Serial number 0031
Title Students' responses to learning analytics dashboards
Submitter Dr. Liz Bennett

Students' responses to learning analytics dashboards

Paper

This paper reports on a small scale study of students as they receive data about their progress via a dashboard. Data were gathered through semi-structured interviews with ten students in the final year of a range undergraduate education studies courses. The particular focus of the paper is on the application of Sutton's (2012) model of feedback literacy to understand the students' response to their data; and a discussion of how this analysis can be used to offer critical understanding of dashboards and their use in higher education.

Dashboards[1] are the graphical interface that present data about students' learning behaviours (attendance, visits to the library, which books they take out, their attainment etc.). Although only a few UK HEIs have developed a dashboard for students, most other UK HEIs have an aspiration to develop their use (Sclater 2014). Research into use of dashboards is in its early stages but there is some evidence of their positive impact on student engagement leading to improvements in student motivation, retention, satisfaction and attainment (Duval, Verbert, Klerkx, Govaerts, & Santos 2013; UCISA 2015; Sclater, Peasgood & Mullan, 2016; Sclater & Mullan 2017). However much of the research focus is on the technical aspects of collecting and analysing data (Papamitsiou & Economides 2014) with little understood about how students respond to seeing data presented in this form (Duval et al 2013).

Methods

The data for the study were gathered from semi structured interviews with ten final year undergraduate students from a school of education. The sample was self-selecting and included students with a range of levels of attainment. In the most recent assessment, students in the sample ranged from 1st to 116th out of the cohort of 180. The sample had average marks (across all their modules) ranging from 51% (low 2:2) to 74% (1st). Hence, whilst being self-selecting, they covered a range of levels of academic attainment. Five of the group had done better, and five had done worse, than their overall average in their most recent assignment. This suggests that the sample had the potential to uncover a range of responses to the data about their recent assignment. All students were female.

Each student was given a dashboard based on their actual performance with their data presented in a number of formats. The dashboard showed their attainment in a recent assignment compared to others in the cohort, it also displayed a pie chart showing their attendance, a slider showing the degree classification that they were on track to be awarded, a list of their module marks. Semi-structured interviews were used to gather data on each student's response to seeing their data presented in this form.

Findings and Discussion

Our developing analysis uses Sutton's (2012) feedback literacy notions to understand these data. Sutton (2012) draws on understandings of academic literacies to make the case for the

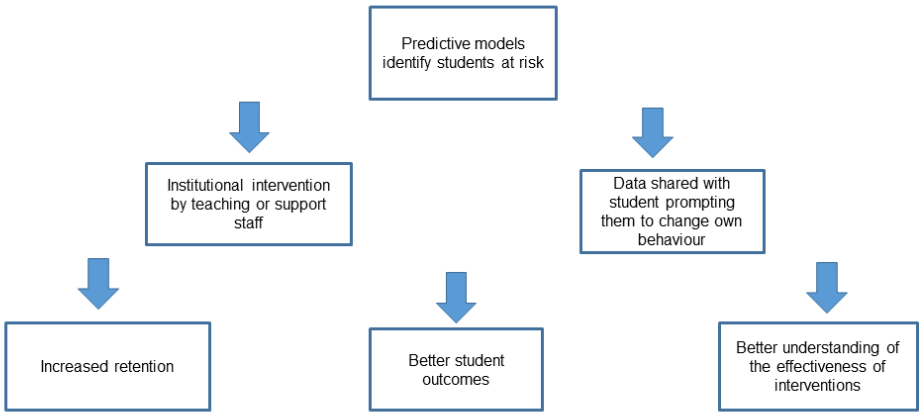
1 Dashboard is the term for the graphical representation of data, and learning analytics is the term for the computation that underpins these graphical representations.

idea of feedback literacy. It has been argued that academic literacies should be seen as embedded practices that exist with discipline values and norms and have epistemological roots (Lea and Street 1998) which are not simply a set of discrete technical and instrumental skills which learners must master. Rather acquiring academic literacy is “a complex process that not only demands that learners master new technical skills and adapt to new cultures of learning and teaching, but, crucially, acquire new educational identities: new ways of knowing, being and acting in academic contexts” (Sutton 2012, p.33).

Drawing on this understanding of academic literacy, Sutton (2012) has developed a model of feedback literacy around three interrelated dimensions, knowing, being and acting. The emerging analysis of the data uses these dimensions to understand how students respond to seeing their data presented in dashboard form. I describe how their responses are complex and unpredictable based on their personalities and their dispositions towards themselves and learning.

Based on this framework, I critique the model for learning analytics adopted by Sclater and Mullan (2017) and supported by Jisc[2], Figure 1, which suggests that learning analytics can be used to predict students at risk. The model suggests that, by sharing learning analytics with students and guiding them to interventions to address areas of weakness, then there are positive outcomes that follow including increased retention, students doing better and the institution learning about how to make interventions effective.

2 the sector body that promotes the use of technology enhanced learning



How predictive learning analytics works (Sclater and Mullan 2017, p.5)

Our interpretation of students' response to their data illustrates a range of ways that students did indeed value the getting this data to inform their understanding of their performance and to shape their future engagement with their studies. However, there is a danger that students faced with this learning analytics data can become more docile and compliant. They appeared to spend a disproportionate amount of time focussing on data about their attendance reinforcing MacFarlane's (2017) notions of student performativity and presentism. The Dearing report (1997, p.8) described one of the key imperatives for higher education as "to develop a culture which demands disciplined thinking, encourages curiosity, challenges existing ideas and generates new ones" (p.8). Hence I argue that if 'better student outcomes' means higher levels of this critical autonomous behaviour then we need to help students to gain a deeper understanding of what the data tells them and how they should interpret and act on it.

In summary, the way that students respond to dashboard feedback is similar to other forms of feedback and can be understood using Sutton's feedback literacy model (2012). It is mediated by their understandings of academic discourse and by their dispositions towards learning. Hence the use of dashboards is not the panacea that Sclater and Mullan (2017) suggest, rather it needs to be embedded in academic practices that support students developing academic maturity and recognise their diversity and individuality.

References

Duval, E. E., Verbert, K. K., Klerkx, J. J., Govaerts, S. S., & Santos, J. L. J. L. (2013). Learning analytics dashboard applications. *American Behavioural Scientist, 57*(10), 1500-1509.

MacFarlane, B. (2017). *Freedom to Learn*. London: Routledge.

Papamitsiou, Z., & Economides, A. A. (2014). Learning analytics and educational data mining in practice: A systemic literature review of empirical evidence. *Educational Technology and Society, 17*(4), 49-64.

Sclater, N. (2014). *Learning analytics The current state of play in UK higher and further education*. Retrieved from https://www.jisc.ac.uk/rd/projects/effective-learning-analytics

Sclater, N., Peasgood, A., & Mullan, J. (2016). *Learning analytics in higher education: A review of UK and international practice*. Retrieved from https://www.jisc.ac.uk/sites/default/files/learning-analytics-in-he-v2_0.pdf

Sclater, N., & Mullan, J. (2017). *Jisc Briefing Learning analytics and student success – assessing the evidence*. Retrieved from http://repository.jisc.ac.uk/6560/1/learning-analytics_and_student_success.pdf

Sutton, P. (2012). Conceptualizing feedback literacy: knowing, being, and acting. *Innovations in Education and Teaching International, 49*(1), 31-40. doi:10.1080/14703297.2012.647781

UCISA. (2015). *2014 Digital Capabilities Survey Report*. Retrieved from UCISA: http://www.ucisa.ac.uk/~/media/Files/publications/surveys/Digital_Capabilities_survey_report_2014.ashx