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### Technology developments across the UK HE sector: reflections on recent UCISA research

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## Technology developments across the UK HE sector: reflections on recent UCISA research

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*This paper summarises recent findings from UCISA case study and survey research on technology enhanced learning (TEL) developments across the UK HE sector. Updating the conclusions presented in Walker, Voce & Jenkins (2013), the article reports on the pace of change in institutional adoption of TEL tools and the impact this has had on service and business models.*

*The UK sector has witnessed steady growth in centrally managed TEL services over the past decade, with a significant investment in technologies such as VLE platforms and e-assessment solutions to manage and control the learning experience. The rise in UK tuition fees to a £9k maximum in 2012 has led to a further wave of TEL investment, with the elite Russell Group institutions in particular seeking to improve their offer to undergraduates through the provision of lecture recording and other student-facing services, which are aimed at attracting applicants and widening participation.*

*However, our survey research has shown that the expansion of TEL service provision at the centre has not led to the emergence of new business and service delivery models: self-managed services which support traditional campus-based course delivery remain the most common approach. Despite the recent upsurge of interest in online learning by senior managers connected with the emergence of MOOCs, innovation in course delivery and pedagogic design has yet to take off and the 'trickle-down' effect of innovative pedagogies from MOOCs to campus-based undergraduate teaching is not yet in evidence. Student expectations in an increasingly competitive undergraduate marketplace remain the main driver for change, with their demands focusing on better administration, resource provision and support for learning, rather than innovation in teaching methods. This extends to improved connectivity for students' mobile technologies to university services, which represents a key challenge now facing higher education institutions.*

*We predict that if change in business and TEL service models across the UK HE sector is to come, it will be centred more on postgraduate taught programmes and CPD provision where there is a more established practice of offering flexibility in course delivery, with students better prepared to embrace a mix of online and campus-based learning.*

**Keywords:** technology enhanced learning; learning technology; TEL services

## **Introduction**

The Universities and Colleges Information Systems Association (UCISA) has surveyed UK higher education institutions on the use of learning technology tools on a biennial cycle since 2001, offering a longitudinal perspective of TEL developments across the sector. Our most recent survey report (Walker, Voce & Ahmed, 2012) and case study research (UCISA, 2012) have tracked the current, emerging and predicted patterns of learning technology use across the UK HE community, exploring the range of tools that are centrally-supported and the services underpinning them, the interaction with student-owned devices and their penetration across institutions as a feature of course delivery. Recently we have conducted additional case study research on effective uses of mobile technologies to enhance the student learning experience (UCISA, 2014), looking at how institutions are addressing the mobile agenda.

In this short paper, we summarise the key developments in learning technology provision and emerging trends in service delivery models for higher education, drawing on our own research and related UK reports.

### **1. Pace of change in technology development by HE institutions**

#### ***Developments over the past decade (2003 -2013)***

The pace of change in technology adoption across the UK higher education sector has been steady rather than spectacular over the past decade. Our perceptions of developments to date should not be skewed by the recent rhetoric on MOOCs (Parr, 2013) and enthusiastic support from the current UK Minister for Universities and Science for online learning (Willets, 2013), which suggest a more radical adoption of the digital agenda. Looking back over the past decade (2003 – 2013), technology provision for learning and teaching has followed a gradual pathway, and may be divided into three key phases of development.

#### ***Capacity-building (2003 – 2008)***

Prior to 2003, despite various false starts with project funding (e.g. the Teaching and Learning Technology Programme in the 1990s), the focus was very much on small-scale discipline-specific project developments. The implosion of the UK e-University (2003-4) represented a watershed moment, marking a change of direction for the Higher Education Funding Council for England (HEFCE) in strategy and in its funding model for HE institutions, releasing capital grants for dedicated infrastructure development for institutions. This pump-priming supported a period of investment in centrally managed TEL services, which was guided by the JISC's e-learning programme (2003-09), dedicated to the embedding of technologies across institutions. Capacity building was initially influenced by the JISC managed learning environment (MLE) model, integrating the institutional virtual learning environment (or learning management system) to key information systems such as student records and library systems.

### *Consolidation of TEL services (2008 -2012)*

The Higher Education Academy's e-learning benchmarking and pathfinder initiatives (2006-9) straddle the capacity-building and consolidation phases, during which UK HE institutions were busy reflecting on e-learning investments and the strategic priorities for development, judging how best to maximise the benefits accrued from these systems (HEA, 2008). The revised HEFCE e-learning strategy (2009) and National Union of Students' (NUS) Student Perspectives on Technology report (2010) gave special attention to this theme.

### *Disruption and renewal? (2012 onwards)*

For the current phase since 2012, it is a moot point whether the debate over online provision and outreach education really reflects disruption and renewal of institutional e-learning visions. Only time will tell how durable and influential the current MOOC bubble is, and whether online learning is successful in driving changes in technology development and usage, acting in David Willetts' words as a "game changer" in opening up access to higher education and expanding UK HE teaching provision internationally (Willetts, 2013).

What is clear is that capital investment over the past decade has contributed to the mainstreaming of technology usage institution-wide for the management and control of key learning and teaching activities. This is particularly evident for the management of assessment activities, with significant investment in assessment-related technologies such as e-assessment, e-submission and plagiarism detection tools, as depicted in Table 1 below. The 2012 UCISA Survey data revealed that 50% of responding institutions reported having more than 50% of their courses now using e-submission tools. In addition, we have seen the virtual learning environment (VLE) emerge as a mission-critical educational system, ubiquitous across the sector. The 2012 UCISA data explored the trend for reviewing the investment in VLEs, such that 62% of responding institutions had undertaken a review in the last two years.

**Table 1: Institutional provision of TEL tools**

<b>Tool</b>	<b>2008</b>	<b>2010</b>	<b>2012</b>
VLE	96%		100%
<i>Other tools:</i>			
Plagiarism detection		92%	92%
E-submission		89%	87%
E-assessment	77%	80%	79%
E-portfolio	64%	72%	76%
Wiki	72%	75%	74%
Blog	68%	74%	72%
Podcasting	69%	69%	62%

*Source: UCISA 2012 TEL Survey*

Yet the UK sector is far off from some of the more ambitious Gartner technology predictions for 2013-14: the recent Gartner report for higher education (2013) heralds the rise of interactive technologies such as 'gamification' and adaptive learning, placing them at the

peak of its hype cycle for the global HE sector (Lowendahl, 2013), but the reality across UK campuses is quite different. Many institutions are still grappling with basic support and infrastructure requirements (e.g. wifi resilience) for mobile learning and the renewal of their own learning platforms, with support for social learning interaction through the use of student devices still some way off.

Figure 1 represents our appreciation of the maturity of TEL adoption within the UK higher education sector, adapting Gartner's hype cycle for higher education [1]. The design of the figure and positioning of items were informed by data from the 2012 UCISA TEL survey and through discussion with e-learning managers. Items marked with a cross are those which appear to be dropping off the hype cycle, either due to lack of take-up by academic staff or as a result of replacement by newer technologies; e.g. lecture capture solutions appear to be replacing podcast-only solutions.

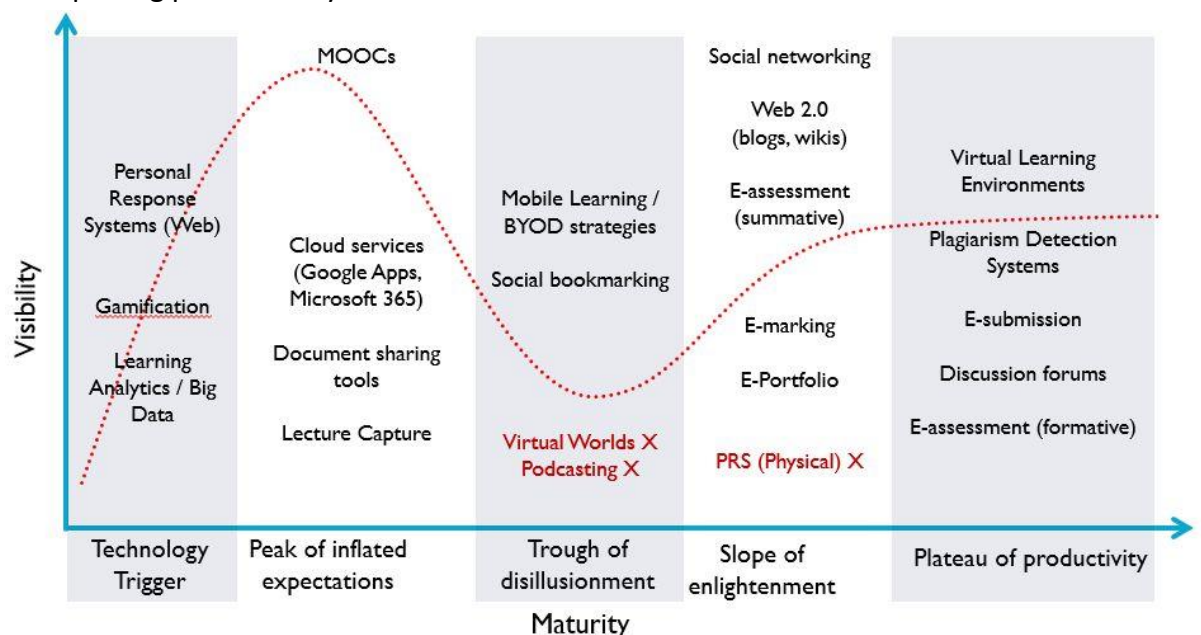


Figure 1: UK Higher Education TEL hype cycle (based on the Gartner hype cycle methodology [1])

### ***Current & future challenges for institutions in the delivery of technology-enhanced learning services***

Respondents to the 2012 UCISA survey data identified the support for mobile technologies and the 'bring your own device' (BYOD) agenda as the leading challenges which institutions are now facing. This conclusion chimes with other recent research studies, such as the Universities and Colleges Admission Service (UCAS) Media survey, which has reported on the increasing proportion of students owning smartphones: four-fifths (82%) of new university and college students own a smartphone and at least 20% have a tablet (UCAS Media, 2013). The reality is that this number is set to rise, and recent NUS research conducted in December 2013 puts smart phone ownership at just under 90% of undergraduate students (Bone, 2013).

Current and future generations of students will be arriving on campus with the expectation that their technologies will seamlessly interconnect with university services and support their learning experience. Table 2 shows the longitudinal picture of tool usage, confirming the rise of student-controlled and creative technologies to promote information and knowledge-sharing and networking in learning and teaching activities. We anticipate that this upward trend in tool-ownership and adoption for learning activities will be sustained in future years.

**Table 2: Software tools used by students which are not centrally-supported**

Tool	2008	2010	2012
<b>Social networking</b>	-	81%	73%
<b>Blog</b>	46%	59%	60%
<b>Document sharing tool</b>	-	-	52%

*Source: UCISA 2012 TEL Survey*

Yet these technologies remain on the periphery of formal course delivery, with only baby steps taken by the sector as a whole in acknowledging and supporting the role of student-owned devices and external services in support of learning activities, both in formal and informal learning contexts. Our recent case study research on mobile learning (UCISA, 2014) showcases ways in which some institutions are now addressing mobile learning, such as the University of Greenwich’s institutional change agenda for digital literacies, which promotes the use of mobile devices in learning and teaching activities over a three-year implementation cycle (Kerrigan et al., 2014). Medical schools have also embraced mobile technologies as a way of bridging the divide between the university campus and teaching hospitals (cf. the Manchester Medical School case study in the UCISA publication focusing on the School’s adoption of mobile learning), albeit through issuing mobile devices rather than the accommodation of the technologies that students bring to campus (Mooney et al., 2014). However for many other institutions, the use of mobile devices for active learning is restricted to specific modules and project innovations and has not yet been mainstreamed.

Mobile learning is an area that we are tracking in our most recent 2014 UCISA Survey [2], and we anticipate that the findings will reveal greater planned investment by institutions in this domain in app development and responsive design for web services. The 2012 Survey reported a low benchmark of provision offered across the sector, with only limited progress reported as having been made in the optimisation of services for mobile devices, primarily aimed at access to email, course announcements and library services, as depicted in Table 3 below. Unsurprisingly, institutions have focused on pushing out information to learners, with very limited provision in support of two-way interaction, such as through dedicated support for collaboration software (blogs, wikis and discussion boards). However, recent developments by the major learning management systems in supporting interaction through their apps (e.g. Blackboard Mobile Learn app’s support for discussions, journals and blogs) have demonstrated the ‘direction of travel’ in mobile learning.

**Table 3: Institutional TEL services optimised for mobile devices**

TEL Service	2012
Access to library services	37%
Access to email	35%
Access to course announcements	31%
Access to timetabling information	26%
Access to course materials & learning resources	21%
Access to personal calendars	21%
Access to communication tools	20%

Source: UCISA 2012 TEL Survey

Other new service areas which have attracted recent big investment include document sharing and lecture capture systems, supported by 50% of responding institutions to the 2012 UCISA survey. The elite Russell Group institutions have led the sector in investing strongly in lecture recording services (64% reported as having done so), with institutions such as Newcastle University explicitly marketing them to prospective students as part of their e-learning offer in return for threshold tuition fees. [3]

### ***New approaches to service management in support of teaching and learning?***

Whilst we have observed an expansion of TEL service provision through steady capacity building, there is little evidence to suggest that institutions have moved away from centrally managed models for the delivery of these services. Our research shows that the outsourcing of TEL provision and service delivery is not well established and is largely limited to email, calendaring and basic support services. Cloud-based services for learning and teaching as a proportion of the UK market are not that far advanced, although we note a growing uptake for hosted services such as Google Apps for Education and Microsoft 365. This may take off in the future, with the 2012 survey data revealing that a number of institutions (n = 20) are now considering the outsourcing of provision for their institutional VLE. However, it is worth stressing here that a consideration of hosted solutions does not necessarily translate into action. We note a recent lecture capture survey of UK institutions (n=43) by Southampton Solent University (December 2013), which revealed that less than 30% of responding institutions had opted for cloud-hosted services, with the overwhelming majority supporting self-managed installations.

## **2. What evidence is there of changing business models and strategic focuses in teaching and learning in response to market shifts?**

UCAS, the university admissions body, reports that the £9k tuition fees regime has not held back admissions to UK universities this year, with a record number of applications for undergraduate courses registered in 2013 (Adams, 2013). The reported admissions statistics indicate a strong demand for campus-based education, which is evident for UK-based and international students, as well as for applicants from disadvantaged backgrounds. In contrast, fully online learning still represents a small part of the market. UCISA data

shows that the proportion of fully online courses has declined slightly over the years and represents just 3% of the total number of courses supported by technology.

Is this all about to change? The current MOOC frenzy and fanfare associated with the launch of FutureLearn [4] – an initiative strongly backed by the Minister for Universities and Science as a way of internationalising UK higher education and ‘punching our weight’ in the global market (QAA, 2013) – suggests that we have reached a watershed for TEL services in terms of their role in supporting learning and teaching. Strong claims have been made for MOOCs in driving innovative pedagogies and flexible modes of course delivery, as well as encouraging learner analytics through the processing of course data, but is there substance beyond the hype? Don Nutbeam, Vice Chancellor of the University of Southampton, has outlined how Southampton are planning to develop two or three MOOCs per year and have earmarked a £60k budget per MOOC to develop a high quality offering, which will act as a driver for innovation in teaching and learning delivery “in and through campus”, adding and extending access to content and learning resources, further enhancing the quality of the campus-based learning experience (Nutbeam, 2013). Having launched successful MOOCs on the Coursera platform, Jeff Haywood, Vice-Principal Knowledge Management at the University of Edinburgh, has outlined Edinburgh’s plans to launch a further 20-24 MOOCs with around £1 million investment. The materials under development will be made available under creative commons licences and the University is investigating how to incorporate MOOCs into their undergraduate programmes (Haywood, 2014). The University of Nottingham’s Vice Chancellor David Greenaway announced something similar at the opening address of the 2013 Association of Learning Technology Conference, heralding Nottingham’s internal-facing *NOOCs* (Nottingham Open Online Courses) as a way of driving innovation in the use of technology to support delivery of the taught curriculum, and he has blogged about the potential of MOOCs to inform institutional practice in the delivery of distance, online and blended learning courses (Greenaway, 2013).

If delivered effectively, the adoption of MOOC-style pedagogy for campus-based students may offer opportunities to free up scheduled lecture slots for more focused support (e.g. one-to-one support) and more time for quality interactions between students and academic staff. By ‘flipping the classroom’ in this way, more time can be freed up for small group work, lab study and practical work, and there are also opportunities for transforming assessment and feedback, leading to more choice and flexibility in learning approaches on campus. Whilst MOOCs and the associated ideas on the inversion of online / classroom learning are not new, with well documented examples of this practice existing across the sector (e.g. Young, 2012), there is an emerging view that MOOCs may serve as an *accelerator* in mainstreaming new approaches to curriculum design which are enabled through the use of technology.

A recent CETIS white paper makes a compelling case for the pedagogic innovation bound up in MOOC design to filter down to campus-based academic practice, enabling ‘more flexible forms of learning and assessment that include community as well as content-based models



of learning' (Yuan, Powell & Olivier 2014). At the University of Southampton the physical estate is being shaped to complement this learning vision, and students are being actively engaged to influence the design of highly connected collaborative learning spaces supporting small group face to face interaction. And yet.... there is the inescapable reality that MOOCs need to be a vehicle for financial return in order to prosper and drive sustainable innovation. As Don Nutbeam has observed: "Either MOOCs deliver commercially or they will be forgotten in 2-3 years" (Nutbeam, 2013). It is a highly experimental phase at the moment, but ultimately it is all about financial development and return through federated partnerships.

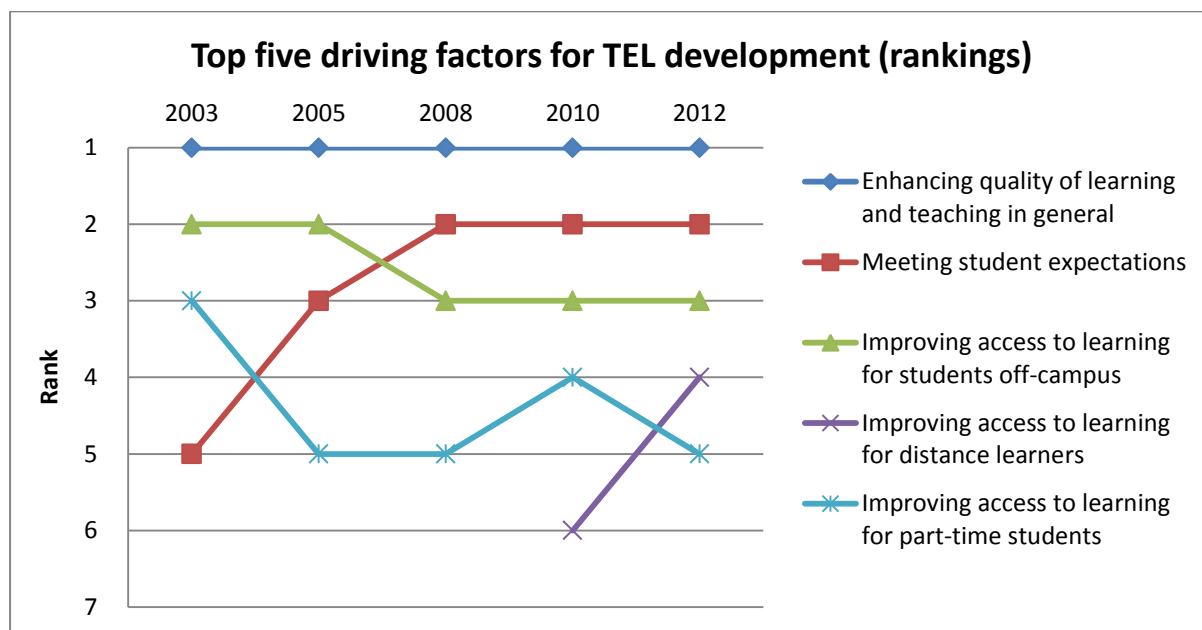
MOOCs continue to be perceived as a marketing tool to attract new students and extend an institution's global reach. How effective MOOCs can be for marketing existing programmes has yet to be determined. The University of London recently reported that 150 students from around 93,000 who started on four MOOCs have now registered on to University of London degree programmes, but the evidence on financial returns for this type of activity is patchy. Despite talk about commercial applications of big data from MOOC delivery and spin-offs from assessment and accreditation, there is no established business model in place and all the current evidence seems to suggest that this delivery mode suits graduates and mature professional learners. This profile closely resembles the one found by the University of London and replicated in demographic surveys run by other Coursera MOOC partners, namely that the 'majority of MOOC users are employed professionals using the short courses in order to develop or broaden their skills base' (Grainger, 2013) – i.e. established learners rather than a new market of non-traditional learners. This has led MOOC providers such as Udacity and Coursera to move towards provision of courses for the corporate market with the intention of providing corporate training and courses for recruiting new staff to companies such as Google and Yahoo.

Where then may we see change in teaching and delivery models? With the recent introduction of student tuition fees, we speculate that while undergraduate applications are more than holding up, there may be a delayed effect on the market, with the big squeeze to come in the taught postgraduate market. If this comes to pass, we may well see an enhanced role for TEL services in supporting more flexible study pathways for taught Masters programmes, including credit-based learning and fully online components to support flexible and more cost-effective delivery models, whilst undergraduate programmes continue to follow a more traditional delivery model.

### **3. What do our students expect?**

The UK HE sector does not track student perceptions of TEL services in the way that the annual ECAR study of US undergraduates and IT [5] does, but recent reports all point to an expectation of instant and on-demand access to learning amongst UK students. Students see technology as providing them with ways to study more flexibly – whether from home, the workplace, using mobile technologies, on campus, or any combination (NUS, 2010). This

expectation is reflected in the UCISA TEL Survey responses as institutions have consistently positioned access to off-campus, distance and part-time students in the top-six list of driving factors for TEL development, as shown in Figure 2 below.



Source: UCISA 2012 TEL Survey

**Figure 2: Top five driving factors for TEL development (rankings)**

More recent NUS research has shown that students expect to see further changes in the use of technology which will address administration, resource provision and support for independent learning, but interestingly less emphasis is placed on the role of technology in transforming teaching methods in the future. The supplementary use of technology for online provision of learning resources and content delivery is still very much a part of the future learning experience in their view, but this does not extend to radical changes in teaching methods for campus-based learners. Student feedback provides a clear message that the use of learning technologies should not be employed as a replacement for face-to-face contact time, specifically not for the lecture and traditional face-to-face teaching encounters (Bone, 2013).

As Figure 2 shows, meeting student expectations has become a key driver for TEL development, second only to enhancing the quality of teaching and learning, and reflects the increasing importance of the UK's National Student Survey (NSS) for both students and institutions. For example, the Imperial College Student Union has published a response to the NSS over the past three years with a view to identifying the areas that the institution and its departments should be focusing on to improve the student experience. [6]

## **Students also expect to play a greater role as partners in course design / delivery**

HEFCE released last year a second tranche of funds for the *Changing the Learning Landscape* programme, which is directed towards supporting transformative change across institutions in embedding learning technologies. [7] The programme draws on a number of key partners including the National Union of Students and aims to support senior managers, helping them to see the opportunities to align technology enhanced learning developments with strategic priorities. There is indeed an increasing awareness across the sector of the importance of involving the student community in the process of scoping and planning TEL developments, engaging students as partners in curriculum design, and this has been a focus of recent JISC-funded projects which have engaged students as change agents [8]. This represents a developing trend, backed up the NUS research study of student attitudes to technology – with 51% of respondents agreeing that it is important for them to have some input on the planning of technology in courses (Bone, 2013). This recommendation aligns with a call made by Rachel Wenstone, Vice President (Higher Education) of the National Union of Students at the 2013 Association for Learning Technology Conference [9], where she proposed that institutions involve and empower students to shape their learning experience through the creation of partnerships at all levels of the institution (NUS, 2012). A similar message was conveyed by Alex Louch, VP Academic Affairs at the University of Exeter, who presented the student perspective at a recent event on MOOCs [10] and called for students to help shape MOOC development. Alex himself sits on his institution's MOOC Project Board.

## **Conclusion**

The past decade has witnessed significant investment by UK HE institutions in new technology enhanced learning services. Investment has been driven by a need to scale up and manage key learning, teaching and assessment processes across institutions. The ubiquitous presence of centrally managed VLE and e-assessment systems across the HE sector bear testimony to this drive to push technology out to departments and embed its use within academic practice - in this way actively supporting the adoption of TEL services by teaching staff.

The recent rise in tuition fees for undergraduate programmes has enabled a fresh wave of investment to be made by some of the UK's leading universities, focusing on the creation of new TEL services as part of an improved offer to undergraduates. Current investment has placed a strong focus on the establishment of student-facing TEL services that will enhance the learning experience *on campus*, and this initiative has been informed by student expectations and the recognition that universities are operating in an increasingly competitive admissions market where the quality of student services counts. In this respect there is an emerging recognition of the importance of TEL services and specifically the value of mobile service provision to students' learning, with attention by universities to the support they offer students for the technologies that they are bringing on campus and seeking to use to support their own learning.

The evidence from NUS research suggests that students' expectations appear to be directed towards better services, rather than radical pedagogic innovation in their course experience, with technology applied where it is relevant to learning and teaching activities to enhance the campus-based learning experience. In this respect, the role that the emerging generation of students may play in informing uses of technology in course delivery, acting as partners and change agents in curriculum design, may become more significant in future years.

There is less clarity over future business models for taught provision which draw on TEL services. The MOOC phenomenon promises much – revolutionising campus-based pedagogy and the use of the physical estate – but in our view if change is to come, it is more likely to be manifested in postgraduate and continuing professional development provision, acknowledging the competencies that students possess at this stage of their academic and personal development to embrace a richer mix of flexible and independent study – and where traditional universities have long supported greater flexibility in their delivery of programmes. Here we may see an enhanced role for TEL services in supporting a mix of on-line (tutor-moderated and peer-led) and more structured *x-type* MOOC learning with on-campus teaching, as part of more flexible programme designs. For this to happen, we would need to see sustainable innovation and investment in pedagogic practices accompanied by cultural change in programme design and academic practice. This must involve the effective transfer of practice from niche courses to the wider academic community, underpinned by strong institutional support for the adoption of new teaching and course delivery methods. In addition, concerns raised by the NUS about the lack of ICT competency of academic staff (NUS, 2010) need to be addressed by institutions through the provision of appropriate support mechanisms for academic staff to ensure they are given time, tools and the skills to develop expertise in the use of TEL (Laurillard, 2010).

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## Notes

[1] Gartner hype cycle methodology –

<http://www.gartner.com/technology/research/methodologies/hype-cycle.jsp>

[2] The 2014 UCISA TEL Survey was circulated to UK higher education institutions on 8<sup>th</sup> January 2014 for completion by 7<sup>th</sup> March 2014. The Report on the 2014 Survey is due for publication in September 2014. The 2014 question-set is available at:

<http://www.ucisa.ac.uk/bestpractice/surveys/tel.aspx>

[3] Details of Newcastle University's 'offer' to new undergraduate students is available at:

<http://www.ncl.ac.uk/quilt/resources/excellence/newcastleoffer.htm>

[4] FutureLearn is a MOOC provider led by the UK Open University and a consortium of UK and international partner institutions, which was launched in December 2012. Further details are available at: <https://www.futurelearn.com/>

[5] ECAR Study of Undergraduate Students and Information Technology, 2013

<http://www.educause.edu/library/resources/ecar-study-undergraduate-students-and-information-technology-2013>

[6] The NSS response from Imperial College Union is available at:

<https://www.imperialcollegeunion.org/blogs/deputy-president-education/nss-response>

[7] Changing the Learning Landscape is a professional development programme aimed at helping UK HE institutions to explore practical, innovative use of digital technologies in learning and teaching. Further details are available at: <http://www.heacademy.ac.uk/cli>

[8] The JISC has funded a series of curriculum development projects which have engaged students as change agents. Further details are available at:

<http://iiscdesignstudio.pbworks.com/w/page/31087422/Students%20as%20Change%20Agents>

[9] 'It's all about the learner', Keynote speech by Rachel Wenstone, Vice President (Higher Education) of the National Union of Students at ALT-C 2013, Nottingham, UK. 10-12 September 2013. <http://www.youtube.com/watch?v=cjINstTYw9U>

[10] *MOOCs: What have we learned, emerging themes and what next?* University of London, 28 January 2014. <http://cdelondon.wordpress.com/2014/01/27/moocs-what-have-we-learned/>

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