



# Learning by Design

2018 OUP BIOSCIENCE EDUCATION SUMMIT  
Edinburgh University, 5th-6th September 2018

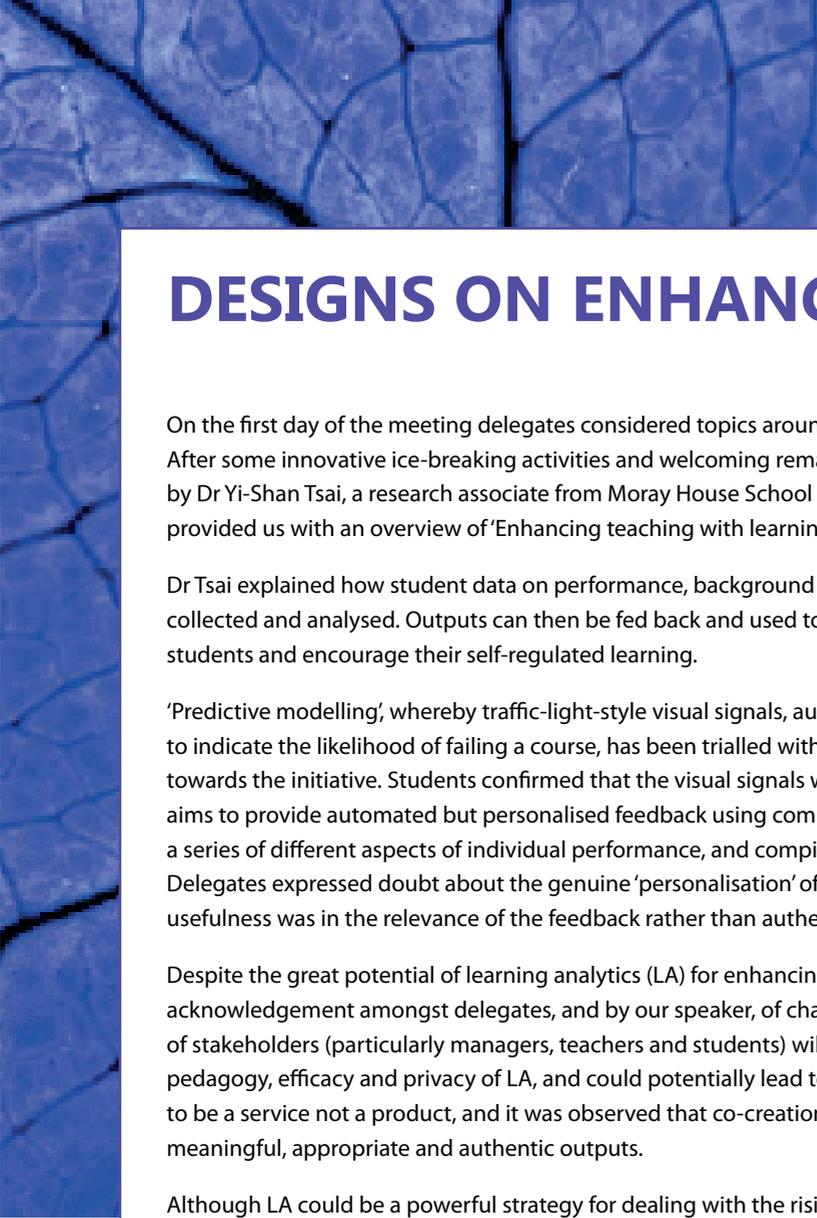
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**'Learning by Design'** was the theme of the 2018 OUP Bioscience Education Summit.

There were forty-eight delegates from 20 different UK HE institutes in attendance, representing a wide range of biology specialisms and roles.

The meeting was held over two half days in Edinburgh University's modern and centrally located Outreach Centre, with each half day focusing on a different theme.

Meeting organised and notes of proceedings compiled by **Dr Heather McQueen**, University of Edinburgh, and **Dr Annie Tierney**, Edinburgh Napier University.



## DESIGNS ON ENHANCED LEARNING

On the first day of the meeting delegates considered topics around the theme 'Designs on Enhancing Learning'. After some innovative ice-breaking activities and welcoming remarks, our guest plenary presentation delivered by Dr Yi-Shan Tsai, a research associate from Moray House School of Education at the University of Edinburgh, provided us with an overview of 'Enhancing teaching with learning analytics'.

Dr Tsai explained how student data on performance, background and engagement can be automatically collected and analysed. Outputs can then be fed back and used to inform the provision of educational services for students and encourage their self-regulated learning.

'Predictive modelling', whereby traffic-light-style visual signals, automated messages, flags, or referrals are used to indicate the likelihood of failing a course, has been trialled with 1500 students, 89% of whom were positive towards the initiative. Students confirmed that the visual signals were motivating for them. The 'On-task' tool aims to provide automated but personalised feedback using complex automated decision trees working through a series of different aspects of individual performance, and compiling a composite message to the student. Delegates expressed doubt about the genuine 'personalisation' of such a message and it was agreed that the usefulness was in the relevance of the feedback rather than authentic personalisation.

Despite the great potential of learning analytics (LA) for enhancing learning and teaching, there was acknowledgement amongst delegates, and by our speaker, of challenges to address. The differing motivations of stakeholders (particularly managers, teachers and students) will lead them to focus variably on costs, benefits, pedagogy, efficacy and privacy of LA, and could potentially lead to tension or conflict over its use. LA was agreed to be a service not a product, and it was observed that co-creation with institutions will be necessary to achieve meaningful, appropriate and authentic outputs.

Although LA could be a powerful strategy for dealing with the rising numbers of students in Higher Education, delegates reflected on whether LA use would drive up teaching quality. Concern was expressed that excessive LA could increase the gap between teachers and their students by replacing individual authentic communications with computer-generated messages.



## ENHANCED LEARNING SWAP SHOPS

The second session consisted of four short 'swap shop' sessions, whereby selected delegates share practical experiences and ideas with other attendees.

First, Paul McLaughlin from the University of Edinburgh shared his experiences of a bespoke online peer marking activity, advising wisely of the importance of sharing the pedagogical purpose with students. The design allowed students to provide their peers with pre-cooked feedback that they could edit or supplement during the task. The online format allowed staff to review procedures and establish that some students did indeed add their own feedback while most viewed the feedback they received after the session.

The second swap shop, by Nick Freestone from Kingston University, explored variations in student retention of material learned on devices of various screen sizes. Nick presented some intriguing preliminary data that both short and long-term retention of information were compromised when the information was learned via a mobile phone versus a laptop, and that intermediate results were achieved for both tests when learning happened on an intermediate-sized tablet screen.

Next, Harriet Jones from the University of East Anglia provided an update on recent revisions to the three main English A-level exam curricula, incorporating better practical work engagement and more mathematical training. The reduction in direct recall within exam questions was agreed also to bode well for student preparedness for Higher Education.

In the last swap-shop of this session Liz Alvey from the University of Sheffield told us about undergraduate research projects with local microbreweries. Via industrial visits supplemented with training in yeast molecular and microbiology analysis, focusing on genes associated with beer flavour, the students were equipped to work with the breweries on projects of their own choice, but with commercial or societal value. With the current steady rises in student number there was much interest in such innovative and authentic projects.

## REFLECTIONS ON SELF-EFFICACY

Post coffee-break we heard from the 2018 winner of Bioscience Teacher of the Year, Dom Henri from the University of Hull, who hosted his workshop 'To believe is to be able: A study of developing self-efficacy in undergraduate biologists'. Dom pointed out the importance of (and our current deficiencies in) developing self-efficacy in our students, citing its association with employability, academic performance, perseverance, satisfaction and mental health. To this end it would seem that students succeeding is key, and setting students up to fail is damaging. He reminded us of Kolb's learning cycle around thinking, doing and reflecting, and invited us to reflect upon an authentic skill for our students to build confidence around, and for us to design an appropriate learning experience.

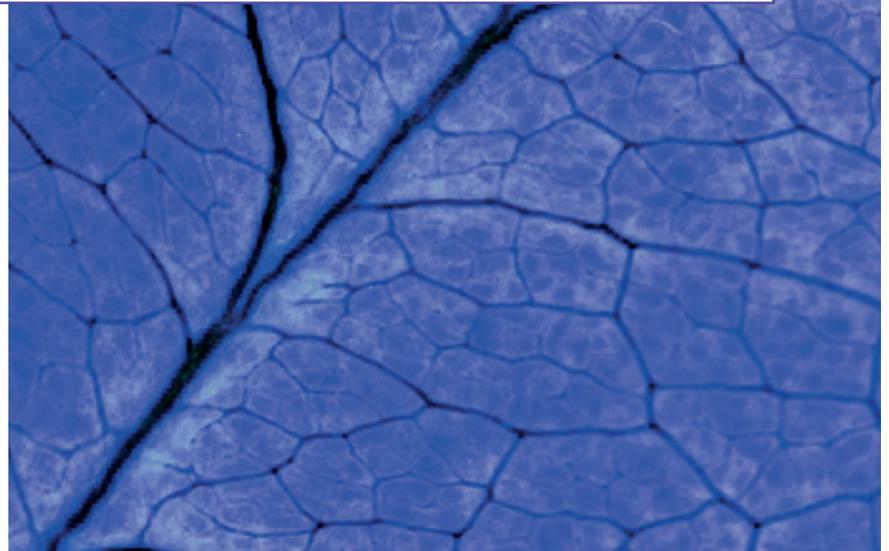
Whilst deep in reflection Dom then surprised us by drawing our attention to the issues of self-efficacy, building confidence and receiving support for early career staff. It was clear from the general discussion that, not only are we often preoccupied with discipline-specific student learning to the detriment of general development of learning skills, but also that charity starts at home. Many of us, as squeezed academics, would also greatly benefit from some support, reflection and celebrated success to build our own self-efficacy.

The formal part of the day ended with a reception at the Scottish Parliament hosted by Clare Adamson, Convener of the Scottish Parliament Cross Party Group on Science and Technology. Professor Jon Green from the University of Birmingham, Jonathan Crowe from Oxford University Press, and Dom Henri all took the opportunity to present prepared speeches highlighting some of the values and issues around learning and teaching in academia. Ms Adamson listened with interest, and presented a very supportive attitude towards championing of learning and teaching without unnecessary overuse of metrics. Discussion around higher education post-devolution continued from the parliament building to dinner and whisky tasting well into the evening.

## DESIGNS ON ENHANCING CAREERS

The second day of any conference is challenging, especially after a packed programme on day one. The theme for day two was 'Designs on enhancing careers'. As with the previous day, the format of presentations was mixed. We started the morning with a discussion of the latest developments surrounding the Teaching Excellence Framework (TEF) by Jon Scott. Although the situation is different in Scotland, the discussion about the pros and cons of the developing complexity of institution- and subject-level TEF was lively, underlining the importance of the topic to academics both north and south of the border. It is hard to argue with the aims of TEF – to raise the status of teaching in line with the status of research. However, it is equally hard to see how TEF as it currently exists will actually realise those aims.

Following on from the TEF discussion, we turned our attention to the funding of research and teaching. The picture is glum: dwindling funding, increasing student fees, the hidden costs of research, and full economic costing all gave us pause for thought. HE in the UK is experiencing lean times, which we are all aware of in our day-to-day roles. In discussion it was felt that institutions attach higher prestige to research funding than teaching income. In reality, the two are inextricably linked and it is clear that universities rely on income from teaching despite its generally perceived lower status.





## ENHANCING CAREERS SWAP SHOPS

After morning refreshments, we settled into a more positive frame of mind for the second series of swap shop presentations. Janis MacCallum and Sam Campbell-Casey of Edinburgh Napier University led discussions about the challenge of developing reflective learners and the importance of student ownership of skills development.

Next, Kelly Moule from the University of Bristol impressed us with a study demonstrating the impact of a structured tutorial system on developing disciplinary identities of bioscientists. Acknowledging the clear benefits of this intervention, discussion focused on how to achieve this with larger cohorts.

Our third swap shop of the session was presented by Gillian Rhodes from the University of Westminster who challenged us to consider what excellent teaching really is. A qualitative study assessed the opinions of academic staff, students, alumni and senior managers. While academics were most concerned with learning and communication, students cared more about content and teacher availability. Interestingly, alumni agreed with teaching staff about the importance of learning – with the benefit of hindsight.

Our last swap shop was an amusing exposé by James McEvoy, Royal Holloway, University of London, of how one's perspective can change when assuming the role of Associate Dean, and how that power can be used for good as well as evil.

In her closing remarks, Momna Hejmadi from the University of Bath noted how pleasing it was to have had such open discussion throughout the two days. She commented on the impressive breadth of experience represented by those at the meeting and how rewarding it was to see so many new people involved with the network. It was agreed that such open and invigorating discussion, often around fairly contentious issues and involving a range of viewpoints from management, long-standing teaching staff and relatively new staff, was particularly useful.

The unique combination of people present, encouraged by the traditional collegiate behaviour within this particular group, makes the annual OUP Biosummit meeting a unique event and a highlight of the calendar that is worth making the time to attend, even when time is what you really do not have to spare.

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