Back to Basics: combining analytics and early assessment with personalised contact to improve student progress

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Student progression, attrition and completion are key metrics for all Universities. Subject level progress rates can be a useful lead indicator of these metrics; thus allowing quality improvement activities to be piloted and evaluated in shorter timeframes. The aim of this pilot study was to examine the effect of a series of pre-census interventions on subject progress rates. In 2018, twenty five subjects from the Faculty of Science at Charles Sturt University were selected to participate in the pilot based on a history of poor subject progress rates. Approximately 700 disengaged students were identified via learning analytics and emailed in week 2. In weeks 3 and 4 a range of "triggers" were used to identify 425 students who remained disengaged and contact was made via phone and/or email. Overall average subject progress rates increased from 66% in 2017 to 80% in 2018 (p<0.05) with a significant reduction in the average number of fail and fail withdrawn grades (from 42 to 26 per subject, p<0.05). Overall, we demonstrated that significant improvements in subject progress rates can be achieved when academics and Divisional support staff work collaboratively to identify, contact and support disengaged students prior to the HECS census date.

Keywords: Subject progress, Learning analytics, Early assessment item

Introduction

There is no doubt that student progression, attrition and completion rates have concerned Universities, the government and the broader community for many years. Recent announcements from the Federal Government regarding the introduction of performance-based funding in 2020 have cemented the fact that these metrics will continue to be front of mind for academics and senior university management for years to come! "The Department of Education and Training counts as attrition a commencing student who reached their first census date (which is at least 20 percent of the way through the semester) but is not enrolled the next year without completing" (Grattan, 2018b). Although attrition is the measure on which most importance is often placed; this measure is significantly lagged because by definition the latest attrition data is not known for at least 12 months after the student enrols. Due to the lag in attrition data, a useful surrogate or lead-indicator of attrition is subject-level progress rates. However, it is acknowledged that the relationship between progress rates and attrition is not perfect; and indeed the strength of this relationship can differ depending on the discipline of study.

The first HECS Census date for a commencing student represents a critical juncture in the academic journey; for both the institution and the student. Once a student passes this first census date and then withdraws from study they are deemed attrition. There is a short "window of opportunity" between students accepting their offer through to the first census date for Universities to support students in their transition to Higher Education and guide the student in making a decision as to whether University study is the right choice for them. Both the Higher Education Standards Panel (2018) and the Grattan Institute (2018a) reports include specific recommendations about monitoring student engagement and taking action before the census date.

There are a multitude of published studies describing complex algorithms and models that predict (with variable levels of accuracy) the likelihood of a student failing their subjects or leaving University (Jayaprakash et al 2014; Wolff et al 2013; Lacave, Molina & Cruz-Lemus 2018; Lu et al 2018; Tempelaar et al 2018). However, in this pilot project we took a "back to basics" approach through building solid relationships with teaching academics and divisional support staff to devise a program of proactive, pre-census support and contact at the subject level. The aim of this pilot program was to improve subject progress rates through the identification of disengaged students before the census date and offer targeted support.

Methods

Pilot Phase 1: In 2017 a single large enrolment, multi-campus, online and on-campus subject was selected to pilot different mechanisms of pre-census contact. The subject had an early assessment item (online mini-test) due in

Week 4. Of the 227 students enrolled, 58 did not submit the early assessment item. These 58 students were randomly divided into 2 groups, which compared two contact strategies:

- Group 1 were phoned by Divisional support staff from the Charles Sturt Outreach team. This team of trained callers can provide over the phone assistance with managing administrative processes and the availability of other University support services (e.g. disability, counselling, academic skills etc). Following 3 failed call attempts a brief email was sent directing students to contact their Subject Coordinator.

- Group 2 were phoned by the Subject Coordinator. No script was provided to the Subject Coordinator. Following 3 failed call attempts an email was sent that provided instructions on how to contact the subject coordinator if an extension was required, as well as links to manage their enrolment and firmly worded text about the financial implications of remaining in the subject after the HECS census date.

Overall, this small test case indicated that the Outreach Team provided far more effective support for students over the phone compared to the academic; however, the more firmly worded email from the academic was more effective in prompting the Group 2 students to update their enrolment.

Pilot Phase 2: In 2018, twenty five subjects from across the Faculty of Science at Charles Sturt University were selected to participate in Phase 2. Subjects were selected based on a history of poor subject progress, with all subjects having progress rates less than 80%. Subject progress is calculated as the percentage of students that receive passing grades for a subject. Non-passing, substantive grades that reduce progress rates include: Fail (FL; scoring less than 50%), Fail Withdrawn (FW; not submitting any assessment items) and Approved Withdrawal (AW). All subjects had a large number of commencing students, and 20 of the 25 subjects were offered across multiple internal and online offerings. The number of students enrolled in each subject varied from 20-740 (average 153). Disengaged students were identified at two time points, firstly in weeks 2 and again in weeks 3/4.

Week 2 Contact: Disengaged students were identified in all subjects using the learning analytics tool, retention centre in Blackboard. Retention centre uses site access analytics and a site access rule was created to contact students that had not accessed their online learning resources since the beginning of session. These students were sent a friendly email as a reminder that the resources are ready and to contact their subject coordinator if there were any problems. Subject coordinators were sent clear instructions (PDF and video) of how to do this quick task themselves and were provided with a template email and additional support from the project team.

Week 3/4 Contact: Disengaged students were identified in all subjects using a range of "triggers". Where possible students were identified via non submission of a pre-census early assessment item. However, in subjects without a pre-census assessment task, nonattendance at compulsory classes or learning analytics were used as a substitute. Learning analytics such as date of last site access, the number of site accesses and access to the subject outline were used. The Charles Sturt Outreach team then attempted to contact all disengaged students via phone and an email was sent following 3 failed attempts. The email template was provided to the Outreach Team and was based on the successful email devised in Phase 1.

Data are expressed as mean ± standard deviation. Group means were compared using a paired student t-test (2017 v 2018) or one way analysis of variance (ANOVA; for comparison of 3 years of data) using a Tukey Post Hoc and were analysed using the statistical package GraphPad Prism (version 7.04). The significance level was set at $p < 0.05$.

Findings

Approximately 700 students were identified and contacted in retention centre in week 2 due to not accessing their subject sites since the commencement of session. Unfortunately, a number of students were contacted with the same email multiple times for not accessing each of the subjects they were enrolled in and in the future a course based approach to contact would be more appropriate.

Overall, 425 students from the 25 subjects were identified as disengaged in Week 3/4 and 3 attempts at phone contact were made, with follow-up emails sent to all students who did not answer. Unfortunately, the reporting did not allow for simple extraction of data on the number of students who answered the phone, but a rough estimate from the Outreach Team was 10-20%. In the future SMS communication may increase the call success rate.

Figure 1 illustrates the significant increase in progress rates across the 25 subjects from 2017 to 2018. Average progress rates increased from 66% in 2017 to 80% in 2018 ($p < 0.0001$). Comparison of progress rate improvements in subjects with and without a pre-census early assessment item also revealed a significant difference (Figure 2).

Subjects which included a pre-census assessment task (n=16) improved progress rates from 70% in 2017 to 83% in 2018 (p<0.05), while those without an early assessment (subjects n=9), despite targeted intervention strategies in 2018 had a non-significant increase from 69% to 73%. Indeed, it is very difficult to accurately identify disengaged students with learning analytics alone. Interestingly, in 2017 without targeted feedback there was no difference in subject progress with or without an early assessment, indicating that to have a significant impact on subject progress, both an early assessment and targeted contact and support are required.
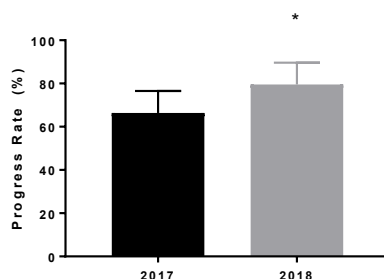

Figure 1. Significant increase in the average progress rate in 2018 following targeted student contact pre HECS census, *p<0.0001.
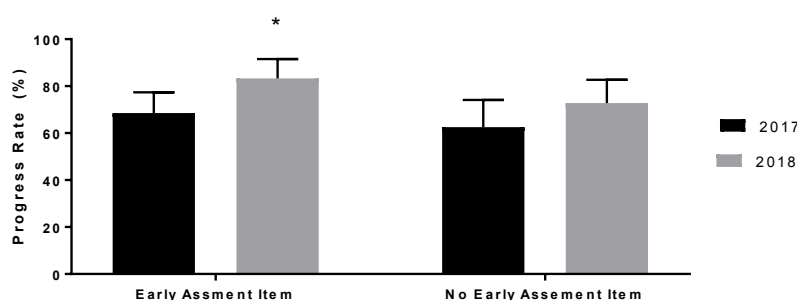
Figure 2. Subject progress rates in subjects with and without a pre- census early assessment item.
* Progress rates in 2018 with an EAI were significantly higher an all other progress rates, p<0.05.

This increase in progress rates occurred concurrently with a significant decrease in the number of FW grades, reducing on average from 6 per subject in 2017 to 3 per subject in 2018 (p<0.05) and a reduction in the average number of FL grades from 36 to 22 per subject (Figure 3). Importantly, this increase in subject progress, and decrease in non-passing grades did not affect the number of passing grades, or average student load (Table 1).
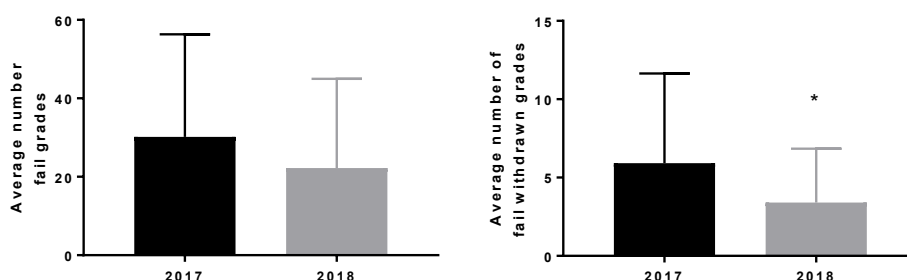
Figure 3. The average number of FL and FW grades per subject. *Significantly lower than 2017 p<0.05.
Table 1: Subject progress rates, cohort size and the total number of FL and FW grades for each of the 25 subjects in 2016, 2017 and 2018. Subjects 1-16 had a pre census assessment task and subjects 17-25 did not.
* Significantly different to 2016 and 2017, p<0.05

Conclusion

Overall, this pilot project demonstrated that significant improvements in subject progress rates can be achieved when academics and Divisional support staff work collaboratively to identify, contact and support disengaged students prior to the HECS census date. The authors acknowledge that there are many variables which can influence subject progress rates from one year to the next; however, in most subjects the assessment regimen was unchanged and few changes were made to the teaching staff.

There is no doubt that a key finding from this pilot is the critical importance of a pre-census assessment item. The use of learning analytics alone as a "trigger" to identify and contact disengaged students simply did not perform as well in terms of progress rate improvements. In Kift's (2009) Program coordinator: First year curriculum principles checklist the importance of an early, low-stakes assessment item is explicitly mentioned. However, the checklist states "is there early, 'low stakes', formative assessment due and returned to students before Week 4-5….." (Kift, 2009). A key recommendation from this work is that if an early, low-stakes assessment task is to be utilised to contact disengaged students then it must be scheduled between 3-7 days before the HECS census date to allow time to contact students that have not submitted.

The Higher Education Standards Panel (2018) report made a strong recommendation that "institutions should automatically review the enrolment of all students who have not engaged in their studies to an agreed level by the census date". As a result of this pilot project we would recommend caution when determining the "agreed level" of pre-census engagement; especially where learning analytics tends to be the "go-to" approach. Charles Sturt University is proud to have a significantly high proportion of low SES and first-in-family students enrolled and this pilot has again highlighted that personalised contact and support for these students can result in really positive outcomes. This pilot forms a solid foundation for future expansion of this work across all Faculties and an increased number of subjects in 2019. In particular, future work will take a much closer look at the timing and design of all pre-census assessment tasks to ensure maximum benefit for students and the institution alike.

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