StREAM by Kortext

A strategic and research-informed deployment to enhance student success

Case Study
January 2023

Key Statistics

- A member of the Russell Group
- Joined the StREAM community in 2020
- A world top 100 university (QS)
- 39,000+ students from more than 100 countries - including 5,000 international students

> "Learning analytics is mission critical … we need learning analytics to mature so that it can help us both with the kinds of institutional questions we need to ask ourselves and also to provide resources to educators and students to support learning."
>
> **Jeff Grabill, Deputy Vice Chancellor, Student Education**

Executive summary

In 2020, the University of Leeds implement the StREAM engagement analytics dashboard as part of a broad learning analytics strategy that focused on supporting all students studying at Leeds. After a successful pilot with 10 academic schools, StREAM was rolled out across the institution during the 2021/22 academic year to the 36,500+ members of the student undergraduate and taught postgraduate population.

Having completed the pilot, it is timely to reflect on how the implementation and embedding work is progressing in line with Leeds' strategic and research objectives, and how it is impacting student engagement, the student experience, and shaping institutional policy as part of the broader digital transformation strategy at Leeds.

A strategic and proactive deployment of StREAM by Kortext

The University of Leeds is in the process of proactively redefining its curriculum around the 'hopes, dreams and needs' of its students, both present and future. Jeff Grabill, Deputy Vice Chancellor Student Education, explains the crucial role that learning analytics plays in this redesign:

"Learning analytics is mission critical … we need learning analytics to mature so that it can help us both with the kinds of institutional questions we need to ask ourselves and also to provide resources to educators and students to support learning."

The deployment of StREAM at Leeds is therefore tightly linked to their strategic aims and supports an ongoing shift towards the use of real-time learning analytics data to ensure timely interventions to support student success. From an operational perspective, StREAM sits across an active digital ecosystem and ingests multiple data-feeds that are used to help the Student Education Service (SES) team focus their attention on students who appear the most 'at risk' of not progressing or succeeding on their course.

A research-informed approach

The StREAM deployment at Leeds is supported by a multi-stranded pedagogic research approach (figure 1), informed by current research from across the sector. It was developed as part of the broader strategic deployment plan, to enable an agile and timely evaluation that enables Leeds to answer those 'institutional questions' that Grabill is keen to address. The resulting insights inform an ongoing strategic conversation within the University on how Leeds uses student data and for what purposes.

A four-stranded research approach

1. Ensure appropriate consideration of ethical and data issues
2. Disseminate findings of current research to inform the implementation
3. To engage staff and students in the learning analytics project
4. To critically evaluate the implementation and impact of learning analytics at Leeds

Figure 1: The Leeds Institute for Teaching Excellence (LITE) Fellowship to evaluate Learning Analytics

These research strands demonstrate that, for Leeds, the introduction of StREAM is centered on achieving operational and curriculum change that enhances student success. Visualising progression over time, as part of the student learning journey, moves their implementation of StREAM beyond a transactional deployment of a technological solution to a student-centered approach aligned to the institutional promise to graduate all students admitted to study at Leeds.

The need for engagement analytics at Leeds

Leeds has a digital strategy that encourages the appropriate pedagogical use of a wide range of digital systems. StREAM enables the university to pull all these data sources together into one umbrella system to review digital engagement and turns the data into an easy-to-read visual representation of student engagement, thereby personalising the promise to support student success at the individual level.

"I think that the merits for the use of these data, even if they prevent a handful of serious problems... those benefits outweigh the very minor privacy concerns about, has a student been logging onto [the VLE], for example. I don't see those as particularly sensitive data."

Staff Feedback Interview

In reaching a shared understanding of 'engagement at Leeds', the University undertook a collaborative process-mapping exercise across the following services: Student Education, Digital Education, and Educational Engagement to operationalise the implementation. Their aim was to ensure that the use of StREAM in visualising that engagement was not limited to transactional, task-based interactions.

The outcome of the exercise led to a shift in emphasis away from physical attendance to an understanding of engagement based on interaction with the multiple data sources within their digital eco-system. This also aimed to generate alignment with existing pastoral support processes within the SES teams who are identifying and supporting students at risk, and the institution's approach to Academic Personal Tutoring. Significantly, this shift is reflected more broadly across the sector within the revised UKVI student routes requirements and has thereby informed how Leeds are complying with this aspect of student governance.

Through viewing student engagement across multiple digital systems, a richer and more holistic picture of academic engagement at the individual student level emerges. This deeper understanding has expanded the initial insights available to Leeds colleagues at the start of the pandemic, which were initially solely based on student VLE login access. Given the institutional emphasis on an integrated digital learning ecosystem, it is not surprising that the University is moving towards a learning analytics pathway where all the data is pulled together to help the University make sense of it.

Engagement is thus more nuanced, ranging from physical activities such as library turnstile counts, to asynchronous learning activity including lecture capture/replay or use of library e-resources.

"StREAM does this nicely, by aggregating the different data points and providing insights into how students are actively using resources. … [T]he algorithm … giv[es] some meaning to that with engagement ratings to see how students are progressing in real time."

Professor James Pickering, Academic Lead for Learning Analytics System Implementation

Evaluating the analytics: Personal, Cohort and Curriculum

To realise the university's aspirational promise to meet the hopes, needs and dreams of its students, the project team at Leeds have adopted a three-stranded approach to evaluating the StREAM project:

1.Personal analytics to support individual outcomes

The transparent intelligence within StREAM produces actionable insights that students can use independently or in conjunction with their academic personal tutor and programme team to have informed conversations aligned to their personal measures of success. 'Success' in this context covers not only academic outcomes, but also student support and wellbeing. Supportive nudges help keep students on track to achieve their goals. Gentle, supportive interventions of this sort retain student agency whilst simultaneously providing a steer and the opening of a dialogue to success.

2. Cohort analytics to identify patterns in learning behaviours at programme level

Insights from anonymised cohort data will enable better understanding of differentials in awarding gaps and inform decision-making processes and associated intervention activities designed to address and reduce those gaps at the institutional and faculty/school level.

3. Analytics to inform curriculum design, development and delivery

Longer-term, the University want to explore how student engagement with the data points available within StREAM can feed into curriculum design, development and delivery. For example, integrating multiple engagement touch points within modules and programmes can ensure that students have obvious and meaningful opportunities to demonstrate engagement with their learning and for these educationally purposeful activities to impact their engagement within StREAM.

Research conducted concurrently by the Leeds Institute for Teaching Excellence (LITE) Research Fellow, Dr Bronwen Swinnerton, will help explore how work in each of these three strands is progressing, fulfilling the requirement for an evidence-informed approach to deployment based on an institution-specific evidence base.

'Utilising the StREAM system: we have a better working knowledge of [students] overall online interactions (rather than just the VLE)

Staff Feedback Interview

Working with engagement analytics: An institutional code of practice

At the heart of Leeds' implementation of StREAM has been a desire to clearly and transparently articulate how the University will appropriately and ethically use engagement data within pre-defined guidelines to inform academic personal tutoring conversations and support individual student agency over their learning. At the start of the project, a Code of Practice on Learning Analytics was agreed and made available to colleagues and students. The Code states that learning analytics will be used to support student education, student wellbeing and student outcomes. These three threads run vertically throughout the institution – from the core project delivery team right up to the institutional governance group, with student representation at each level *'helping to shape the guidance, the strategy, the policy and how we're actually implementing the system'* (Professor James Pickering, Academic Lead for Learning Analytics System Implementation).

"It's important that use is transparent, that all parties are aware of what's being done with that data as well so that you're aware of who's got access to it and what it's being used for."

Staff Feedback Interview

Data-informed resource deployment

In providing data at the individual level, StREAM offers valuable insights into how students are engaging with their studies, enabling the Leeds SES team to identify where study behaviours are masking the true extent of student engagement. For example, students on the same course living in shared accommodation may have attended webinars via one student login or downloaded all information in one go due to limited internet access or a need to share digital devices. Practices like these will impact how individual engagement scores are calculated. This is where Leeds staff can use early and supportive coaching conversations to contextualise the picture painted by the black-and-white data in StREAM.

To effectively meet the strategic requirement to support student outcomes, the project team had to make some early decisions around resource use and deployment. The team agreed that their initial focus would be on supporting those students identified by the data as being most 'at risk' of withdrawal i.e. those students seemingly not accessing any digital resources, with a view to implementing support activity at the earliest possible opportunity.

In this regard, StREAM has acted as a disrupter, transforming how the University of Leeds reaches out to students identified as being 'at risk', based on a combination of a review of digital activity and additional contextual student checks. The cross-institutional StREAM/Engagement Monitoring Working Group, chaired by Student Education Service Manager (Programme Support), Noemy Ellis Martin, revamped the pre-Covid previous formal non-attendance escalation approach. This has been superseded by a softer, pastoral approach to supporting students who are "at risk", with the focus on having a conversation to refer the student to support services, as needed (figure 2). A collaboratively developed *No Engagement* process articulates roles and responsibilities, with implementation supported via staff development activity and a refresh of associated student-facing communications.

No engagement alert process

- <7 days: Letter A - 'A message from your school - checking in'
- <14 days: Letter B - 'A message from your school - we'd like to hear from you'
- <21 days: Letter C - 'Urgent: Please contact us - Leeds University'
- <28 days: Letter D - 'Presumed withdrawn - Leeds University'

Figure 2: 'Non-Engagement' (Presumed Withdrawn Process) (Days since last engagement)

Contextual understanding remains important when using StREAM. Reasons why students may not be engaging are multi-faceted, nuanced and layered – one of the reasons why StREAM is only ever used to trigger a conversation and why no decisions are taken based on data alone. Feedback from staff and students support the revisions to process – the changes in tone and language in outreach communications have been particularly impactful, changing the nature of the relationship between the student and the University. Building on this work, the next step has been to define a complementary *Low Engagement* process, with a focus on using notifications within StREAM to reach out to students whose engagement is low in comparison to their cohort peers. A further *Low Engagement* process framework has also been developed and rolled out for 2022/23, including updated student communications to reflect the new additional framework.

> *"I have had several students thank me for my concern. I have also had students give reasons/explanations for absences by both [the VLE] and email, some of which have been forwarded to our Student Support Officer for monitoring/wellbeing checks."*
>
> **Staff Survey Feedback**

A long-term perspective

Via a time-motion study, Leeds are also seeking to gain a longer-term understanding of the resource implications arising from the use of StREAM to inform decisions around effective resourcing of the engagement monitoring process. This was supplemented by a staff survey at the end of the 2021-22 academic year to obtain feedback on System use once staff are more familiar with the dashboard and with using it in pastoral settings. This reflective cycle of 'implementation – evaluation - reflection – revision' is an approach that will yield deeper insights and benefits over time, as the richness of the picture painted by the data develops and has led to changes for the current academic session 2022-23.

Research findings to date

To date, research by LITE Fellow, Dr Bronwen Swinnerton, on the implementation of analytics at Leeds, has focused on three main areas:

- better understanding the impact of using analytics on the student experience;
- on the effectiveness of academic personal tutoring; and
- on student self-regulation of their learning.

For institutions considering how best to deploy learning analytics, the following two findings from the LITE research with staff and students are worth considering:

1. The value of the cohort average:

Access to engagement data in StREAM can be viewed by individual students in different ways. As an example, if activated, students can compare their own learning journey with that of their cohort, or with the top 25% of highly engaged students. For some individuals, viewing the data in this way may function as an incentive, but for others, it could engender feelings of anxiety, triggered by an engagement dashboard that suggests their engagement is below average. If so, students can choose not to visualise this information. Interestingly, research* shows that it is not so much the provision of comparative engagement that matters, as the need for students to understand what the data is actually showing and to provide actionable insights from the data with information on how to obtain support where necessary.

An initial discussion in favour of disabling this functionality was reconsidered after the research team explored the contextual stories underpinning different engagement profiles. Learning journey maps that, on face value, appeared to show students engaging quite well, were shown to be average when the cohort average was added and vice versa. The point is simple: there is no 'right' or 'wrong' in the engagement patterns, but rather inclusion of the additional insights provided by the cohort average result in deeper, more-focused conversations with students.

* Bennett, E. & Folley, S. (2020) Four design principles for learner dashboards that support student agency and empowerment. Journal of Applied Research in Higher Education, Vol. 12 No. 1, pp. 15-26. https://doi.org/10.1108/JARHE-11-2018-0251

2. The use of demographics in analytics:

Research at Leeds conducted during the StREAM deployment phase has also validated the fundamental principle underpinning the use of data in StREAM, namely that any engagement classification should be informed only by data that a student can affect through their academic behaviour. Therefore, demographic data is intentionally not included in the engagement calculations or dashboards precisely because it is not data that a student can change. By not using demographic data in engagement, StREAM seeks to prevent user-bias as all students can influence their engagement scores based solely on their educational behaviours, in line with principles for StREAM that focus on what students do, not who they are.

Demographic data will, however, inform work on curriculum and cohort analytics where large, anonymised data sets will be interrogated to identify whether engagement behaviours are linked to demographic characteristics with a view to implementing actions to reduce attainment or awarding gaps.

Future research will focus on the relationship between interventions and future engagement, the relationships between engagement and success at cohort level and the impact of the digital divide on student engagement.

Conclusions

The University of Leeds has demonstrated a number of fundamental principles central to a successful deployment of StREAM. Their strategically aligned approach has been clearly designed and developed in conjunction with staff and with the wider student body. An ethical and transparent approach to the use of data, epitomised in the concurrent development of a code of practice and embedded within policy and practice, helps to ensure that the deployment will meet those strategic objectives.

Intentional adoption of a complementary research strategy is helping embed StREAM within student education policy, process and practice, producing lasting change and impact for individual students and for the University itself, thereby helping Leeds, in the words of Grabill, 'to be really smart about how we're performing'.