Strategic approaches to learning analytics in UK higher education

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Introduction

Learning analytics cannot yet be considered a mature field in UK higher education. However, the use of data about learners and their learning to address areas such as attrition and curriculum enhancement is increasingly being investigated through projects at an institutional level. A recent survey by the UK Heads of eLearning Forum (HeLF), which elicited responses from 53 institutions, suggested that there had been rapid change in the adoption of learning analytics over the past two years. Those institutions “working towards implementation” had nearly doubled from 34% to 66%. Meanwhile, the proportion of respondents’ universities not implementing learning analytics at all had decreased from 47% to 13% (Newland & Trueman, 2017).

In order to help understand how UK universities of different types are developing their strategies related to learning analytics, research was commissioned by Jisc during the summer of 2017. Contacts at 19 universities known to have institutional learning analytics projects were invited to respond to an online survey containing 18 questions (see Appendix). Responses were received from 10 institutions. The qualitative responses to the questionnaire complement to some extent the primarily quantitative findings in the recent HeLF report. The areas investigated in our survey are: drivers, aims, links to strategy and policy, accountability, organisational structures and stakeholder involvement, staffing, budget and duration, dissemination mechanisms, technologies, challenges and long term goals. In addition, respondents were asked to provide their top piece of advice for institutions embarking on a learning analytics project.

It is hoped that this report will be of interest not only to institutions considering embarking on learning analytics initiatives but also to those have already gone down this route, and are interested in seeing at what stage other universities are and what issues they are facing.

Drivers

The motivations behind learning analytics projects have previously been found to vary considerably across institutions (Sclater, 2014). Before specifying the aims of their institutional learning analytics projects, respondents to our survey were asked to list the drivers. It can be difficult to differentiate drivers from aims and objectives, and there can be a hierarchy of high level intended outcomes for a project, with one being a prerequisite for the next. In some institutions, for example, the fundamental driver is the need to address unacceptably high levels of student dropout. However, people may express this in different ways ranging from improving graduation rates to providing better support to students.

One respondent to our survey expects learning analytics to be used to inform strategic decisions at their university. Another mentions addressing institutional key performance indicators, specifically the Teaching Enhancement Framework and a local strategic aim of increasing student numbers. A third wishes to impact continuation rates, numbers of “good” degrees (generally defined as first class and 2:1s) and student satisfaction through the use of learning analytics.
The recent HeLF survey found that 36.5% of institutions were focussed on improving retention, up from 17% two years previously (Newland & Trueman, 2017). Half of the respondents to our survey mention retention as a driver: this has to date been the area of learning analytics that has been of most interest to university managers globally. One of these also adds the related concept of progression. Improving attainment is listed by three institutions; another includes student success as a driver. That is not defined by the completer of the survey, but is used as a catch-all for indicators such as good degrees and graduation rates.

Stated drivers often relate to improving the student learning experience in various ways, such as providing better feedback, improving dialogue with personal tutors or empowering students to become more reflective learners (Sclater, 2014). HeLF’s survey found that 36.5% of institutions were planning to use learning analytics to support the enhancement of learning, the same proportion that is interested in retention (Newland & Trueman, 2017). Enhancing the student experience is specified by three institutions in our survey, with student engagement listed by another and student satisfaction, arguably a way of measuring the quality of the student experience, and of course also an indicator in the National Student Survey, being mentioned specifically by a further respondent.

Aims

Institutions were asked to list the more specific aims of their projects. Virtually all of these relate to data and/or systems. Some mention gathering a richer level of data into one place as the starting point. Most then discuss putting in place the systems to provide dashboards and visualisations for the early identification of students at risk by tutors. Various respondents discuss plans to provide academic and support staff with accessible and meaningful data about student activity. Another intends the systems to help staff take “effective, targeted, assertive interventions with students”. A further suggestion is to focus the statistical work on less successful populations where interventions may have the most impact.

Several institutions are particularly interested in providing analytics to the students themselves. The intention is to enable students to monitor their progress against their cohort; it is also suggested that better data should help to increase self-awareness and empower students to take more responsibility for their learning. Study Goal, Jisc’s learning analytics student app, is being deployed by several of them to address this goal.

While most of the projects are primarily about early alert systems, a few explicitly mention using the data to inform the development of pedagogic approaches and better curriculum design processes. One discusses spreading good practice across the institution. Another respondent wants to develop institutional understanding of how students interact with their learning environment, while in a further institution the plan is to work in partnership with students to develop new pedagogic approaches.

After gathering and processing the data, and providing it in actionable form to staff and or students there are of course other things that need to be done. One respondent mentions training users, sharing insight and embedding a culture of learning analytics across the institution. Finally, one respondent bases their response around a hierarchy of stakeholders: “generating an holistic view of student activity across the institution - providing academic and support staff with accessible and meaningful data about student activity - providing students with access to their data that may increase self-awareness and enable their success”.

Study Goal, Jisc’s learning analytics student app, is being deployed by several of them to address this goal.
Links to strategy and policy

Respondents were asked whether their learning analytics projects tied in specifically with any university-level strategy or policy. Nine of them detail at least one document which their initiative relates to. For some, this is their university’s overall strategic plan. Strategies, with varying names, related to enhancing education, the student experience and the use of technology are particularly prominent, with one noting a high level requirement “to provide first class education and technology”.

One institution is developing a “Retention and Success Strategy”; another linked the project to two core principles of their institutional strategy: quality: “striving for the highest quality in everything we do by improving attainment and the support we offer students” and institutional sustainability relating to finances, reputation, services, retention, achievement of good degrees and strategic decision making. Only one institution has not linked the project to a specific policy or strategy, but does say that learning analytics fits the “general aims and ethos of the University” and is adapting and adopting Jisc’s model learning analytics policy (Sclater, 2016). Again, the findings here appear to correspond with those in the HeLF report, where learning analytics is considered a low priority in only 21.3% of the respondents’ universities and for some there has been a rapid escalation in its importance. Comments quoted in the HeLF report include: “Nothing in the past 5 years and suddenly moved to the top of the agenda.”; “This is very high on the agenda.”; and “TEF is starting to focus minds” (Newland & Trueman, 2017).

Accountability

Leadership at a high level in the institution is argued by Norris and Baer (2013) to be essential for the successful deployment of learning analytics. Meanwhile in the Australian study by Colvin et al. (2016) of 28 experts in learning analytics, the importance is stressed of having a senior leader to set the direction of the project and ensure that this is backed up by appropriate resource and commitment. The project sponsor, or person accountable for the overall project is at executive level in eight of the ten institutions in our survey: either a deputy vice chancellor / principal or pro vice chancellor / principal.

Arnold et al. (2014) argue that it is vital for leaders of learning analytics initiatives to have a “scholarly understanding” of the domain. However, it is unlikely that a member of the senior executive will have detailed knowledge of such specialised areas as predictive modelling, so the reality is that leadership will have to occur at multiple levels in the organisation (Sclater, 2017, p.181). Several of our respondents mention in addition to the executive sponsor a senior but lower level colleague with whom devolved responsibility for the project lies: director of learning and teaching enhancement; director of student services; academic registrar; and head of academic practice, are some of the positions which have been allocated this. In one of the remaining two institutions the accountable individual is the academic dean for students; in the other it is the director of strategic planning.
Organisational structures and stakeholder involvement

The structures that are put in place for these initiatives are clearly vital to their success – particularly given the multiple stakeholders involved and the potential of learning analytics to create a new range of responsibilities and cut across existing power structures (Sclater, 2017, p.183) Eight of the projects have a project board or overseeing committee. Some respondents note that these report to higher level strategic bodies, including a teaching and learning committee, a university senate, education committee, university executive, and an IT strategy board. This demonstrates that these initiatives are being taken seriously at senior levels, and are bringing on board a range of stakeholders whose buy-in is necessary to ensure successful adoption of the resulting platforms and processes. HeLF’s survey with its larger sample found that a formal project group is managing the institutional learning analytics project in just less than three quarters of the respondents’ institutions (Newland & Trueman, 2017).

Some respondents list the service departments involved in their various incarnations such as information services and student services. Others detail the schools or departments carrying out pilots. One notes that their business faculty is key as students there are more homogenous in relation to the size and type of programmes they are studying, allowing this to be a more controlled factor in testing.

With such a direct potential impact on learning and other aspects of student life, most of the institutions consider it important to ensure the views and experiences of their learners are actively sought out and considered too. In several of them students are being consulted through the normal mechanisms e.g. student union representatives sitting on the project board. In others they are taking a more direct role in working groups or giving feedback via focus groups and surveys, particularly related to the use of Study Goal, Jisc’s learning analytics app for students. In one, graduate interns have been employed to support students and to gain feedback; in another, students have been recruited on casual contracts to assist with various aspects of the project.

Staffing

Staffing varies considerably across the projects. Several mention a project manager; it is likely that the others have one as well. Some list a range of existing, sometime senior, roles that have been brought into the project but can clearly only devote a limited amount of their time to learning analytics. Academic and IT staff are mentioned frequently. One of the larger projects has six workstreams, mostly led by academics, and with project staff now recruited to some of them. One respondent mentions the involvement of students, who are working with academics to develop new pedagogic processes based on the analytics.

In order to understand better the extent of staff input, an additional question was asked: “How many staff FTEs (full-time equivalents) would you estimate would be involved over the coming 12 months?” Here there was enormous variety in the responses too. The numbers, from those who provided them, were 1, 1.5, 4, 5.5 and 15. Another has 1 full-time and 3 part-time members of staff, with 20 others involved intermittently. A further
respondent simply states “all our personal academic coaches”; another still has 2-3 FTEs involved but notes that if learning analytics is rolled out more widely the figure may be closer to 6.

Budget and duration

Only 4 respondents give a specific figure here: £50k (HEFCE funding), £94k, £275k (for 2017/18) and £487k (under negotiation over 3 years). A further institution has been allocated IT resource but has yet to set a budget for the current academic year.

The current agreed durations of the projects also varied. Measured in years these were 1 (x3 institutions); 2 (x1 institution); and 3 (x3 institutions). Two institutions gave more vague responses, one saying it was “somewhat open ended” and the other saying the project had “been extended”. It is clear that many projects are taking longer than originally envisaged, due to a range of factors. The HeLF survey found that in 46.2% of institutions, progress was “slow”, although 32.7% were making either quick or steady progress (Newland & Trueman, 2017).

Dissemination mechanisms

Respondents were asked about the mechanisms used to communicate about their projects to stakeholders across their universities. A wide variety of different tools and methods is reported. These include email (some from senior leaders), internal newsletters, regular updates to committees and the provision of the minutes of these meetings, project and other institutional websites, presentations to the executive, a student blog for students, workshops with personal tutors, video, infographics (sent in hard copy around the campus), core communications briefings and other internal events such as departmental staff meetings, faculty away days, and presentations at the institutional teaching and learning conference.

One institution mentions the support of their communications and marketing department; another is putting together a communications plan that will be actioned by their head of internal communications. The importance of controlling the messaging in order to manage expectations was expressed by one respondent.

Technologies

One question asked about the mix of technologies selected for learning analytics. Those listed were: Jisc Learning Records Warehouse [Learning Data Hub] (x7 institutions), Jisc Study Goal (x7), Jisc Data Explorer (x6), Tribal Student Insight (x4), Campus M student app (x2), SolutionPath StREAM (x1), in-house data warehouse (x1), IBM data warehouse (x1), Microsoft Power BI (x1), Microsoft SSRM reporting tool (x1), Student Success Plan (x1) and Civitas Learning (x1). The solutions chosen here are biased toward the Jisc provided tools, as many of those institutions most engaged with Jisc’s Effective Learning Analytics project were invited to respond to the survey.
One interesting point to note however is the rapid evolution of products in this space: there is very little cross-over between the tools mentioned above and those detailed in the “Current State of Play” report of 2014, which itself found “little common ground among the participating institutions in the analytics systems they are using” (Sclater, 2014 p.7).

Respondents were also asked about their institution’s rationale for the choice of technologies. Their answers are once again highly varied – and illuminating. One has chosen their particular mix because this was what was available freely at the time. Another is a small institution which opted for Jisc’s architecture to enable them to move forward, developing their expertise and understanding of what is involved without having to develop their own solutions or commit to a commercial product. By contrast, one institution has gone it alone, feeling that commercial offerings are not yet mature enough to justify significant investment. This university is confident that it can use its IT infrastructure and in-house expertise to deliver staff and student diagnostic dashboards. However, it is building these on top of underlying IBM and Microsoft technologies and integrating the CampusM student app. A different approach is incorporated in one university’s IT Strategy i.e. to “buy” rather than “build” solutions, and the Jisc architecture had been selected here.

Two universities mention Study Goal in particular, one because it allowed them to record student attendance at lectures. Another states that StREAM delivers many of their previously identified requirements. One institution is using a commercial provider to gain access to advanced predictive modelling, and working with Jisc for sector collaboration on policy issues.

Finally, one respondent states that they are still holding back to some extent. Their institution is interested in providing comparative engagement and performance data to students, who would voluntarily download the student app. Meanwhile they have an aspiration to develop their own algorithm to identify students at risk and to plan effective interventions, with retention and success officers in each faculty having access to the system.

Challenges

One question asked what had been the biggest challenge for the project to date. Newland & Trueman (2017) found that the key barriers to implementation were a lack of knowledge/understanding (25% of respondents, n=53), unclear objectives (21%) and lack of funding (19%).

Again, no particular pattern of responses emerges here in our more open-ended survey – and they no doubt vary according the role and particular concerns of each respondent. One institution, for example, has had difficulties in extracting data from their virtual learning environment. Another respondent notes that the data set available is not optimised for learning analytics: “This has impacted on everything from where we store component marks for a module to the way we record attendance.” For this university learning analytics has, in some cases, been a driver for improvement in the collection of such data.

Some respondents mention uncertainty about whether their systems will be ready in time or usable and useful. One from a smaller institution notes that while the will is there, resource constraints often make it difficult to complete project tasks on time.
Moving goalposts and changing requirements “as we have learnt more about analytics and about what we want and what we can do” was noted by a completer of the survey as a challenge. Meanwhile it is hard not to feel sympathy towards the respondent at the mercy of factors outside their control, with “constant change at Senior Management level requiring the team to reboot the project with new justifications and business cases.”

Even with critical factors in place such as the business requirements, budgets, technologies and senior management support, buy-in from stakeholders is not guaranteed. One respondent states their biggest challenge as having to convince their university ethics group to accept the ethical implications of learning analytics. In addition, the importance of keeping academics in particular on board is mentioned by several respondents. “Managing expectations and clearly communicating potential benefits” is a particular challenge for one. Similarly, another notes that “bringing gate-keepers along the journey who are reluctant to change/adapt the practices within their departments has been challenging…and often frustrating”.

Long term goals

In an attempt to bring out respondents’ more visionary long-term aspirations, the questionnaire included the following: “Do you have a long term goal for your use of learning analytics? In other words - what next?” Many of these institutions are still at an early stage in their projects and need to see how successful they are before envisaging the next stage, so some of the responses here relate to meeting existing project goals e.g. “to improve the retention and attainment of our students”. Rolling the project out across the whole institution after pilots have been completed was also seen as a long-term goal by two completers of the survey.

Others mention specific challenges relating to data such as “demonstrating the value of having students’ data all in one place” and the incorporation of library data. One respondent is looking forward to “more more more data” and a move to student facing analytics. Another wants to see technical integration of the various apps and dashboards “ideally embedded in the VLE” but recognises that cost will be a key factor.

One of the more advanced institutional projects has clearly defined benefits for the different stakeholders (students, personal tutors, module and programme leads, governors, and “the university”) which were incorporated in the response to this question. Among the more visionary of these are:

**Students would be empowered “to be more reflective learners by being better informed”**

**Module and programme leads would “gauge the impact of module changes on student performance”**

**The University meanwhile would be provided with “evidence to target resources and monitor longer term impacts”**

Developing a better understanding of how students learn as a long-term goal for learning analytics is acknowledged by only three respondents at this stage. This is expressed as “analytics for learning design” and “building institutional knowledge about our students’ patterns of learning etc.” One of the visions is:
In five years to have got to a point where key student attributes and behaviours that affect engagement and learning have been identified. To be able to monitor these in a consensual way and provide interventions that are tailored to the individual student so they can maximise their potential.

Advice for other institutions

Finally, respondents were asked for the most important piece of advice they would give to other institutions embarking on a learning analytics project. The nine responses are quoted below in full:

It can take time, data processing and access have been much longer than anticipated

Build in enough time, engage all stakeholders early and frequently.

Be clear about aims and have a well-defined system requirements specification before speaking to vendors. Ensure senior leadership buy-in and support

Do not treat it as a technology project, it is a cultural change project

Don't spend lots of money on technical solutions. The technology is the easy part. Ethics and staff buy-in are critical

You need to keep pushing onwards, taking some big and some smaller steps towards the goal. Even with good data, there will be hurdles to overcome. You need to be committed.

Take it one data source at a time

Be clear to academic staff what their role is

Embed into business plans at faculty and institutional level ensuring support from senior management.

Complete a readiness assessment - this made clear to senior leadership what (some of us) already knew but had little joy in getting recognised: the value of an external body coming in and saying this was invaluable to moving forward with activities. This helped also formulate a sense of ‘why' we might embark on analytics work. Also, get connected to those already working in this area.

Conclusion

This report has outlined approaches to some key strategic issues by universities which have embarked on institutional learning analytics projects. It has highlighted a mixture of common and sometimes highly varied approaches to the various issues. Drivers include various ways of enhancing learning as well as tackling retention
issues. More specific project aims relate primarily to gathering data and putting in place systems to provide analytics around that data to staff and students. All but one of our respondents’ projects are linked to institutional strategy; the vast majority are led or sponsored by staff at senior executive level.

Almost all projects have overseeing committees; stakeholder involvement, in particular of students in these groups and in other aspects of the projects appears to be being taken seriously too. The budgets and current durations of the projects vary considerably, however, and there is also great variety in the technologies and dissemination mechanisms being deployed. The challenges noted by respondents are many and range from extracting data from the VLE to timescale issues, changing requirements and managing expectations.

Some respondents appear to be too embroiled in trying to help meet the outcomes of their existing projects to envisage more visionary long-term goals. However, several foresee the ultimate goal not as enhancing retention but as understanding better how students learn. Advice provided by the respondents to institutions embarking on a learning analytics project includes issues common to any change management projects involving IT e.g. building in enough time, being clear about aims and engaging stakeholders.

Future work planned in this area includes a series of more in-depth case studies of UK universities’ approaches to their learning analytics projects and a comparative study of strategies being implemented for learning analytics with leading institutions in the US. Meanwhile, Jisc is developing a consultancy service to help institutions move forward with their learning analytics initiatives and assist them with many of the issues highlighted in this report.
References


Sclater, N., 2014, Learning Analytics: The current state of play in UK higher and further education, Jisc. http://repository.jisc.ac.uk/5657/1/Learning_analytics_report.pdf


Appendix 1: Questions

Drivers and aims
What are the drivers for your project?
What are the aims of your project?
Do these tie in specifically with any university-level strategy? If so, from which strategies / policies?

Structure
Who is accountable overall for the project (project sponsor)?
Is there an overseeing committee for the project? If so what is it?
What staff are involved in the project and what are their roles?
How many staff FTEs would you estimate will be involved over the coming 12 months?
Which departments are most involved in the project?
What size of budget has been allocated to the project?
What is the current agreed duration of the project?

Stakeholder communication
How are students involved in the project?
What dissemination mechanisms are being used to communicate about the project to stakeholders across the university?
What mix of technologies have you chosen (e.g. Tribal / Jisc learning records warehouse [Learning Data Hub] / Study Goal)?
What was your rationale for the choice?
Are you rolling out the different technologies in a particular sequence? If so why?

Reflection
What would you say has been the biggest challenge for the project so far?
What is the most important piece of advice would you offer to other institutions embarking on a learning analytics project?
Do you have a long term goal for your use of learning analytics? In other words - what next?