Implementing Timely Interventions to Improve Students' Learning Experience*

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This paper describes the development of an approach aimed at increasing student engagement and outcomes in online business studies. Personalised real-time interventions were used by lecturers to encourage online participation and enhance students' overall experience through engaging them in the online learning environment. This 'high touch' approach was developed using analytics from the learning management system (LMS) to determine key points for interaction and a series of interventions were implemented at these points during the teaching period. These interactions were evaluated through student reactions and surveys to assess students' perceptions of their value in enhancing learning, and the impact on retention and student success.

Keywords: Learning analytics, online learning, student engagement

Introduction

As higher education looks to the future and learning is offered increasingly via online delivery, universities find it increasingly important to develop ways to enhance student learning through applied use of the technologies. Analytics is seen as a means for higher education institutions to increase student retention and success (Bischel, 2012, p. 5) and universities are increasingly employing analytics as part of their business processes.

This paper describes an approach developed to employ learning analytics at the subject level in an interactive approach intended to increase student progress, success, engagement and to tailor learning to improve achievement of student learning outcomes. This project, which was supported by a grant from the Office for Learning and Teaching, commenced with the identification of touch points for students in relation to the subjects they were undertaking. These key points were then assessed for potential impact if an intervention was enacted. Personalised interactions were implemented by the teaching staff which were tailored to the critical point in the teaching period. The project included both undergraduate and postgraduate subjects and all students were studying fully online.

Learning Analytics

The use of learning analytics in higher education is increasing as online education grows. Distance education facilitated through online studies means that students are increasingly diverse in demographic characteristics,

and support systems that utilise 'big data' to predict student success, engagement and learning experience are becoming more important for institutions seeking to deliver high quality education for students. Elias (2011) and Shum and Ferguson (2011) suggest that analytics provides the application of business intelligence tools to capture and interpret data in order for academia to individualise and optimize learning. Increasingly, "the use of analytics is becoming more prevalent in educational institutions where learner data and behaviour tracking can inform learning and teaching practice" (Fisher, Valenzuela & Whale, 2012, p. 4). Brooks, Greer and Gutwin (2012, p. 1) identify the goal of learning analytics as a means to "provide insight into learners based upon their activity in e-learning systems". Many learning analytics projects discussed in the literature have shortcomings in terms of the application of real time data to inform learning and teaching practice (Fisher, Valenzuela & Whale, 2012). This project aims to contribute to the literature related to the real-time, lecturer initiated use of analytics to improve student learning outcomes and satisfaction.

Analysis of subjects

This study analysed three subjects (two postgraduate and one undergraduate) offered by the University of New England Business School to determine key points and behaviours to trigger interventions with students that were thought to be likely to increase success, engagement and overall experience. These interventions were specifically targeted at students who were considered to be at risk and were in addition to general reminders sent to all students through the LMS.

The key points and behaviours targeted were:
Intervention 1. First two weeks of Trimester – no access to the LMS and learning materials for over seven days
Intervention 2. Early assessment tasks – reminders prior to due date and poor results or non-completion
Intervention 3. Major assessment tasks –limited or no access to assessment information for over seven days prior to the due date

Although a similar approach was taken in each subject, because each had a different combination of assessment tasks, the interventions and their timing varied across subjects.

For all students exhibiting these behaviours at the key points, personalised interventions were developed and implemented by lecturers with the goal of prompting increased engagement with the subject. The interventions were tailored to the key point and consisted of telephone contact and / or email contact on a one-to-one level with the student. Further contact was invited and maintained if prompted by the student.

Detailed information about the process that was put in place and the results are provided in Table 1.

Table 1: Results of Interventions

Behavior	Intervention	Result
No access to LMS for over seven days during first two weeks of the trimester	*INTERVENTION 1* 43 students were contacted to remind them to set up study plan and check if there were issues The subjects involved were: - MM110 – 17 students contacted - GSB731 – 9 students contacted - GSB751 – 17 students contacted 17 Students were contacted by phone and 26 by email	MM110 – all 17 had multiple access GSB731 – multiple access by 8. One student planned to withdraw GSB751 – multiple access by 15. Two students indicated their plan to withdraw when contacted.
No access to LMS for over seven days before assignment due day of an early non compulsory assessment task	*INTERVENTION 2.A* Personal emails were sent to students to remind them about the first assessment due date and to offer additional support The subject involved was: GSB751 – 18 students contacted	Two students replied thanking the lecturer for getting in contact with them 9 students subsequently attempted the activity

Did not complete or did not receive full marks for the early non compulsory assessment task	*INTERVENTION 2.B* Personal emails were sent to students to offer additional assistance The subject involved was: GSB751 – 17 students contacted	15 of these students went on to successfully complete the subject
No access to LMS for over seven days before assignment due date of a major assessment task	*INTERVENTION 3* Personal emails were sent to 36 students to remind them about the first assessment due date and to offer additional support The subject involved was: MM110 – 36 students contacted	Three students replied thanking the lecturer for the information 25 students subsequently submitted the assessment

From this table it can be seen that a total of 43 students enrolled in the three subjects were recipients of the first intervention (17 by phone and 26 by email). Subsequent to this contact, 40 of these students accessed the LMS multiple times. The second intervention employed in one subject consisted of an email reminder to the 18 students who had not accessed the LMS in the seven days prior to the early non compulsory assessment task. Nine of these students subsequently attempted the task. After the due date students who either did not complete or did not receive full marks for this task were contacted by email offering additional support. Finally, the third intervention consisted of emails sent to 36 students who had not accessed the LMS for more than seven days prior to the due date of the major assessment task. Of these students 25 subsequently submitted the assignment.

In order to determine students' level of satisfaction with the interventions and the impact of the interventions on students' learning experience, an online survey was carried out. Invitations to participate in the survey were sent out to all students who were involved in the interventions as shown in Table 1. A 35% response rate has been obtained so far. Results show that students gave a very high evaluation to the interventions (see Figure 1 below).

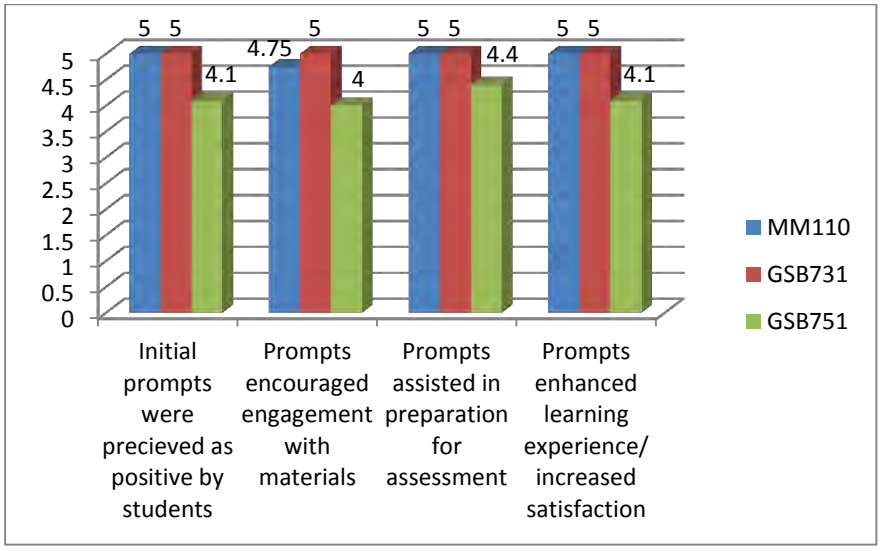

Figure 1: Targeted Students Survey Results (out of 5)

In particular students perceived the initial prompts positively; they indicated that the prompts encouraged them to engage with materials; they considered the prompts assisted them in the preparation of the assessments; and that the prompts enhanced their learning experience. In order to determine if the overall learning experience of the students involved in the interventions were significantly better than of those students who were not involved, an additional set of questions was administered to all students. Fifty seven responses were obtained from students who were not targeted by the interventions and 16 from students who were involved in the interventions. One of the questions asked students to rate their overall online learning experience. Results show a significant difference ($p<0.05$) between these two cohorts of students (i.e., means of 4.0 and 4.3, respectively) in favour of students who were involved in the interventions (see Figure 2).

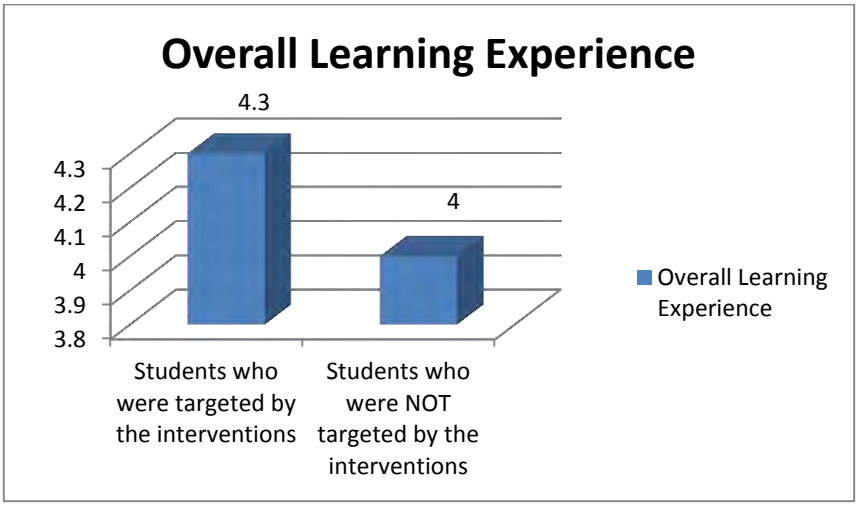

Figure 2: Results of End of Trimester Survey (out of 5)

Conclusions

This project demonstrates a simple approach to the use of learning analytics by teaching staff to improve students' learning experience. Tracking students' activities and the timely implementation of interventions has the potential to influence students' behaviours and improve their chances of success, and hence to enhance students' online learning experience. Identification of likely behaviours which may impact adversely on student results in online learning were determined through a review of the learning materials and timelines for each subject. Consideration was given to the timing and format of interventions. Students were contacted personally, rather than by an automated means. Students' responses revealed that these interventions were highly appreciated as they improved their learning experience. The project will be reviewed and revised and rolled out to a larger number of subjects to provide an opportunity to evaluate of the impact on students' online experiences and outcomes across a broader sample.

One of the challenges that became obvious during this project is the question of workload. The teaching staff involved spent significantly more time supporting students than in previous offerings of the subjects. If it can be demonstrated that the project has been successful and a larger project confirms this finding, then institutions have a good reason to provide support to teaching staff to engage in this level of interaction with students.

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