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collaboration within and between diverse teams**

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Conclusion

Exploring the changing pressures and influences on the Personal Tutor role in the University of Westminster has been informative. Whilst the review confirmed a great deal of good practice it was also clear extra support would be valuable to enhance the role. The use of an e-learning module appears to offer flexibility of delivery and integration with current policies. How well the module is perceived to add value, its compatibility with wider systems, and the feedback from Personal Tutors will inform future staff development practice.

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Developing cross-disciplinary education by facilitating collaboration within and between diverse teams

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There is currently substantial interest within Higher Education in providing modules or courses that are interdisciplinary, or that cross disciplinary boundaries in one way or another. A cross-disciplinary education may benefit both the student and the educator. Yet developing such a cross-disciplinary offer is challenging when it requires collaboration between academics more familiar working within their own silos. Particularly so when these colleagues are also dispersed across multiple sites. This article addresses this issue by offering a personal reflection on such an educational development at the University of Westminster.

Our challenge – To develop innovative cross-disciplinary education

In recent years, there has been great interest in developing cross-disciplinary education. Lyall *et al.* (2015) report that across the sector most HEIs endorse the view that interdisciplinary courses or programmes have increased over the past five years. For students, there may be added value in working

with peers with different types of expertise. This provides opportunities to develop soft skills and more complex problem-solving through collaborative enquiry. For educators, this offers the potential for developing in our students the attributes of highly employable graduates capable of making a positive contribution to the big challenges we face in our uncertain world. As a multi-faculty institution, the University of Westminster might employ cross-disciplinary education as an aspect of its distinctive offer. Thus, our current corporate strategy contains a commitment to enhance learning through cross-disciplinary provision.

For several years, the University of Westminster has offered students from our Arts and Science faculties the opportunity to learn from each other in the form of an optional Art/Science Collaboration module. This module was developed over a number of years through the Broad Vision project (Barnett and Smith, 2011; see also: <http://broad-vision.info/>). Led by National Teaching Fellow Heather Barnett (now based at Central Saint Martins, University of the Arts

London), Broad Vision was initially supported by a University pedagogic innovations scheme, and has attracted follow-on funding from the Wellcome Trust. Early on, Broad Vision was very experimental, and extra-curricular. Situating the project outside the formal curriculum freed us to take risks, and allowed us to develop a pedagogic model for cross-disciplinary learning. From 2012 onwards, the credit-bearing interdisciplinary Art/Science Collaboration option module has been on offer, but taken by a relatively small number of students restricted to Science and Arts disciplines. In order to enhance the impact of cross-disciplinary learning, our challenge therefore was to find a way of scaling up this singular innovation to reach a greater number of students.

The Broad Vision project provided us with a pedagogic model for cross-disciplinary learning that promotes true interdisciplinarity (Box 1 distinguishes between these terms). Initially, we provide a period of disciplinary exchange in which students serve as teachers and demonstrate to others aspects of their discipline relating to

a central common theme that varies from year to year (e.g. in our first year this was visual perception). In this way, students become aware of their developing subject expertise. They also practise key transferable skills in communicating this knowledge, overcoming differential subject expertise. This provides the groundwork for project work in which students undertake collaborative enquiry in cross-disciplinary teams to produce an output of their choosing that relates to the module theme. The outputs have been diverse, including artworks, experiments, computer games, conference presentations and co-authored publications. Each is interdisciplinary in that students from multiple disciplines combined their knowledge into a single activity, accomplishing an outcome that would have been difficult from a single disciplinary perspective.

A blog by music researcher Alexander Jensenius provides an accessible entry point into the different types of 'disciplinarity' (intra-, cross-, multi-, inter-, trans-; see Jensenius, 2012). Distinctions drawn can be subtle, and relate to the extent to which the subject disciplines are integrated. In our venture, we sidestepped these subtleties by using the term 'cross-disciplinary module' as the generic, referring to a unit that is team-taught and considers a given subject from multiple disciplinary perspectives. We were permissive regarding the extent to which modules required integration of approaches. Some, but not all, of the modules developed were interdisciplinary in the sense that they involved project work that required the methods of enquiry of two or more academic disciplines to be combined.

Box 1 Cross-disciplinary and interdisciplinarity

The vehicle that provided the impetus to scale up the Broad Vision innovation at Westminster was an ambitious and wide-ranging change programme called 'Learning Futures' that took place from 2012-2016. Two of the many outcomes of this programme were a new academic framework, and rewritten undergraduate curricula. Our goal was to provide an initial catalogue of cross-disciplinary electives available to students to choose alongside the

new curriculum when it launched in 2016/2017 at Levels 4 and 5. The Learning Futures programme provided a fertile environment within which to reconsider our cross-disciplinary offer; it offered a rare opportunity to adapt operational structures to facilitate cross-disciplinary provision. This was important because the Broad Vision project outcomes were achieved despite structures and systems that were not particularly conducive for cross-disciplinary work.

A specific challenge we had to confront in developing these modules was an organisational structure comprising five faculties distributed across four geographically dispersed sites. The University of Westminster is a large institution, currently providing an undergraduate education to approximately 16,000 students. Our portfolio is diverse, spanning science and technology, social sciences and humanities, and media art and design. Our degrees tend to have a practice focus, encompassing also business, architecture, and law. In scaling up our cross-disciplinary offer, our main initial challenge was to bring together disciplinary and geographically diverse teams, and foster collaboration, in this large multi-faculty, multi-site organisation.

Educational Development of cross-disciplinary elective modules at the University of Westminster

Our educational development of an initial catalogue of cross-disciplinary electives required collaborative working in diverse teams, both at university and module level. At the university level, two task groups, situated within the auspices of the Learning Futures change programme, performed the leadership and project management of the development of the electives. At the module level, cross-disciplinary teams of academics developed the actual electives. In this section, I outline what we did, identifying what worked well, and what worked less well in our collaborative working at each of these levels.

Leadership and project management
Leadership and project management of this educational development were performed by two time-limited task groups. Each task group was chaired

by a senior manager (Prof. Kerstin Mey, Pro-Vice Chancellor and Dean of Westminster School of Media Art and Design), and was diverse, comprising academics from each faculty, professional support staff, and students. One group focused on the academic development of the elective modules, and some of this development work is described in more detail in the next section. The other group focused on the operational framework for the electives, which was groundbreaking for us in several ways. Innovations introduced by this group included a dedicated timetable slot for electives, amendments to the workload allocation model in recognition of the extra challenge of teaching across faculties, and bespoke financial arrangements. Furthermore, because it was quickly determined that the electives should be 'University Owned', dedicated Quality Assurance and assessment board arrangements were put in place that were outside normal faculty structures, while remaining compliant with regulations.

One clear advantage of working as task groups within the Learning Futures programme was that it provided the opportunity to change how we operate to facilitate delivery of cross-disciplinary electives. This allowed us to confront at least some of the challenges encountered by the Broad Vision team in developing the Art/Science collaboration module. In this fashion, the task groups were effectively working in the 'third space' in Higher Education (Whitchurch, 2008). This project-based approach afforded us some agility to pursue a new direction of travel, less encumbered by regular committee structures. However, a limitation of this approach was that this work took place intermittently, as team members' schedules allowed. The contribution of a project manager from the change programme was essential to keep these developments on track – particularly given that, for this new initiative, the programme leader role was effectively distributed across a group of people.

In summary, the process we put in place to develop an initial catalogue of cross-disciplinary electives was as follows. Two open meetings were held for academic staff to pitch ideas for modules and to network across disciplines. These meetings elicited 27 written expressions of interest in offering a module. The academic

development task group selected fourteen of these proposals, primarily on the basis of their cross-disciplinary potential. This included an explicit requirement that module teams should comprise academics from more than one faculty. Ultimately, eleven of these proposals went forward for validation following module development, including those summarised in Table 1.

Residential event to facilitate module development

We put on a 48-hour residential event to facilitate module development. We were working with module teams that already had an overview of their proposed module. However, these teams generally had had limited opportunity to work with each other. Our aim was to provide teams with the time and space to collaborate, so that by the end of the event they had developed module outlines and tested their ideas on some students. As developers, we also wanted to provide fresh input designed to broaden the range of possibilities considered by teams, beyond those contained in their initial expression of interest.

In overview, we began by working with the entire group for half a day, mixing up module teams. We combined short plenary presentations with discussion mediated through open space technology (see Owen,

2008). This provoked consideration of opportunities afforded by interdisciplinarity and Learning Futures, while allowing colleagues to set the agenda and further explore points of interest. The next full day was devoted to module development. Case studies of cross-disciplinary and collaborative electives were presented, before module teams collaborated to sketch out module plans, ultimately pitching their ideas to a panel of student reviewers (our pedagogic Dragon’s Den!). The residential concluded with a final half day that focused on practicalities: ideas were translated into formal module specifications, and emerging operational issues were collated to be addressed by the operations task group.

Our residential took place in a corporate training venue situated on the outskirts of London, with good transport links. The venue provided space for plenary sessions for approximately 50 participants, and ample break-out rooms for development work by module teams. By good fortune, our event coincided with the hottest day of 2015, allowing us also to make good use of the grounds. The residential offered protected time away from normal academic commitments, providing creative space for module teams.

Having two evenings away enabled constructive discussion to continue beyond the working day. By bringing together our diverse teams in this way, our aim was to facilitate collaboration within and between teams in the belief that this was essential to the development of a strong cross-disciplinary offer.

Reflection

An important function of the residential event was enabling collaborations between geographically dispersed academics. The facilitators were academic peers who had themselves experienced the joys and challenges of cross-disciplinary education. Heather Barnett, Prof. Mark Clements (now at the University of Lincoln) and I had worked closely before on the Broad Vision project and on the Art/Science collaboration module. A concrete outcome of this process was the submission of eleven module outlines for validation. Less tangibly, however, we were enabling colleagues with an interest in cross-disciplinary learning to network and learn from each other, kick-starting a community of practice with an interest in cross-disciplinary learning (Wenger, 1998).

However, our reliance on task groups to lead and manage the development process was not ideal. We were fortunate that in Prof. Kerstin Mey this initiative had an influential sponsor, committed to our aims, and a skilful chair of task groups meetings. Nonetheless, leadership was distributed, with our sponsor, a project manager, and the module development team all variously contributing.

This diffusion of responsibility was inefficient (Petty *et al.*, 1977), and progress was intermittent. Some issues were overlooked, such as putting in place constructive peer review of module outlines prior to validation. Also, as described in the next section, we might have done more at the start of the process to estimate a target number of modules to develop. Although sub-optimal, this arrangement was required in the absence of a single academic lead with responsibility for these novel developments. By turn, this was a consequence of the scale of the changes simultaneously introduced at Westminster through the Learning Futures programme.

Rank	Title	Brief Synopsis
1	Pop Goes the Now: Deconstructing Popular Culture	Appreciate one’s own place in the context of popular culture, drawing upon multiple disciplinary perspectives
2	Art/Science Collaboration	Interdisciplinary project work, involving collaboration across arts and science disciplines
3	LGBTQ Studies	Studying LGBTQ lives from a range of academic disciplines and perspectives
4	Developing Effective Communication for Professional Life	Interpersonal communication skills, across a range of professional contexts
5	Game On: ‘Serious Games’ Production, Entrepreneurship and Social Change	Interdisciplinary project work, involving the production and marketing of an electronic game to address a societal issue (‘gamification’)
6	Coaching and Mentoring	Developing coaching and mentoring skills for leadership, across a range of professional contexts

Table 1 Cross-disciplinary electives provided in 2016/17 (ranked by number of registered students)

Preliminary evaluation

At the structural level, this initiative was successful. In 2016/17 the University provided six times as many cross-disciplinary modules as was the case in the previous year. This provision enabled a 565% increase in the number of UG students learning in a cross-disciplinary context. More importantly, an operational framework is now in place that enables further development of our cross-disciplinary portfolio. This includes a dedicated timetable slot, amended workload allocation model, and specifically tailored arrangements for Quality Assurance.

However, the impact of this work in year one was limited by low student take-up. Only six of the eleven validated modules attracted sufficient module registrations to be provided. This was despite our best efforts to publicise the electives through online communications, video clips and at module fairs. With the benefit of hindsight, a low take-up was perhaps unsurprising. Historic module registration data suggests that our students tend to favour an option from their own discipline in preference to a module offered by another discipline. Anecdotal reports suggest that this pattern has also occurred at other universities when introducing cross-disciplinary electives. Thus, a limitation of our planning was a failure to forecast the number and nature of electives that would be viable. Making an accurate prediction would have been particularly challenging in our context given the broad scope of Learning Futures, and the wide range of changes simultaneously introduced.

To address this limitation, we consulted our students to determine potential *foci* for further developments of our electives offer. A large and representative sample of our current students (1165 respondents) completed our online survey of their attitudes towards elective modules. As illustrated in Table 2, this revealed that students express a preference primarily for electives that relate to personal interests (73%), or align with their programme of study (54%). This attitude towards electives seems to be borne out by our module registration data, judging from the range of electives that were viable to

run in year one. Other findings were more surprising, such as a mismatch between student and staff evaluations of the relative importance of a range of characteristics of cross-disciplinary learning collated at our residential. In particular, the item least endorsed by our students was 'Examine grand challenges requiring interdisciplinary solutions'.

Factor	Endorsement (%) (selected within top three factors)
Personal Interests	72.80
Relevance to Subject of Study	53.70
Assessment Type	46.90
Timing	32.30
Location	29.50
Module Leader	19.70
Recommendations from Peers	16.10
Recommendations from Academic Staff	15.10
Recommendations from Careers Advisors	7.50
Other	1.70

Table 2 Attitudes towards electives – factors determining choice

Recommendations, and next steps

There are three main recommendations I would like to draw from our experience of developing cross-disciplinary modules. First, I would recommend that an academic programme leader should ideally be appointed at the earliest practical time to avoid the inefficiency and diffusion of responsibility associated with task groups. Second, I would advise against making assumptions about students' appetite for cross-disciplinary learning. Our catalogue of cross-disciplinary electives emerged from the interests of staff, rather than being demand-led, or managed around themes that might produce an easier to communicate 'brand'. While we tested out ideas on students during the residential, I believe we missed a trick by not co-curating the catalogue of electives with student partners from the outset. Third, I believe it is important to provide protected time and space for module development when

these modules are to be delivered collaboratively by disciplinary diverse teams. Our residential event seemed to serve this function well. In the spirit of a community of practice, it was facilitated by peers who had themselves designed, developed, and delivered a cross-disciplinary module.

At the time of writing, the new electives modules are being delivered for the first time, and we are keen to evaluate how students receive them. A senior appointment has recently been made to the role of University Director of Cross Disciplinary Learning (Dr Thomas Moore). We anticipate that this will provide clearer and more visible leadership than was possible by a group of individuals (no matter how well intentioned). There are plans afoot to rebrand the electives, around the theme of expanding professional skills to support career development. Processes have been put in place, under the University's newly formed 'Centre for Teaching Innovation' (see <http://cti.westminster.ac.uk/>), to support the formation of communities of practice.

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