

Engaged learning in MOOCs: a study using the UK Engagement Survey



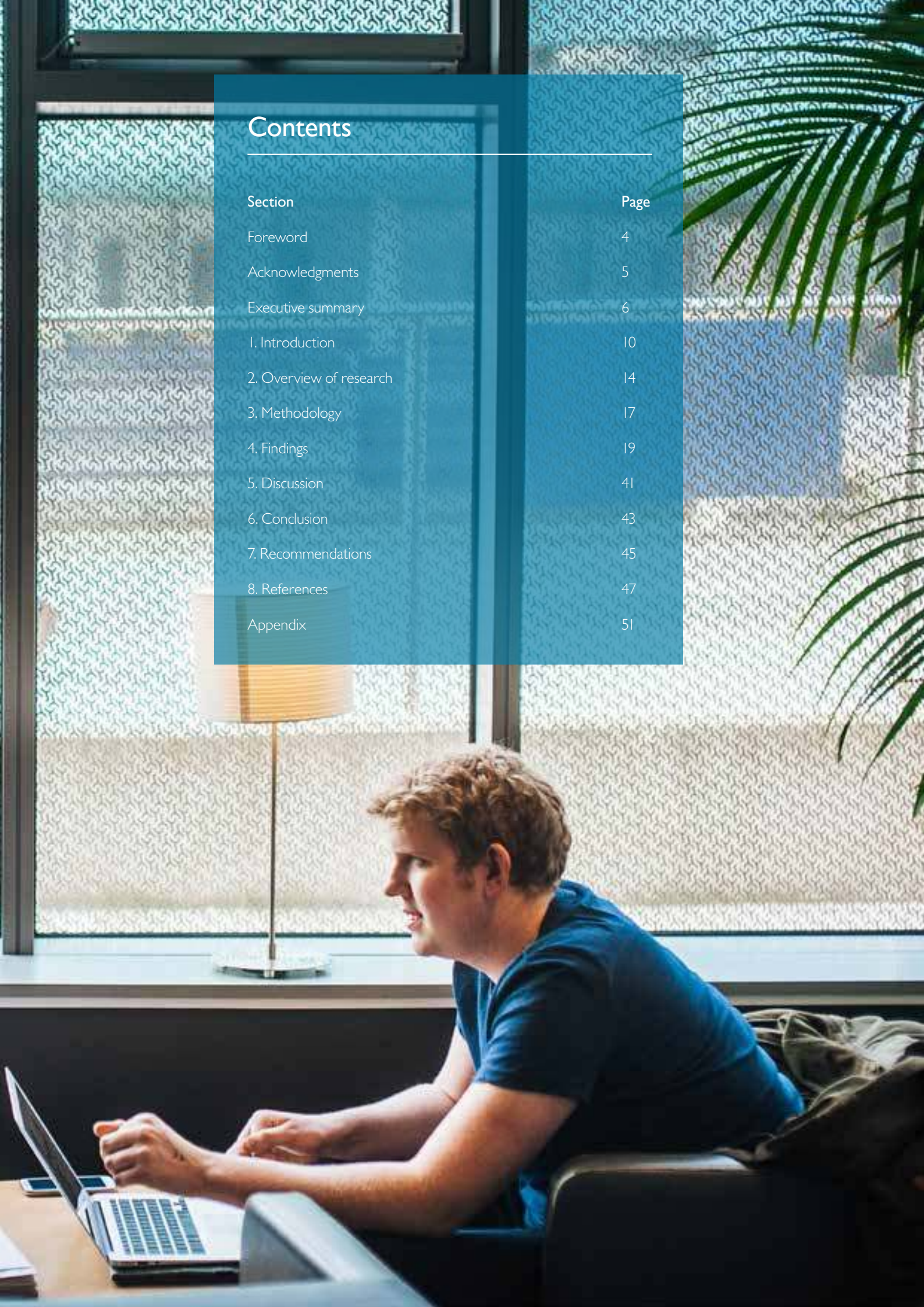
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Foreword

Massive Open Online Courses (MOOCs) have attracted a considerable amount of interest within higher education, not least because of the unprecedented number of learners who take them, free of charge. Yet below these headline features lie important and challenging questions. Are MOOCs being designed in such a way that learners will benefit from studying through them? What principles of learning and teaching are emerging as indicators of quality? How can we know what learning is taking place, and from there identify MOOCs' potential for future use in HE?

This report, the second of a series of three by the Higher Education Academy which explore aspects of MOOCs with a focus on learning and teaching, looks at the last of these questions. Using a specially-adapted version of the UK Engagement Survey 2014 – the first time this has been applied to MOOCs – learners who completed one of two MOOCs delivered through the UK's FutureLearn platform and designed and run at the University of Southampton, were questioned about their experiences as learners and their engagement with their respective MOOC. The results indicate that both of the MOOCs succeeded in enabling significant proportions of participants to feel engaged in intellectual endeavours such as forming new understandings, making connections with previous knowledge and experience, and exploring knowledge actively, creatively and critically. In response to the open access approach, whereby no participant is required to have a minimum level of previous educational achievement, the study also tells us that persistent learners engaged, *regardless* of prior educational attainment.

Higher education is changing rapidly, not just in the UK but worldwide. MOOCs have the potential to disrupt many of the sector's traditional approaches and assumptions and it is important that the learner is kept at the heart of innovations. The HEA is proud to take a lead on studying a phenomenon that is likely to find a place in the overall higher education landscape of the future. The study contributes strongly to better informing the sector about the potential strengths and weaknesses of MOOCs; ways in which they might offer new opportunities to those seeking to engage in continuing professional development and work-based learning; and some of the ways in which they can contribute to both formal and informal education. It also suggests that UKES will offer a useful and robust basis for further studies investigating learner engagement in MOOCs. The most significant finding of the project reported here, however, is the indication from an evidence base that when certain conditions are met, MOOC participants can and do experience engaged, high quality learning.

I commend the report to you.

Professor Philippa Levy
Deputy Chief Executive Officer (Academic)
Higher Education Academy

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Executive summary

MOOCs – massive open online courses – arrived in UK higher education in 2013 with the launch of 'FutureLearn',¹ an international collaboration of universities offering access through one dedicated platform. David Willetts, then Universities' and Science Minister, heralded MOOCs as 'the opportunity to widen access to our world class universities and to meet the global demand for higher education'.² The University of Southampton developed two new MOOCs, *Web Science: how the web is changing the world* and *Exploring our Oceans*, for delivery through the FutureLearn initiative. Both ran for the first time in 2013 and early 2014. This research, commissioned by the Higher Education Academy (HEA), used the UK Engagement Survey (UKES 2014)³ to research the two MOOCs with the aim of exploring the type and degree of engagement reported by MOOC learners. The following questions were posed:

- How do MOOC learners report engagement in learning, using the UKES as a framework for analysis?
- Do they describe being more or less engaged in their learning when compared with those in higher education, or exhibit different patterns overall?
- Are particular patterns, similarities or differences in engagement evident when learner characteristics are analysed?

Context

MOOC development is rapid; high numbers of people are registering, and universities continue to invest resources in their development. This is in a context of a significant fall in part-time and mature learners, and changes to flexible, part-time opportunities in higher education in the UK. Critiques of MOOCs centre on the high recruitment / low follow-through phenomenon, the meaningfulness and worth of assessment, and forms of accreditation. For some courses, FutureLearn offers either a *Statement of Participation* or a *Statement of Attainment by Exam*, a 'real world exam at a local test centre' both of which learners can choose to pay for. In addition and in the planning is a free on-screen record of learning as proof of achievement.⁴

Method and findings

In the project reported here, Southampton's MOOC learners were invited to complete the UKES 2014, with its eight constructs: higher-order learning; course challenge; collaborative learning; academic integration; reflective and integrative learning; time spent; skills development; and engagement with research.

A third of those completing activities and tests six weeks into the MOOCs completed the survey, in total just under a thousand people. Just under half of participants also offered demographic data, including age range, gender, current occupational status, disability, area of employment, educational attainment and country of residence. This showed participants' characteristics to be broadly similar to those completing FutureLearn's more generic satisfaction survey, which in turn reflected the reported MOOC learner population. A largely degree-educated cohort showed a skew towards the older age bands. Approximately one fifth were retired and about half were in full or part-time work. Including the UK, participants were from 38 countries from all parts of the world.

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- 1 'FutureLearn' is the platform through which many UK MOOCs are delivered and is a private company wholly owned by The Open University.
 - 2 <https://about.futurelearn.com/press-releases/futurelearn-to-launch-unique-social-online-learning-experience-delivering-free-university-courses-to-learners-around-the-world/> [Accessed 8 May 2014].
 - 3 The UKES has been piloted for a second year. Findings from 2013 are available at https://www.heacademy.ac.uk/resources/detail/nss/engagement_for_enhancement. Since going to press, results of the second year pilot are now available: <https://www.heacademy.ac.uk/UK-Engagement-Survey-2014>
 - 4 See <https://about.futurelearn.com/about/faq?category=statements-of-participation> and <https://about.futurelearn.com/about/faq?category=exams-and-statements-of-attainment>

Findings are summarised by the three research questions:

How do MOOC learners report their engagement in learning, using the UKES?

In substantial proportions, and regardless of prior educational attainment, learners reported engaging in:

- Higher-order learning, which reflects mental activities such as memorising, evaluating, synthesising, analysing and applying information.
- Reflective and integrative learning, which examines the level of integration of ideas and concepts, and reflects such mental activities as connecting new ideas to previous learning and to social issues and problems, and viewing ideas from new perspectives.
- Current research and research methods, which explores awareness of methods and results of research, and reflects the exploration of a particular knowledge base and the ways in which knowledge is created.

Far fewer regularly:

- Interacted or collaborated with others.
- Explored their own or open-ended lines of enquiry.
- Actively participated in creating knowledge.

Do MOOC learners describe being more or less engaged in learning when compared with those in higher education, or exhibit different patterns overall?

Eight questions in UKES 2014 could be directly compared with the smaller pilot of the UKES 2013, amongst more traditional full and part time university students. There were clear differences:

- A much greater *range* of responses was evident from MOOC learners, unlike the broadly comparable sets of responses from the different cohorts who completed the pilot UKES 2013.
- The 'online' nature of the MOOC was reflected in the pattern emerging: social, interactive learning is much higher in face-to-face programmes.
- Learning dependent on individual, reflective learning showed higher responses; proportionally more MOOC learners reported 'forming new understandings' from their course, than those who learned in face-to-face settings.

Are particular patterns, similarities or differences in engagement evident when learner characteristics are analysed?

Learners were diverse, in age, educational attainment, employment type, occupational status and country of residence. A higher proportion declared a disability than is usual in higher education. Yet few differences emerged according to characteristics. Key differences showed:

- People *in full time education* and younger learners *under 25 years of age*, regardless of prior educational attainment, reported higher levels of engagement than others, although numbers were small.
- Characteristics particularly associated with lower levels of engagement were being *retired*, regardless of age, and being *over 65 years of age*.

Discussion

The goal of the research was to understand more about MOOC learners' engagement in learning. Many reported frequent, high levels of engagement. The constructs used in the UKES 2014 appear to be meaningful to MOOC learners. An alternative 'MOOC shaped' profile of engagement emerged; both Southampton courses elicited a broadly similar distribution of responses, which differed markedly from the responses of students in higher education.

Although not originally a goal of the research, differences between the two MOOCs emerged: in areas such as feeling challenged to do the best work, forming new understandings and questions involving application, analysis and evaluation of information. This suggests specific forms of learning are sensitive to MOOC pedagogy and curricula, and that design and teaching approaches can elicit particular forms of engagement.

Learner characteristics and engagement show MOOCs have the potential to attract and engage a very diverse cohort, and to connect inter-generational and international networks of learners. To become effective 'stepping stones' to higher education however, accreditation and forms of assessment that will attract UCAS points will be necessary. Similarly, if MOOCs are to achieve the policy aim of widening access, their reach needs to extend to the under-represented groups targeted by the UK government; that is, people from specific minority ethnic groups, lower socio-economic backgrounds, low participation neighbourhoods, or who have been in care or are disabled.

To conclude, MOOCs have the potential to be engaging and to offer new and alternative routes to higher education. The institutions offering them have an opportunity to create credit-bearing assessment opportunities and reciprocal openings in traditional entry requirements. Currently, as stand-alone experiences, without academic recognition, however engaged and persistent the learners, it is difficult to see where and how MOOCs in their current form will serve to widen access.

Recommendations

Education enhancement: curriculum developers and learners

- Understanding engaged learning in a MOOC context offers curriculum developers new insights for enhancement. Curriculum developers and learners would benefit from putting measures into place in order to discover what aspects of their courses most and least engage learners, and how particular activities engage different types of learners.
- Identifying the independent learning activities most suited to online learning – in promoting such things as intellectual challenge and enabling new forms of understanding – would be valuable and could be made explicit to learners.
- In the same way, curriculum developers could enable learners to be more strategic and to make more informed choices about how to spend time and invest energies by generating greater clarity about what social learning and interactivity contributes to engaged learning (both within the MOOC community and outside of it).
- Providing direction and guidance to learners about ways to apply new empirical or theoretical knowledge to 'real world' problems may be helpful in deepening and sustaining understanding and promoting creativity. Including and eliciting learners' own ideas and projects would also be a way of developing greater involvement.
- Findings suggest MOOC developers might usefully create more effective opportunities for self-directed and open-ended learning. This is particularly important if learners are using MOOCs as a stepping-stone to higher learning.
- If the development of more social forms of learning is a goal, then MOOC development teams might usefully consider how the diversity, commitment and focussed interests of MOOC learners might best be harnessed and utilised to promote the formation of networks and communities.

- Curriculum designers would benefit from gaining a greater understanding of how to enhance engagement in independent, online learning. This also has relevance to blended forms of learning, to the 'flipped classroom' concept, and to work-based, professional development and lifelong learning more generally.

Higher Education Providers and marketing teams

- Learner characteristics suggest that MOOCs need to be reaching different sections of the population if the objective of widening access to study in higher education is to be achieved. Further work needs to go into how this might be done.
- Given the successful engagement of many who persisted with the MOOCs researched, marketers and those communicating key messages about MOOCs need to consider in greater depth how to attract a more diverse cohort.
- Accreditation of learning that attracts UCAS points is necessary if MOOCs are to become part of the landscape of higher education and provide a route to the full range of higher level learning. HE providers should work at putting this into place.

Researchers and policy makers

- Further research is necessary in order to gain a deeper understanding of the educational role of MOOC peer communities and their interactivity if MOOC teams are to make informed decisions about how best to invest time supporting learners. This is likely to differ across types of MOOC, across curriculum development teams and according to learners' own reasons for undertaking the MOOC.
- If government and MOOC providers are to know whether the widening access goal has been realised, then collation and analysis of a much more detailed range of demographic information over significant periods of time is necessary, following learners from first contact through and well beyond completion.
- Similarly, more needs to be learned about the potential of analytics to support persistence and completion through targeted communications and interventions. However, as with the collection of demographic data, there is a risk that such approaches could become intrusive.

I. Introduction

Massive Open Online Courses (MOOCs) promised to disrupt and transform higher education, and to widen access, by offering free online courses from leading universities. An educational revolution was anticipated (Barber, Donnelly and Rizvi 2013). Some lives have changed dramatically as a result of studying a MOOC (see Example 1). Their potential to drive curriculum innovation and radically reshape education continues to inform developments in the UK (BIS 2013).

Numbers registering on MOOCs remain high (Colombo 2014) and those who participate seem to enjoy MOOC learning, reporting high levels of satisfaction (Anderson 2013). However when Sebastian Thrun, one of the most successful innovators in computer science, attacked the concept, questioning the pedagogic principles of the MOOC and pointing to high drop-out rates (Parr 2013), dissenting voices grew louder. In and beyond education, the ability of MOOCs to deliver on grander claims continues to be challenged; Laurillard (2014) calls the claim that MOOCs will solve global scarcities in education 'a cruel myth', and McGhee (2012) sees their arrival as a means of reproducing, rather than reducing, inequalities. A recent Department for Business, Innovation and Skills (BIS) report (2013) questioned their scalability, sustainability and educational quality, identifying the absence of a workable business model as the single biggest challenge to providers.

Originators of the concept (Siemens and Downes) continue to innovate, locating the disruptive potential of MOOCs in a much more connectivist⁵ learning paradigm that includes personalised learning, accreditation through badges and formal academic credit, and as part of work-based learning and continuing professional development (CPD) opportunities (Siemens 2004, 2012a, 2012b). A helpful discussion of the different forms of MOOC – which they refer to as the cMOOC/xMOOC binary – is offered by Bayne and Ross in the first of the Higher Education Academy's (HEA's) series of reports on MOOCs (2014, p. 21).

It was into this dynamic context that Southampton introduced its first two MOOCs, as part of FutureLearn, a collaborative venture between 19 UK universities.⁶ Increasing participation to education remains a policy priority. At its launch, the Universities' and Science Minister, David Willetts, forecast MOOCs would "provide the opportunity to widen access to our world class universities".⁷

The University of Southampton defines the MOOC as:⁸

"a free study programme which is designed to be studied online by large numbers of participants. In addition to traditional course materials – video lectures, reading material, coursework and tests -- MOOCs provide interactive forums that help students and tutors build an online community."

5 Connectivism is a hypothesis of learning which emphasizes the role of social and cultural context.

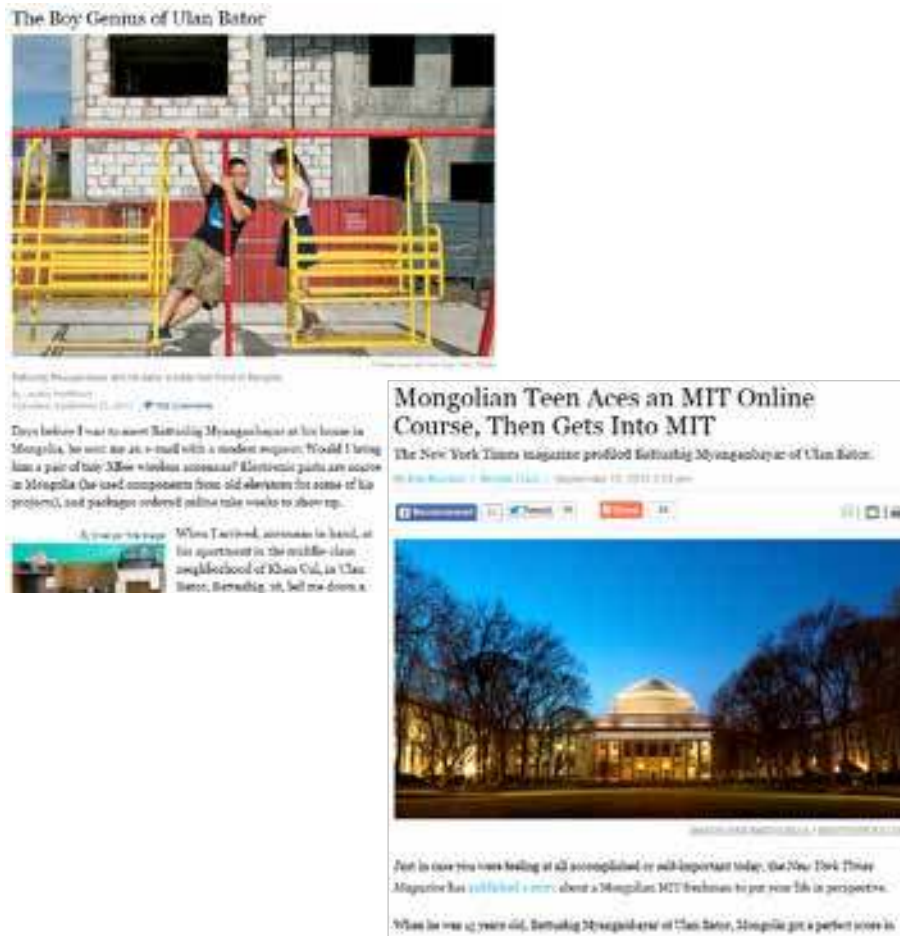
6 This has increased to 29 universities, including Ireland and Australia, since its launch. FutureLearn is a private company wholly owned by the Open University.

7 <https://about.futurelearn.com/press-releases/futurelearn-to-launch-unique-social-online-learning-experience-delivering-free-university-courses-to-learners-around-the-world/> [accessed 21 May 2014]

8 <http://www.southampton.ac.uk/moocs/whatis.shtml> [accessed 21 May 2014]

Example I: MOOCs' life-changing potential

The opportunity to study a MOOC proved life changing for Battushig Myanganbayar and Amol Bhawe. At 17 years old, both are studying at MIT after achieving 'perfect scores' on its Circuits and Electronics MOOC, which they each completed in their own homes in Mongolia and India. As well as changing the lives of individuals, Pappano (2013) points out that universities can now "find exceptional students all over the globe".



The Boy Genius of Ulan Bator

Following Pappano's article, the author is often contacted by students. Days before I was to meet Battushig Myanganbayar at his home in Mongolia, he sent me an e-mail with a modest request: Would I bring him a pair of tiny XBox wireless controllers? Electronic parts are scarce in Mongolia (he used components from old televisions for some of his projects), and packages ordered online take weeks to show up.

When I arrived, antennas in hand, at his apartment in the middle-class neighborhood of Khan Uul, in Ulan Bator, Battushig sat, let me down a

Mongolian Teen Aces an MIT Online Course, Then Gets Into MIT

The New York Times magazine profiled Battushig Myanganbayar of Ulan Bator.

Just in case you were feeling at all accomplished or self-important today, the New York Times Magazine has published a story about a Mongolian MIT freshman to put your life in perspective. When he was 17 years old, Battushig Myanganbayar of Ulan Bator, Mongolia got a perfect score in

Source: *New York Times* (2013) http://www.nytimes.com/2013/09/15/magazine/the-boy-genius-of-ulan-bator.html?_r=0 and *Boston Magazine* (2013) <http://www.bostonmagazine.com/news/blog/2013/09/13/mongolian-teen-aces-mit-online-course-gets-mit/> [accessed 21 May 2014]

Two MOOCs – *Web Science: how the web is changing the world*, and *Exploring our Oceans* – were launched in December 2013 and February 2014, respectively. More are planned. Each attracted high numbers and saw approximately a quarter of all who completed the first activity follow through to completion, reflecting numbers reported at Duke University (Belanger and Thornton 2013). Other reports offer far lower completion rates of between 5-10% (Parr 2013). Colleagues generously agreed for their MOOCs to be researched in a project funded by the Higher Education Academy (HEA), while running them for the first time. Here we report on the first stage of that research, in which we investigated learner engagement through the UK Engagement Survey (UKES 2014).⁹ A subsequent interview-based study involving MOOC learners, curriculum developers and teaching teams has been published by the HEA.¹⁰

9 <http://www.heacademy.ac.uk/surveys/engagement> [accessed 21 May 2014]

10 <https://www.heacademy.ac.uk/node/10315>

Example 2: Exploring our Oceans

Exploring our Oceans

We created a MOOC in *Exploring our Oceans* as a vehicle for public engagement with our research. The MOOC was designed to engage participants over six weeks, with each week exploring a different aspect of *Exploring our Oceans*. We used examples from our own research to illustrate key concepts, and actual data from our research in interactive exercises, with participants, for example, exploring our maps of newly surveyed areas to identify deep-sea features. We also developed activities to raise awareness and stimulate discussion of our research process, with participants planning their own fieldwork expedition to the Cayman Trough to understand the logistics of deep-sea exploration.

The core content of each week represented around three hours of activities for participants, with optional additional content for those wishing to explore topics further. Each activity step included a discussion forum for participants to post comments, discuss their thoughts, and ask questions. During the “live” six weeks of the course, six PhD students each spent one hour per day facilitating these online discussions, along with contributions from the course educators.

The development of content for the MOOC was directly informed by experience from our previous face-to-face and online public engagement activities for our research, and the course was designed for participants either to follow in a linear fashion, or to select content from topics that interested them. We also designed the course specifically for participants with no prior background in science, while including advanced steps for those more familiar with scientific knowledge and approaches to research.

More than 5,000 people participated in the first run of the course, posting over 9,000 comments in the discussion forums. More than 25% of participants completed all the activities in the MOOC, which is substantially higher than the average ‘completion rate’ reported for MOOCs in general. Participants attributed the ‘live’ interactions with the facilitators and educators, during the six weeks, as a key factor for their engagement.

Learners provided clear evidence of our target engagement outcomes of “generating inspiration and curiosity about science”, “raising awareness of research findings and their context”, and “providing cultural enrichment by supporting lifelong learning”. In addition, some participants reported that the MOOC stimulated them to discuss deep-sea discoveries and ocean issues with other people outside the course, and even to alter career choices, make lifestyle changes, and undertake ocean advocacy.

Dr. Jon Copley



Source: <http://moocs.southampton.ac.uk/oceans/category/mooc-details/>, <https://twitter.com/expeditionlog> [accessed 21 May 2014]

Example 3: Web Science

Web Science: how the web is changing the world MOOC

In the Web Science MOOC we examined the origins and evolution of the Web, and considered key questions of security, democracy, networks and economy from both computational and social science perspectives. Topics included: Making the 21st-century Web; Introduction to Network Analytics; Cybercrime; Open Government Data; and Employability in a Digital Age.¹¹

The World Wide Web has changed the world. It has changed the ways we communicate, collaborate, and educate. We increasingly live in a Web-dependent society in a Web-dependent world. The Web is also the largest human information construct, and it is growing faster than any other system.

However, it is a striking fact that there is no systematic discipline to study the Web. We need to understand the current, evolving, and potential Web but at the moment we have no means of predicting the impact that its future developments will have on society or business.

Web Science aims to anticipate these impacts. It is the study of the social behaviours in the Web at the inter-person, inter-organizational and societal level, the technologies that enable and support this behaviour, and the interactions between these technologies and behaviours.

Professor Susan Halford and Professor Leslie Carr



Source: <https://www.futurelearn.com/courses/web-science-2014/todo/273>, <http://moocs.southampton.ac.uk/websci/> [accessed 21 May 2014]

¹¹ Source: <http://www.southampton.ac.uk/moocs/webscience.shtml> [accessed 21 May 2014]

2. Overview of research

The relatively low proportion of people completing MOOCs is regularly cited as problematic and a reflection of quality, although this is contested. Our research is framed within this context but looks beyond, to intellectual engagement, which may be present in MOOC learning regardless of completion. The relationship between engagement, satisfaction and course completion has been extensively researched in traditional forms of education, and to a lesser degree in blended learning. Engagement in purely distance or online education is less well researched. This brief overview therefore considers findings from related studies to establish how engagement in MOOCs might be described, given their different origins and purposes.

2.1 Course completion

The largest systematic study of early departure in UK HE is by Rose-Adams. Among early leavers “mature entrants without recent A-levels, people from lower higher education participation neighbourhoods and those from a previous educational institution in the further education sector” (2012, p. 4) were found to be significantly over-represented when compared to A-Level entrants of a younger age group. No similar study has been conducted in online or distance education, although Simpson (2010, 2013) researched completion rates of the Open University (OU) – the UK’s unique provider of distance or open higher education – over the previous decade. Finding only 22% had completed their degrees up to eleven years after beginning them – and following a thorough review of retention research – he found little evidence of successful, sustained and proactive institutional strategies, speculating that attitudes, structures and “dropout disempowerment” (Simpson, 2010, pp. 44–5) serve to perpetuate cycles of exclusion. Comparing MOOC completion with full-time HE is problematic, however. Not only does the UK have one of the lowest rates of attrition in Europe, at 16% (Schnepf 2014), but high fees, narrow entry gates, and complex credit transfer systems for prior learning, militate against alternative, step-on/step-off routes into and through higher education. Government targets are necessary to ensure institutions put in place arrangements to widen access (OFFA 2014).

While most in higher education would support Simpson’s (2010) goal of reducing attrition still further, MOOCs occupy a new space. Patterns of involvement have been compared to the ‘funnel of participation’, a marketing concept used in sales and described by Clow (2013, p. 3): “A vast number of people need to become aware that the product exists; a fraction of those will be interested in that class of product; a fraction of those will form a desire for the specific product; and, finally, a proportion of those will make a purchase.” Hill (2013) also shuns comparison with the higher education concept of ‘drop-out’, identifying “lurkers, drop-ins, passive and active participants”, who make choices to dip in and out of learning. BIS (2013) offers yet another typology of MOOC behaviours – auditing, sampling, disengaging and completing – suggesting a more savvy form of partial participation.

The ‘free’ (gratis) nature of MOOCs means not only is there no financial loss to deciding *not* to complete, but power cannot be exercised by and through the final assessment, with its inherent risk of failure (Mann 2008). The MOOC, as originally conceived by Downes (Parr 2013), embodies the connectivist principles of learning by doing, with peers and networks, rather than focussing on assessment as a goal.

Schnepf’s (2014) European study found that, in certain countries, it is taking part in tertiary education that provides a career advantage, whether or not courses are completed. The exception was the UK, where dropping out can signal problems in future career terms (Rose-Adams, 2012). However, students may make strategic decisions. In a longitudinal study of foundation degree students, we found that some who started the programme did not intend to complete, but wished to be able to show evidence of recent HE-level study to gain entry to highly competitive professional programmes (Wintrup, James and Humphris, 2012, p. 185). It is probable that OU courses are used in the same way, meaning we should treat course completion data differently when completion may not be the students’ goal. Given the difficulty of gaining access to certain parts of HE, such rational and instrumental decisions are hard to criticise.

There is consensus in the literature regarding the pivotal part played by the first learning activities in a MOOC. In consumer terms, this first step 'inside the shop' needs to be easy and attractive. In educational terms, recalling Krause (2005) and Kift (2009) on the importance of belonging and transition, it needs to welcome, include, motivate and establish a combination of intellectual stimulation, high expectations and new possibilities.

2.2 Moving beyond satisfaction

An extensive literature exists in the field of student satisfaction, which we do not attempt to do justice to here. Most relates to traditional forms of higher education and draws on business or customer approaches. A robust critique is offered by Sabri (2011), but it is nonetheless of interest, given its link to persistence and engagement.

Bean (1980) shows a causal link between student satisfaction, organisational factors and early withdrawal. However, the challenge of educational research is always how to reach and learn from those who choose not to participate or to continue (Rose-Adams, 2012). There is an additional problem accessing data about online and distance learning (ODL). Such forms of education were found to be under-researched in the UK by White *et al.* (2010, p. 4), who found "almost no formal collection of data related to HE level ODL activity".

The growing body of empirical research into online learner¹² satisfaction is largely related to blended programmes. A key theme emerging from survey-based research is the importance of the course leader, or instructor. Responsiveness and interaction was most valued by distance learners in Herbert's (2006) US-based study, and student-peer interactions valued least. Students' assessment of the instructor's expertise, counselling, and support most influenced satisfaction in an Austrian college (Paechter, Maier and Macher 2009). In a larger survey, Kuo *et al.* (2013, p. 30) found "learner-instructor interaction, learner-content interaction, and Internet self-efficacy (the belief in one's capabilities to organise and execute actions on the Internet) were good predictors of student satisfaction while interactions among students and self-regulated learning did not contribute to student satisfaction." The role of the 'teacher' in MOOCs was found by Bayne and Ross (2014, p. 23) to be polarised and under-explored; they describe the "distant rock star" at one extreme, the co-participant/facilitator at the other.

Regardless of its critics, satisfaction remains the valued criterion in HE provision. National surveys in general reflect a high level of satisfaction among distance learners. The largest UK provider of distance education, the Open University, has been ranked among the top five universities for student satisfaction since the National Student Survey was introduced in 2005 (OU 2014). Remote learners responding to the Irish Survey of Student Engagement (ISSE) also formed the largest proportion of satisfied students, over and above both full and part-time campus-based students (ISSE 2013). It is possible that a low level of expectation is a contributory factor, as Simpson (2010) posits, but currently this is speculation. Yet in one of the largest and most thorough reviews of MOOCs, following an extensive literature review, the authors conclude "there is as yet no agreed satisfactory system of measurement for assessing the quality of MOOCs from the learners' point of view" (BIS 2013).

2.3 Student engagement

Tinto's (1975, 1993) seminal work in US college campuses transformed understanding of student drop-out, contributing to an international interest in shifting the focus from 'retaining' students (an institutional need) to actively engaging them in learning and personal development. Tinto's work and that of others (see, for example, Astin 1993; Pascarella and Terenzini 2005; and Kuh 2009) has been influential internationally, although in the UK, student engagement has a variety of meanings. In the past, the focus has been on student feedback and course representation in governance and quality activities (Little *et al.* 2009). Increasingly, partnership models are developing; for example, the 'students as partners' strand of work within the HEA (HEA 2014), the *Student as Producer* (Neary and Winn, 2009) and *Students as Change Agents* (Kay, Dunne and Hutchinson 2010).

¹² The term 'learner' is used here in relation to MOOCs and 'student' is used as it is in the literature.

While these institutional approaches may have limited relevance to MOOC learners, some anticipate that an increasingly blended approach within traditional education will prompt a rethinking of engagement (Lane 2013). Coates (2006), and Krause and Coates (2008 p. 495) explored the concept as part of blended, campus-based learning, recommending that, even within such a context, online learning requires its own engagement dimensions: online engagement, online active learning, online academic relevance, online teaching, online collaboration, online social interaction, and online contact with staff.

2.4 The UKES

Defining intellectual and social learning constructs, then developing ways to measure these, has been the purpose of Kuh's and others' extensive bodies of research (see e.g. Kuh *et al.* 2008). The most established and adapted tool, the National Survey of Student Engagement (NSSE),¹³ has been used in many different settings (see Buckley 2013, p. 11). Students rate their own activities, in terms of intellectual engagement, personal changes and behaviours, and how much their course has provoked certain responses, reflecting the "total curriculum" (Kift 2009). Developed for education enhancement, the surveys are not designed primarily for inter-institutional bench-marking.

A UK adaptation of NSSE – the UK Engagement Survey (UKES) – is in development and has been piloted and adapted, under license from the owners of the copyright (the Trustees of Indiana University). Buckley (2013, p. 7) offers a thorough discussion of its reliability and validity, and the outcomes of the first pilot study. The UKES questionnaire was modified and expanded for the second pilot which took place in 2014. The national results (along with findings relating to validity and reliability) were published in November 2014. The current study used a slightly modified version of the 2014 questionnaire. The full versions of the 2013 and 2014 questionnaires, and the questionnaires used for this study, are reproduced in appendices one, two and four. To view MOOCs through the lens of student engagement, it is necessary to de-couple the concept from its origins in campus-based education. We did this by re-reading all UKES questions carefully to imagine how online learners would respond to each and removed any implying learning was campus-based or blended. Having done that we then reworded the introduction to each survey question itself, placing the emphasis on the learner and creating first-person responses (e.g. "During the course I ...") rather than leaving the original emphasis on the course (e.g. "How much did your course emphasise ...?"). Doing these two things allowed us to retain the key engagement concepts while seeking a more direct and personal rating of items, placing emphasis on the 'learning' rather than on the 'course'. This research offers an opportunity to assess the value and applicability of UKES to MOOC learners, to provide comparisons, and to test its potential to assess the overall quality of learning and teaching from the learner's perspective.

A small number of studies have investigated the engagement of distance learners using NSSE or its derivatives (such as the Australasian Survey of Student Engagement, AUSSE).¹⁴ Chen, Gonyea and Kuh (2008) reported that distance learners experience higher levels of academic challenge and reflective learning than face-to-face learners, and lower levels of active and collaborative learning. The 2006 NSSE results showed that distance learners reported higher levels of academic challenge, reflective learning, and higher gains in practical competence and personal and social development. However, they also engaged less in active and collaborative learning than campus-based students (NSSE 2006). The 2013 results for both ISSE and NSSE show that distance learners reported lower levels of interaction with staff (NSSE 2013; ISSE 2013). In Australia, research using AUSSE found that distance learners report higher levels of work-integrated learning, but report lower levels of work with other students (AUSSE 2008; Kahu *et al.* 2013). An investigation of the suitability of NSSE for distance learners did find issues with a NSSE item regarding asking questions in class, but the issue was rectified for the item wording used in NSSE 2013 and adapted for use in UKES (Chen and Gonyea 2007). This is the first study to report the use of a NSSE-derived survey in a MOOC context. Given the international prominence of NSSE as a tool for evaluating engagement this is, therefore, an important moment for the examination of learner engagement in MOOCs.

13 <http://nsse.iub.edu/> [accessed 21 May 2014]

14 <http://www.acer.edu.au/ausse> [accessed 21 May 2014]

3. Methodology

Discovering how learners appraised their engagement with study on a MOOC required a direct form of communication, which would not be too intrusive. We sought to balance learners' needs, our goal of eliciting worthwhile research data, and the demands on colleagues leading the MOOCs. To these ends, we accessed anonymised demographic and progression data where possible and adapted our methods, while maintaining the integrity of the project. We introduced learners to UKES (2014); 2014 saw the second pilot administration of UKES, and the survey will be running again in 2015.¹⁵

3.1 Study design and conduct of the research

A cross-sectional study design enabled us to observe and capture the natural responses of learners,¹⁶ without directly intervening with their experience (Field 2009). Two datasets were compared. First, we used anonymised demographic data from FutureLearn's extensive, generic pre- MOOC and post-MOOC evaluations. Second, we sought responses to the UKES (2014) survey, which was administered once, six weeks into each of the MOOCs (the notional end point). Findings are represented graphically, as two sets of data, each relating to these separate sources. UKES participants were invited to volunteer personal characteristics including their age group, highest educational attainment, occupational group and type of employment, disability, and additionally to volunteer for individual interviews as part of a follow-up study.^{17 18} We make no claim to generalise findings to a wider population, offering findings as contingent, situated uniquely in time and place, and particular to two new MOOCs: *Web Science: how the web is changing the world* and *Exploring our Oceans*.

3.2 Ethics

University ethical approval was given¹⁹ and embodied principles of respect, privacy and confidentiality, and not doing harm. (See Appendix 3 for principles applied to the study.) The only demographic information sought (over and above that given as part of FutureLearn's pre-course and post- course surveys) was collected from volunteers following the UKES (2014) survey. There were limitations to this data.²⁰

15 The national report of the 2014 UK Engagement Survey is available at <https://www.heacademy.ac.uk/UK-Engagement-Survey-2014>. For our purposes, we omitted the section called 'Time spent' which seeks information about engagement in the life of the campus, including work and volunteering activities during more traditional (full-time) university experiences. (See Appendix 2.)

16 The *Web Science: how the web is changing the world* MOOC ran two times during the research period (December 2013 to April 2014) demographic pre-course data was gathered from both cohorts and post-course data from one. *Exploring our Oceans* ran once, February to April 2014, and demographic pre-course data was gathered.

17 Both were optional and UKES data were used from all participants who completed the survey in full.

18 The qualitative research is available on the HEA website.

19 By the Faculty of Engineering and Computer Sciences.

20 This did not include part-time study, socio-economic, postcode or ethnicity categories, limiting subsequent analysis.

3.3 The research questions

Following the literature review, our goal was to explore the kinds and degrees of engagement reported by MOOC learners. We posed the following questions:

- How do MOOC learners report their engagement in learning, using the UKES?
- Do they describe being more or less engaged in their education when compared with those in higher education, or exhibit different patterns overall?
- Are particular patterns, similarities or differences in engagement evident when learner characteristics are analysed?

4. Findings

FutureLearn's generic pre-course survey was completed by 1,898 people (of those who registered for *Exploring our Oceans* and either cycle of *Web Science* MOOCs). Another 636 completed the post-course survey (from *Web Science* only, no post-course data being available yet for *Exploring our Oceans*). The UKES MOOC survey was completed by 974 people, 521 from *Web Science* and 453 from *Exploring our Oceans*.²¹ Of those, 455 from both MOOCs offered additional demographic information, of a similar type to that sought by FutureLearn. Both forms of data are presented to offer a comparison of learner characteristics. Only UKES data is analysed beyond this comparison.

4.1 Demographic profiles of survey participants

Chart 4.1.a: Age ranges of participants in pre-course and post-course generic surveys

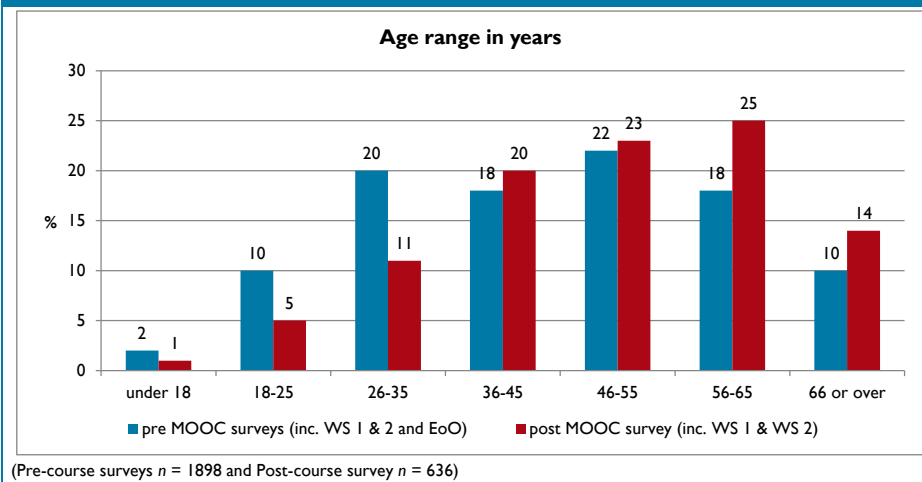
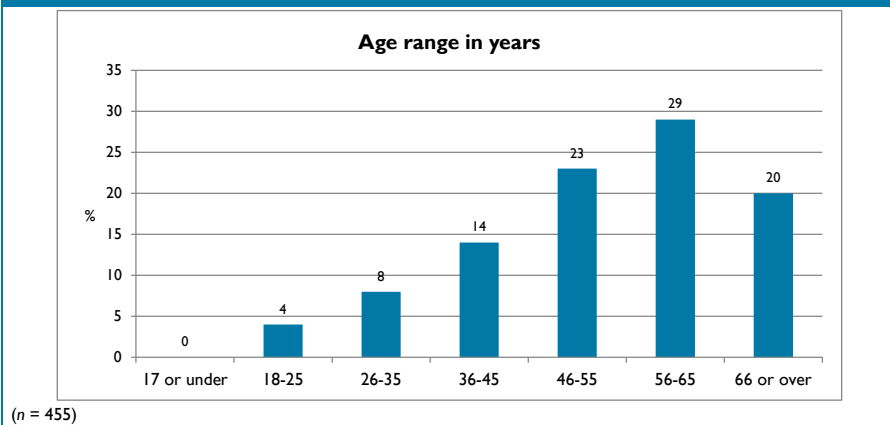


Chart 4.1.b: Age ranges of participants in UKES MOOC survey



The generic pre-course survey shows a normally distributed age profile. Both later surveys are skewed towards the older age ranges: two-thirds of participants are over 46 years of age. Those over 65 years of age constitute 20% of UKES participants, and 14% of the generic survey cohort. In both cohorts, less than 6% are under 25 years of age.

21 Of the two out of three MOOC cohorts for which figures were available, this constituted 34% of all who completed tests and were actively involved at the end of the six week MOOC course.

Chart 4.1.2a: Highest level of education of participants in pre-course and post-course generic surveys

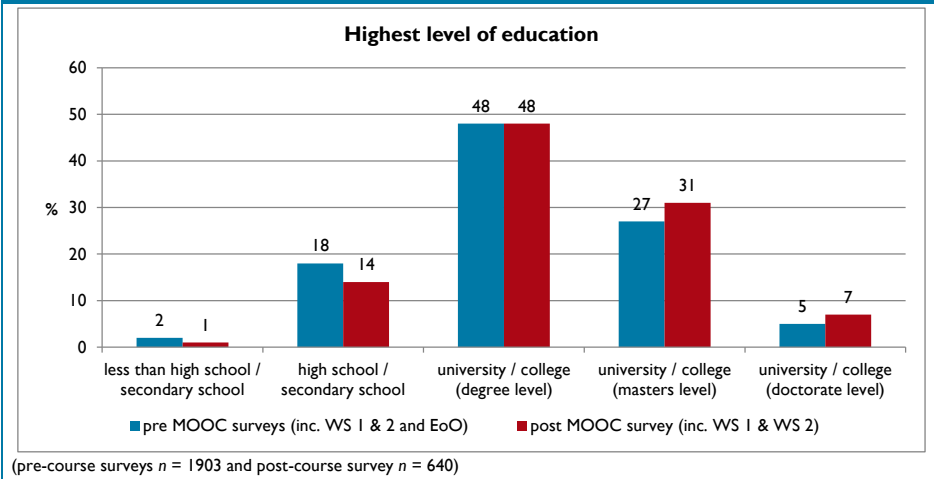
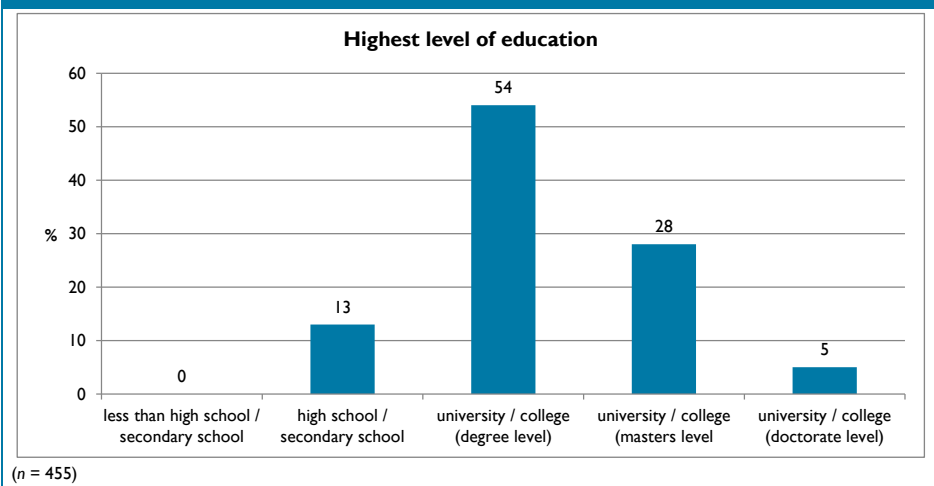


Chart 4.1.2b: Highest level of education of participants in UKES MOOC survey



Distribution is very similar in both graphs, with a skew post-MOOC towards the higher qualifications. Between 85-87% described their educational attainment level as a degree or higher, compared with 38% of the general UK population (ONS 2013). Over one-third are Masters or doctoral graduates. Around one-sixth responding post-course describe a level of educational attainment below degree level.

Chart 4.1.3a: Gender of participants in pre-course and post-course generic surveys

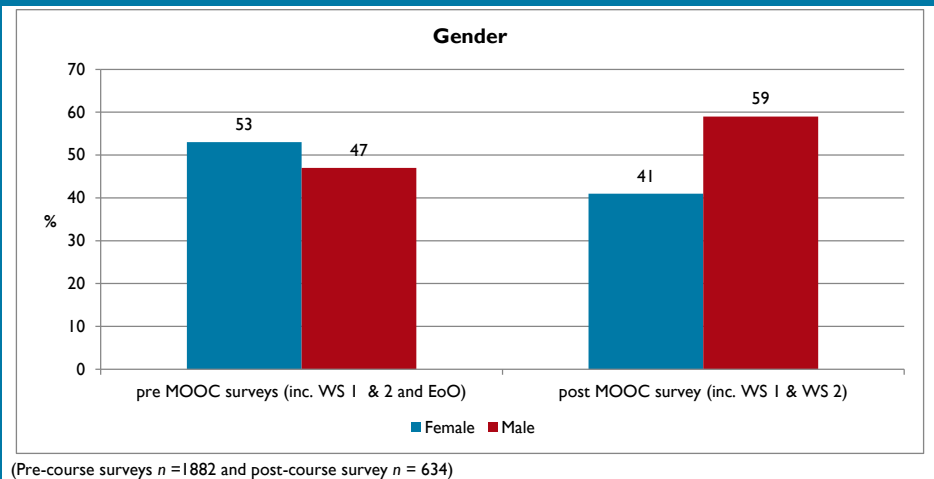
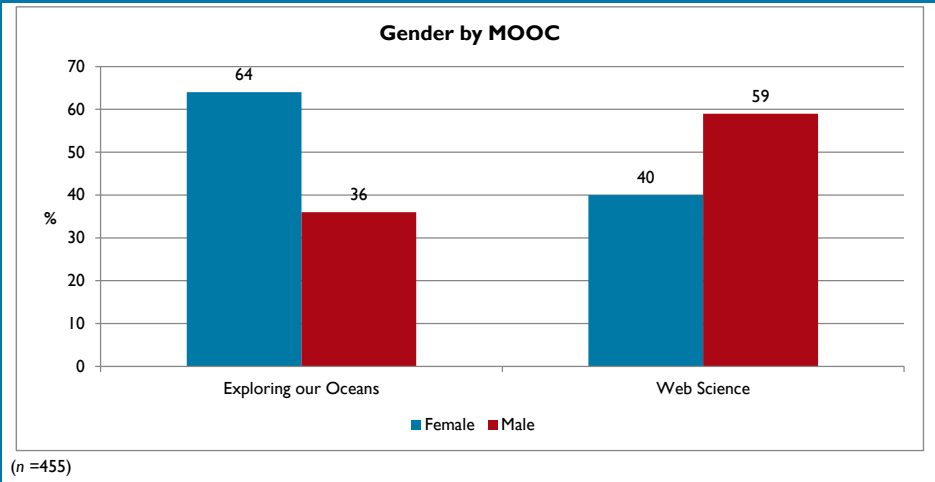


Chart 4.1.3b: Gender of participants in UKES MOOC survey



Gender differences reflect differences between the two MOOCs and differences in the two survey types. This may be related to the subject/disciplinary areas.

Chart 4.1.4a: Disability of participants in pre-course and post-course generic surveys

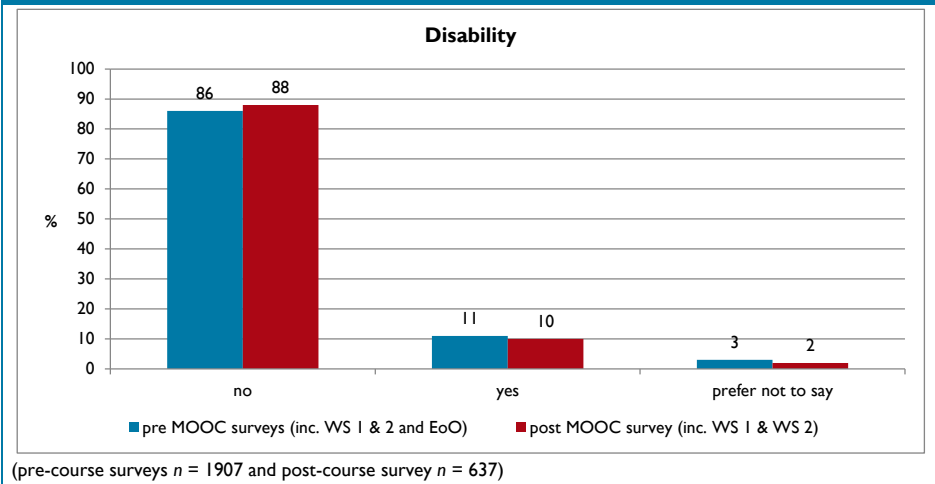
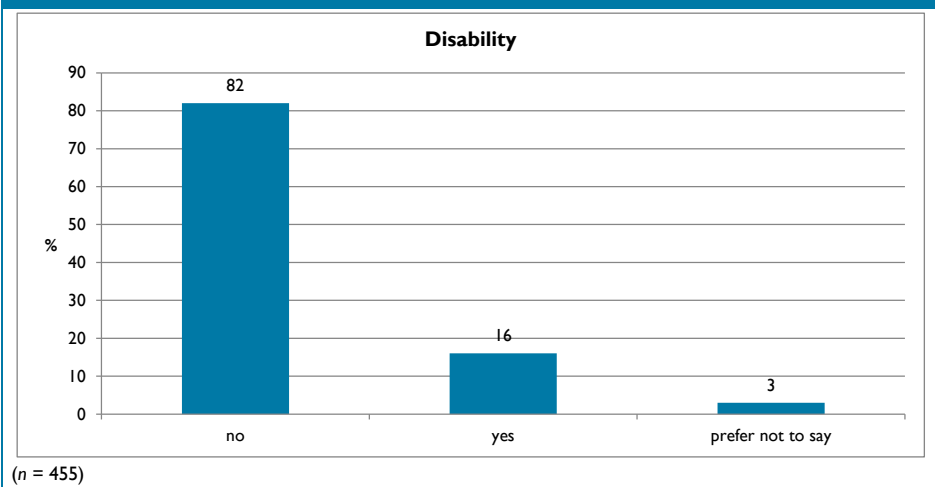


Chart 4.1.4b: Disability of participants in UKES MOOC survey



The generic survey reflects a lower proportion than the UKES of participants describing themselves as disabled.²² The latter reflects both the UK norm (16%)²³ and the European average of one-sixth of working age people.²⁴ Given that 20% of UKES participants are over 65 years of age, when disability increases to 45% of the UK population, this overall proportion seems low. Dyslexia alone is estimated to affect 10% of the population.²⁵

However compared with disabled students in higher education, the proportions are relatively high. HESA (2013) found only 7% of students to be in receipt of disabled students' allowance (DSA). Many disabled students do not register for or qualify for DSA, but even in terms of self-reporting only 8% report a disability on application (UCAS 2013).

Chart 4.1.5a: Occupational group of participants in pre-course and post-course generic surveys

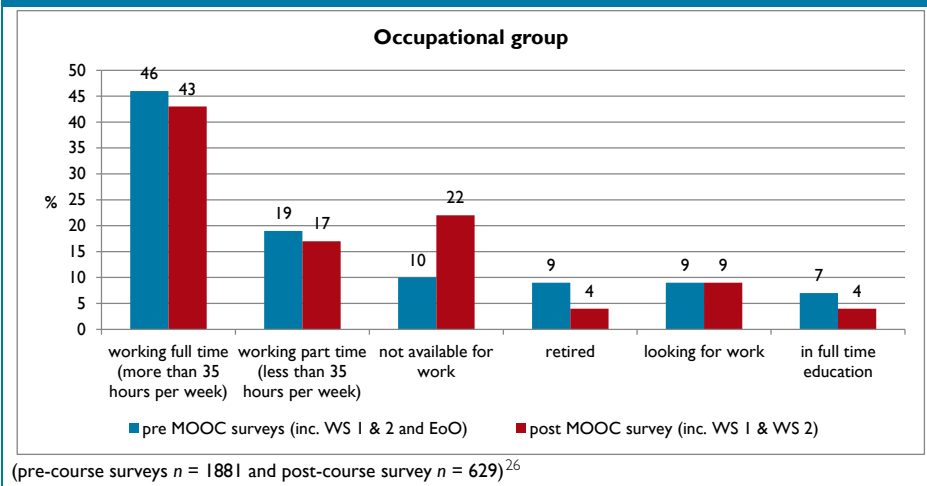
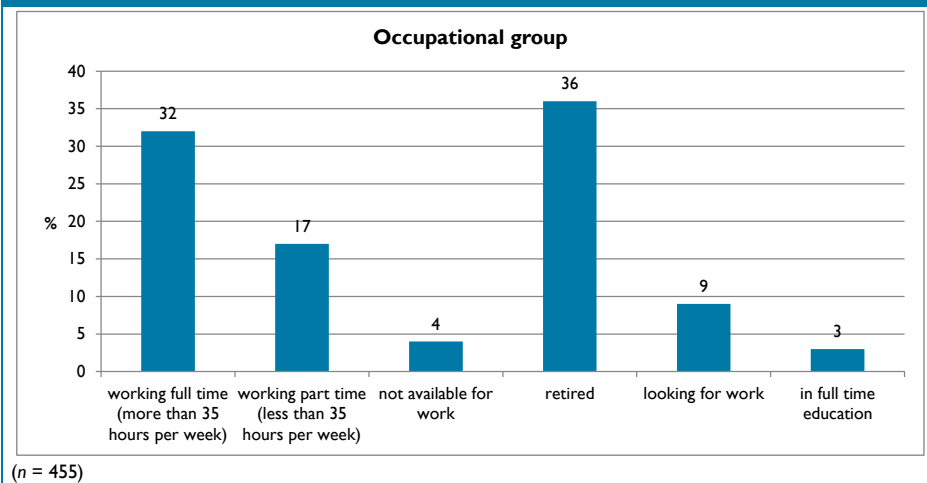


Chart 4.1.5b: Occupational group of participants in UKES MOOC survey



Only one generic post-MOOC survey included an option for 'retired', which may account for the more than doubling of those registering 'not available for work' in the combined dataset. Even taking this into consideration, for the first time the two graphs show a different pattern, with many more retired people offering demographic data through the UKES survey. People from 46 years old to over 65 years old described themselves as retired. Data collection differences in this category mean caution is needed in any extrapolations.

22 Disability included long-term health condition, mental health condition, specific learning difficulty (such as dyslexia), or other physical or mental impairment

23 <http://odi.dwp.gov.uk/disability-statistics-and-research/disability-facts-and-figures.php> [accessed 21 May 2014]

24 http://ec.europa.eu/justice/discrimination/disabilities/index_en.htm [accessed 21 May 2014]

25 <http://www.dyslexiaaction.org.uk/frequently-asked-questions> [accessed 21 May 2014]

26 The option to select 'retired' was only available in the *Web Science: how the web is changing the world 2* and *Exploring our Oceans* pre and post-course surveys.

Chart 4.1.6a: Area of employment of participants in pre-course and post-course generic surveys

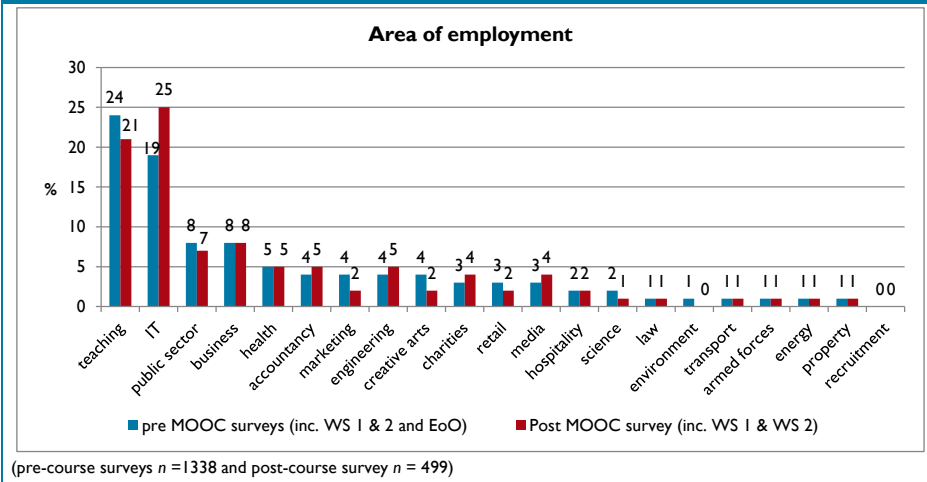
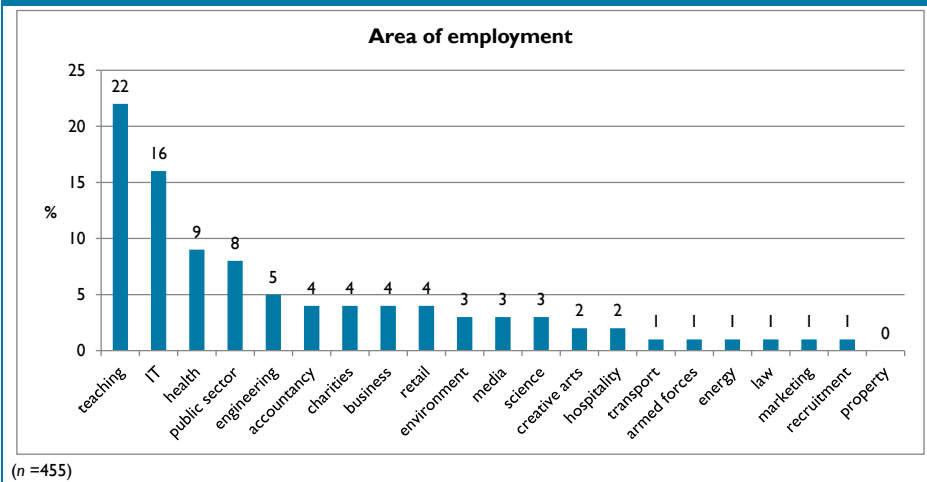


Chart 4.1.6b: Area of employment of participants in UKES MOOC survey



All three surveys reflect significant proportions working in education, information technology (particularly of those studying the Web Science MOOC) and public sector work.

The UKES 2014 MOOC participants: learner characteristics

Participants who volunteered personal and demographic information enabled different forms of analysis to be conducted on their data. For the first time, it was possible to see that while 80% of participants reported living in the UK, the other 20% studied the MOOCs in 35 other countries, spanning six continents.²⁷

Figure 4.1: Map of current country of residence of UKES 2014 MOOC participants



Table 4.1: Current country of residence of UKES MOOC participants

Country	Number of people	% of people
Australia	2	0
Austria	2	0
Bolivia	1	0
Brazil	3	1
Canada	2	0
China	1	0
Columbia	2	0
Denmark	2	0
Egypt	1	0
Finland	2	0
Germany	1	0
Gibraltar	2	0
Greece	2	0
Indonesia	1	0
Ireland	12	3
Italy	5	1
Lebanon	1	0
Luxembourg	1	0
Malaysia	1	0
Mexico	2	0
Netherlands	3	1
New Zealand	3	1
Nigeria	2	0
Oman	1	0
Pakistan	1	0
Peru	3	1
Portugal	4	1
Romania	2	0
Russia	2	0
South Africa	1	0
Spain	7	2
Switzerland	2	0
UK	362	80
US	12	3
Vietnam	1	0
	452	100

Source: UKES MOOC iSurvey

Differences between the two MOOCs emerged, although numbers were small. Of the eight in the youngest age band (under 18) studying *Exploring our Oceans*, six lived outside the UK. Of the 11 aged between 18-25, five lived outside the UK. However, of the seven younger (18-25) *Web Science* participants, only one lived outside the UK. So in broad terms, people living outside the UK tended to be more highly represented in the younger age bands and less so in the older age bands. No other differences emerged in terms of characteristics; they were equally mixed in terms of occupations, educational levels and disability.

This proportion was not reflected in the larger generic survey, which showed a much higher proportion (38%) of learners living outside the UK. So, from comparing the two samples, certain trends prevail (age ranges, education, occupation) while differences exist in the proportions of retired people and learners studying outside the UK.

4.2. The UKES 2014 MOOC survey

MOOC learners completed questions in the categories: higher-order learning (which reflects mental activities such as memorising, evaluating, analysing and applying information); course challenge; collaborative learning; academic integration; reflective and integrative learning (which examines the level of integration of ideas and concepts); skills development; and engagement with research.²⁸ All categories of the UKES other than *engagement with research* are drawn from the NSSE. Results are comprised of *Exploring our Oceans* n = 453 and *Web Science* n = 521, in total 974 participants. Another 674 attempted but did not complete the UKES.²⁹ Abbreviated versions of the survey questions are used in the charts below. (The full question wordings are available in Appendix 4.) NSSE items adapted for use in UKES are used with permission of from *The College Student Report, National Survey of Student Engagement* (copyright 2001-13, The Trustees of Indiana University).

Chart 4.2.1a: Higher-order learning – *Exploring our Oceans*

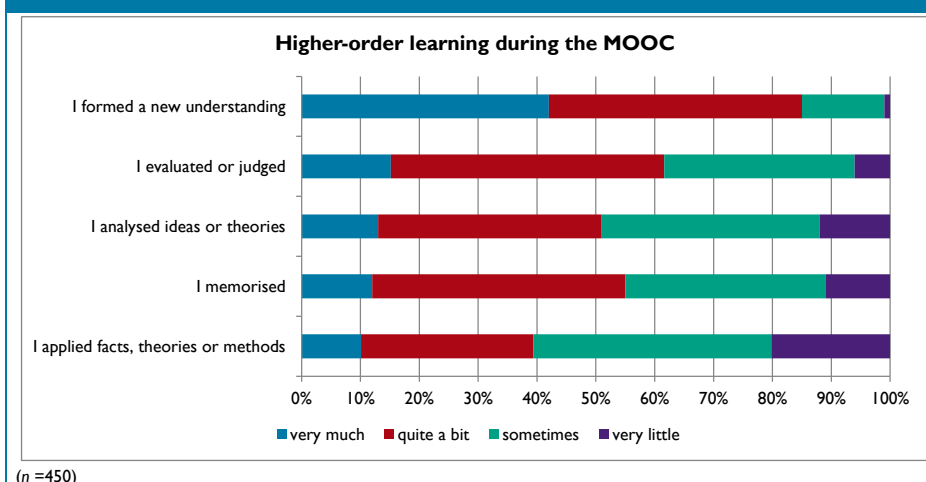
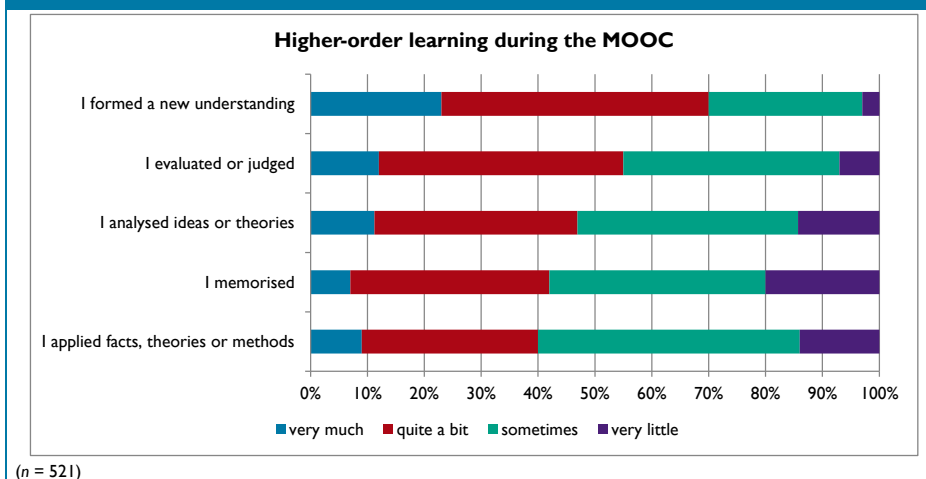


Chart 4.2.1b: Higher-order learning: *Web Science*

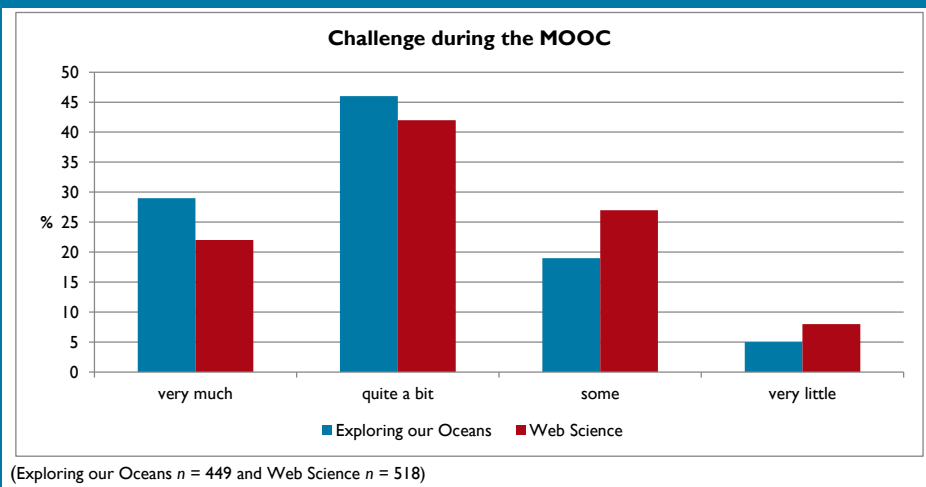


28 The category 'time spent' was omitted as it asked questions largely relevant to campus-based life. The validity and reliability of the UKES 2014 questionnaire used in the national pilot has been reported by the HEA: <https://www.heacademy.ac.uk/UK-Engagement-Survey-2014>

29 See Appendix 4 for full UKES MOOC 2014 question wording and appendices 5 and 6 for survey format.

Both MOOCs enabled between 70-85% of participants, *quite a bit* or *very much*, to form a new understanding as a result of their learning. This has implications for many forms of online, blended and self-directed learning. Fewer reported memorising course content although 7% (*Web Science*) and 12% (*Exploring our Oceans*) did so *very much*.

Chart 4.2.2: During the course I was challenged to do my best ...



Again both MOOCs show a majority – over two-thirds – felt challenged to do their best work *very much* or *quite a bit*. The differences between the MOOCs open the way for discussion with learners, between MOOC teams, and with academic course developers more generally, to understand what aspects of learning led to this level of challenge when no assessments or grades were in the balance.

Chart 4.2.3a: Collaborative learning during the MOOC – *Exploring our Oceans*

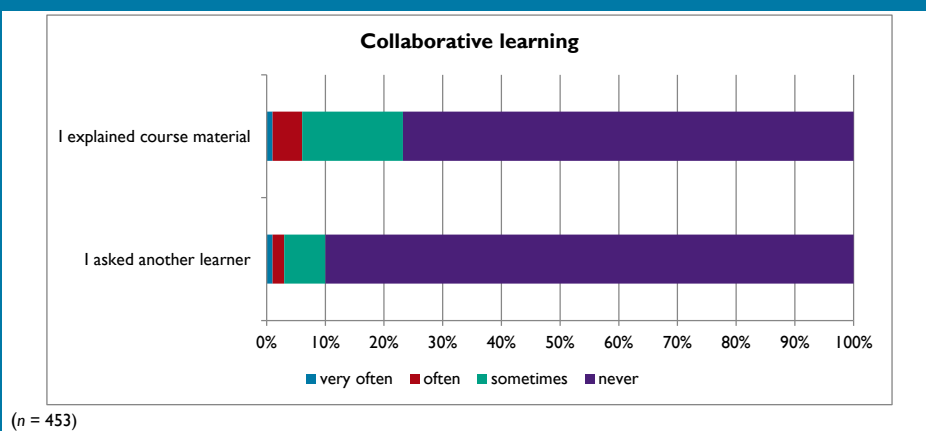
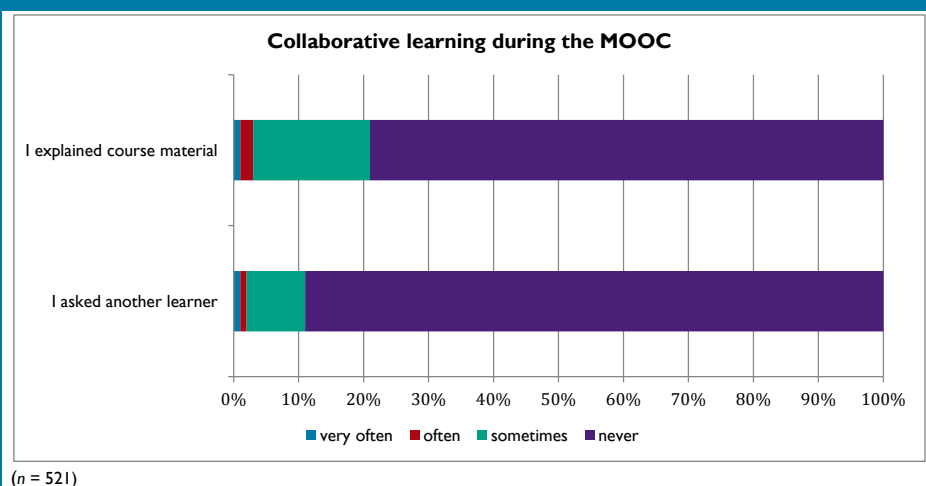


Chart 4.2.3b: Collaborative learning during the MOOC – *Web Science*



These two graphs are very similar. This question was important to include in the survey, given the University's description of the "interactive forums that help students and tutors build an online community."³⁰ While over three-quarters in both MOOCs reported *never* explaining course material to another learner, over one-fifth reported doing so *sometimes*, *often* or *very often*. Even more surprisingly, around 10% of participants – almost 100 people in total – *sometimes*, *often* or *very often* asked another learner to "help me understand course material."

Chart 4.2.4a: Academic integration during the MOOC – *Exploring our Oceans*

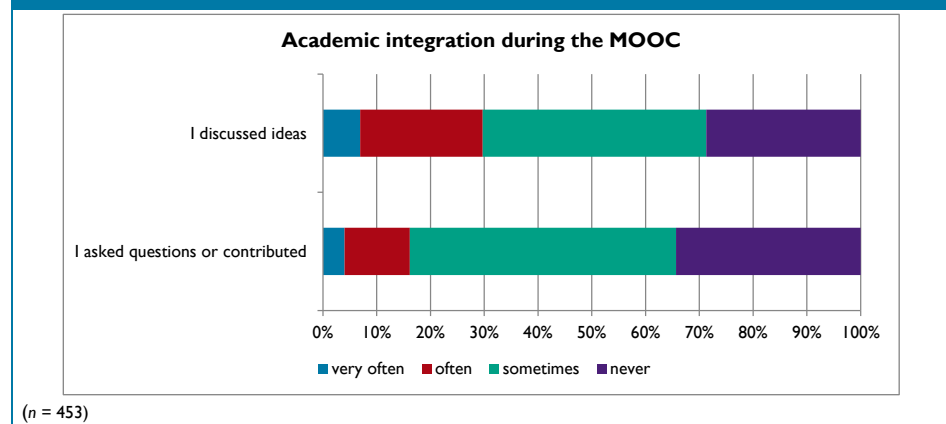
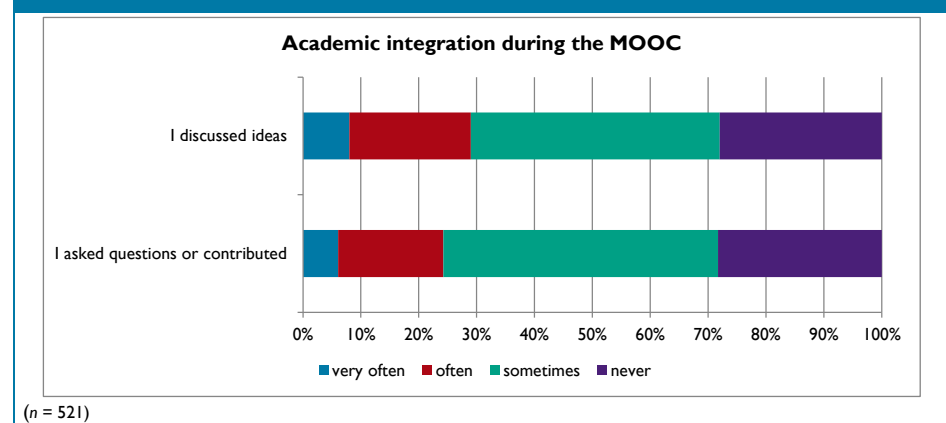


Chart 4.2.4b: Academic integration during the MOOC – *Web Science*



Again broadly similar, in both MOOCs almost one-third reported discussing ideas outside the course *often* or *very often*. Almost a quarter of *Web Science* and around a sixth of *Exploring our Oceans* learners, asked questions or contributed to course discussions *often* or *very often*. This time, a minority – one-third or less – reported *never* doing either activity. While the value of the activity may not be obvious to learners, course designers worked hard to facilitate interactivity, valuing its part in learning. This mismatch may signal an area of development for MOOC designers.

30 <http://moocs.southampton.ac.uk/oceans/category/mooc-details/> and <http://moocs.southampton.ac.uk/websci/> [accessed 21 May 2014]

Chart 4.2.5a: Reflective and integrative learning during the MOOC – *Exploring our Oceans*

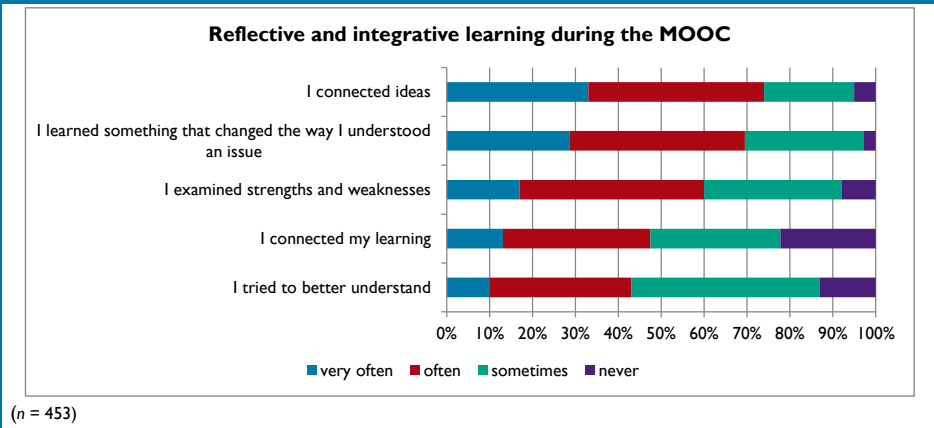
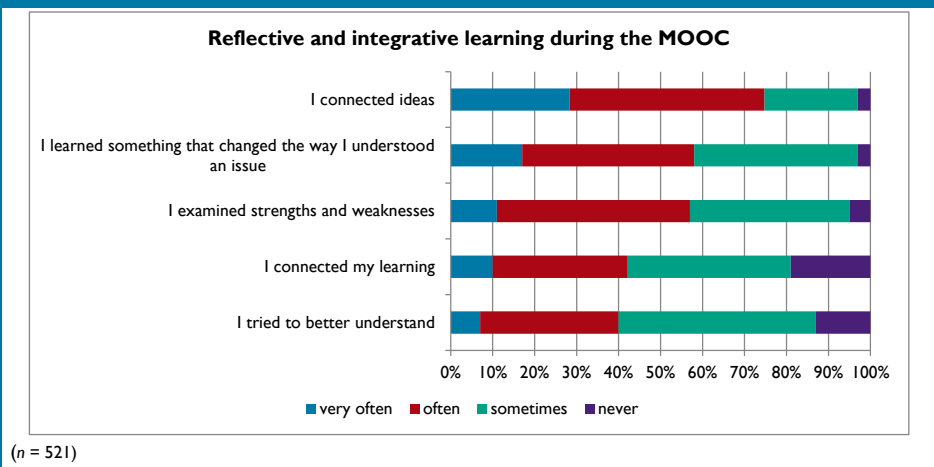


Chart 4.2.5b: Reflective and integrative learning during the MOOC – *Web Science*



Both MOOCs conform to the same pattern of engagement again and show only minor differences within items. The majority engaged *often* and *very often* in connecting ideas and changing ways of understanding issues, offering new insights for MOOC developers and educators more generally. This aspect of engagement beyond the immediate topic of the MOOC may be exploited more fully in connectivist and work-related iterations of MOOCs.

Only 3-8% *never* integrated their learning with earlier knowledge, or reflected on themselves, with less than a quarter failing to connect learning to social issues or problems or to understand new perspectives.

Chart 4.2.6a: Skills development during the MOOC – *Exploring our Oceans*

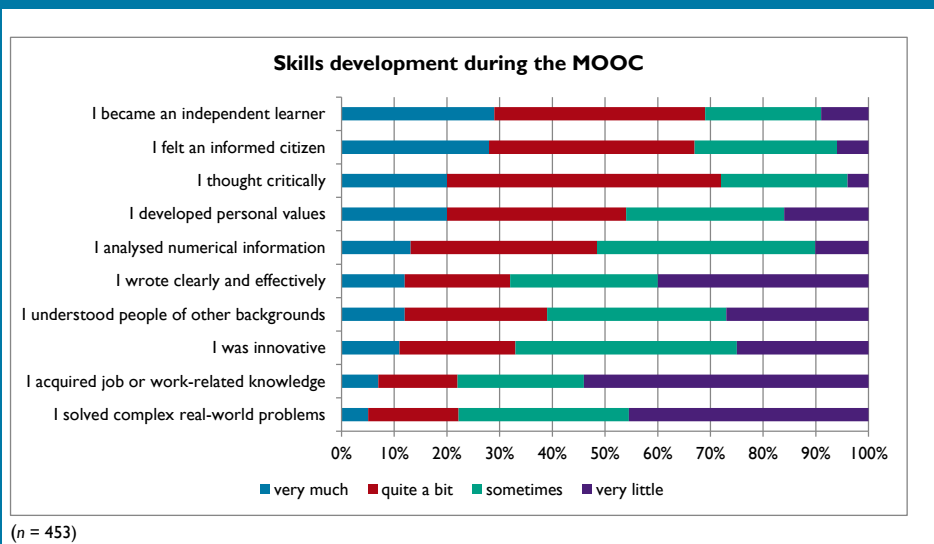
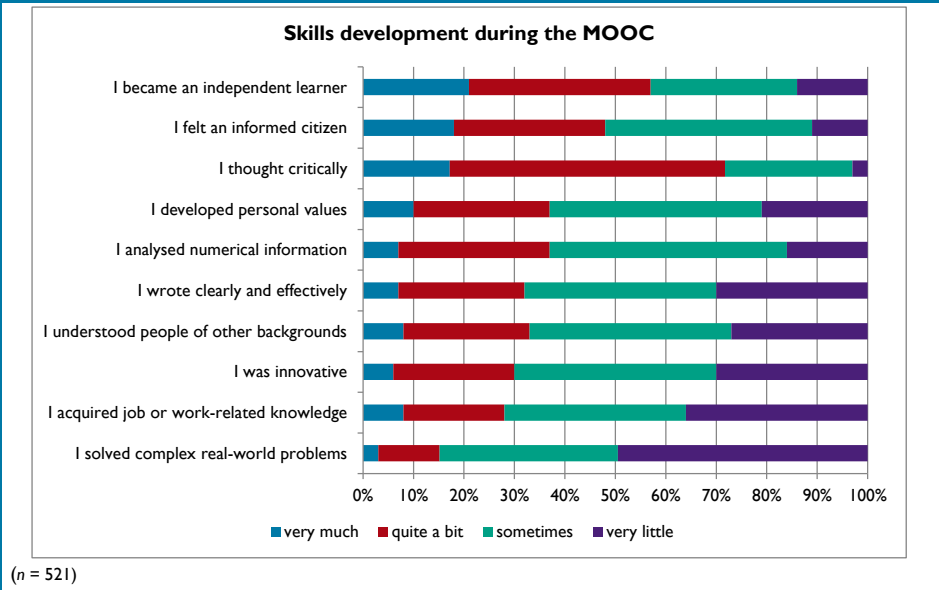


Chart 4.2.6b: Skills development during the MOOC – Web Science



Again a broadly similar pattern is evident in both MOOCs, although differences are noticeable. Critical and analytical thinking emerges as something well over two-thirds consider themselves to have done *very much* or *quite a bit*. *Exploring our Oceans* left over two-thirds feeling like informed and active citizens, with only between 6-11% on either MOOC *never* feeling this way. Both show fewer people considering themselves to have acquired job-related or work-related knowledge, or solving complex real-world problems, although between 15-28% consider themselves to do so *very much* or *quite a bit*.

Chart 4.2.7a: Engagement with research during the MOOC – Exploring our Oceans

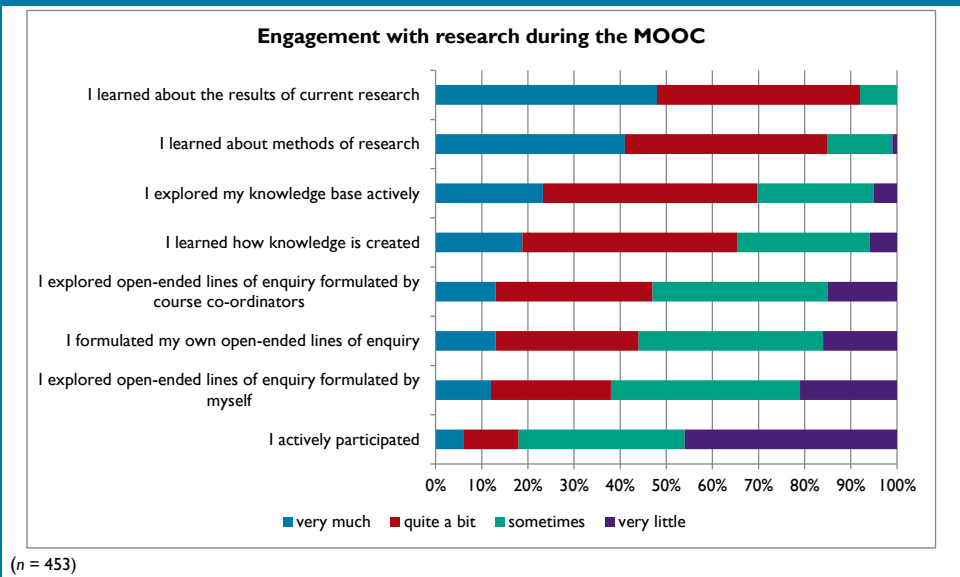
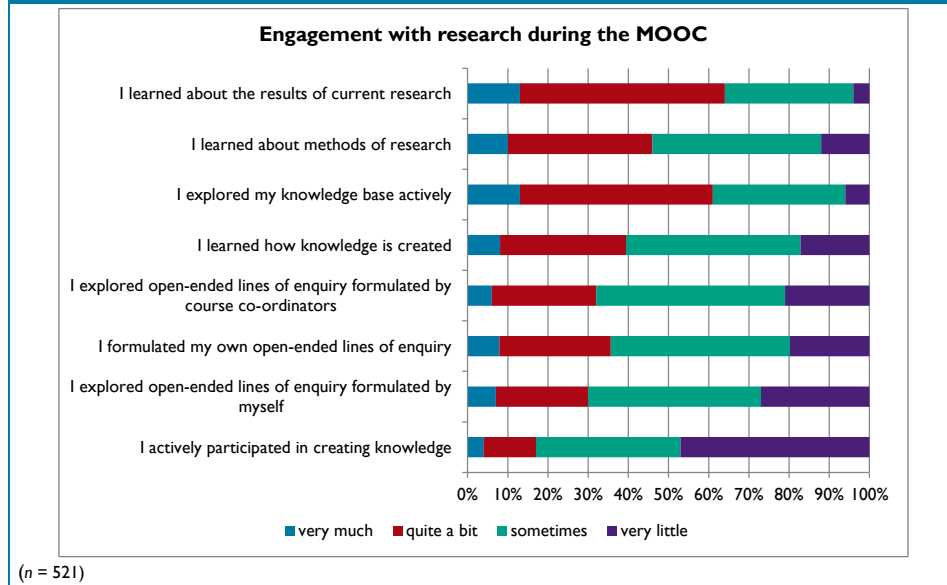


Chart 4.2.7b: Engagement with research during the MOOC: *Web Science*



This final category shows that the designer’s goal of engaging people in their research was highly successful. In *Exploring our Oceans*, 100% replied positively, with 92% engaging with current research *very much* and *quite a bit*. In *Web Science*, 64% did so, suggesting the MOOC medium has potential to engage learners with current research. All the academics leading the MOOCs are established and successful researchers and promoted research, and public engagement with research, throughout (see Examples 2 and 3). Many other aspects of this category are high, including research methods. The more learner-initiated, connectivist concepts of *formulating my own lines of enquiry* and *participating in knowledge creation* are lower, again reflecting their online/individual nature.

4.3 Comparison with UKES 2013 findings

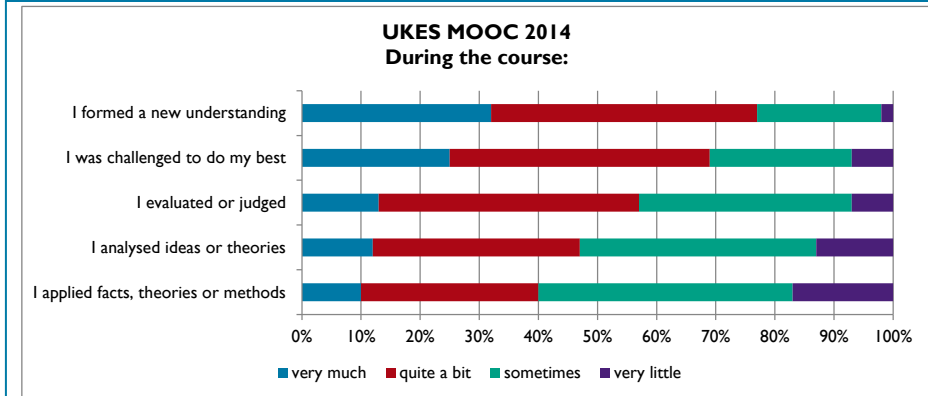
The UKES 2014 questionnaire used for this study differs from the UKES 2013 questionnaire for which national results are currently available, in that new categories have been introduced (see Appendices 1 and 2) and category titles changed. Only eight questions are identical and allow direct comparison. Three require ‘frequency’ responses (‘How often ... ?’) and five seek ‘emphasis’ (‘How much ... ?’). When both MOOCs are compared, with each other and with UKES 2013 results, it is possible to see similarities and differences. It is important to bear in mind the different student profiles: all UKES 2013 participants were studying face-to-face, 94% were studying full-time, 11% were taught postgraduate students, 42% were in their first year, 29% in their second year, 18% in their third year, and 12% in their fourth year or above.

It is important to note too that the UKES 2013 results are only indicative of engagement in face-to-face learning in UK higher education. Only nine self-selecting institutions took part (though from a range of institution types) and 8,500 students responded (see Buckley 2013 for more details). The comparisons made here are therefore only suggestive of how learner engagement in MOOCs differs from student engagement in face-to-face learning in UK higher education. (National results for the 2014 UKES pilot, which involves a far higher number of institutions, were published by the HEA in November 2014.)³¹

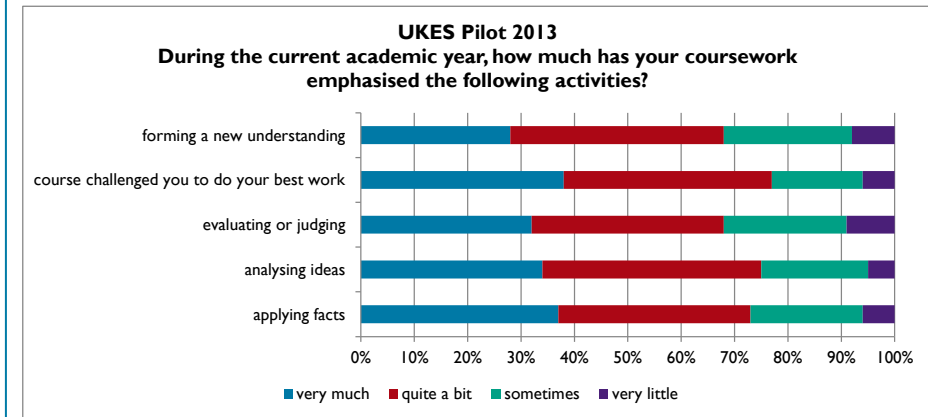
Finally, the wording was altered for the MOOC version of UKES 2014. Rather than foregrounding “during the current academic year, how much has your coursework emphasised ... ” and similar, we adapted the survey to ask the simpler “during the course I ...”. Our purpose was to tailor the survey to elicit more immediate, personal responses rather than place emphasis on the course itself. (See Appendix 4 for comparison of the full sets of questions in both the MOOC version and in UKES 2014.)

31 <https://www.heacademy.ac.uk/UK-Engagement-Survey-2014>

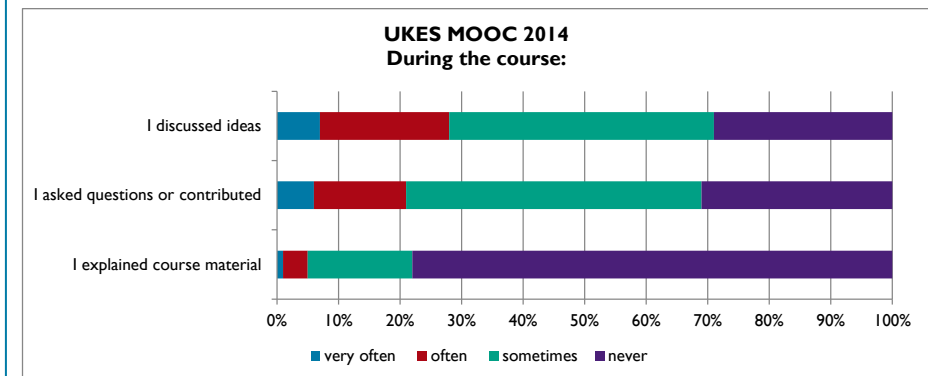
Chart 4.3.1: UKES MOOC 2014 (*Exploring our Oceans and Web Science*) compared with UKES Pilot 2013



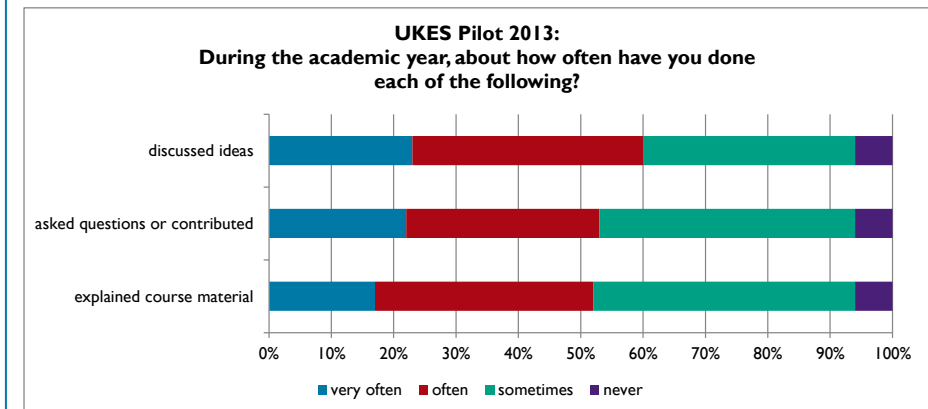
(n = 974)



(n = varies between 7,545 – 8,373)



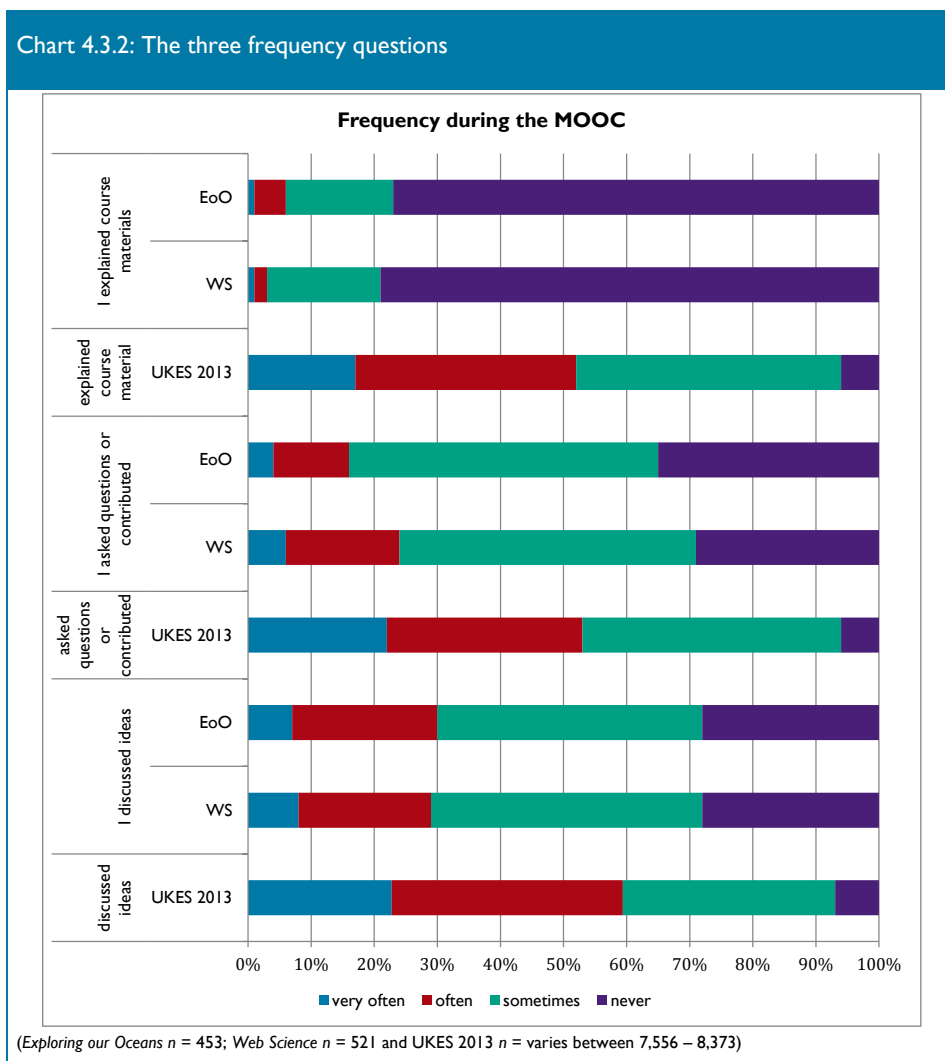
(n = 974)



(n = varies between 7,545 – 8,373)

The eight questions show a much greater range of responses from MOOC learners, unlike the broadly comparable sets of responses from the larger cohort. The 'online' nature of the MOOC is reflected in the pattern emerging: social, interactive learning is much higher in face-to-face programmes. This is supported by previous research into engagement in distance learning (see above). Proportionally, more MOOC learners reported forming new understandings from their course, than those learning in face-to-face settings who responded to UKES 2013.

Chart 4.3.2: The three frequency questions



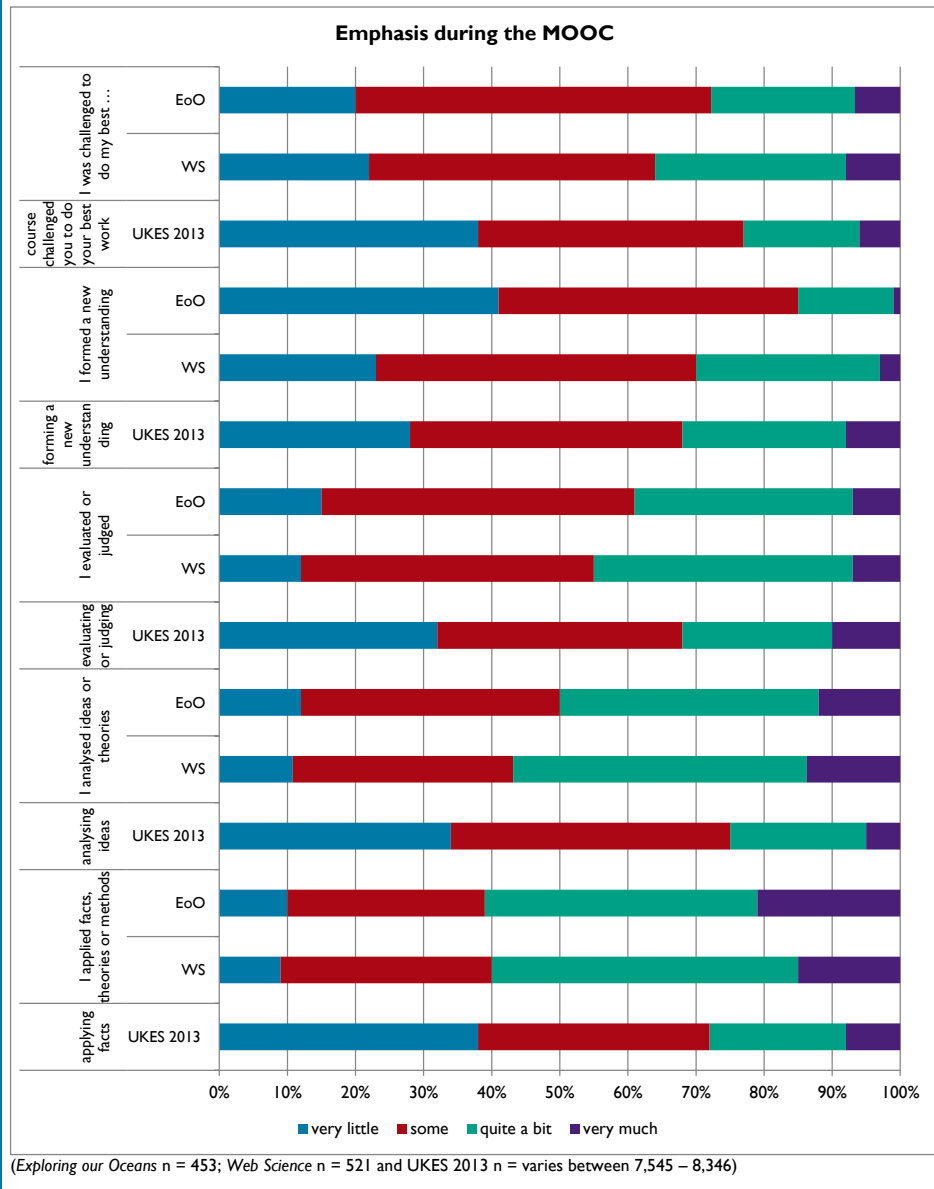
These are all questions about interaction with other people, and not surprisingly the MOOC results are very different from the UKES 2013 results (which all relate to face-to-face learners). The question that directly relates to interaction with other learners sees the biggest difference between the two types of participant with nearly 80% of MOOC participants saying that they *never explained course material* to one or more learners.

Despite being considerably less than the face-to-face participants, some MOOC learners clearly interacted with others: nearly 30% said they discussed ideas from the course with others either *often* or *very often*.

It is also interesting that (while acknowledging the lower results) a sizable proportion reported involvement in course discussions: 24% of *Web Science* participants saying they did so *often* or *very often*.

For these three questions, both sets of MOOC results are again broadly similar. The only substantial difference is the number who contributed to course discussions, suggesting that this form of engagement may be affected by MOOC design and delivery.

Chart 4.3.3: The five emphasis questions



It is notable that, for two questions, there is as much difference *between* responses to the two MOOCs, as there is between the MOOCs and UKES 2013: *being challenged to do my best work* and *forming a new understanding*. These phenomena do not appear to be as dependent on face-to-face delivery as others covered by the survey. The large response difference between the two MOOCs suggests that forming a new understanding from various pieces of the course is a construct sensitive to individual MOOC design and delivery.

Large differences between the MOOCs and UKES are apparent, for the questions involving application, analysis and evaluation of information. However, the UKES 2013 results did show that the higher-order learning questions vary substantially by subject (Buckley 2013), which could account for at least some of the difference.³²

32 Both MOOC topics sit within Science, Technology, Engineering, and Mathematics (STEM) in Joint Academic Coding System (JACS) terms, although Web Science is also a Social Science.

4.4 Composite index of engagement

For this standard form of survey data analysis, categories have been combined into a single index score, to consider in relation to demographic features.³³ It is important to note that the index scores in the graphs are not percentage results. Responses to questions were recorded as Likert scales and were aggregated and transformed into a composite index ranging from zero to one hundred. Scores, therefore, do not signify proportions of the MOOC learner cohort, offering instead a gross measure of the particular item of engagement. These composite scores have been created on the basis of the survey categories and not psychometric analysis.³⁴

This section presents an analysis of indices from a variety of participant characteristics – from the sub-group of participants offering demographic information – including gender, age group, occupational group, area of employment and educational attainment.

Chart 4.4.1a: Composite index of engagement by construct – both MOOCs

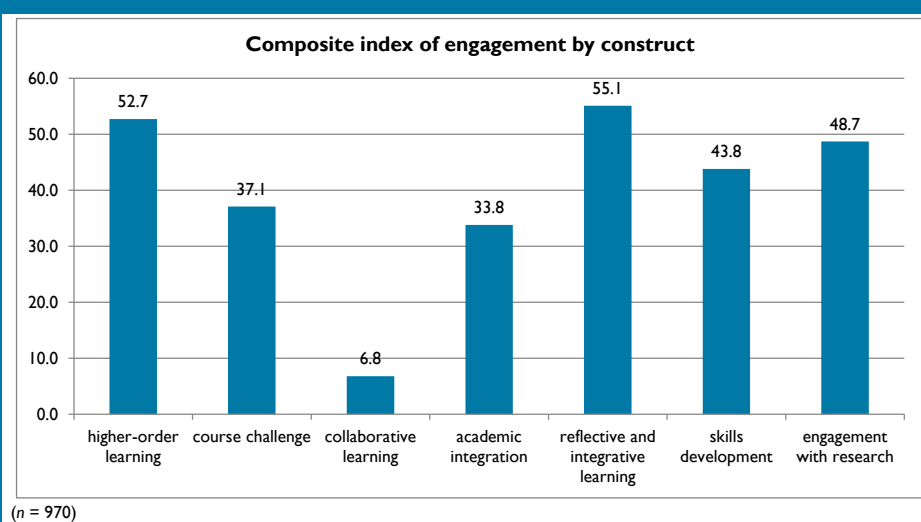
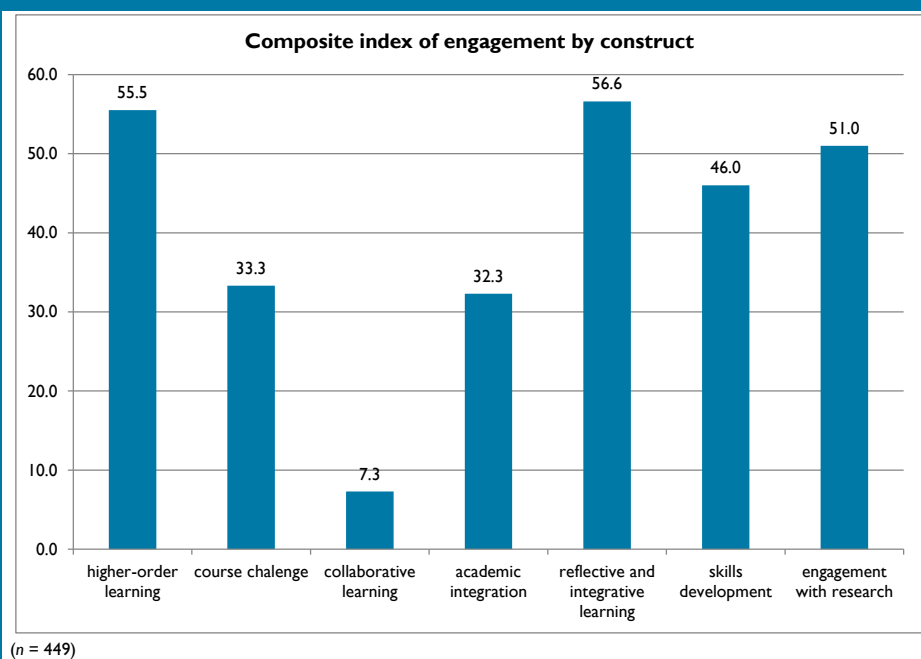


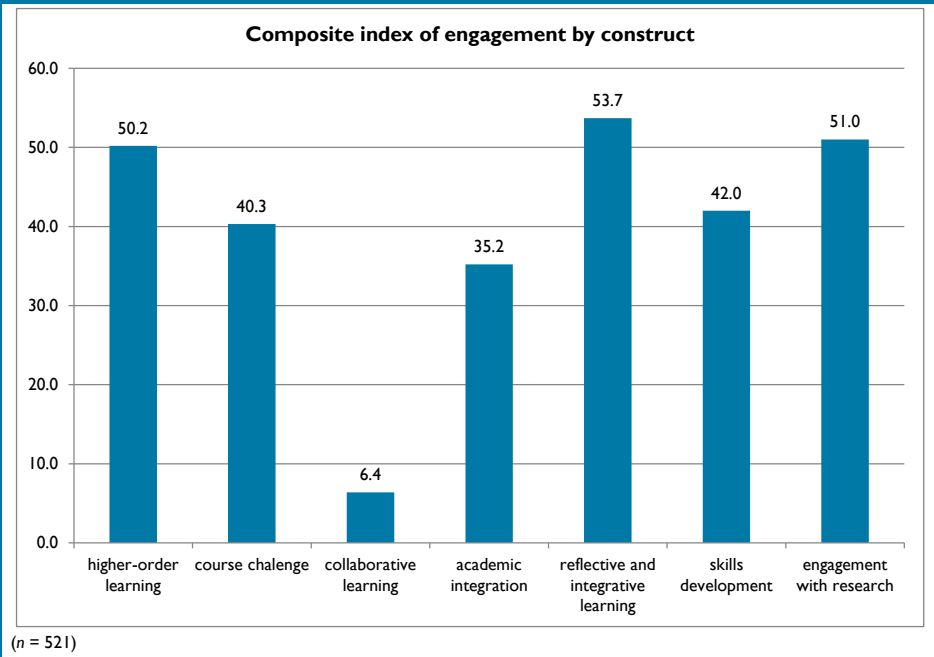
Chart 4.4.1b: Composite index of engagement by construct – *Exploring our Oceans*



33 See for example http://nsse.iub.edu/html/engagement_indicators.cfm [accessed 21 May 2014]

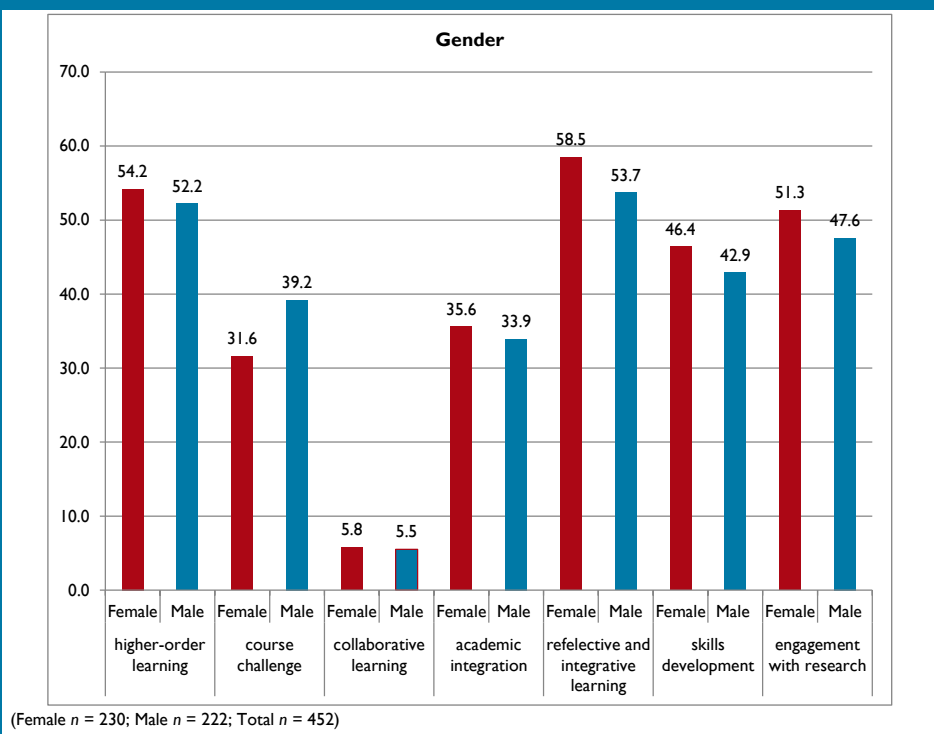
34 The construct validity of the UKES 2014 questionnaire has been reported by the HEA: <https://www.heacademy.ac.uk/UK-Engagement-Survey-2014>

Chart 4.4.1c: Composite index of engagement by construct – Web Science



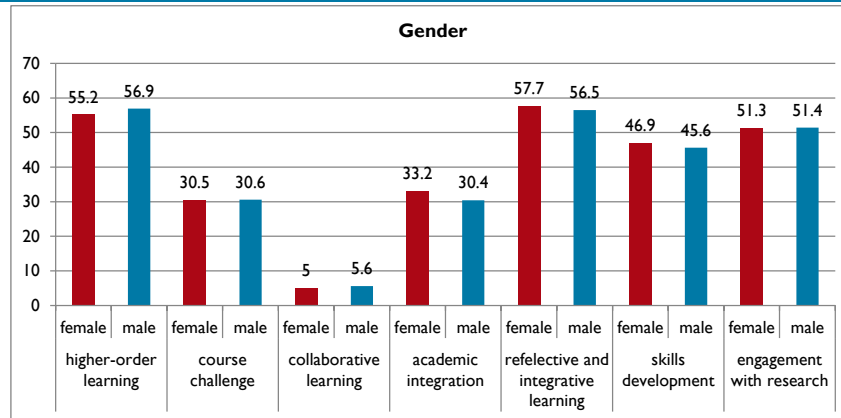
This analysis shows a very similar distribution for both MOOCs, with the differences between them being smallest in *collaborative learning* (0.9) and greatest in *engagement with research* (7.8 higher for *Exploring our Oceans*) and *course challenge* (7.0 higher for *Web Science*). These areas of difference reflect the potential of MOOC design and delivery to elicit particular responses. The similarities are interesting given the very different topics of the MOOCs and the independent teams of academic curriculum designers and tutors.³⁵

Chart 4.4.2a: Engagement by gender – both MOOCs



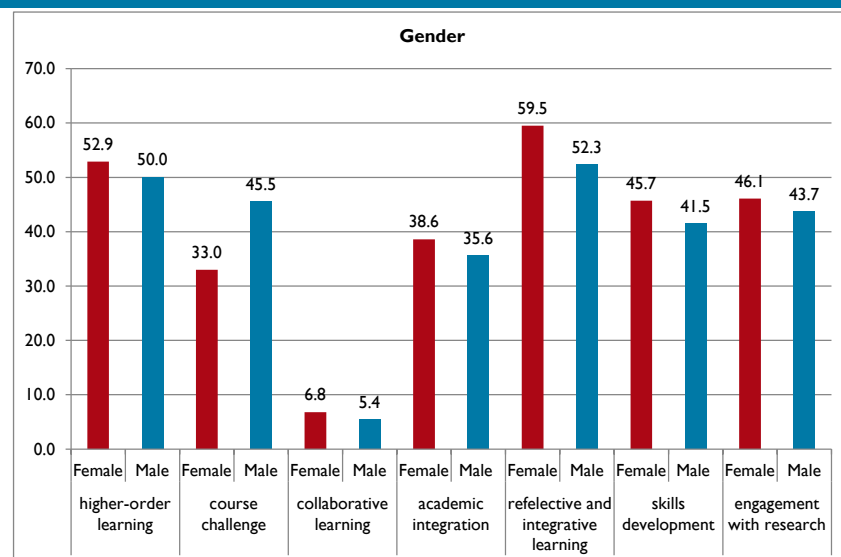
35 Education developers from the Centre for Innovation and Technology in Education worked to support both academic teams, in aspects of delivery not pedagogy or course content.

Chart 4.4.2b: Engagement by gender – *Exploring our Oceans*



(Female n = 129; Male n = 74; Total n = 203)

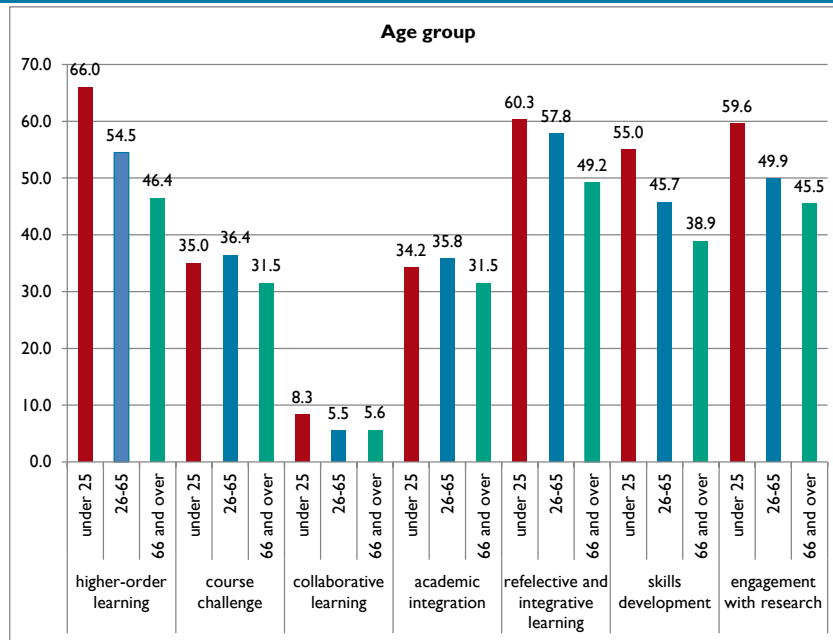
Chart 4.4.2c: Engagement by gender – *Web Science*



(Female n = 101; Male n = 148; Total n = 249)

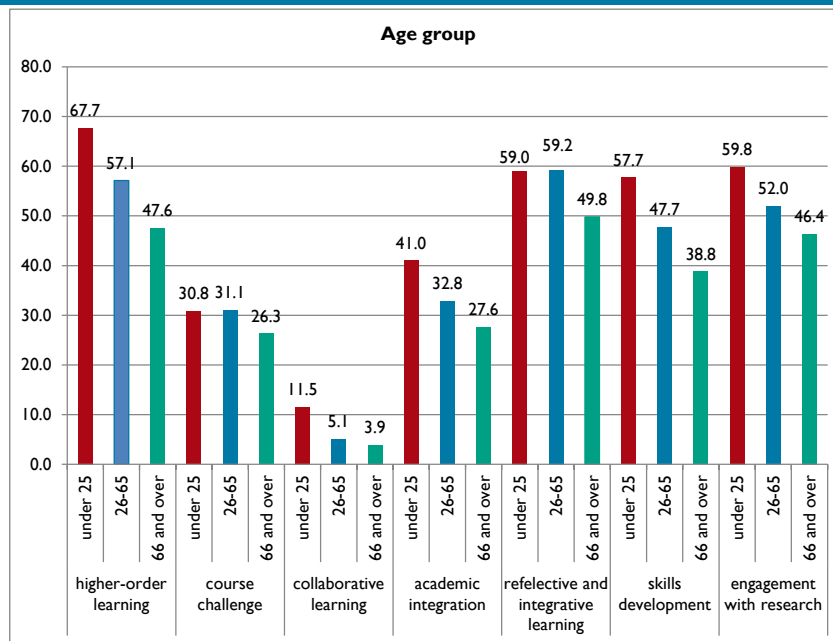
This analysis compares each engagement construct by gender. In *Web Science*, women emerge as less challenged to do their best work than men, and more engaged in forms of reflective and integrative learning. Differences are not so marked in *Exploring our Oceans*.

Chart 4.4.3a: Engagement by age group – both MOOCs



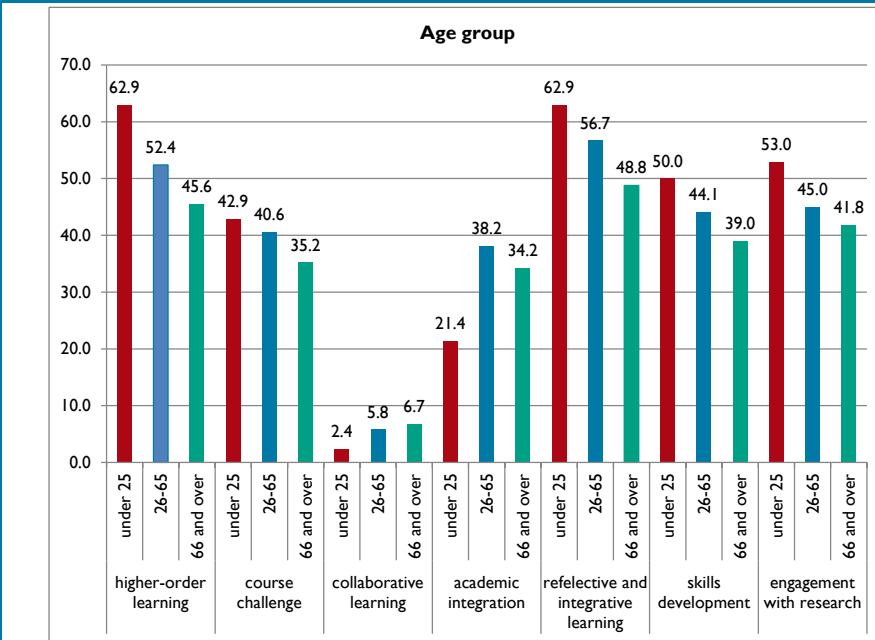
(Under 25 n = 20; 26-65 n = 341; 66 and over n = 93; Total n = 454)

Chart 4.4.3b: Engagement by age group – Exploring our Oceans



(under 25 n = 13; 26-65 n = 151; 66 and over n = 38; Total n = 202)

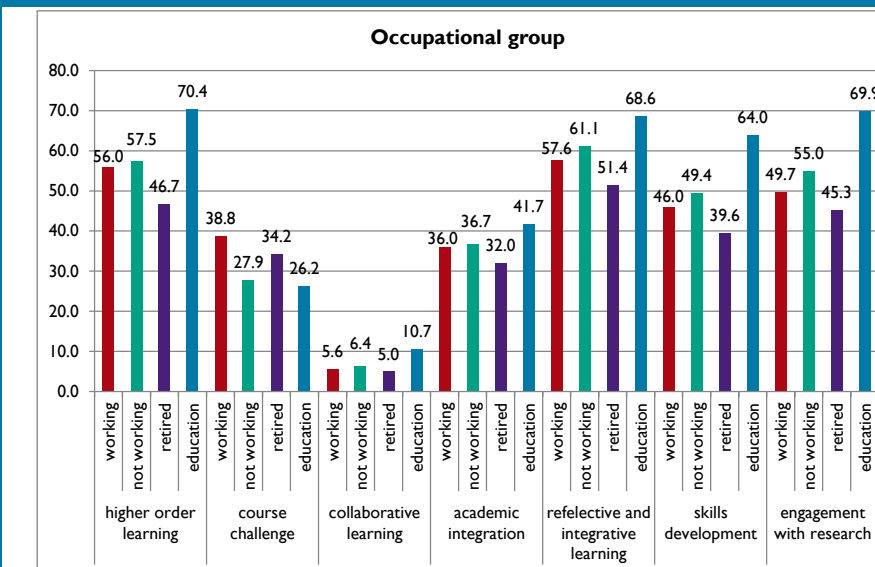
Chart 4.4.3c: Engagement by age group – Web Science



(Under 25 n = 7; 26-65 n = 190; 66 and over n = 55; Total n = 252)

Younger learners emerge as the single age group recording higher levels of engagement in five of the seven categories, although their numbers are very small. Bearing in mind that the combined age categories offer only indicative information (the middle group spans forty years), the pattern repeats. The exceptions are 'course challenge' and in *Web Science*, 'collaborative learning', which reverse the trend, suggesting retired learners interacted most, albeit minimally. This differs from previous work, which has found that older distance learners report greater levels of higher-order learning, and lower scores for collaborative learning (Chen *et al.* 2008). However, we make no claim for wider generalisation; previous research relates to standard distance learning and our own numbers of young learners are very low (20 people in total).

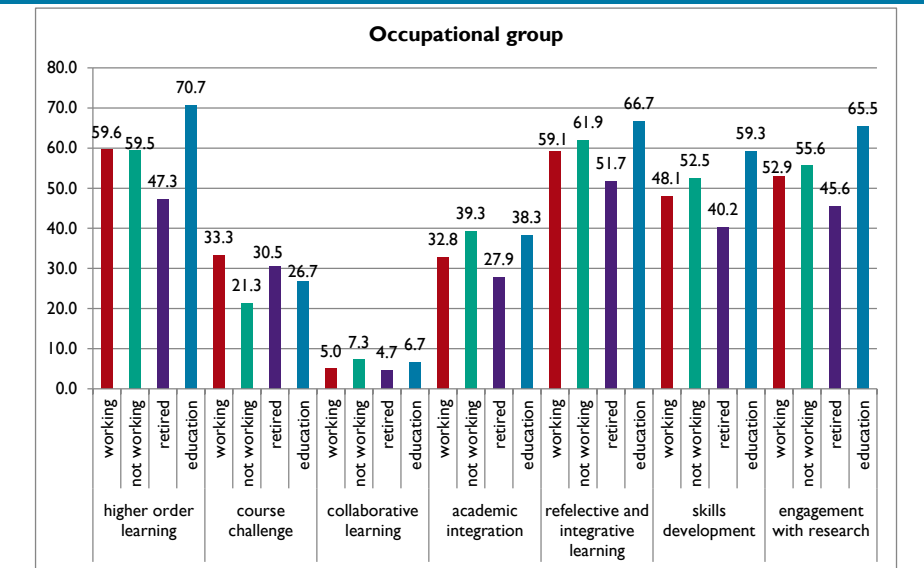
Chart 4.4.4a: Engagement by occupational group – both MOOCs



(working n = 222; not working n = 55; retired n = 163; education n = 14; total n = 454)

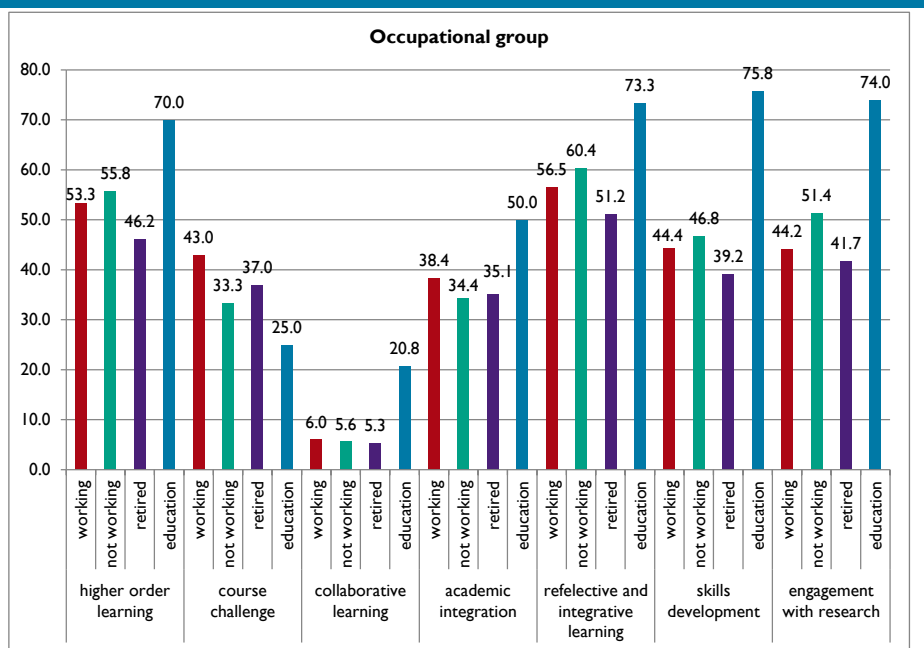
For this analysis, employment status is again grouped fairly crudely, into: working, full-time or part-time; not employed (including looking for work), or unavailable for work (reasons unknown); retired; in full-time education.

Chart 4.4.4b: Engagement by occupational group – Exploring our Oceans



(working n = 97; not working n = 25; retired n = 71; education n = 10; total n = 203)

Chart 4.4.4c: Engagement by occupational group – Web Science

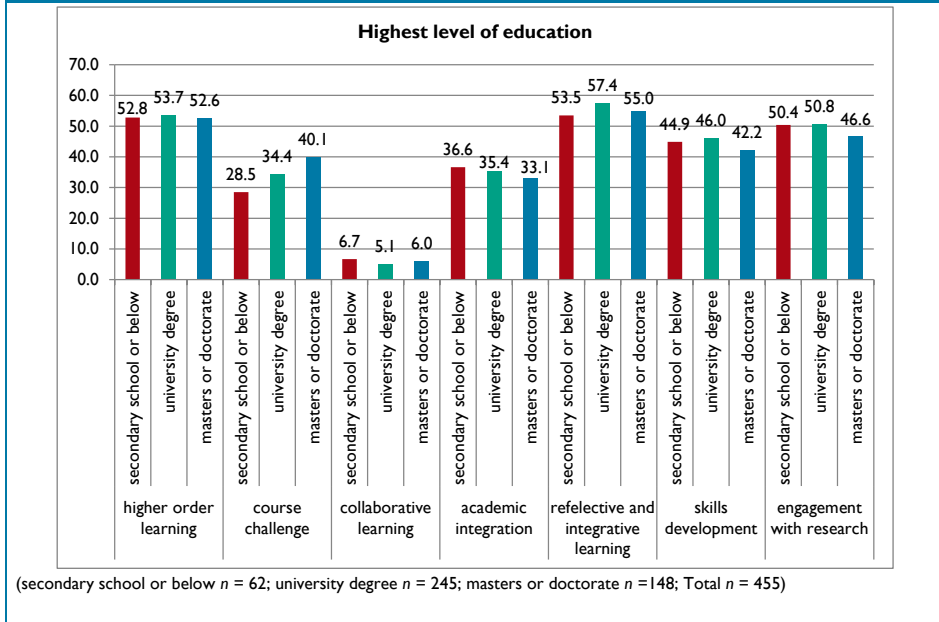


(working n = 125; not working n = 30; retired n = 92; education n = 4; total n = 251)

Again this form of analysis shows a marked difference between groups. The starkest contrast is between those in full-time education (all ages) and those who identify as retired, bearing in mind that neither group conforms to an age profile stereotype. Those in full-time education collaborated most often, engaged highly in research, but felt least challenged to do their best work. The least difference is evident between participants in employment and looking for/unavailable for work.

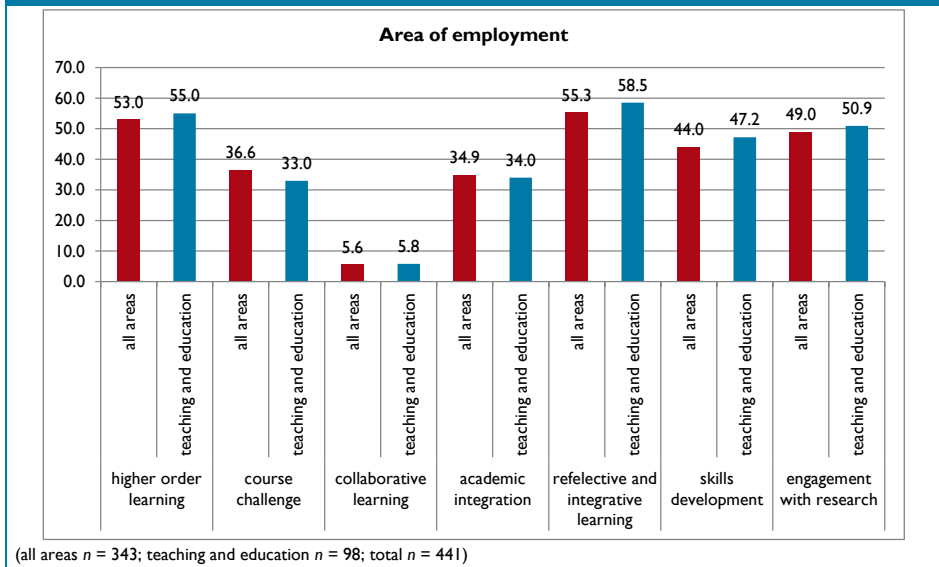
Once again, some groups are very small. Only four people were in full-time education so we are unable to read anything into this. We offer the data here as a prompt for consideration in future research only.

Chart 4.4.5; Engagement by highest level of education – both MOOCs



Little difference emerged between MOOCs, or between different levels of educational attainment, so only the combined graph is presented. *Being challenged to do my best work* is considerably higher for those with higher degrees. It may be that their greater experience of education means they fully exploit materials and opportunities, as experienced and resourceful learners.

Chart 4.4.6: Engagement by area of employment – both MOOCs



Again, MOOCs were broadly similar in terms of employment area, and very similar responses can be seen when education (the largest group) is compared with other types of employment.

5. Discussion

5.1 Summary of key findings

Learners reported engaging in all the categories offered by the UKES 2014 survey, to greater or lesser degrees, regardless of prior educational attainment, but particularly in:

- higher order learning;
- reflective and integrative learning;
- current research and research methods.

Within these broader constructs, both MOOCs succeeded in enabling significant proportions of participants to feel engaged in such intellectual endeavours as forming new understandings; making connections with previous knowledge and experience; and exploring knowledge actively, creatively and critically. The high levels of engagement with research support the designers' objectives of public engagement and active involvement in environmental concerns. These are all forms of engagement with important implications for the place of MOOCs in formal and informal education. The findings are very encouraging for the MOOC educators, given their objective to promote and support just such forms of engagement (see examples 2 and 3).

In addition, high response rates to feeling intellectually stretched and challenged, and to thinking critically, suggest MOOCs can be effective in enabling personal development and change. This was particularly the case for people with greater experience of higher education. Reflecting the online medium and in line with previous work on engagement in distance learning, only a minority engaged in collaborative learning. The 25% who reported high involvement in asking questions, contributing to course discussions and discussing ideas with others outside the course crossed age groups and education levels. The role and purpose of interaction and collaborative learning, in and beyond MOOC peers, warrants further investigation.

Higher levels of engagement were evident among learners in full-time education, regardless of age group, and those under 25 years of age; however, very small numbers in both groups limit any wider relevance. Lower levels of engagement were evident in those identifying as retired, regardless of age, and those over 65 years of age (the exception being in collaborative learning when some engaged frequently). Their significant numbers will have lowered overall response rates and composite index scores.

Differences *between* MOOCs emerged, suggesting particular forms of engagement are sensitive to MOOC pedagogy and curricula. However, wide variations in and among learners serve to highlight the nuances and complexities of engagement, reflecting many critiques of the concept.

The demographic profiles of learners resemble other MOOC cohorts; that is, an older and well-educated majority, with many working in education. In other ways the samples showed diversity in: gender, age, educational attainments, occupational groups, disability, and area of employment.

5.2 Implications of findings

We asked the questions: How do MOOC learners report their engagement in learning, using the UKES? Do they describe being more or less engaged in their education, when compared with those in higher education, or exhibit different patterns overall? Are particular patterns, similarities or differences in engagement evident when learner characteristics are analysed?

We found that significant proportions engaged in MOOC learning, sometimes in similar ways to other learners, sometimes very differently. There may be a MOOC 'shape'; higher on analytical and integrative learning, lower on social and interactive learning, reflecting earlier research. Engagement levels overall were lower than the UKES 2013 responses, but there are some explanations – and there were important and notable exceptions. The high responses to higher order, reflective and integrative learning, and engagement with research have implications for educators and curriculum designers beyond MOOCs. Work-based, CPD, blended approaches and the concept of the 'flipped classroom' all require deeper understanding of what *kinds* of knowledge can be acquired effectively through online resources (discussed here by Lage, Platt and Treglia 2000). Equally, knowing the limitations of MOOCs in generating collaborative and applied forms of learning is helpful in prompting educators to consider whether this is a goal, and if so, to learn from and with each other, to develop manageable and creative methods in future.

6. Conclusion

We found that as a form of evaluation, the UKES offered a meaningful alternative to satisfaction surveys, and has potential to enhance learner engagement on all the engagement constructs. But what does this analysis add to our understanding of learner engagement in MOOCs? Buckley (2013 p. 50) concluded that the real test of the UKES project would be “whether or not the data makes a difference to learning and teaching.” We would add, “and its design”, given the clear response to the achievement of some of the MOOC designers’ specific goals, and judging by the differences between the two MOOCs.

Whether we should seek to design MOOCs for greater engagement (as Kift 2009; Simpson 2010, 2013 advocate) or accept the ‘funnel of participation’ (Clow 2013) is a moot point. Either way, getting people through the gateway of undertaking a single activity, or first step, is clearly important. If the ambition to widen access to HE through MOOCs is to be realised, much more needs to be understood about the junctures: from registration, to first activity and on to active participation in MOOC learning, from different perspectives and about types of learner. Only research-informed use of analytics, over prolonged periods of time, will discover whether the goal of widening access to HE has been achieved. Qualitative research, such as the follow-up study reported by HEA, offers an opportunity to learn about the experiences and decision-making processes of those who persist, *and* who meet the criteria defining widening participation. This study tells us persistent learners engaged, *regardless* of educational attainment, which is encouraging; degrees and higher degrees were not pre-requisites for engagement. To this end, more detailed demographic data would enable more to be learnt about such groups as: those who register and drop out, particularly after the first activity; younger people and those in specific minority ethnic groups; those identifying as disabled; looking for work; and with vocational or Level 3 QCA³⁶ and below qualifications.

Limitations to our study included the absence of socio-economic data. However, our sample indicated that far fewer than might be expected came from the specific groups targeted by HE’s widening participation strategy.³⁷ Younger people and those with only school-level education were under-represented in all our samples, limiting analysis. They may be present, among the ‘dippers and lurkers’, and of course may be active learners in other MOOCs, along with the mature students, from college-based HE providers or low participation neighbourhoods. Equally, the slightly higher proportion of people identifying as disabled suggests MOOCs have potential to reach this group more effectively than other forms of education. At present we have no way of knowing. We suggest that a renewed focus on *communication* – including marketing strategies and recruitment processes – and a step change in the proportion taking the *first learning activity*, are essential if access to higher education is truly to be widened beyond the older, already well-educated section of the populace.

Given the dramatic fall in mature learners in HE (see, for example, Sutton Trust 2013; HEFCE 2014) it is encouraging that such a broad *age range* exists, and even moreso that many are working or looking for work. Siemens’s (Parr 2013) prediction that MOOCs will become routes for personalised CPD offers an alternative and interesting direction and associated set of reasons for participation. However the question of academic accreditation remains pivotal. Still under-explored is the place of MOOCs and their open resources in informal learning (characterised in the work of Usher e.g. 2010) and their use as part of work-based and vocational education (such as that described by Mullin 2013).

36 Qualifications and Curriculum Authority <http://www.qca.org.uk/> [accessed 21 May 2014]

37 Specific under-represented groups included in the OFFA Widening Participation strategy are students from lower socio-economic groups and neighbourhoods in which relatively few people enter higher education, students from some ethnic groups or sub-groups, students who have been in care and disabled students. <http://www.offa.org.uk/press/frequently-asked-questions/#sthash.H26ZUGkl.dpuf> [accessed 21 May 2014]

The sheer number of people showing an interest in MOOCs – if, as yet, only to register and go no further – offers new possibilities to learn from people who might never appear through the usual HE routes yet have a wish, however fragile or tentative, to become involved. This offers exciting possibilities to shape MOOCs *for* participation; the risk of researching only the persistent 'completers' being that we learn about what works from the successful minority. In particular, further research is warranted into the online pedagogy that led to such high engagement with specific aspects of the MOOC.

Further work to develop the UKES for MOOCs would be valuable if we are to build on this study; for example, UKES 2014 offered questions related to 'time spent' – on paid work and study – which would be useful to retain in any further applications to MOOC engagement research. In addition, comparison of these findings with the results of UKES 2014, which involves a far larger group of institutions, will allow more robust conclusions to be drawn about how engagement differs between MOOCs and other contexts.

Finally, if MOOCs are to achieve their early goals and become part of the landscape of higher education, academic credit and clear progression routes are needed. An opportunity exists; the institutions offering them are ideally placed to create credit-bearing MOOCs and tailored, reciprocal openings in traditional entry requirements.

7. Recommendations

Education enhancement: curriculum developers and learners

- Understanding engaged learning in a MOOC context offers curriculum developers new insights for enhancement. Curriculum developers and learners would benefit from putting measures into place in order to discover what aspects of their courses most and least engage learners, and how particular activities engage different types of learners.
- Identifying the independent learning activities most suited to online learning – in promoting such things as intellectual challenge and enabling new forms of understanding – would be valuable and could be made explicit to learners.
- In the same way, curriculum developers could enable learners to be more strategic and to make more informed choices about how to spend time and invest energies by generating greater clarity about what social learning and interactivity contributes to engaged learning (both within the MOOC community and outside of it).
- Providing direction and guidance to learners about ways to apply new empirical or theoretical knowledge to 'real world' problems may be helpful in deepening and sustaining understanding and promoting creativity. Including and eliciting learners' own ideas and projects would also be a way of developing greater involvement.
- Findings suggest MOOC developers might usefully create more effective opportunities for self-directed and open-ended learning. This is particularly important if learners are using MOOCs as a stepping-stone to higher learning.
- If the development of more social forms of learning is a goal, then MOOC development teams might usefully consider how the diversity, commitment and focussed interests of MOOC learners might best be harnessed and utilised to promote the formation of networks and communities.
- Curriculum designers would benefit from gaining a greater understanding of how to enhance engagement in independent, online learning. This also has relevance to blended forms of learning, to the 'flipped classroom' concept, and to work-based, professional development and lifelong learning more generally.

Higher Education Providers and marketing teams

- Learner characteristics suggest that MOOCs need to be reaching different sections of the population if the objective of widening access to study in higher education is to be achieved. Further work needs to go into how this might be done.
- Given the successful engagement of many who persisted with the MOOCs researched, marketers and those communicating key messages about MOOCs need to consider in greater depth how to attract a more diverse cohort.
- Accreditation of learning that attracts UCAS points is necessary if MOOCs are to become part of the landscape of higher education and provide a route to the full range of higher level learning. HE providers should work at putting this into place.

Researchers and policy makers

- Further research is necessary in order to gain a deeper understanding of the educational role of MOOC peer communities and their interactivity if MOOC teams are to make informed decisions about how best to invest time supporting learners. This is likely to differ across types of MOOC, across curriculum development teams and according to learners' own reasons for undertaking the MOOC.
- If government and MOOC providers are to know whether the widening access goal has been realised, then collation and analysis of a much more detailed range of demographic information over significant periods of time is necessary, following learners from first contact through and well beyond completion.
- Similarly, more needs to be learned about the potential of analytics to support persistence and completion through targeted communications and interventions.

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Appendix I

Items used in 2013 engagement survey pilot

Critical thinking

During the current academic year, how much has your coursework emphasized the following mental activities? (Response categories: Very much / Quite a bit / Some / Very little)

1. Analysing in depth an idea, experience or line of reasoning
2. Forming a new idea or understanding from various pieces of information
3. Evaluating a point of view, decision, or information source
4. Applying facts, theories, or methods to practical problems or new situations

Course challenge

5. In your experience at your institution during the current academic year, about how often have you worked harder than you thought you could to meet a tutor's/ lecturer's standards or expectations? (Response categories: Very often / Often / Sometimes / Never)
6. During the current academic year, to what extent have your courses challenged you to do your best work?
(Response categories: Very much / Quite a bit / Some / Very little)
7. In your experience at your institution during the current academic year, about how often have you come to taught sessions unprepared? (e.g. not completed assignments, readings, reports, etc.) (Response categories: Very often / Often / Sometimes / Never)

Collaborative learning

In your experience at your institution during the current academic year, about how often have you done each of the following?
(Response categories: Very often / Often / Sometimes / Never)

8. Worked with other students on course projects or assignments
9. Explained course material to one or more students
10. Discussed ideas from your course with others outside of taught sessions (students, family members, co-workers, etc.), including by email/online

Academic integration

In your experience at your institution during the current academic year, about how often have you done each of the following?
(Response categories: Very often / Often / Sometimes / Never)

11. Asked questions or contributed to course discussions in other ways
12. Discussed your academic performance and/or feedback with teaching staff
13. Discussed ideas from your course with teaching staff outside taught sessions, including by email/online
14. Discussed ideas from your course with others outside of taught sessions (students, family members, co-workers, etc.), including by email/online
15. Talked about your career plans with teaching staff or advisors

Suggested questionnaire format

1. In your experience at your institution during the current academic year, about how often have you done each of the following?

	Very often	Often	Sometimes	Never
a. Asked questions or contributed to course discussions in other ways				
b. Come to taught sessions unprepared (e.g. not completed assignments, readings, reports, etc.)				
c. Worked with other students on course projects or assignments				
d. Explained course material to one or more students				
e. Discussed your academic performance and/or feedback with teaching staff				
f. Talked about your career plans with teaching staff or advisors				
g. Discussed ideas from your course with teaching staff outside taught sessions, including by email/online				
h. Discussed ideas from your course with others outside of taught sessions (students, family members, co-workers, etc.), including by email/online				
i. Worked harder than you thought you could to meet a tutor's/lecturer's standards or expectations				

2. During the current academic year, how much has your coursework emphasized the following mental activities?

	Very much	Quite a bit	Sometimes	Very little
a. Analysing in depth an idea, experience or line of reasoning				
b. Forming a new idea or understanding from various pieces of information				
c. Evaluating a point of view, decision, or information source				
d. Applying facts, theories, or methods to practical problems or new situations				

3. During the current academic year, to what extent has your course challenged you to do your best work?

Very much	Quite a bit	Sometimes	Very little

Appendix 2

UK engagement survey pilot 2014 - Items and scales

Higher-order learning

During the current academic year, how much has your coursework emphasized the following activities? (Response options: *Very much / Quite a bit / Some / Very little*)

1. Memorising course material
2. Applying facts, theories, or methods to practical problems or new situations
3. Analysing ideas or theories in depth by examining their parts
4. Evaluating or judging a point of view, decision, or information source
5. Forming a new understanding from various pieces of information

Course challenge

1. During the current academic year, about how often have you made significant changes to your work based on feedback?^{*}
(Response options: *Very often / Often / Sometimes / Never*)
2. During the current academic year, to what extent has your course challenged you to do your best work?
(Response options: *Very much / Quite a bit / Some / Very little*)
3. During the current academic year, about how often have you come to taught sessions prepared (completed assignments, readings, reports, etc.)
(Response options: *Very often / Often / Sometimes / Never*)

Collaborative learning

During the current academic year, about how often have you done each of the following? (Response categories: *Very often / Often / Sometimes / Never*)

1. Worked with other students on course projects or assignments
2. Explained course material to one or more students
3. Asked another student to help you understand course material
4. Prepared for exams or assessments by discussing or working through course material with other students

Academic integration

During the current academic year, about how often have you done each of the following?
(Response categories: *Very often / Often / Sometimes / Never*)

1. Asked questions or contributed to course discussions in other ways
2. Discussed your academic performance and/or feedback with teaching staff
3. Talked about your career plans with teaching staff or advisors
4. Discussed ideas from your course with teaching staff outside taught sessions, including by email/online
5. Worked with teaching staff on activities other than coursework

Reflective and integrative learning

During the current academic year, about how often have you done each of the following?
(Response categories: *Very often / Often / Sometimes / Never*)

1. Combined ideas from different modules when completing assignments
2. Connecting your learning to societal problems or issues
3. Examined the strengths and weaknesses of your own views on a topic or issue
4. Tried to better understand someone else's views by imagining how an issue looks from his or her perspective
5. Learned something that changed the way you understand an issue or concept
6. Connected ideas from your course to your prior experience and knowledge

Time spent

About how many hours do you spend in a typical 7-day week during term-time doing the following? (Response categories: *0 / 1-5 / 6-10 / 11-15 / 16-20 / 21-25 / 26-30 / more than 30*)

1. Preparing for taught sessions
2. Participating in extra-curricular or co-curricular activities (students' union, societies, sports, etc.)
3. Working for pay on campus
4. Working for pay off campus
5. Doing volunteer work
6. Providing care for dependents (children, parents, etc.)
7. Commuting to campus (driving, walking, etc.)

Skills development

How much has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas? (Response options: *Very much / Quite a bit / Some / Very little*)

1. Writing clearly and effectively
2. Speaking clearly and effectively
3. Thinking critically and analytically
4. Analysing numerical and statistical information
5. Acquiring job- or work-related knowledge and skills
6. Becoming an independent learner*
7. Being innovative and creative*
8. Working effectively with others
9. Developing or clarifying personal values or ethics
10. Understanding people of other backgrounds (economic, racial/ethnic, political, religious, nationality, etc.)
11. Solving complex real-world problems
12. Being an informed and active citizen

Engagement with research 1

During the current academic year, how much has your coursework emphasised the following activities? (Response categories: *Very much / Quite a bit / Some / Very little*)

1. Learning how knowledge is created in your subject*
2. Learning about methods of research and analysis in your subject*
3. Learning about the results of current research*
4. Exploring the knowledge base of your discipline actively, critically and creatively*

Engagement with research 2

During the current academic year, how much has your coursework emphasised the following activities? (Response categories: *Very much / Quite a bit / Some / Very little*)

1. Formulating your own open-ended lines of enquiry (including problems, questions or scenarios)*
2. Exploring open-ended lines of inquiry formulated by yourself (including problems, questions or scenarios)*
3. Exploring open-ended lines of enquiry formulated or proposed by teaching staff (including problems, questions or scenarios)*
4. Your active participation in creating knowledge*

Suggested questionnaire format

1. During the current academic year, about how often have you done each of the following?

	Very often	Often	Sometimes	Never
a. Asked questions or contributed to course discussions in other ways				
b. Come to taught sessions unprepared (e.g. not completed assignments, readings, reports, etc.)				
c. Worked with other students on course projects or assignments				
d. Explained course material to one or more students				
e. Discussed your academic performance and/or feedback with teaching staff				
f. Talked about your career plans with teaching staff or advisors				
g. Discussed ideas from your course with teaching staff outside taught sessions, including by email/online				
h. Discussed ideas from your course with others outside of taught sessions (students, family members, co-workers, etc.), including by email/online				
i. Worked harder than you thought you could to meet a tutor's/lecturer's standards or expectations				
j. Asked another student to help you understand course material				
k. Prepared for exams or assessments by discussing or working through course material with other students				
l. Combined ideas from different modules when completing assignments				
m. Connecting your learning to societal problems or issue				
n. Examined the strengths and weaknesses of your own views on a topic or issue				
o. Tried to better understand someone else's views by imagining how an issue looks from his or her perspective				
p. Learned something that changed the way you understand an issue or concept				
q. Connected ideas from your course to your prior experience and knowledge				

2. During the current academic year, how much has your coursework emphasised the following mental activities?

	Very much	Quite a bit	Sometimes	Very little
a. Memorising course material				
b. Applying facts, theories, or methods to practical problems or new situations				
c. Analysing ideas or theories in depth by examining their parts				
d. Evaluating or judging a point of view, decision, or information source				
e. Forming a new understanding from various pieces of information				

3. During the current academic year, how much has your coursework emphasized the following activities?

	Very much	Quite a bit	Sometimes	Very little
a. Learning how knowledge is created in your subject				
b. Learning about methods of research and analysis in your subject				
c. Learning about the results of current research				
d. Exploring the knowledge base of your discipline actively, critically and creatively				
e. Formulating your own open-ended lines of enquiry (including problems, questions or scenarios)				
f. Exploring open-ended lines of enquiry formulated by yourself (including problems, questions or scenarios)				
g. Exploring open-ended lines of enquiry formulated or proposed by teaching staff (including problems, questions or scenarios)				
h. Your active participation in creating knowledge				

4. During the current academic year, to what extent has your course challenged you to do your best work?

Very much	Quite a bit	Sometimes	Very little

5. About how many hours do you spend in a typical 7-day week during term-time doing the following?

	0 hours	1-5 hours	6-10 hours	11-15 hours	16-20 hours	21-25 hours	26-30 hours	More than 30 hours
a. Preparing for taught sessions								
b. Participating in extra-curricular or co-curricular activities (students' union, societies, sports, etc.)								
c. Working for pay on campus								
d. Working for pay off campus								
e. Doing volunteer work								
f. Providing care for dependents (children, parents, etc.)								
g. Commuting to campus (driving, walking, etc.)								

6. How much has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas?

	Very much	Quite a bit	Sometimes	Very little
a. Writing clearly and effectively				
b. Speaking clearly and effectively				
c. Thinking critically and analytically				
d. Analysing numerical and statistical information				
e. Acquiring job- or work-related knowledge and skills				
f. Becoming an independent learner				
g. Being innovative and creative				
h. Working effectively with others				
i. Developing or clarifying personal values or ethics				
j. Understanding people of other backgrounds (economic, racial/ethnic, political, religious, nationality, etc.)				
k. Solving complex real-world problems				
l. Being an informed and active citizen				

Appendix 3

Ethical standards applied:

- in keeping with the highest standards of research, participation was on a strictly 'opt in' policy. The online invitation to participate explicitly stated that there was no obligation to participate and the educational experience would be in no way affected by either decision;
- an explicit consent procedure was supported by an information letter embedded in the online survey link;
- iSurvey can only be accessed when the participant actively reads and confirms information making them aware that they are consenting to a research activity;
- an opt out policy was made explicit to those who expressed an interest in further participation. It is not possible to identify/remove anonymous survey responses;
- all data was handled only by the second researcher, who was prepared to further anonymise any identifying features unwittingly offered by participants (and did not prove necessary);
- email addresses offered were held separately from data. Identifying codes replaced addresses on datasets, and were stored separately and securely according to the University's policy on storage of research data and personal information (DPP 2008) and the Data Protection Act (1998);
- anonymised data sets from post-module evaluation completion were used descriptively and not linked to any other aspects of the research data;
- neither researcher participated in any public forms of communication (social media communications) or used any publicly available forms of communication, or accessed any learner forums at any point.

For any further information on the University's ethical approval processes, please visit http://www.southampton.ac.uk/inf/ethics_policy.html

Appendix 4

Shortened question in chart	Original question in UKES MOOC survey
Charts 4.2.1 a & b Higher-order learning	
I formed a new understanding	I formed a new understanding from various pieces of the course
I evaluated or judged	I evaluated or judged a point of view, decision, or information source
I analysed ideas or theories	I analysed ideas or theories in depth by examining their parts
I memorised	I memorised course content
I applied facts, theories, or methods	I applied facts, theories, or methods to new situations

Chart 4.2.2 Course challenge	
I was challenged to do my best ...	During the course I was challenged to do my best ...

Charts 4.2.3 a & b Collaborative learning	
I explained course material	I explained course material to one or more learner
I asked another learner	I asked another learner to help me understand the course material

Charts 4.2.4 a & b Academic integration	
I discussed ideas	I discussed ideas from the course with others outside the course, including by email/online
I asked questions or contributed	I asked questions or contributed to course discussions

Charts 4.2.5 a & b Reflective and integrative learning	
I connected ideas	I connected ideas from my course to prior experience and knowledge
I learned something that changed the way I understood an issue	I learned something that changed the way I understood an issue or concept
I examined the strengths and weaknesses	I examined the strengths and weaknesses of my own views on a topic or issue
I connected my learning	I connected my learning to societal problems or issues
I tried to better understand	I tried to better understand someone else's views by imagining how an issue looks from his or her perspective

Charts 4.2.6 a & b Skills development	
I became an independent learner	I became an independent learner
I felt an informed citizen	I felt an informed and active citizen
I thought critically	I thought critically and analytically
I developed personal values	I developed or clarified personal values or ethics
I analysed numerical information	I analysed numerical and statistical information
I wrote clearly and effectively	I wrote clearly and effectively
I understood people of other backgrounds	I understood people of other backgrounds (economic, racial/ethnic, political, religious, nationality, etc.)
I was innovative	I was innovative and creative
I acquired job or work-related knowledge	I acquired job or work-related knowledge and skills
I solved complex real-world problems	I solved complex real-world problems

Charts 4.2.7 a & b Engagement with research	
I learned about the results of current research	I learned about the results of current research
I learned about methods of research	I learned about methods of research and analysis
I explored my knowledge base actively	I explored my knowledge base actively, critically and creatively
I learned how knowledge is created	I learned how knowledge is created
I explored open-ended lines of enquiry formulated by course co-ordinators	I explored open-ended lines of enquiry formulated or proposed by course co-ordinators (including problems, questions or scenarios)
I formulated my own open-ended lines of enquiry	I formulated my own open-ended lines of enquiry (including problems, questions or scenarios)
I explored open-ended lines of enquiry formulated by myself	I explored open-ended lines of enquiry formulated by myself (including problems, questions or scenarios)
I actively participated	I actively participated in creating knowledge

UKES Pilot 2013		UKES MOOC 2014	
In chart	Original	In chart	Original

Chart 4.3.1 UKES Pilot 2013 & UKES MOOC 2014			
Forming a new understanding	Forming a new understanding from various pieces of information	I formed a new understanding	I formed a new understanding from various pieces of the course
Course challenged you to do your best work	During the current academic year, to what extent has your course challenged you to do your best work?	I was challenged to do my best ...	During the course I was challenged to do my best ...
Evaluating or judging	Evaluating or judging a point of view, decision, or information source	I evaluated or judged	I evaluated or judged a point of view, decision, or information source
Analysing ideas	Analysing ideas or theories in depth by examining their parts	I analysed ideas or theories	I analysed ideas or theories in depth by examining their parts
Applying facts	Applying facts, theories, or methods to practical problems or new situations	I applied facts, theories, or methods	I applied facts, theories, or methods to new situations
Discussed ideas	Discussed ideas from your course with teaching staff outside taught sessions, including by email/online	I discussed ideas	I discussed ideas from the course with others outside the course, including by email/online
Asked questions or contributed	Asked questions or contributed to course discussions in other ways	I asked questions or contributed	I asked questions or contributed to course discussions
Explained course material	Explained course material to one or more students	I explained course material	I explained course material to one or more learner

Chart 4.3.2 Frequency during the MOOC			
Explained course material	Explained course material to one or more students	I explained course material	I explained course material to one or more learner
Asked questions or contributed	Asked questions or contributed to course discussions in other ways	I asked questions or contributed	I asked questions or contributed to course discussions
Discussed ideas	Discussed ideas from your course with teaching staff outside taught sessions, including by email/online	I discussed ideas	I discussed ideas from the course with others outside the course, including by email/online

Chart 4.3.3 Emphasis during the MOOC			
Course challenged you to do your best work	During the current academic year, to what extent has your course challenged you to do your best work?	I was challenged to do my best ...	During the course I was challenged to do my best ...
Forming a new understanding	Forming a new understanding from various pieces of information	I formed a new understanding	I formed a new understanding from various pieces of the course
Evaluating or judging	Evaluating or judging a point of view, decision, or information source	I evaluated or judged	I evaluated or judged a point of view, decision, or information source
Analysing ideas	Analysing ideas or theories in depth by examining their parts	I analysed ideas or theories	I analysed ideas or theories in depth by examining their parts
Applying facts	Applying facts, theories, or methods to practical problems or new situations	I applied facts, theories, or methods	I applied facts, theories, or methods to new situations

Charts 4.16 a & b
Area of employment

Shortened category in chart	Original category in survey
Accountancy	Accountancy, banking and finance
Armed forces	Armed forces and emergency services
Business	Business, consulting and management
Charities	Charities and voluntary work
Creative arts	Creative arts and culture
Energy	Energy and utilities
Engineering	Engineering and manufacturing
Environment	Environment and agriculture
Health	Health and social care
Hospitality	Hospitality, tourism and sport
IT	IT and information services
Law	Law
Marketing	Marketing, advertising and PR
Media	Media and publishing
Property	Property and construction
Public sector	Public sector
Recruitment	Recruitment and HR
Retail	Retail and sales
Science	Science and pharmaceuticals
Teaching	Teaching and education
Transport	Transport and logistics

Appendix 5

MOOC engagement research survey

We are interested in the ways in which you have engaged with this course. This survey will take approximately 5 minutes to complete.

Section 1

During the course I ...

- Very often
- Often
- Sometimes
- Never

- Asked questions or contributed to course discussions
- Explained course material to one or more learner
- Discussed ideas from the course with others outside the course, including by email/online
- Asked another learner to help me understand the course material
- Connected my learning to societal problems or issues
- Examined the strengths and weaknesses of my own views on a topic or issue
- Tried to better understand someone else's views by imagining how an issue looks from his or her perspective
- Learned something that changed the way I understood an issue or concept
- Connected ideas from my course to prior experience and knowledge

Section 2

During the course I ...

- Very much
- Quite a bit
- Some
- Very little

- Memorised course content
- Applied facts, theories, or methods to new situations
- Analysed ideas or theories in depth by examining their parts
- Evaluated or judged a point of view, decision, or information source
- Formed a new understanding from various pieces of the course

Section 3

During the course I ...

- Very much
- Quite a bit
- Some
- Very little

- Learned how knowledge is created
- Learned about methods of research and analysis
- Learned about the results of current research
- Explored my knowledge base actively, critically and creatively
- Formulated my own open-ended lines of enquiry (including problems, questions or scenarios)
- Explored open-ended lines of enquiry formulated by myself (including problem, questions or scenarios)
- Explored open-ended lines of enquiry formulated or proposed by course coordinators (including problems, questions or scenarios)
- Actively participated in creating knowledge

Section 4

- Very much
- Quite a bit
- Some
- Very little

During the course I was challenged to do my best ...

- Very much
- Quite a bit
- Some
- Very little

Section 5

- Very much
- Quite a bit
- Some
- Very little

During the course I ...

- Wrote clearly and effectively
- Thought critically and analytically
- Analysed numerical and statistical information
- Acquired job or work-related knowledge and skills
- Became an independent learner
- Was innovative and creative
- Developed or clarified personal values or
- Understood people of other backgrounds (economic, racial/ethnic, political, religious, nationality, etc.)
- Solved complex real-world problems
- Felt an informed and active citizen

Section 6

- Very often
- Often
- Sometimes
- Never

During the course I ...

- Found the given resources useful
- Used additional resources that were not suggested within the course
- Chose to purchase resources directly related to the course subject matter

What resources, if any, which weren't provided within the course would you have liked to have been signposted to you?

.....

.....

.....

.....

.....

Section 7

Email address (please use the same email you used to sign up to the course)

.....

.....

Thank you for taking this questionnaire.

Appendix 6

MOOC engagement research survey (demographics)

Thank you for your interest in providing further details, this will take around 1-2 minutes to complete.

My gender is

- Female
- Male
- Prefer not to say
- Other

My age group is

- Under 18 years of age
- 18 - 25 years old
- 26 - 35 years old
- 36 - 45 years old
- 46 - 55 years old
- 56 - 65 years old
- 66 years old or over

I live in ...(please state country). In terms of employment I am

- Working full-time (35 or more hours per week)
- Working part time (less than 35 hours per week)
- In full-time education
- Not available for work
- Looking for work
- Retired

My area of employment is

- Accountancy banking and finance
- Armed forces and emergency services
- Business consulting and management
- Charities and voluntary work
- Creative arts and culture
- Energy and utilities
- Engineering and manufacturing
- Environment and agriculture
- Health and social care
- Hospitality tourism and sport
- IT and information services
- Law
- Marketing advertising and PR
- Media and publishing
- Property and construction
- Public sector
- Recruitment and HR
- Retail and sales
- Science and pharmaceuticals
- Teaching and education
- Transport and logistics

I am educated to

- Less than high school / secondary school
- High school / secondary school
- University / college (Degree level)
- University / college (Masters level)
- University / college (Doctorate level)

I have a disability, long-term health condition, mental health condition, specific learning difficulty (such as dyslexia), or other physical or mental impairment

- Yes
- No
- Prefer not to say

I would like to volunteer to be interviewed about my experiences on the *Exploring our Oceans* MOOC by:

- Skype
- Phone
- Not at all

Thank you for filling in your further details.





Contact us

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