decline in student wellbeing between 2015 and 2016 (Figure 1)[6].

The diminishing level of mental health among students is placing increasing pressure on university and college counselling services. The IRRP found that 94% of universities reported increasing demand for counselling services and that 61% reported increases in demand of greater than 25%. At some universities one in four students were using, or waiting to use, counselling services[7].

Figure 1 Measures of wellbeing, 2016 and 2017 (source: Neves and Hillman 2017)



[1]

1 Trautmann, Rehm and Wittchenm 2016; Marquez and Saxena 2016.
2 Gil 2015
3 Thorley 2017
4 Thorley 2017
5 Thorley 2017
6 Neves and Hillman 2017
7 Thorley 2017

Applying learning analytics

Data is central to the analysis of student wellbeing, mental health and achievement.

Learning analytics is a specific field within this broader context: "every time a student interacts with their university – be that going to the library, logging into their virtual learning environment or submitting assessments online – they leave behind a digital footprint. Learning analytics is the process of using this data to improve learning and teaching. Learning Analytics refers to the measurement, collection, analysis and reporting of data about the progress of learners and the contexts in which learning takes place."[8]

To date, the focus of learning analytics has been on retention and academic achievement. Data sets are extensively used to identify students at risk, alerting academic and support staff that an intervention is required. The study of students' digital footprints is providing insights into how learning happens, contributing to improvements in the quality of learning and teaching. More controversially, it is argued that analytics can be used to build predictive models of students' future needs and preferences – "adaptive learning". [9]

However, key aspects of established practice in learning analytics have the potential to contribute to other aspects of student wellbeing, and for improving the efficacy of interventions that can address mental health issues. Learning analytics systems enable universities to track individual student engagement, attainment and progression in near-real time, flagging any potential issues to tutors or support staff. A similar approach can be used to flag students at risk from anxiety, depression and other mental health conditions, triggering appropriate interventions from universities' counselling services. For example, a student's failure to engage with academic tasks, flagged on a Learning Analytics dashboard, may be directly caused by the need to put in increased part-time work to pay for rent and food. This may trigger academic guidance that encourages the completion of the semester because of the long term benefits of attaining a qualification. But at the same time, financial concerns are well established as causes of anxiety and depression, requiring a parallel intervention by the university's counselling services. Looking ahead, the kinds of large data sets that are being developed across universities can be used to build predictive models of risk conditions, that will allow universities both to benefit from improved retention and academic performance, and to use student support services effectively and efficiently. Student centred tools could be developed to help students at risk from mental health issues manage their environment to best advantage and to provide real time support where this is required.

More generally, and at the level of the higher education system as a whole, large scale and longitudinal data sets from learning analytics have the potential to provide key insights for informed public policy, in ways that are now standard in the field of public health. For example, extending current expertise in Learning Analytics to the broader concern with enhancing positive mental health will allow investments in student support and counselling services to be measured against their return in completion and graduation rates, and graduate employability and destinations.

[1]

8 Sclater, Peasgood and Mullan 2016
9 Sclater 2017

Current work on the use of analytics to understand and measure "learning gain" recognises the key connections between learning and teaching, and the broader context of student wellbeing. For the past few years HEFCE – now the Office for Students – has funded explorations of learning gain across a wide range of universities in England. The most recent evaluation of these projects notes that interest in behavioural and cognitive interpretations of learning gain is now matched by a focus on affective measures. These are attitudes, interests and values that "capture how students think and feel. Projects are exploring metrics of: self-efficacy; well-being; resilience; disposition to learning; and satisfaction. These measures of students' attitudes and feelings can usefully be captured at numerous points in time to assess how students' emotional states vary during their higher education experience and how that might relate to their gains and outcomes in other areas. Several of these measures are also being used as outcome measures, such as increased self-efficacy or confidence."[10]

Recognising that learning and mental health are interdependent leads in turn to an emphasis on the full and effective integration of academic and professional services – a "whole university" approach. Universities UK argues that this should be a guiding principle at all universities: "mental health in higher education has multiple determinants and consequences. It constitutes an increasingly complex challenge for leadership, a matrix of risk, regulation, emergent policy and opportunity, arguably no longer susceptible to conventional planning and delegation. Adoption of a whole university approach requires strong and strategic leadership, engagement of multiple constituencies and partners and sustained prioritisation. It asks universities to reconfigure themselves as health-promoting and supportive environments in support of their core missions of learning, research and social and economic value creation and to embed this across all activities." [11]

Taking a data-informed, whole university approach to student wellbeing and mental health will also require co-working across institutional boundaries such as the integration of data managed by universities with data from independent providers of student accommodation. Seen from a student perspective, learning happens both in the classroom and in the place of residence; similarly, the factors that advance or diminish a sense of wellbeing apply as much in the place where a student lives as in the formal structure of a curriculum. This is apparent in a recent study by Unite Students[12]. This research explored key non-academic elements of student life including accommodation, wellbeing, financial management and employability. There was strong evidence of interconnectedness: students with a positive experience in one area were more likely to have a positive experience in others. This is understood as emotional resilience: "a cluster of factors that enables an individual to cope better with adverse circumstances or incidents". Emotional resilience comprises a positive mental attitude and a range of skills and is a strong predictor for positive mental health[13].

A whole university approach to wellbeing, that embraces both on-campus and off-campus student experience, is essential for effective, data-driven interventions in the current and increasing mental health crisis in colleges and universities. But there is also a risk that exemplar studies of specific institutions are taken as diagnostic of circumstances across further and higher education as whole. To be effective, a whole university approach must recognise the diversity of universities and colleges and the wide variation in the circumstances of their students.

It is well established that, across Britain, rates of participation in higher education are correlated with household income. This is demonstrated in the series of Participation of Local Areas (POLAR) studies, conducted by HEFCE from 2005 to 2017. The POLAR classifications predict the proportions of young adults likely to attend university on the basis of where they live[14]. The POLAR model uses a five-fold classification of household income. In some of the highest (Quintile 5) household income category areas all young adults are now likely to attend university. However, the median participation rate across all five quintiles is 37% and just over half of all

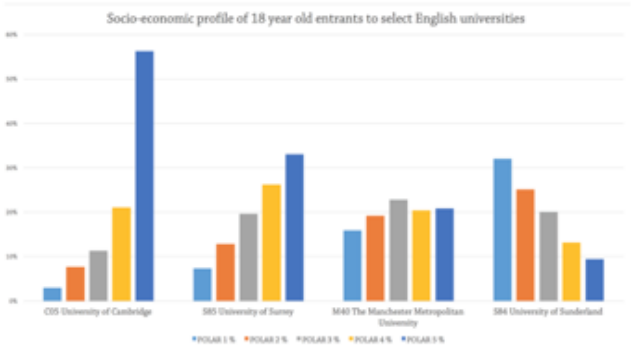
young adults live in areas where the likelihood of their attending a university is between 20% and 40%[15]. There are also stark regional disparities, with London having the highest participation rates and, in contrast, the North East having the largest proportion of Quintile 1 areas[16].

While complex, the POLAR classifications correlate with other measures of disadvantage, such as parental qualifications and the proportion of children entitled to free school meals. There is also clear evidence that low income families carry a higher burden of mental illness[17]. The contrasts become sharper when universities are differentiated in terms of the selectivity of their entry requirements. Analyses based on the POLAR data show that, in England, those from the most advantaged areas are six to seven times more likely than those from the most disadvantaged areas to attend a university with high average entry tariff requirements[18].

Together, these sets of data endorse the self-evident point that different universities serve different communities of students. It follows that assuring student wellbeing by engendering positive mental health will require different responses according to the location of a university and the community of students that it serves. This is illustrated by comparing four different universities: Cambridge, Surrey, Manchester Metropolitan and Sunderland (Figure 2). Based on the 2017 POLAR classification, 56% of Cambridge entrants were from the most privileged quintile of areas, compared to 3% from the least privileged quintile. Surrey was close to the sector average, with 33% from the top quintile and 7.5% from the bottom quintile. Manchester Metropolitan University was one of the few institutions that came close to an even split across POLAR quintiles. Sunderland had an overwhelmingly disadvantaged entrant profile, inverse to the national average, with 32% of its students coming from the least advantaged quintile of neighbourhoods[19]. While each university will have a focus on assuring student wellbeing and positive mental health, the wider variation in the backgrounds and circumstances of their students will require differing intervention strategies.

The extent of this variability across the higher education system requires that the "whole university" approach advocated by Universities UK is set within a "whole system" model. The importance of this holistic approach is emphasised by the IPPR: "the HE sector should collectively adopt student mental health and wellbeing as a priority issue, with individual institutions developing their own 'whole-university' approaches, which are subject to audit and quality assurance, and underpinned by common principles which draw on best practice.[20]"

Figure 2: Socio-economic profile of 18-year old university entrants: four universities compared (Source: Morris 2017)



[1]

10 HEFCE 2018
11 Universities UK 2018
12 Unite Students 2017
13 Unite Students 2017
14 HEFCE 2014; HEFCE 2017
15 HEFCE 2017
16 HEFCE 2014
17 Centre for Economic Performance 2012
18 HEFCE 2014
19 Morris 2017
20 Thorley 2017

Jisc's potential contribution

Jisc has well established expertise in the field of learning analytics, that ranges from the development of dashboards for individual student self-monitoring, through to tools for course management and to university-level analytic systems.

Jisc is also assembling large data sets at national levels that enable "whole system" approaches within the requirements of data protection, ethical practice, and the requirements set by individual colleges and universities. This architecture has the potential to make a significant contribution to understanding the dimensions of student wellbeing and to addressing the crisis in student mental health.

Jisc's potential role can be understood as three levels of application.

The first level is the use of indicators to direct mediated interventions for maximum benefit. The use of individual learner data to identify students at risk of dropping out is proven and widely applied. Typically, there is an unusually long period over which a student fails to log in to the course management system, or access an online resource managed by the university library, or use an access card to swipe into a classroom or make a purchase at the campus cafeteria. This data pattern – the digital footprint – triggers an alert to a personal tutor or a course manager, who then contacts the student to find out whether assistance is required. These "level one" learning analytic systems have proved effective in improving student retention, particularly during the initial year of study when students are most vulnerable[21].

Clearly, a similar system could be developed for flagging students at risk from mental health issues. The Unite Students study found that 12% of applicants for student housing declared a prior mental health condition[22]; subject to appropriate consent and data protection measures, this information could be built into such a level one system. The key indicators that have been found effective in anticipating the need for academic support could also be relevant to flagging mental health risks; additional digital patterns could be identified and applied in consultation with mental health and counselling specialists.

The second level of wellbeing analytics is at the "whole university" level. This has been the primary focus for Jisc's learning analytics work to date. Here, Jisc has built a system architecture that allows a college or university to collect and analyse data across a comprehensive set of digital functions and applications, and to integrate data from independent providers who are contracted for student-facing digital services. This architecture is supported by fully-compliant security and data protection systems and by comprehensive agreements that encapsulate each university's sets of obligations and requirements. Jisc is particularly well positioned to provide this service because it is an independently owned by its member organisations; a large majority of colleges and universities across all parts of Britain [23].

Again, this level of application can be adapted and extended to provide for broader student wellbeing and mental health. There is a strong alignment with Universities UK's advocacy of a "whole university" approach, and much of the information that the Jisc architecture already collects and manages will be applicable to assuring student wellbeing across the full reach of a university. The Jisc model has been specifically designed to provide an interface with commercial providers of learning management systems

(for example, Blackboard). Consequently, additional external data sets can easily be added on a university-by-university basis, allowing for the integration of key student life data sets of the kind identified in the Unite Students' report [24].

The third, and essential, area of potential application is at the "whole system" level. Here, Jisc's current objective is to put in place the conditions that will allow universities to share anonymised data sets, with appropriate protections, so that they can improve learning and teaching by understanding the needs and responses of large sets of students across multiple institutions. For example, a university wishing to better understand how the prior educational experience of students from particular backgrounds affects learning in a specific subject area could compare the learning analytics from their own courses with anonymised data sets from universities with similar curricula and curricula at other universities in different geographic regions. The insights gained by understanding the needs of a small sub-set of one institution's students in a far broader context can lead to valuable insights.

The diversity of universities across Britain, so clearly demonstrated in the POLAR classifications, underlines the value in extending Jisc's whole system model for learning data to the broader area of student wellbeing and mental health. By bringing together data from multiple institutions, subject to bilateral agreements that meet data protection requirements and provide defined and guaranteed dis-identification, national-level planning can be informed by real and diverse institutional needs. Jisc's Learning Data Hub will be a repository for millions of completed student journeys through all kinds of colleges and universities, secured with required permissions and protections, and owned by the higher and further education sectors. This will provide unique opportunities for assurance, management and planning.

This whole system approach to using analytics in support of student wellbeing also opens up possibilities for informed monitoring and evaluation, and the shaping of effective public policy. Jisc's national-level data hub will provide longitudinal data sets for successive student cohorts, with appropriate levels of data protection and dis-identification. Educational opportunity and mental health both have life-time consequences for individuals, shaping and determining the realisation of their capabilities, their opportunities, and their overall health and happiness. Consequently, the longer the time series, the more valuable the data. University planning conventions generally track undergraduate students for five years from the first point of enrolment, and the relationship between a university qualification and employment directions and opportunity only becomes meaningful five years or more after graduation. Similarly, the benefits of effective interventions to ensure positive mental health will only become apparent in the longer term, and through the ways in which people are able to realise their sense of their future selves. Realising the value in such long-term data sets requires consistency and reliability in data capture and management, and the security provided by an independent and trusted organisation such as Jisc.

[1]

21 Sclater 2017
22 Unite Students 2017
23 Jisc 2018a
24 Unite Students 2017

Conclusions

There are clear opportunities for Jisc's current and proven expertise in learning analytics to be expanded and applied in the broader area of student wellbeing, and specifically to the current crisis in student mental health. This potential was extensively discussed at Jisc's Digifest convention in March 2018, where there was a clear consensus that expanding Jisc's scope in this way would make a significant contribution to higher education across Britain[25]. Realising this potential will require extensive consultation with mental health and student counselling specialists across the range of university missions in Britain, with student representative bodies to ensure meaningful and ethical practices, with data protection specialists to ensure compliance with health data requirements and privacy rights, and with university and sector leadership to achieve the right balance between individual institutions' needs and the benefits of sector-wide collaboration.

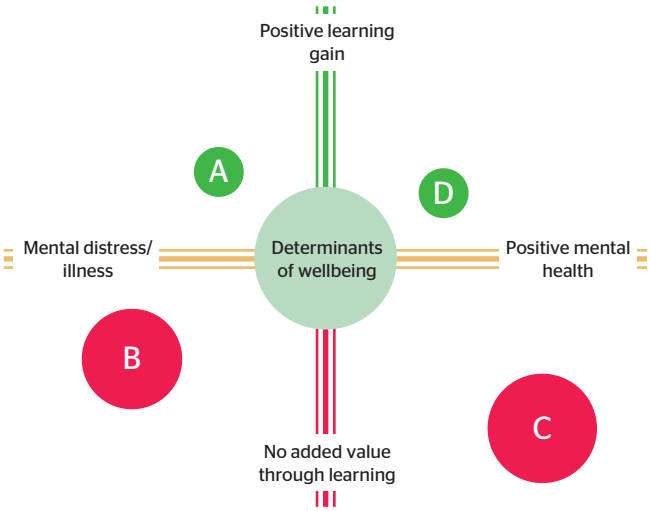
The overall objectives of this extended use of learning analytics can be expressed as a matrix combining the spectrum of mental health conditions with the range of benefits from learning (Figure 3).

Student A has an enduring mental illness, with appropriate diagnosis management and support resulting in positive learning gain. Student B has undiagnosed and unsupported mental distress, resulting in no added value while at university. Student C reports positive mental health, but has experiences a badly designed curriculum and a low standard of teaching, resulting in no added value while at university. Student D has positive mental health, well designed learning path resulting in significant learning gain while at university.

The use of learning analytics data to contribute to wellbeing at the whole university and whole system level has clear analogies with the beneficial use of system level public health data. A number of well-respected studies have now demonstrated the value of tracking health conditions through lifetimes and at scale. In particular, such research has shown the importance and benefits of early interventions to address mental health issues. A comparatively modest allocation of resources to address mental health issues manifested by young adults significantly decreases later morbidity and reduces expenditure on far more expensive health requirements[26]. At the whole system level, and over the long term, investing in analytics that contribute to student wellbeing makes economic sense.

At the same time, intervening quickly and effectively to counter the mental health crisis in colleges and universities is a humanitarian requirement that focusses on the wellbeing of the individual student. "Mental pain is as real as physical pain, and it is often more severe. Yet only a quarter of all those with mental illness are in treatment, compared with the vast majority of those with physical conditions"[27].

Figure 3 Determinants of Wellbeing (adapted from Thorley 2017. Figure 2.1)



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25 Jisc 2018b
26 Centre for Economic Performance 2012
27 Centre for Economic Performance 2012

Acknowledgments

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