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Online learning at research-intensive universities

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INTRODUCTION

1. Research-intensive universities (RIUs) have a three-part core mission: teaching, research and innovation. Their teaching is strongly influenced by research, is innovative, and is informed by knowledge transfer. They are also motivated by the aim of inspiring the citizens and leaders of tomorrow to be curious, driven, responsible and capable of academic thinking. In their choice of pedagogy these core values are leading. They aim to teach based on research and to use excellent methods of pedagogy at the same time.

2. In their choices related to developing innovation in online learning RIUs will first and foremost take into consideration their research strengths and will subsequently aim at developing excellent online pedagogy. This combination of focus on research strengths and excellent pedagogy sets them apart from universities which do not have a strong research focus in developing online materials.

3. Teachers at research-intensive universities are driven to share research innovations with students. They are motivated by the wish to deliver their message compellingly and effectively with innovative pedagogy. New ways of digital learning are most likely to excite top researchers if they facilitate innovation both in research and teaching. Tools facilitating that combination yield the most rapid developments in online learning and have the greatest potential for impacting on-campus teaching at research-intensive universities. RIUs feel first and foremost a pedagogical responsibility towards their own students, whom they teach within a focused and demanding research-intensive environment. But RIUs also recognise the role that they play as ambassadors for educational outreach and innovation, and thus acknowledge with enthusiasm that in the context of online learning they will be engaging with a broadening range of learners and co-enquirers from outside their institutions.

4. This paper aims to enable research-intensive universities to situate themselves strategically within a shared context of engagement with online learning. It defines online learning as a broad spectrum of digital activity. At one end are the local materials that university teachers will commonly make available to their students in a virtual learning environment hosted by the institution, including handouts, digitised texts, and links to external online resources such as videos and talks. At the other end are specially created Massive Open Online Courses (MOOCs) designed by the university delivered from a platform hosted by a third party provider with whom the university has entered into a contractual arrangement. They are aimed at learners across the globe, but may also potentially be accessed by the university's own students and by its alumni.

5. Within the spectrum will be many forms of online activity, including smaller scale closed online courses for both on-campus students and distance learners; online resources made available by universities as podcasts on host organisations such as iTunes (see, for example, http://itunes.ox.ac.uk/), and which can include language lessons, lab demonstrations, and campus tours, as well as lectures. Also considered are crowdsourcing projects using massive data-sets and encouraging co-enquirer participation, such as the 'citizen science' project of Galaxy Zoo (http://www.galaxyzoo.org/).

6. It is thus important to emphasise from the start that this is not yet another position paper about MOOCs. Rather, it argues that it is in the interests of RIUs to generate a full-scale digital strategy, in which MOOCs will be but one element. MOOCs are at the moment showing the potential to change the face of educational delivery because they emancipate it and invigorate it, but this paper does not see this change as presently revolutionary. At the time of writing over half of the LERU universities have some form of engagement with MOOCs, though engagement is well developed in a much smaller number, but all of them are involved in a variety of forms of digital and online learning activity.

7. This advice paper makes a series of recommendations to RIUs, which it sees as an important and distinct grouping as far as online learning is concerned. It emphasises the importance of taking a strategic direction on matters digital and engaging in scenario planning. Towards its conclusion this paper also makes recommendations to policy makers. It is crucial that RIUs play a major role in setting the digital agenda in higher education and the paper thus focuses on some key strategic elements in relation to that.

STRATEGIC OVERVIEW

8. Online learning will speak to the mission of many universities in its capacity to communicate knowledge widely and quickly and in its capacity for innovation and creativity.[1] The LERU member institutions, and European RIUs in general, have been using digital resources for over twenty years. In the sphere of digital resourcing, when offered by RIUs online learning will have a strong research-based content. It can both enhance existing materials and generate new ones and it can provide a stimulus for new pedagogy. It can also provide a stimulus for collaborative research and research-based teaching activity, something that may be of interest to groups of research-intensive universities. In the form of Open Educational Resources (OER), or MOOCs, it can reach a wider global audience, potentially from non-traditional backgrounds, some of whom may be recruited as students. It has the further potential in the form of crowd-sourcing projects to make that original audience co-enquirers as well as or instead of learners. Universities may also be able to gather insights into teaching effectiveness and learner behaviour through click-stream data and analytics, which can be on a vast scale if harnessed through a consortium of participant institutions.

9. The key challenge for all European research-intensive universities, however, is to engage strategically with online learning at a time when changes in digital delivery are speedy, dramatic, and often unpredictable. The digital world moves extremely fast and on a grand scale. It took Twitter nine months to reach the significant milestone of over 50 million users, something that took radio 38 years. Universities need to be prepared to embrace fast-moving technological change while recognising that benefit from such investment may be short-lived. A major risk for universities is that they become strategically led by what digital technology can do, rather than requiring digital technology to enhance their educational and research missions within a defined academic strategy.

10. This paper is written from the perspective that online learning is not 'an avalanche coming' but 'part of the landscape for everyone'.[2] However, it also counsels RIUs to ensure that they are vigilant, inventive and flexible in relation to the ways in which that landscape is changing.

11. Innovations in online education are at present both a normal part of the regular education continuum of research-intensive universities and something completely different. They are a normal part in the sense that although they have introduced unprecedented pedagogical innovations, it does not appear that they will soon change the essence of the on-campus learning experience. They are something completely different in the sense that the production and distribution of MOOC-type education to global audiences is costly, does not serve the same goals as regular teaching, and has introduced an element of competition in teaching between universities that previously existed primarily in research. This has also involved the arrival of commercial platforms in an area of online course provision which was previously handled by individual universities themselves. If competing, high quality, research-intensive universities start offering MOOCs hosted by third party providers that are eventually extensive and comprehensive enough to replace an entire course of another university, MOOCs could indeed become the severely disruptive vehicles that some have predicted they may be. Although RIUs that compete globally and that offer high quality MOOCs and online courses in the areas of their own research strengths will have less competition to fear than more teaching oriented universities, such developments may over time drastically challenge the educational strategy of RIUs.

12. The MOOCs phenomenon has rapidly demonstrated the global outreach potential of online material when launched as free courses from prestigious universities. Even though the business models for making MOOCs a stable part of the global landscape of higher education still seem to be lacking (see section VII), the attention has put online educational initiatives at the top of the higher education agenda. However,

1 Contextual publications on why RIUs should work in this area are available at eg. http://www.oecd.org/edu/ceri/givingknowledgeforfree-theemergenceofopeneducationalresources.htm and http://www.unesco.org/new/en/communication-and-information/events/calendar-of-events/events-websites/world-open-educational-resources-congress/

2 The phrase 'an avalanche coming' is Sir Michael Barber's. See http://www.insidehighered.com/sites/default/server_files/files/FINAL%20Embargoed%20Avalanche%20Paper%20130306%20%281%29.pdf). The assertion that MOOCs will be 'part of the landscape' is Sir David Watson's. See http://www.lfhe.ac.uk/en/research-resources/published-research/research-by-theme/the-uk-he-system/credit-risk-reviving-credit-accumulation-and-transfer-in-uk-higher-education.cfm

the other side of this has been a certain fixation on MOOCs as such, sometimes narrowing down the perspective on online learning to the development of massive open on-line courses only. This tendency may obscure the potential inherent in the full spectrum of online education for research-intensive universities.

13. All forms of online learning, moreover, come at a price. Production of online learning materials may require substantial and sustained institutional financial support, along with sustained technical and personal commitment from IT professionals and from academic faculty. Academics may also require upskilling in order to respond creatively to technological possibilities in their subject area. Dissemination of online learning and access to analytics may require commercial engagement with third-party providers, and that in itself may raise ethical or governance issues for universities.

14. Such considerations are closely connected to issues of identity and brand. Offering learning online provides universities the opportunity to extend and develop their reach and reputation globally. But this again can carry risk, particularly if it involves partnership with other providers or institutions of uncertain or unproven quality. The implications of brand extension will differ for LERU universities in terms of their current global visibility and impact.

15. RIUs thus need to engage in strategic scenario planning, both individually and collectively. We need to ask ourselves whether and how we wish to influence developments in digital delivery so that they fundamentally affect the ways in which we work with undergraduate and graduate students, and the ways in which we recruit and engage with learners and potential students.

16. LERU thus recommends research-intensive universities to:

- Undertake scenario planning in terms of their institution's future pedagogy and sustainable online delivery
- Assess strategically the extent to which they wish their existing on-campus learning experiences to involve online delivery and digital materials
- Assess strategically the extent to which they wish to extend their online learning opportunities to learners or co-enquirers outside their university
- Assess strategically the extent to which they wish to work collaboratively with other institutions, or with commercial partners in the delivery of online learning
- Invest time in keeping fully up to date with developments in MOOC-related activity
- Assess strategically the investments in financial and human capital necessary for the extension and sustaining of online learning activity
- Identify the reputational advantages and risks for their institution's brand and identity arising from the decisions taken in relation to online learning activity

THE FUTURE OF BLENDED LEARNING

17. For universities where teaching is research-led and delivered by major academics in their field, the online learning they offer is most likely to be a form of blended learning. In a blended learning environment the online experience is part of a rich suite of pedagogy, in which an on-campus experience plays an important role and the digital is used where it can bring the most added value or enhancement. A 2012 ECAR study showed that students prefer blended learning environments and often learn best in them.[3]

18. Online learning innovations can change on-campus teaching in the blended learning environment in a variety of ways. First, technological developments provide students with supplementary materials to courses, working groups, books and written (paper or digital) course materials. The most common form of supplementary online material that can change students' behaviour is lecture capture. Many universities now capture lectures – some capture all lectures. Students can follow the lectures without being physically present in the lecture hall, although the indications from surveys to date are that lecture capture does not have to reduce lecture attendance. Sometimes the recorded lectures are used for re-viewing and revision; sometimes they are being used as a replacement for the regular lectures and the time freed up can then be used for other interaction between teacher and students (flipping the class room). The tools offered by lecture capture offer new ways to engage with the recorded content. Students can annotate, bookmark relevant parts of the lecture, collect play lists together, and so forth.

19. Further, innovation can take place in online discussion groups that can supplement in-class interaction. If well orchestrated by the team of the host university such discussions will be of the right academic level, and can both offer the course directors feedback that would not otherwise be available and give the students new insights. Online discussion forums can be combined with online supplemental exercises, links to extra materials or peer grading. Some of these developments took place before MOOCs were introduced; others, such as peer grading, were developed for on-campus use more rapidly as a result of experiments within MOOCs.

20. On-campus teaching innovations can take place in direct conjunction with MOOCs or related types of courses offered by the university. For instance, professors who develop and implement MOOCs can involve their regular students in a variety of tasks from testing the teaching materials to supervising peer grading to regulating online discussions and safeguarding their academic level. Secondly, MOOCs can become research driven virtual learning environments for on-campus students when the MOOCs are being used for research purposes. Students can for instance be involved in research into the learning outcomes of MOOCs or in implementing surveys among the learners, on topics related to the MOOC and in analysing the survey outcomes for research. Thirdly, MOOC-platforms can be used to run Small Private Online Courses (SPOCs). Those can involve on-campus students only, or a mix of on-campus and off-campus students. Especially in topics that would benefit from an international classroom, this form of learning can create an enhanced experience for the regular students and for the teacher.

21. Leiden University will soon offer a SPOC on Sharia in the West for credits to 25 on-campus Master's students and an equal number of international applicants who together will form an international classroom. The prime purpose of offering the course as a SPOC is that this type of delivery will change the Leiden students' academic learning experience by introducing international perspectives under the supervision of the professor teaching the course. On-campus teaching innovations directly related to developments of MOOCs are often specific to research-intensive universities, since the MOOCs they develop focus on their research strengths. They tend to have a strong research component and are intended to maintain a high academic standard in the teaching as well as in the online discussions. They often provide the teachers with new research opportunities and can create a high level international class room that can benefit local students as well.

22. Universities can also use MOOCs from other universities to replace a book or another part of their regular on-campus courses. Alternative options may lie in the development of more technically dynamic books

3 See http://www.educause.edu/library/resources/ecar-study-undergraduate-students-and-information-technology-2012

rather than replacement through MOOCs (eg. http://www.academicpub.com/). Developments are taking place fast and new applications to be used both in MOOCs and comparable technologies as well as in online learning on campus are continually emerging.

23. So while MOOCs offer opportunities for innovation in teaching, they themselves are already being replaced by new models of online learning. In addition to SPOCs, essays in a recent collection talk about DOCCs (distributed open collaborative courses), SMOCs (synchronous massive online courses) and 'MOOC 2.0' (MOOCs that integrate more effectively with distance and on-ground courses and lead to trustworthy credentials).[4] The concept of the MOOC is thus a constantly evolving one. Universities need to keep up with this rapidly moving set of developments if they do decide to invest substantially in MOOC-related programmes.

24. RIUs also, however, need to take a strategic approach to MOOCs and related online learning. Three key elements here are level, subject area, and strategic fit. Recent analysis from the University of Pennsylvania suggests that 60 per cent of takers of MOOCs are 30 or over, 60 per cent are male, and a little over 80 per cent are already in possession of a degree.[5] If universities are getting into MOOCs on the basis of outreach, this is something they need to bear in mind. Any decision to launch a MOOC or related piece of online learning should be underwritten by a clear evaluation of the level of the audience of learners or students for whom it is intended. Secondly, RIUs should make a strategic assessment as to which subject areas they would wish to give priority and prominence of in online learning. Again, this should not be confined only to MOOCs. RIUs may wish to give particular prominence to crowd-sourcing projects that reflect current research strengths or projects. They may wish to group their OER to showcase elements of their curriculum which lend themselves to this medium. They may wish to develop MOOCs or SPOCs in subject areas where they are interested in recruitment or outreach. The University of Helsinki, for example, has piloted its own Computer Science MOOC, completion of which may enable a student to proceed to a Computer Science programme at the university. The University of Amsterdam offers an online pre-masters bridging programme in Information Studies to prepare Bachelor students for applying to the Master's in the same area[6]. By contrast, the University of Milan has for the past ten years offered a wholly online bachelor degree in Computer Science.[7] Certain subjects lend themselves particularly to online delivery. The emphasis should always be on the online learning activity fitting with an articulated digital strategy. Many first-generation MOOCs were experimental or serendipitous. For RIUs, it is time to move on.

25. Moreover, when OER and MOOCs in higher education may be distributed all over the world to a much larger extent than before, the conditions for educational cooperation between research-intensive universities may look different. RIUs are increasingly well placed to share their experiences of online education and to build on this to create joint taught online courses and programmes. This is discussed further in section VIII.

26. This is thus a moment for RIUs strategically to reassess their educational mission from the perspective of what they wish online delivery and digital resourcing to contribute to it. As suggested above, this will best be done on the back of informed and facilitated scenario planning. One size will not fit all universities, which will undoubtedly differ in terms of the priority and emphasis they wish to give to different forms of online pedagogy. Crucial to such considerations will be the extent to which pedagogy online substitutes for or supplements pedagogy on campus.

27. LERU thus recommends research-intensive universities to:
    - Produce a clear rationale for the purpose, level, and strategic fit of any online course or vehicle they produce, within a holistic digital strategy
    - Be alert to allied technological developments in course materials

4 *Online Education: more than MOOCs. A selection of Inside Higher Ed articles and essays* (Washington, 2013); http://www.revistaensinosuperior.gr.unicamp.br/edicoes/facsimiles/OnlineEdBooklet.pdf

5 Christensen, G. et al., 'The MOOC Phenomenon: Who Takes Massive Open Online Courses and Why?' (November 6, 2013). Available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2350964

6 http://starfish.innovatievooronderwijs.nl/project/21/

7 See *International Journal of Knowledge and Learning*, 6 (2010), 329-44.

ONLINE PEDAGOGY AND QUALITY

28. Quality assurance is a crucial element in the delivery of online education. If online materials are used in on-campus education, how can we ensure that students continue to have a high level academic environment that combines the classic campus experience of a physical university with the novel pedagogical possibilities that online technology can offer? For on-campus students, digital technologies and online applications must fit with the existing pedagogical philosophy that has been developed by the university and should be subjected to the same rigorous internal and external evaluation as traditional course offerings.

29. Online teaching should not be offered out of considerations of efficiency, but should be offered to enhance the learning and/or the teaching experience. So far it appears that RIUs are developing new online pedagogies only for the purpose of quality improvement. For the time being, online innovations in learning are unlikely to replace significant parts of the on-campus experience that have been the core business of the research-intensive universities. Blended learning, if delivered well and with consideration for the prime purpose of academic teaching, will enhance the on-campus experience. Nevertheless, RIUs should remain vigilant and should continue to monitor and evaluate the effect of their online course offerings on their on-campus students, both in terms of the quality and of the experience of learning.

30. If more and more universities decide to bring their message to learners across the globe, how can quality education be guaranteed? How can it be ensured that learners actually receive the best possible teaching and training if they have so much to choose from? The UN Declaration on Open Educational Resources of June 2012 emphasises the global right to education and promotes 're-use, remixing and redistribution of educational materials across the world'.[8] The declaration recognises the need for quality assurance and peer review of globally available educational resources, but stops short of recommending methods for carrying out such quality assurance. RIUs should be giving the lead here in setting the standards and levels of expectation for quality assurance in online learning.

31. One particular element of this will be of relevance to some, but by no means all, RIUs. With more and more widely available materials, learners and students can create their own mix of materials to construct a course. This is called unbundling.[9] Such picking, choosing and re-creating can only result in a recognisable achievement if students know how to find good quality offerings and if the completed coursework can be accredited.

32. The strongest RIUs have a global competitive advantage since their research is internationally recognised as excellent. They need to make sure that they only offer to a global audience MOOCs and other courses that are of superior quality, both in terms of the research and in terms of the pedagogy. Since MOOCs are expensive and time consuming to develop and since failure could lead to damage to the institution's reputation, these universities will likely choose topics that belong to their core research profile and they will choose professors who are among their best teachers. Existing large international MOOC-platforms such as edX and Coursera use strict criteria both for admission of new partner universities and for choice of topics of MOOC courses.

33. Nonetheless there have been failures. The 40,000 participant MOOC on 'Fundamentals of online education' offered by Georgia Tech through Coursera, which had to be suspended due to extensive technical problems, is widely cited in the educational press as an example of reputational damage.[10] A 2012 report by Brown University singles out a Machine Learning course offered by Coursera as containing 'poor quality videos of the professor speaking into his laptop camera, alternating with fairly conventional PowerPoint slides'.[11]

8 http://www.unesco.org/new/en/communication-and-information/resources/news-and-in-focus-articles/in-focus-articles/2012/open-educational-resources-congress-passes-historic-declaration/

9 See also http://web.mit.edu/future-report/TaskForceOnFutureOfMITEducation_PrelimReport.pdf

10 For example: http://chronicle.com/blogs/wiredcampus/georgia-tech-and-coursera-try-to-recover-from-mooc-stumble/42167/

11 Bergeron. K. et al., *Online Education and the Residential Experience: A report of the Ad Hoc Committee on Online Education* (Brown University, 2012)

THE GLOBAL AND INTERNATIONAL PERSPECTIVE

34. These cautions about quality are presently of particular relevance to MOOCs. MOOCs offer a specific custom-built course which, if completed, can offer some form of certification. Paradoxically, the level of expectation of the quality 'look' of the product seems greater in relation to course materials produced by universities for audiences primarily outside their universities than for audiences within them. The level of expectation with OER is somewhat different. Many universities have been making existing course materials available as OER for the past decade. The quality threshold that this material has passed is the local academic one of the host institution. It may not be particularly sophisticated in production or presentation but it is of great value to students at the university who have the opportunity to reinterrogate it in their own time and to audiences outside the university who have an interest in the subject matter in question. That said, it would be particularly valuable for RIUs to promote shared, open, technical standards so that materials can be integrated into courses easily. It would also be valuable for RIUs to take the lead on reviewing lessons learned by national OER initiatives, and to examine case studies for sustainable open practice.

35. LERU thus recommends research-intensive universities to:
- Be prepared to set the lead in defining standards and expectations for quality assurance in online education
- Subject online offerings that are packaged as defined courses to the same rigorous evaluation as traditional course offerings
- Monitor and evaluate the effect of their online course offerings on the learning experience of their on-campus students
- Monitor and review from a quality assurance perspective the wider context in which their online offerings hosted by third party providers appear
- Lead on promoting shared, open, technical standards for OER

36. The importance of minimising barriers to higher education and seeking ways to make that education more flexible has long been recognised within Europe, particularly through substantial public and institutional funding for the Erasmus and virtual Erasmus programmes, and through e-learning and OER. This position was re-stated in 2012 in the European Commission's 'Re-thinking Education' initiative, and in a consultation about 'Opening up Education'. The horizon extends beyond European countries with a rising interest in global internationalisation (the 'European Higher Education in the World' strategy).12 Online and distance-taught education constitutes a particularly dynamic and proactive way of reaching groups of learners from less developed countries, which will speak to the mission of many RIUs.

37. Research-intensive universities such as the LERU members already reach global audiences through a variety of means: research partnerships and collaborations, journal publications, and conference hosting and attendance being leading instances. In many of these cases, the online element is already a vital one: in showcasing research through video or podcasts; in publishing electronically; in streaming conference presentations. However, the educational outreach element of such work is often defined as specific to the global research community within the particular field. In the context of online learning, two key strategic considerations for RIUs are firstly how interested we are in taking a global approach to the provision of online education; and secondly, how important we think it is additionally to reach a global audience of learners not actually attending our universities.

38. European research-intensive universities today have expanding global roles in the development of educational programmes. This is seen in international student recruitment; in the expansion of both physical and digital modes for delivering courses and programmes; and in the development of transnational education, with overseas campuses. In some instances, transnational education has been a fillip for the generation of innovative online delivery.

12 See http://ec.europa.eu/languages/policy/strategic-framework/rethinking-education_en.htm, and http://ec.europa.eu/education/policy/international-cooperation/world-education_en.htm

Underpinning the development of the curriculum of the Lee Kong Chian Medical School at its Singapore campus, Imperial College has developed a mobile learning platform to support its innovative pedagogy of Team Based Learning.[13]

39. Another important element of RIUs' global engagement is online distance learning. This development is directed towards new groups of students across the globe. Students may take part in courses and programmes without having to arrange for housing or long periods of time at the main campus of the European university. Many RIUs offer this form of lifelong learning through award-bearing, closed courses delivered to relatively small groups of students; in some cases students may earn degrees in this way. More broadly than this RIUs may wish to use OER and/or MOOCs to provide free education to learners in countries that have less developed systems of higher education. For example, France has implemented a MOOC platform (France Université Numérique[14]) dedicated to MOOCs using French language, for national and international purposes. Pierre & Marie Curie University and Université Paris-Sud are members of this platform and the University of Strasbourg is planning on joining it as well.

40. For many of these students and learners this type of learning experience can be supplemented by other OER materials which the same universities make available, particularly podcasts of lecture series originally delivered to on-campus students. The continual expansion of OER and the recent development of MOOCs are therefore key elements in the internationalising agenda for research universities. In what ways an expanding global audience of learners, including off-campus students, will grow in importance for European research universities are questions that should be approached sooner rather than later.

41. Indeed, the potential implications of these developments are far larger than the more localised ones of whether to go into the MOOC market or not. We need to consider the question of whether the future delivery of university education could radically change on a global scale. If university courses and programmes are partly freed from local constraints and are able to 'travel' globally, the internationalisation that today is a taken-for-granted part of the conditions for research could become an integral aspect also of the conditions for education at research-intensive universities.

42. For European RIUs the expansion of the global audience of learners thus has to be situated in the relation between on the one hand the specific educational mission of each university and the character of its research profile and, on the other, a thorough evaluation of the changing conditions for learning and the future role of European universities.

43. LERU thus recommends research-intensive universities to:

- Reach a policy decision on their approach to educational provision globally, including a view on the strategic importance of reaching online learners outside their university
- Consider the potential for upscaling their existing distance online learning provision
- Include consideration of radical changes to the internationalisation of education within their scenario planning, including transnational education
- Plan the extent to which they wish to use online materials as a recruitment tool for international students or learners, and at which levels

13 See http://enewsletter.ntu.edu.sg/thelkcmedicine/issue8/Pages/InFocus1.aspx/

14 https://www.france-universite-numerique-mooc.fr/

REPUTATION AND BRAND

44. The strongest research-intensive universities are identified with excellence, leadership, and innovation. How they integrate an evolving and coherent online learning strategy into the articulation of their brand is one of the major challenges of the next decade.

45. Online learning provides both great opportunities and demonstrable risks to universities. For each university the future will involve finding the right balance in the extent of online learning it wishes to provide to its students, alumni, and other learners. It will also involve generating the institutional agility and flexibility to adjust this aspect of one's mission in a timely manner. RIUs such as the LERU member universities will additionally need to assess the advantages of forms of collective activity or collective presentation within the digital realm.

46. All strong research universities are identified as destinations of choice for students from our individual countries and from across the world. These institutions offer students a high-quality learning experience in distinctive academic environments. For many students attending such a university involves living away from the parental home and sometimes being housed by or in the university itself. Students receive teaching directly from leading academics, and have the opportunity to work in world-class libraries and laboratories. The on-campus experience is one of spending several years in a new environment, of being part of an active academic cohort while working in close proximity to experts in the field, and of developing life skills in that context. It is at the heart of the education that universities offer undergraduate and graduate students. There is no suggestion that this intrinsic element of the student experience should diminish, but it will need to evolve in relation to an online environment.

47. Much of students' learning experience is already online and in a blended learning environment. Academics generate online materials for students to supplement direct teaching; students use a wide range of scholarly materials online in their studies and project work. In areas such as the sciences online is by far the dominant mode of access. Blogs, discussion forums, message boards, and social media play an increasingly important role in the transmission of scholarly information. Students will increasingly expect their universities to offer them the same level of online search and communication tools that they can access commercially. They are also likely over time to make less of a separation between the scholarly and the social. Delivering this level of functionality will offer challenges to universities. There may be reputational risk if a university is identified as falling behind in terms of the range and kind of digital experience it can offer its students as well as its faculty. On the other hand, both security and pedagogical concerns may prevent universities from blending social media and digital scholarly environments.

48. As observed in section IV, reputational risks may also occur if open online materials are of insufficient quality. Such issues around quality may encourage RIUs to consider questions of brand and reputation within a context broader than the individual institution. Consideration should be given to the potential for developing a quality mark for online learning materials produced by RIUs. This could be of particular relevance to MOOCs, but could also enhance the identity of, for example, an OER portal specifically for RIUs. This is discussed further in section VIII.

49. LERU thus recommends research-intensive universities to:
    - Ensure that their strategic planning in relation to online learning enables them to act with flexibility and agility
    - Identify keeping pace with developments in digital technology and their relation to education as a key element of their risk assurance strategy
    - Ensure that they are alert to developments in the digital technology utilised by their student population
    - Give due consideration to the reputational issues associated with participation in consortia which may purvey online products of questionable quality
    - Give consideration to the extent to wish they would wish to join with other RIUs in grouping and/or promoting online materials collectively

BUSINESS MODELS

50. Although MOOCs have attracted much critical discussion in the past couple of years, literature on the business models for MOOCs specifically shows little consensus. There is a greater depth of discussion on the modelling and sustainability of OER. Some of these models will obviously also be applicable to MOOCs. For LERU universities there will additionally be particular sets of considerations related to their mission and brand.

51. The idea of a business model for online learning in a university environment not dedicated to that sole purpose (such as the UK's Open University) is itself contestable, given that if the mission of a research-intensive university includes the dissemination of excellence in teaching, it will not necessarily follow that the model through which teaching and learning are delivered will be one that is profitable. In order to provide excellence in teaching, universities may choose to run a business model which provides cross subsidy from other areas, such as research. Universities which are dependent on government funding for teaching may also find obtaining public funding for non-compulsory forms of online learning a challenge.

52. On the other hand, one of the arguments adduced in support of online learning as a business proposition is that of efficiency. If governments can be persuaded that knowledge bases offer streamlining, avoid duplication, and promote efficient use of resources, they may be prepared to divert funding to such enterprises. In the UK between 2009 and 2012 the Higher Education Funding Council for England (HEFCE) invested millions via JISC (formerly the Joint Information Systems Committee) and the Higher Education Academy in supporting pilot project and activities around the open release of learning resources for free use and repurposing worldwide.[15] This initiative has now ceased. Another example is the Wikiwijs project in the Netherlands,[16] which is publicly funded by the Dutch ministry of education, culture and science, and which is designed to 'promote the development and use of open educational resources and, in doing so, to improve the quality of teaching'. The equation of the use of OER with teaching quality is of course not as straightforward as that statement implies. The concept of efficiency, too, must be tested against a quality benchmark. These caveats will carry particular weight with RIUs. But a commitment to the value of education in developing the economy and promoting social cohesion may also encourage public or private subsidy of online learning. RIUs may wish to take a positive lead in articulating this dimension of their educational mission, which in some countries has great potential to garner philanthropic support.

53. The most basic freestanding business model is that of the freemium, the giving away of OER or indeed a MOOC as a marketing tactic, in order to attract paying students in the future. Universities need to decide whether to build their own platforms or utilise those of third parties for OER delivery. 'Platforming' itself provides a form of business model: 'Once an organisation has a respected supply of OER, other producers of educational resources could choose to link their resources to the portal of this organisation, or even host their materials there. The hosting organisation can ask for a contribution to the costs, supplying OER for free.'[17]

54. An example would be the ARIADNE infrastructure (http://www.ariadne-eu.org/), which provides access to hundreds of thousands of learning resources from around the world, hosts repositories for collaborating institutions and harvests metadata records from federated repositories that are hosted elsewhere but operated by institutions using ARIADNE. KU Leuven is a member of ARIADNE.

55. One of the most ambitious and interesting online initiatives of the past decade is the Massachusetts Institute of Technology (MIT)'s OpenCourseWare (OCW) programme, which continues to evolve, and which combines various aspects of the models outlined above (http://ocw.mit.edu/index.htm). MIT OCW aims to make materials used in the teaching of

15 See eg. http://www.jisc.ac.uk/whatwedo/programmes/elearning/oer.aspx/

16 http://www.wikiwijs.nl/sector/

17 De Langen, F., 'Strategies for sustainable business models for open educational resources', *International Review of Research in Open and Distance Learning* 14.2(2013)

MIT's undergraduate and graduate courses available free for use on the web, without registration, a credit structure, or direct interaction with MIT faculty. Material available ranges from lecture videos to textbooks and examples of students' writing. A significant spin-off from the original initiative has been the OpenCourseWare Consortium (http://ocw.mit.edu/about/ocw-consortium/), in which 250 institutions across the world (including KU Leuven) are making their course materials available as OER. Funding was originally provided by MIT itself, on the basis of this initiative's key fit with its educational mission, but also from philanthropy and charitable subsidy. Funding is now drawn from MIT, philanthropy, corporate underwriting, and individual donations. The annual running cost is said to be c. $3.5 million.

56. One of the striking aspects of MIT OCW is that, in making a certain amount of material available it powerfully communicates the crucial gap that is left when a reader accesses such study aids without the opportunity for directed guidance from an academic. MOOCs are in part designed to fill that kind of gap. Suggested business models for MOOCs come largely from the platform providers via their partnership agreements with universities. The Maturing of the MOOC, a 2013 research paper from the UK government's department of business, industry, and skills (BIS) identifies eight possible sources of income for participating universities:
    - Certification (students pay for a badge or certificate)
    - Secure assessments (students pay to have their examinations proctored)
    - Employee recruitment (companies pay for access to student performance records)
    - Applicant screening (employers/universities pay for access to records to screen applicants)
    - Human tutoring or assignment marking (for which students pay)
    - Selling the MOOC platform to enterprises to use in their own training courses
    - Sponsorships (third party sponsors of courses)
    - Tuition fees[18]

57. Commenting on this list in his 2012 article 'Making Sense of MOOCs' Sir John Daniel (former Vice-Chancellor of the UK's Open University) points out that the 'striking feature about this list is that the organisation least likely to make money is the partner university. The two options over which the universities have most control, certification and tuition fees, both present problems. In the case of certification … most participating institutions have a self-denying ordinance not to award credit for these courses. As regards tuition fees there are huge challenges of principle and practice. Is a MOOC still "open" if you have to pay for it? Quite apart from the logistical nightmare of collecting fees in the 160+ countries where learners are registering for [...] MOOCs, it seems certain that even a nominal fee would reduce interest dramatically.'[19]

58. The BIS report focuses on accreditation as the most plausible way for money to be made from MOOCs, but take-up of accreditation schemes has so far been low across all MOOC providers. An evaluation of Edinburgh University's MOOCs pilot (involving six courses) states that no student sought accreditation and that even if they had it would not have covered the costs of providing the courses as only 12 per cent of all participants completed the course.[20] The Edinburgh pilot cost £250k for six courses, involved 30 hours of academic staff time per course, and was entirely underwritten by central university funds. Since the publication of the Edinburgh evaluation in May 2013, interest for verified certificates (such as Coursera's Signature Track) is growing. The experience of Leiden University's MOOCs in 2014 was that 3-6 per cent of enrolled learners chose the paid Signature Track. According to Coursera, retention rates for verified track participants are 88 per cent or more.[21] One of the LMU Munich's four MOOCs available with Coursera has had a completion rate of almost 20 per cent. LMU has also witnessed a positive impact on enquiries it receives concerning doctoral programmes in areas in which it has offered MOOCs.

18 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/240193/13-1173-maturing-of-the-mooc.pdf

19 http://www-jime.open.ac.uk/article/2012-18/html

20 Teplechuk, E .,'Emergent models of massive open online courses: an exploration of sustainable practices for MOOC institutions in the context of the launch of MOOCs at the University of Edinburgh' (MBA dissertation, University of Edinburgh Business School 2013). Online: https://www.era.lib.ed.ac.uk/handle/1842/7536

21 http://edf.stanford.edu/readings/daphne-koller-%E2%80%9Cmoocs-can-be-significant-factor-opening-doors-opportunity%E2%80%9D

COLLABORATION

59. This paper has deliberately not gone into the questions of intellectual property in relation to MOOCs and MOOC-related activity. In contrast to OER, where the use of Creative commons licences is very common, the IP issues raised by course work which could receive credit is far more complex and contested.[22] Any institution undertaking MOOCs needs to get proper legal advice in this area.

60. What is very apparent in any discussion of OER or MOOCs is that at present and probably for the foreseeable future, the production and sustaining of such online learning resources will require considerable upfront investment from the host university, unless long-term forms of public or philanthropic support can be obtained. This reinforces the starting premise of this paper, that universities need to plan their engagement with online learning strategically and flexibly, and to link it powerfully and meaningfully to their educational mission.

61. LERU thus recommends research-intensive universities to:
    - Take the lead in articulating business models for online learning which are linked explicitly to their long-term educational strategy
    - Take the lead in carrying out a 'lessons learned' exercise from national OER initiatives
    - Proactively research the range of online initiatives and linked business models adapted by other leading research-intensive universities
    - Interrogate in their strategic literature and business modelling the relationship of efficiency of delivery to educational quality
    - Take legal advice on questions of intellectual property with particular reference to MOOC-related activity
    - Acknowledge and provide for the necessary long-term investment in online learning and the lack of immediate financial return that may be involved
    - Investigate, where relevant, public and philanthropic opportunities for supporting online learning

62. One overall advantage in research-intensive universities in collaborating around online learning would be to create a common infrastructure for partnership both within education and research. Sharing research results and educational resources and discussing such research at a common location could promote an increase in the global exposure of research activities carried out both by individual research groups and of joint European initiatives.

63. Sharing a platform for providing open resources on a common research area to the public could lead to better exposure globally. Crowd-sourcing initiatives are an area where RIUs could provide a significant lead, and where people have a real opportunity to participate as co-enquirers as opposed to learners. This will also give some universities the opportunity more extensively to use their library and museum collections as forms of public engagement and educational enhancement (see eg. http://www.oucs.ox.ac.uk/internal/sld/RunCoCo.xml)

64. Within OER a mutual inventory of what has been produced already could prevent the duplication of material that already exists and would enhance possible future joint productions. In a comparable way, within MOOCs, it seems likely that online courses will need to be more reactive to emerging issues, interests and technologies. The benefit of being in a network would then be that only one or two of the institutions would need to have the specialist knowledge to react and create a course in response to a new demand, while the whole network would maintain a reputation for innovation and cutting-edge research.

65. There is also the potential to generate joint online courses within the regular credit-bearing course structure that many European RIUs use. This could enhance student exchanges and promote the initiation of joint masters/doctoral programmes/courses. Setting up such joint courses in a traditional context can be very time-consuming and complex, but a virtual environment would facilitate the joint coordination of pan-European courses. An example in the US of a joint project of this kind is a two part course

22 http://www.insidehighered.com/news/2013/03/19/u-california-faculty-union-says-moocs-undermine-professors-intellectual-property

POLICY MAKING

on mobile app development that will be offered by Vanderbilt University and University of Maryland at the Coursera MOOC platform in 2014.[23] Universities would have to consider individually whether they also made such materials available to a broader global audience not registered as students.

66. There could potentially be value in a group of RIUs joining forces and research strengths and producing common MOOCs targeted towards, for example, specific group of learners, professionals in certain fields or to specific language groups. A key issue here would be whether such materials were offered to one of the major MOOC providers or hosted separately. The LACE university partnership network of 7 European universities, of which KU Leuven is a member, has recently launched a MOOC on literature and change in Europe, building on its commitment to an open curriculum. Leiden University and the University of Geneva are considering co-producing a five ECTS course by combining two MOOCs from Geneva and one from Leiden on a related topic. Alliances of this sort, building from the ground up, have the potential over time to grow into more significant pedagogical and institutional alliances.

67. LERU thus recommends research-intensive universities to:
    - Consider the creation of networks for facilitating collaborative online learning productions and resources
    - Consider the extent to which they would wish to collaborate in crowd-sourcing projects; shared OER projects; MOOCs; joint courses with a substantial online element including, where relevant, a language policy

68. RIUs should be keen to work with major policy makers in the area of online education. As the instigators of pedagogical innovation and the guardians of quality assurance we have a major role to play in setting this agenda. We can do so more effectively if we are working from a position, individually and collectively, of confidence in our digital strategy and forward planning. That done, our first priority, should be to encourage national and European policy makers to work strategically and supportively with RIUs, in recognition of their leading role.

69. Policy makers should be encouraged to give priority to the establishment of some key sets of standards in the area of online learning. As already noted in this paper, some of those are technical. The promotion of common open technical standards so that materials can be shared, used and integrated into courses easily across institutions should be a leading tenet of policy making in this area. Sustainability is also an essential element here.

70. Standards of quality assurance have also been argued in this paper to be vital. Policy makers should encourage RIUs to lead on the definition and promulgation of challenging but proportionate quality standards in relation to online learning, particularly where courses and credit are involved.

71. Policy makers should incentivise innovation in online learning, in the context of quality and sustainability. Efficiency is important, but should not be the defining criterion.

72. Policy makers should work with RIUs to enable the development of portals and gateways which bring together high-quality online materials and encourage collaborative enterprise.

73. Lastly, policy makers should incentivise RIUs to lead on an active policy of research on what is really trans-

23 http://engineering.vanderbilt.edu/news/2013/vanderbilt-university-and-university-of-maryland-join-forces-to-offer-mooc-sequence-on-mobile-app-development-2/

CONCLUSIONS

formative and successful in online learning. The best in online learning starts from a high research base. To ensure that the online learning experience is sustained as one of high educational quality RIUs must be enabled to take a leading role in analysing and reporting on it as it changes and develops.

74. Policy makers are thus recommended to:

- Develop, in collaboration with RIUs, a clear vision on the common goals to be achieved in the dissemination of online learning
- Work strategically and supportively with RIUS on the development, review, and analysis of online learning
- Give priority to the establishment of common, open, technical standards
- Encourage RIUs to lead on developing policy for quality assurance in online learning
- Incentivise innovation in online learning in RIUs
- Work with RIUs to enable the development of portals and gateways for high quality online learning materials
- Allocate sufficient funds to achieve these goals

75. The appendix to this paper provides a consolidated list of the recommendations highlighted in each section. The principal points emphasised in this advice paper may be summed up as follows.

76. All research-intensive universities need to take a strategic approach to the provision of online education. No one will be able wholly to predict how this fast-moving environment will shift and develop, but leading universities must be both proactive and responsive in relation to it. Intelligent scenario planning, underpinned by a willingness to think radically where necessary, will be key to the future provision of a successful learning experience for the next generations of students.

77. Each university will need its own strategy for online education, but the online educational world is one where collaboration and joint working are increasingly viable and pedagogically stimulating. RIUs need thus to incorporate in their strategic planning for online education an openness to the creation of partnerships and alliances and the sharing of resources where it makes sense.

78. RIUs should take a lead in online education in terms of policy making; content creation and delivery; quality assurance; partnerships and collaboration. Online learning initiatives should be driven by a mission to open up and enhance education, to vitalise the blended learning environment, and to maximise the potential for distance learning, OER, and crowd-sourcing initiatives. The educational online future is an exciting one and research-intensive universities must both embrace and strongly influence it.

APPENDIX

RECOMMENDATIONS TO RESEARCH-INTENSIVE UNIVERSITIES

- Undertake scenario planning in terms of their institution's future pedagogy and sustainable online delivery
- Assess strategically the extent to which they wish their existing on-campus learning experiences to involve online delivery and digital materials
- Assess strategically the extent to which they wish to extend their online learning opportunities to learners or co-enquirers outside their university
- Assess strategically the extent to which they wish to work collaboratively with other institutions, or with commercial partners in the delivery of online learning
- Invest time in keeping fully up to date with developments in MOOC-related activity
- Assess strategically the investments in financial and human capital necessary for the extension and sustaining of online learning activity
- Identify the reputational advantages and risks for their institution's brand and identity arising from the decisions taken in relation to online learning activity
- Produce a clear rationale for the purpose, level, and strategic fit of any online course or vehicle they produce, within a holistic digital strategy
- Be alert to allied technological developments in course materials
- Be prepared to set the lead in defining standards and expectations for quality assurance in online education
- Subject the online offerings that are packaged as defined courses to the same rigorous evaluation as traditional course offerings
- Monitor and evaluate the effect of their online course offerings on the learning experience of their on-campus students
- Monitor and review from a quality assurance perspective the wider context in which their online offerings hosted by third party providers appear
- Lead on promoting shared, open, technical standards for OER
- Reach a policy decision on their approach to educational provision globally, including a view on the strategic importance of reaching online learners outside their university
- Consider the potential for upscaling their existing distance online learning provision
- Include consideration of radical changes to the internationalisation of education within their scenario planning, including transnational education
- Plan the extent to which they wish to use online materials as a recruitment tool for international students or learners, and at which levels
- Ensure that their strategic planning in relation to online learning enables them to act with flexibility and agility
- Identify keeping pace with developments in digital technology and their relation to education as a key element of their risk assurance strategy
- Ensure that they are alert to developments in the digital technology utilised by their student population
- Give due consideration to the reputational issues associated with participation in consortia which may purvey online products of questionable quality
- Give consideration to the extent to wish they would wish to join with other RIUs in grouping and/or promoting online materials collectively
- Take the lead in articulating business models for online learning which are linked explicitly to their long-term educational strategy
- Take the lead in carrying out a 'lessons learned' exercise from national OER initiatives
- Proactively research the range of online initiatives and linked business models adapted by other leading research-intensive universities
- Interrogate in their strategic literature and business modelling the relationship of efficiency of delivery to educational quality
- Take legal advice on questions of intellectual property with particular reference to MOOC-related activity
- Acknowledge and provide for the necessary long-term investment in online learning and the lack of immediate financial return that may be involved

- Investigate, where relevant, public and philanthropic opportunities for supporting online learning
- Consider the creation of networks for facilitating collaborative online learning productions and resources
- Consider the extent to which they would wish to collaborate in crowd-sourcing projects; shared OER projects; MOOCs; joint courses with a substantial online element including, where relevant, a language policy

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About LERU

LERU was founded in 2002 as an association of research-intensive universities sharing the values of high-quality teaching in an environment of internationally competitive research. The League is committed to: education through an awareness of the frontiers of human understanding; the creation of new knowledge through basic research, which is the ultimate source of innovation in society; the promotion of research across a broad front, which creates a unique capacity to reconfigure activities in response to new opportunities and problems. The purpose of the League is to advocate these values, to influence policy in Europe and to develop best practice through mutual exchange of experience.

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LERU publishes its views on research and higher education in several types of publications, including position papers, advice papers, briefing papers and notes.

Advice papers provide targeted, practical and detailed analyses of research and higher education matters. They anticipate developing or respond to ongoing issues of concern across a broad area of policy matters or research topics. Advice papers usually provide concrete recommendations for action to certain stakeholders at European, national or other levels.

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