ABLE Project 2015-1-UK01-KA203-013767

Output O8: Institutional Case Studies
Nottingham Trent University – No Engagement Alerts – 2013/14 onwards

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The three partner institutions start this project in different national contexts with differing sets of priorities. Importantly they start the projects with different levels of experience in the use of learning analytics.

Therefore, we will write three project case studies describing the work conducted. These will be written to aid our own reflection, but also to guide other institutions interested in utilizing learning analytics to support their students.

We will agree a common structure to help readers learn quickly the lessons from each case study.

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1. Project Definition

The aim of the 'no engagement' alerts was to identify students who had not recently interacted with the University, in order to be able to offer these students additional support, and hopefully improve their outcomes (progression and attainment). In a large university, with approximately 27,000 students and s ranging up to hundreds of students in size, it can be easy to miss the signs of a student retreating from study. The aim of these alerts was to ensure that the potentially 'at-risk' behaviour of students who had not engaged at the start of the year, or disengaged during the year, was recognised and acted upon whilst a student still had an opportunity to change their outcomes by adjusting their behaviour.

At the time of piloting, through to the start of the 2017/18 academic year, NTU's learning analytics (LA) tool; the NTU Student Dashboard, used a student's interactions with a number of University systems to generate daily engagement ratings for each student (see output O6 for further details). The systems were:
- Virtual Learning Environment (VLE) use
- Attendance monitoring
- Online coursework submissions
- Card swipes into buildings
- E-resource access
- Library loans

A 'no-engagement' alert generated by such a LA tool had the potential to be able to alert staff of a student's lack of activity on these systems, which otherwise may be difficult to identify. In this way, LA offered an alternative to non-attendance alerts, and provided a deeper insight into student behaviour than merely being physically present/absent at monitored sessions.

Based on initial discussions between NTU and the external providers of the dashboard, Solutionpath, 'no engagement' alerts were set to be sent after 14 days of non-engagement with any of the University systems above. The measures of success for the 'no engagement' alerts were as follows:

- Alerts based on 14 consecutive days non-engagement was a suitable 'early warning system' to spot potentially at-risk students

- Alerts were successfully generated and delivered to student's personal tutors, informing them of the situation

2. Description of work undertaken

The project outcomes include successful set-up of the system to generate non-engagement alerts for certain students at certain times of year. No engagement alerts based on 14 days of non-engagement have been automatically generated by the NTU Student Dashboard each academic year from 2013-14 onwards, and sent to personal tutors. The text that was used in the alerts can be seen in appendix A. Note that some

difficulties were experienced in sending alerts to students due to missing staff email accounts or duplicate tutor information, as described below.

The alerts were designed to be sent to the student's personal tutor, who were then encouraged to reach out and offer support to the student. Ahead of contacting students, personal tutors were advised to check with their subject administrators and teaching colleagues to see if they were aware of the student's circumstances and whether or not the situation was being dealt with. The benefits of using the personal tutor as the point of contact were seen to be manifold; that this would help promote the role of the personal tutor to students, that this would help build the tutor-tutee relationship, that the tutor would be informed and thus able to follow-up on any additional support needs, that the tutor should already know if a student was not engaging for a specific reason (e.g. bereavement) and that a tutor should know if there was something systematic about the (e.g. placement) that meant a student wouldn't be expected to engage during that period. The approach of contacting a student via the tutor was seen as a way in which we could mitigate the risks of stressing a student out by contacting them unnecessarily or when experiencing difficult circumstances that they had already informed the university about.

Each fortnight, alerts were sent to tutors in a single batch on Tuesday morning. It was felt that sending the alerts this way improved the usability for the tutors rather. The other option (sending them as soon as the system processed the non-engagement) was more likely to be missed by tutors as these may arrive throughout the week. We feel this forethought into when it was appropriate for the alerts to be sent has been reflected in the lack of negative comments we have received from staff about the timing of the alerts.

The alerts were piloted alongside the piloting of the Dashboard; in four programmes in the 2013-14 academic year, and institution wide from 2014-15 onwards. The number of alerts generated and the days alerts were sent are detailed below (table 1). Note that multiple alerts were generated for students who did not engage for multiple periods of 14 consecutive days, but the majority of students had only one alert generated about them (figure 1).

Table 1: Number of 'no engagement' alerts generated by the NTU Student Dashboard by academic year.

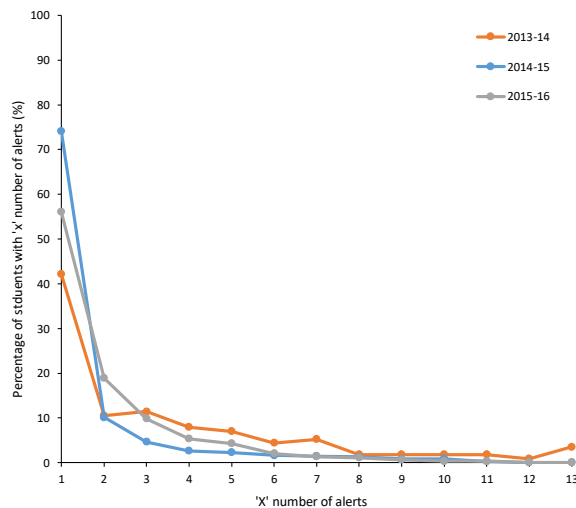| Year	No. of alerts	No. of students alerts sent about	No. of staff members alerts sent to	No. of times alerts sent throughout year
2013-14	399	114	38	14
2014-15	4085	2287	499	11
2015-16	2610	1252	354	11

Figure 1: Percentage of students who generated 'x' number of alerts in one academic year, showing that the majority of student generated only one alert (x=1).

As the alerts were set up to be automated, a number of criteria were set to prevent alerts being generated for certain students and/or at certain times of the year. Alerts were not generated if any of the following applied:

- The student was not either fully or temporarily enrolled, i.e. if they did not complete enrolment at the start of term or they had a change in circumstance during the year, e.g. they withdrew from the University
- The student was not studying at an NTU campus, e.g. distance learners
- The student was completing their studies without attendance, e.g. students repeating a module without needing to attend
- It was the start of first term, when students are still enrolling
- It was out of University term time, e.g. Christmas and Easter holidays

The additional resource required for this case study, beyond set-up and maintenance, is primarily personal tutors' time. Whilst it could be argued that the alerts save tutors time by pulling together information from multiple sources that would be difficult/time consuming for them to reproduce, if a tutor was not already undertaking this activity (as is likely to be the case) asking them to respond to 'no engagement' alerts is an additional task. This is particularly true as in the ideal scenario, the alerts would lead to tutors having face-to-face meeting with the disengaged students. The initial set-up and ongoing maintenance these alerts required involvement from a range of people:

- Staff in the Information Services (IS) department were involved in setting up the data feeds for the Dashboard including usage data collected by our internal systems, student records data and completing testing/technology sign-off. Furthermore, IS were responsible for maintaining the staff access documentation, that included email addresses to allow the emails to be directed to the personal tutors.
- Information was required from Academic Registry who code the different student records data to ensure the data fields used to exclude students from alerts were chosen appropriately.

- School administrators and the central facilities team were involved in assigning students to tutors and digitising this information.
- The Student Engagement Team; business owners of the Dashboard, in consultation with relevant experts, oversaw the 'no engagement' alerts set-up, including finalising the alerting logic, writing the alert text, and communicating about the Dashboard and alerts to relevant stakeholders.

The software used to allow these alerts to be sent are the proprietary Dashboard software, and the University's integrated internal computer systems (Banner; the student records system and Cognos; the data mart).

3. Evaluation and results

The evaluation of the project includes an analysis of the number of alerts generated and sent (see table 1, above) and the relationship between students receiving the alert and subsequent progression. Example analysis of the students receiving the alert and their progression from one year to the next, for the 2014-15 year, can be seen in figure 1, and demonstrates that the alerts do act a good early warning sign for students who subsequently withdraw. For example, less than half (103/209) of the students who had two no engagement alerts raised about them progressed cleanly to the next academic year. For this reason, is it important that the no engagement alerts are successfully delivered to tutors and acted upon.
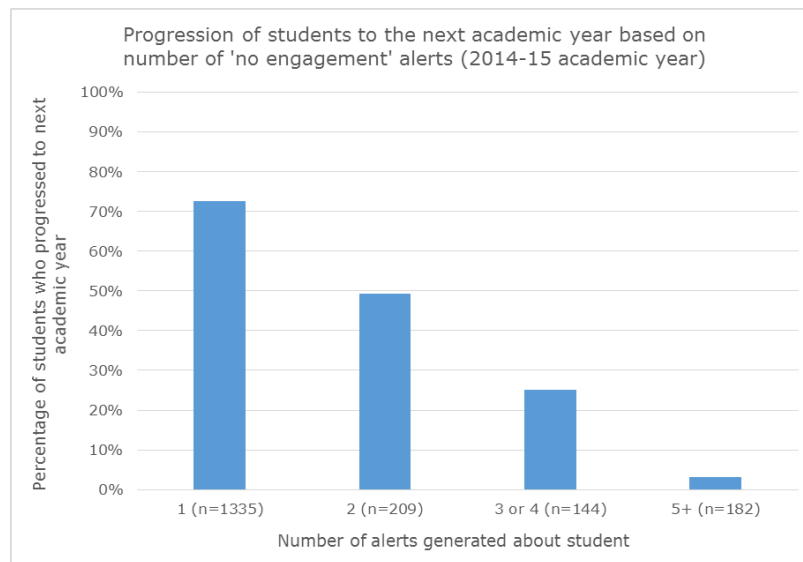

Figure 1: Student progression by number of no engagement alerts for the 2014-15 academic year.

Analysis of the number of alerts generated and sent highlighted a number of issues:

1. Instances where students were not linked to tutors in the system, so the alert could not be delivered to anyone
2. Instances where staff email addresses were missing from the system, so even though the tutor was known, the alert could still not be delivered

3. Instances where a student was mapped to multiple staff members so duplicate alerts were sent to different people about the same student
4. Instances where duplicate alerts appear to have been sent about the same student to the same member of staff (this may be due to the same staff member being mapped to the student multiple times, as a variant of issue 3, listed directly above)

The first of the two types of duplicate could lead to multiple staff members contacting the student, no staff members contacting the student (if they think others will) and/or staff and students getting frustrated with process, whereas the second type is most likely to lead to staff frustration and/or mistrust in the system. Due to the range of potential consequences, we feel it is important to try to avoid such duplication if future years. It is also important to be aware of the existence of duplicate alerts when analysing the connection between the number of alerts sent and student progression/attainment.

The key findings of the project were as follows:

- 14 days of non-engagement with the measures used in the Dashboard is an effective early warning system for identifying student who are likely to subsequently withdraw.
- Given that despite identification, many of the students did ultimately withdraw, more work is needed on what to do next after a student has been identified.
- The student-tutor mapping information and staff access documentation (providing staff email addresses) are not robust enough to ensure that all alerts can be successfully delivered.
- The set-up of working through personal tutors has advantages, as outlined in the description of work undertaken, but also drawbacks, including the fact that it relies on the information about the students' tutors to be present and correct, it relies on the tutor seeing and acting on the alert, and it is difficult to measure the impact of the alerts as it is difficult to 'close the loop' and know how the information was acted on.

4. Lessons learnt and conclusion

The major learning points for the project were as follows:

- For the system to work fully, the data that sits behind the system (student-tutor mapping and staff contact details) must be present and correct. Buy-in is needed to maintain these systems throughout the year and a failsafe should be considered. We suggest that there should be a manual back-up system to process alerts that have not been able to be sent – e.g. the undeliverable alerts get sent to a central mail box for manual processing, to drive follow-up amendments, and to monitor the scale of issue.
- Duplicate alerts were, at least in part, as a result of the relevant data tables appending (being added to) not amending (being overwritten). Both of these are, by definition, 'updates' to the table, and at the start of the project we did not know to stipulate that the data must be specifically 'amended'.

- There is certainly a need to carefully think about which students to include and exclude, and the times when it is appropriate to send alerts and communicate the criteria to stakeholders. If there are difficulties around incorporating certain data sets into the system (e.g. when students are on flexible placement periods away from the institution), this should be explained upfront to manage expectations.
- Errors will not necessarily be proactively reported; during the project a number of issues (e.g. alerts being sent during holiday periods, alerts being sent about students who had withdrawn during the year) were only highlighted when speaking to staff face-to-face in meetings about different matters. The problem was not communicated formally.
- There is often need for additional staff communications beyond what was originally envisaged, e.g. staff have reported the system being broken due to receiving alerts about 'withdrawn' students who we not officially withdrawn on the University systems (and thus still paying university fees).
- The unintended consequences of the set-up should be considered, for example, in our case by setting the system to alert staff on Tuesdays only, we ended up only reporting on non-engagement for fixed periods of time (Monday – Monday). The problem with using fixed dates can be illustrated by the three hypothetical engagement profiles outlined in figure 2. In each case there are only two days of engagement with the University in a 30-day period. For 'Case 1' two alerts would be sent, for 'Case 2' one alert would be sent, and for 'Case 3' no alerts would be sent. So if a student had the same profile as in Case 3, they could disengage for 28/30 days without being flagged by an alert. This is a problem as the probability of a students with 28 days of no activity (equivalent to 2 alerts) in 2014-15 only had a 49 % chance of progression (figure 1, above). If the system was such that a 'no engagement' alert was sent for 14 consecutive days of non-engagement (regardless of whether from Mon-Mon or Tue-Tue etc.) more students who had disengaged would have been be flagged as at risk, and the system would have been more effective. Alerting of this nature could have been achieved using different logic to raise the alerts, however the need for this was not identified as it is easy to overlook such considerations, particularly in cases such as this where implementing a new alert was ran alongside implementing a new system (the Dashboard).
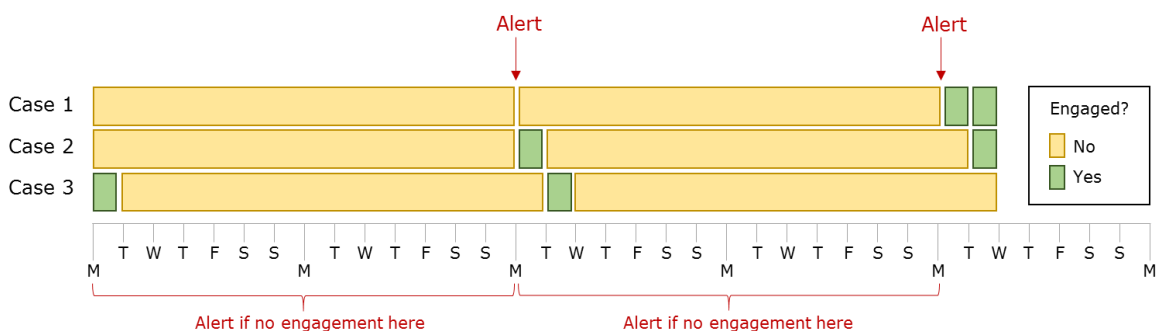

Figure 2: Hypothetical engagement profiles over 30-day period.

Our advice for colleagues in other universities looking to set up similar alerts would be to allocate time to interrogate the quality of the data (including in-project testing), to

ensure the project covers not only generating the alert but also support/guidance about what to do next, and to continue to communicate with stakeholders throughout the process to identify problems and address misconceptions.

5. Contact Details

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