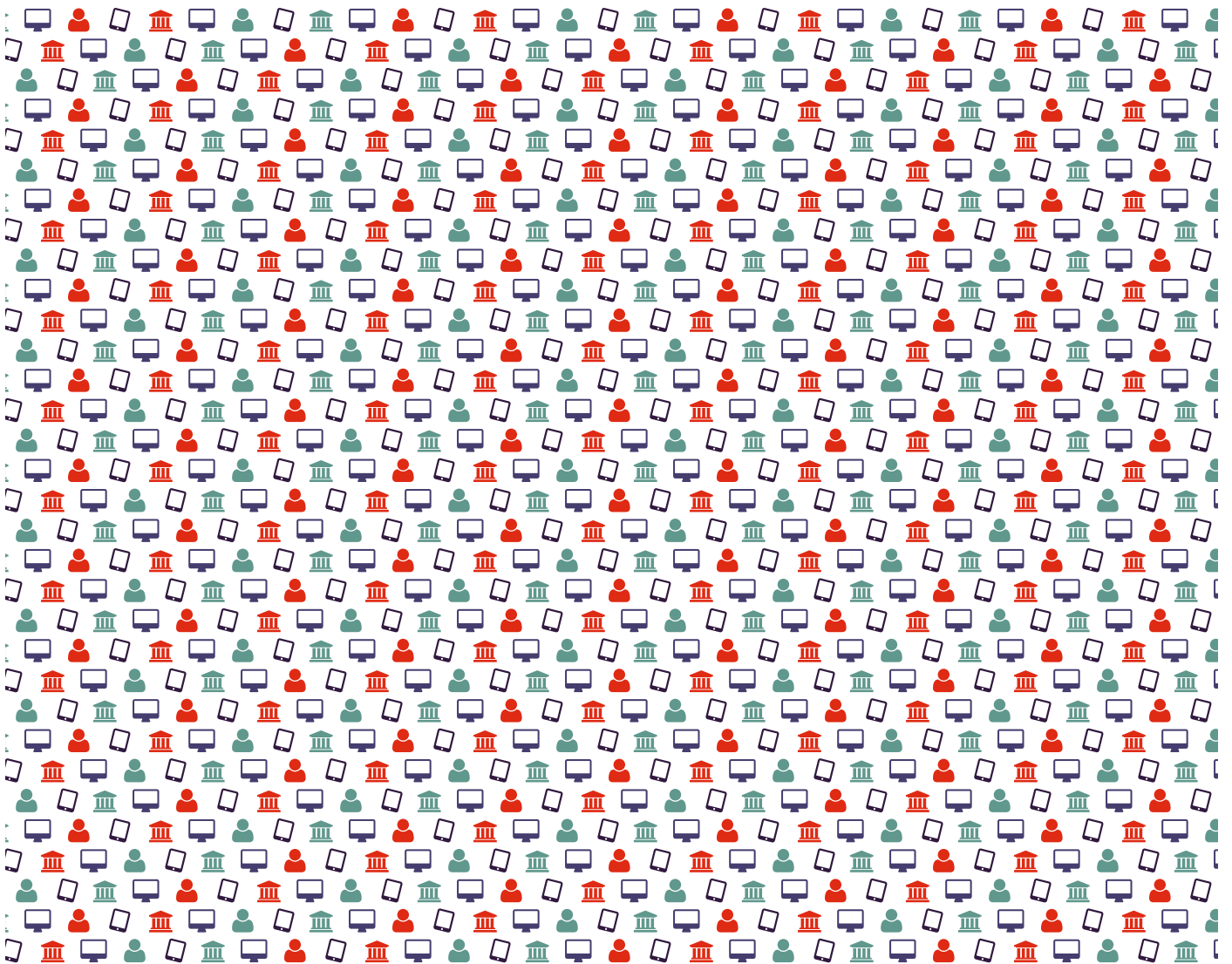


MOOCs: What The Open University research tells us



by Rebecca Ferguson, Tim Coughlan, Christothea Herodotou



Foreword by

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It is good to see that this Quality Enhancement Report focuses on MOOCs, and to discover that the OU is in the vanguard of research into this innovative pedagogical approach. Perhaps not a surprising finding, since we have a history of acclaimed work in open education and online assessment. Ferguson, Coughlan & Herodotou's current report is timely, in not only bringing together a compendium of the OU's research into MOOCs, but in highlighting 10 priority areas for further University activity in this domain. These priorities are indeed laudable and all contribute to the first priority area identified by Ferguson et al, which is to influence the direction of open education globally. One area of research that can be employed to achieve that aim is to use MOOCs in order to understand and promote self-regulated learning.

MOOCs are an ideal environment to explore self-regulated learning because there is a wide diversity of motivations and expectations among the learners who enrol in these types of course (Kizilcec et al, 2013). There is also minimal interaction between student and tutor in MOOCs, which means learners need to navigate their own way and find their own pace through the teaching materials (Milligan & Littlejohn, 2014).

Research summarised by Bernacki, Aguilar & Byrnes (2011) suggests that learners who can self-regulate, employ better learning strategies when studying online. Other positive correlations between self-regulated learning and academic achievement have been found by Azevedo & Cromley (2004) and Barnark-Brak, Lan & Paton (2010). Other research by Hood et al (2015) has shown that significant differences in self-regulated behaviours arise from different learner contexts and professional backgrounds.

Unpacking differences in behaviours associated with self-regulated learning has been undertaken by Littlejohn et al (2016). These behaviours include motivation and goal setting, self-efficacy, task interest value, task strategies and self-satisfaction and evaluation. Those learners with the above characteristics adopted a more open and flexible approach to their studies and were more successful. This leaves us with the question of how we can promote and support these qualities in our students registered for our own OU modules.

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Contents

Contents	3
Executive summary	4
MOOC priority areas	5
Introduction	6
Pedagogy of MOOCs	7
MOOCs and open education	10
MOOC retention and motivation	12
Working together in MOOCs	17
MOOC assessment	19
MOOC accessibility	23
MOOC privacy and ethics	24
MOOC quality	25
Other areas of MOOC research	26
Bibliography	27

Executive summary

This quality enhancement report recommends priority areas for OU activity in relation to massive open online courses (MOOCs). It does this by bringing together all The Open University's published research work in this area from the launch of the first MOOC in 2008 until February 2016. This includes work by 56 OU authors based in 11 units and regions. Subsequent reports in the series will cover more recent OU work and work by our partners in the FutureLearn Academic Network (FLAN).

The report is intended for everyone within the University who has responsibility for MOOCs or for research in this area, or who is likely to take on a MOOC-related role in the future.

It provides brief summaries of, and links to, all publications stored in the university's Open Research Online (ORO) repository that use the word 'MOOC' in their title or abstract. Where these publications make recommendations that could be taken up by the OU, those recommendations are highlighted within the report. Full references for all studies are provided in the bibliography.

Studies are divided thematically, and the report contains sections on the pedagogy of MOOCs, MOOCs and open education, MOOC retention and motivation, working together in MOOCs, MOOC assessment, accessibility, privacy and ethics, quality and other areas of MOOC research.

Overall, the report shows that the OU has a solid basis for MOOC research, and is already world leading in some areas. This has been possible because its research draws on a long tradition of work in related areas at the OU, particularly in the areas of open education, pedagogy and online assessment. Studies can therefore make reference back to research on massive online courses that predate MOOCs, as well as work on OpenLearn, Cloudworks, iSpot and the OER Research Hub.

The OU also benefits from its early engagement with MOOCs. Within weeks of the launch of the first connectivist MOOC in summer 2008, Martin Weller (IET) and Tony Hirst (MCT) were blogging about MOOC research and the possible effects of this new form on the OU.

OU staff joined early connectivist MOOCs as educators, researchers and learners and the OU took early steps in the field with the launch of openED 2, the Open Translation MOOC and the Open Learning Design Studio (OLDs MOOC). The launch of the FutureLearn platform and its first MOOCs in 2013 was a decisive step – the platform now has 87 partner institutions and over 4 million registered learners.

The studies covered by this report show the University building on its experience of massive learning, online learning, open learning, and of running courses. The report also points to other areas of OU expertise that could be explored more deeply in this context.

The first of these is the area of ethics and privacy in MOOCs. When the field of learning analytics emerged, the OU was one of the first institutions to pay attention to ethical practices in this area. That work, initiated by Sharon Slade (Region 2), led to the development and deployment of our policy on the ethical use of student data for learning analytics – a policy that is now used worldwide as a model in this area. The 'MOOC privacy and ethics' section of this report shows how this learning analytics work could be extended in the area of MOOCs.

The OU also has decades of experience in the areas of widening participation and accessibility. Our FutureLearn survey data suggests that 13-17% of MOOC learners have some form of disability, so there is a need for more work to support these thousands of learners. More broadly, as Cannell and Macintyre (Scotland) point out, while MOOC registration and completion

numbers suggest MOOCs are widening access, participants are primarily individuals with prior experience of higher education and there is no evidence that they are widening participation from those who are distanced from education. As this widening of participation is often stated as one of the goals for MOOCs, there is an opportunity for the OU to take a lead in this area and to build partnerships with communities and organisations that will help to drive this work forward.

Overall, this report includes 58 recommendations that have emerged from the research – each of which is linked to the research study that generated it. Some of these recommendations extend or reinforce what the University is already doing, some are very specific, and some are small scale. Overall, the research highlights ten priority areas for University activity.

MOOC priority areas

1. **Influence the direction of open education globally** There is a powerful story to be told around global education. The OU needs to construct a distinct narrative in order to be able to influence the direction of open education effectively.
2. **Develop and accredit learning journeys** Take an active role in constructing and accrediting learning journeys, making use of 'soft certification' such as badging, and include this work in the OU business strategy.
3. **Extend the relationship between learners and the OU** Build learner communities that maintain engagement with the OU over time, reducing the gap between students and alumni, and enabling people who have studied together to continue their conversations, sharing experience as they put their learning into practice.
4. **Make effective use of learning design** Use learning design as a way to set out and describe the intent in learning material, making use of the many possibilities for MOOC design that the OU and its in the FutureLearn Academic Network partners have already explored, so that it is possible to make judgements about what works and to make interventions with the help of learning analytics.
5. **Make use of effective distance learning pedagogies** Pay attention to interactions between students, tutors and material; provide structured tasks to guide learners; offer motivating videos and broadcasts; ensure that teaching material is carefully crafted.
6. **Widen participation** Ensure that no elements of learning design unnecessarily exclude people on the grounds of disability, age or location, and engage actively with the challenges that exclude learners due to disability and disadvantage. Any MOOC platform used by the University should be compliant with accessibility standards, and should take into account the possible accessibility needs of both educators and learners.
7. **Offer well-designed assessment** Include constructive feedback to students, feed forward, and recognition of achievements.
8. **Pay attention to quality assurance** Set quality levels, work in teams, test before our learners do, allow feedback after release and pay attention to external quality assurance frameworks.

9. **Pay attention to privacy and ethics**
Develop a coherent approach to consent, which accounts for social science findings related to how people make decisions about personal data; recognise that people can engage in privacy self management only selectively; develop more substantive privacy rules.
10. **Expand the benefits of learning from OU MOOCs**
In a time when degrees are presented in terms of career financial return for the individual, align MOOCs with other benefits of learning, such as health, social relationships and participation.

Introduction

Massive open online courses (MOOCs) were first named in July 2008, in blog posts and discussions related to the CCK08 Mega-Connectivism course run at the University of Manitoba, which attracted around 1800 students (OEN, 2008; Cormier, 2008; Downes, 2008; Downes, et al., 2008). Open University academics were among those who enrolled in the course, visualised its data (Hirst, 2008) and reflected on its implications: 'If we get some good research answers from it, who knows, maybe it's a model for the OU in general?' (Weller, 2008).

By 2011, the OU was in its second year of running openED 2.0, a European MOOC on business and management, and OU academics were continuing to engage as educators in connectivist MOOCs including LAK11¹ and Change11², running sessions on the future of learning analytics, digital scholarship, collective education, and social media visualisation hacks. Meanwhile, at Stanford University, Sebastian Thrun was hitting the headlines with a course on artificial intelligence that registered more than 100,000 students.

By 2012, the OU was running its own MOOCs. The Open Translation MOOC³ ran from October to December that year, followed closely by the Open Learning Design Studio's OLDs MOOC, which ran from January to March 2013⁴. At the same time, the university was in the process of setting up the FutureLearn MOOC platform,

which launched its first MOOC in October 2013. FutureLearn now has almost 4 million registered learners, and among the many courses offered by its 87 partners are 36 that are produced by The OU. The University is now exploring options that build on its MOOC experience, including badged open courses (BOCs).

Alongside this work in MOOC production and presentation, the University has also been active in researching MOOCs. By February 2016, ORO listed 66 academic publications with 'MOOC' in their title or abstract. These were the work of 56 authors from units across the university (Table 1), together with 46 external authors.

Table 1: Unit or nation of OU authors with MOOC publications on ORO

Unit or region	Number of staff with MOOC publications on ORO
IET	22
MCT	8
FELS	7
KMi	7
Science	4
OMU	3
Associate lecturer	1
Bristol	1
FBL	1
Oxford	1
Scotland	1

1 <http://www.learninganalytics.net/syllabus.html>

2 <http://change.mooc.ca/week03.htm>

3 <http://www.open.edu/openlearnworks/course/view.php?id=1483%3F>

4 <http://www.olds.ac.uk/>

This report provides an overview of MOOC research at the OU. It covers work on ORO, and focuses on its implications for practice. The research is brought together under themed headings, studies in the area are referenced and summarised, and any recommendations that are relevant to practice in the University are highlighted.

In order to write this report, the authors performed a search on ORO in February 2016, looking for items in the repository that included 'MOOC' in their title or abstract. ORO contains peer-reviewed research published by OU staff, together with other

high-quality OU research outputs that meet the Frascati⁵ definition of research. Each report author took 22 of the publications identified in this way and produced a short summary, including any recommendations relevant to the OU. These summaries were then gathered together and grouped in terms of their main subject. Where publications report on closely related studies where the summary and recommendations would be very similar, just one publication is summarised and the related publications are summarised below it.

⁵ http://oro.open.ac.uk/help/helpfaq.html#What_is_the_Frascati_definition

Pedagogy of MOOCs

The papers in this section deal with the theory that underpins teaching and learning in MOOCs. The section also covers the practical implications of implementing that pedagogy at university level and course level, including recommendations related to learning design and educators.

MOOCs 2030: a future for massive open online learning

Ferguson, et al., 2015

<http://oro.open.ac.uk/43541/>

This book chapter looks ahead to the year 2030 and considers the ways in which current visions of massive open online courses may develop into realities. It also looks at the changes in pedagogy, technology, and the wider environment that will be necessary in order for them to flourish.

Recommendations

- Take an active role in constructing and accrediting learning journeys and include this work in the OU business strategy.
- Build learner communities that maintain engagement with the

OU over time, reducing the gap between students and alumni, and enabling people who have studied together to continue their conversations, sharing experience as they put their learning into practice.

- Develop a learner community that functions across a MOOC platform as an effective think-tank, enabling students and alumni to discuss the big issues of the day with a large worldwide community. Make use of these debates and the university's expert knowledge to produce reports and recommendations that go far beyond what current think-tanks can offer.

Designing for educational technology to enhance the experience of learners in distance education: how open educational resources, learning design and MOOCs are influencing learning

Scanlon, et al., 2015

<http://oro.open.ac.uk/44374/>

This journal paper brings together evidence from strands of research based on work in online, distance and open learning. This

research sheds light on several factors relevant to the outcomes of instruction: the often unpredictable motivations of learners, the trajectories they take through courses, and the indicators for success in formal and informal learning, in terms of both pedagogy and technology. The paper presents the outcomes of practical endeavours aimed at widening access to education using technology, which indicate that open education is offering alternative ways of supporting learners.

Recommendations

- Use learning design as a way to set out and describe the intent in learning material, so that it is possible to make judgements about what works.
- Align learning design with learning analytics in order to identify problem areas and motivate interventions to improve retention and maximise the impact of different support models.
- In order to transfer these interventions to other contexts, track the impact of revised learning designs on student outcomes.

Innovative pedagogy at massive scale: teaching and learning in MOOCs.

Sharpley & Ferguson, 2014

<http://oro.open.ac.uk/40787/>

This conference paper looks at the implications for pedagogy of education at a massive scale. It begins by looking at educational approaches designed or adapted to be effective for large numbers of learners: direct instruction, networked learning, connectivism, supported open learning, and conversational learning at scale. It goes on to identify benefits and challenges of teaching and learning at scale for learners, for educators and for society as a whole. These need to be addressed in two ways, through learning design and through platform design.

Recommendations

- MOOC learning design must take into account the points at which learners are likely to need support; build in opportunities for asking questions, raising concerns and asking for help, and build in motivation for offering help to others.
- To do this, the MOOC platform must provide opportunities for learner communication, as well as the contextual information that enables learners to judge which people are offering helpful and reliable advice. This may include the use of social factors (rating and voting) to assess reliability, and the use of user profiles and badges to demonstrate competence.
- Use likes, ratings, tags and analytics to help learners and educators to sort through contributions and locate the ones that will be helpful for their learning or teaching.
- Build in points where learners share stories of success or raise difficult problems that the network of learners can work to solve together.
- Develop forums, discussion areas and chances to meet up both online and offline in order to provide educators with opportunities to extend and share practice, to share possibilities for creating or accessing resources that are not available when working at a smaller scale, and to build on success.
- Ensure that no elements of learning design unnecessarily exclude people on the grounds of disability, age or location, and engage actively with the challenges that exclude learners due to disability and disadvantage.

Open learning at a distance: lessons for struggling MOOCs

McAndrew & Scanlon, 2013

<http://oro.open.ac.uk/39736/>

Learning at scale, at a distance, is not a new phenomenon. Seeing MOOCs narrowly as a technology that expands access to in-classroom teaching can miss opportunities. Drawing on decades of lessons learned, this paper sets out aims to help spur innovation in education.

Recommendations

- Make use of effective distance learning pedagogies: pay attention to interaction between students, tutors and material; provide structured tasks to guide learners; offer motivating videos and broadcasts; ensure that teaching material is carefully crafted.
- Plan for inclusive education and support those who need help. Tutor support can be used to prevent drop-outs; the submission of a first assignment is crucial for further participation.
- Offer well-designed assessment, including constructive feedback to students, feed forward, and recognition of achievements.
- Quality assurance is essential: set quality levels, work in teams, test before your learners do, and allow feedback after release.

Taking on different roles: how educators position themselves in MOOCs

Ferguson & Whitelock, 2014

<http://oro.open.ac.uk/40696/>

An investigation of the different positions that lead educators take in MOOCs, specifically through their messages to learners. Educators' self-presentation in these settings varies: they may present themselves as explainers, leaders, evaluators, recommenders or in a range of other roles.

Recommendation

- Make educators aware of the range of roles and stances available to them in a MOOC, so they are able to consider how these are different from the roles of course team member and AL.

Evaluation of the OLDS MOOC curriculum design course: participant perspectives, expectations and experiences

Cross, 2013

<http://oro.open.ac.uk/37836/>

This report presents an evaluation of the Open Learning Design Studio MOOC (OLDS MOOC) in terms of participant expectations, participation rates, use of the course space and technologies, and the effectiveness and challenges presented by collaborative group working. It also looks at how participants understood and used the series of nine badges on offer.

Learning from open design: running a learning design MOOC

McAndrew, 2013

<http://oro.open.ac.uk/37753/>

also deals with this subject

MOOCs and open education

The Open University has long-standing expertise in the research and development of open education. Several of the publications in this category therefore set MOOCs within a wider historical context. This is in contrast to much of the scholarship relating to MOOCs produced outside the OU, and particularly in the US, which often frames MOOCs, and even online education, as new and unexplored phenomena. The OU is therefore at an advantage, because it can build on previous work in the areas of massive, open and online education.

The challenge of open education

Pantò & Comas-Quinn, 2013

<http://oro.open.ac.uk/36380/>

This paper provides a historical overview of developments in the world of open education and key challenges that it faces.

From OER to MOOCs: critical perspectives on the historical mediation trajectories of open education

Alevizou, 2015

<http://oro.open.ac.uk/44945/>

This paper examines how MOOCs are talked about and positioned. To some extent, these discussions form part of a long history of debates about the future of higher education. However, they may also be associated with an uncritical view of technological development. The paper looks in detail at the beliefs that underpin different views of open education.

The battle for open: how openness won and why it doesn't feel like victory

Weller, 2014

<http://oro.open.ac.uk/44363/>

This book explores the evolution of open in different aspects of education. One aspect of this is the move from early MOOCs as individual academic experiments with networked learning across platforms, to the xMOOC that is institution-led and on a single platform. MOOCs fit within a diverse set of open education practices, and are distinctive due to their sudden popularity and polarisation of opinion. The book provides an explanation of the MOOC learner and offers questions for course design and integration with formal learning

Recommendations

- MOOC learners are primarily 'leisure learners'. Course designs could therefore encourage selection – learners not taking the whole course but focusing on parts of interest.
- Course completion is not necessarily learners' priority; therefore it is not necessarily a good metric. Alternative metrics such as public reaction, buzz or dwell-time may be more appropriate.
- Consider whether other open practices should be used within a MOOC. Can course resources be made available as open educational resources? Is any research discussed in the MOOC openly accessible?

MOOCs and the Silicon Valley narrative

Weller, 2015

<http://oro.open.ac.uk/44364/>

MOOCs have generated considerable media interest, more than other education initiatives such as Open Education Resources. This can be seen as an example of the battle for narrative in open education. MOOCs attracted media interest because they appealed to broader narratives such as 'education is broken' and the dominant narrative that emerges from technology firms in America's Silicon Valley. Analysis of the media coverage of MOOCs highlights how they satisfied the core beliefs inherent in these narratives in a way that other educational initiatives have not.

Recommendation

- The OU needs to construct a distinct narrative in order to be able to influence the direction of open education effectively.

When two worlds don't collide: the marginalisation of open educational practices outside academia

Perryman & Coughlan, 2014

<http://oro.open.ac.uk/39774/>

This paper focuses on connections between academia and other organisations such as charities, national institutes, government departments, training companies and publishers. A concern is that formal education dominates and marginalises the valuable resources produced by those outside formal education. The role of an 'Open Scholar' is touched on with reference to other papers by the authors.

Recommendation

- When developing open education, the OU should think more seriously about including resources from organisations outside formal education, particularly for audiences such as workplace learners, or where there are active subject

communities that have developed valuable but non-academic resources.

The potential social, economic and environmental benefits of MOOCs: operational and historical comparisons with a massive 'closed online' course

Lane, et al., 2014

<http://oro.open.ac.uk/40091/>

This paper looks at the module T171: You, Your Computer and the Net (2000 – 2005) and compares its data with MOOC data. It raises a range of points about the positioning of MOOCs and free learning in social, economic, and environmental terms. While low completion rates could be justified by the free nature of the courses, they matter in terms of sustained investment and perceptions of value from MOOCs. Ultimately there is always a production cost to be paid. MOOCs as a means of increasing distance learning have the potential to benefit the environment via lower carbon emissions.

The potential of MOOCs to widen access to, and success in, higher education study

Lane, 2013

<http://oro.open.ac.uk/38881/>

also deals with this subject

Recommendation

- In a time when degrees are presented in terms of career financial return for the individual, the OU could choose to align MOOCs with other benefits of learning, such as health, social relationships and participation.

Rethinking OER and their use: open education as Bildung

Farrow & Deimann 2013

<http://oro.open.ac.uk/36572/>

This paper proposes a theoretical foundation for open educational practices by introducing the concept of Bildung (self-cultivation, self-realisation). Beliefs and values associated with Bildung include autonomy, critical reflection, inclusivity, and potential for self-development.

Bildung as a critical foundation for Open Education

Farrow & Deimann, 2012

<http://oro.open.ac.uk/35377/>

also deals with this subject

The influence of open resources on design practice

Pegler, 2013

<http://oro.open.ac.uk/35954/>

This chapter explores some of the implications of open education and open educational resources for designers of learning. In doing so, it examines the experience of the Digital Storytelling MOOC, D106, giving this as an example of how openness can change a previously campus-based model.

MOOC retention and motivation

A key issue in relation to MOOCs is their low completion rates. OU researchers have looked at this issue in some detail. They have looked broadly at what completion rates actually are, how they can be measured, and how they relate to participation rates in other open online learning settings. They have examined patterns of engagement within MOOCs and at how these are influenced by the pedagogy and learning design of the MOOCs. They have also considered ways of increasing learner motivation and supporting learners to self regulate their learning.

Initial trends in enrolment and completion of massive open online courses

Jordan, 2014

<http://oro.open.ac.uk/39592/>

This paper analyses data across a set of large Coursera, Udacity and EdX MOOCs from 2011-13. Completion data for 42 courses were used, based on enrolment from 91 courses, alongside other data from a total of 279 known courses. Analysis showed a weak but statistically significant relationship between course length and enrolment, with longer courses attracting more learners. However, there was a stronger negative correlation between course length and completion. Learners are less likely to complete long courses. The majority of courses in the sample had completion rates of less than 10% of enrolment, 6.5% as median. Completion rates were more varied when only considering those who actively engaged, with a median of 10%. This work is extended in the following paper.

Massive open online course completion rates revisited: assessment, length and attrition

Jordan, 2015

<http://oro.open.ac.uk/43566/>

Since their inception, enrolments on MOOCs have fallen while completion rates have increased. This analysis is based upon enrolment and completion data for 221 MOOCs. Completion rates (defined as the percentage of enrolled students who completed the course) vary from 0.7% to 52.1%, with a median value of 12.6%. Completion rates vary significantly according to course length, start date and assessment type. For a sub-sample of courses where rates of active use and assessment submission across the course are available, the first and second weeks appear to be critical in achieving student engagement, after which the proportion of active students and those submitting assessments levels out.

Recommendations

- Shorter, more modular courses could be developed to improve retention, with the use of signposting between courses for learners wishing to create a more substantial programme of learning.
- Offer shorter courses with better guidance about how they could be combined to benefit those students who prefer to direct their own learning by making it easier to find the parts of a course that they value.
- Peer grading for assessments is associated with lower completion rates, so course designers should carefully consider whether automated assessments would meet their educational goals.

MOOCs and the funnel of participation

Clow, 2013

<http://oro.open.ac.uk/36657/>

The 'funnel of participation' is a metaphor used to reconceptualise the steep drop-off in activity, and the pattern of steeply unequal participation in MOOCs and similar environments. The first step is awareness of the MOOC. Only a proportion of those who are aware of a MOOC go on to the next step – registration. A fraction of those go on to engage in a MOOC activity, and only some of those will make meaningful learning progress. Two key features of the funnel are: steep drop-off from each stage to the next, and steeply unequal patterns of participation.

Patterns of engagement in connectivist MOOCs

Milligan, et al., 2013

<http://oro.open.ac.uk/42259/>

This paper examines how a connectivist MOOC is suited to learners with different skills, motivations, and dispositions. Learners participated actively, participated passively or lurked. Lurkers were content with their participation in the MOOC, whereas passive participants seemed frustrated and did not want the autonomy to choose where, when, how, and with whom to learn. Engagement was influenced by confidence, prior experience and motivation.

Recommendations

- When planning a connectivist MOOC, participants who have not previously studied on connectivist courses should be given additional induction, or may be paired with a more experienced student who can act as a mentor.
- Participants who lack confidence could be paired with learners who have similar experience to act as 'buddies'.
- Learners could be encouraged to identify and articulate clear aims and goals for the course in order to increase motivation.

Moving through MOOCs: pedagogy, learning design and patterns of engagement

Ferguson, et al., 2015

<http://oro.open.ac.uk/44052/>

MOOCs are part of the lifelong learning experience of people worldwide. However, the high levels of dropout on most of these courses are a cause for concern. The studies reported in these two papers suggest that there are patterns of engagement within MOOCs that vary according to the pedagogy employed and to the ways in which the MOOCs are structured.

Recommendations

- In order to increase retention: provide previews of course material, set up discussion steps for latecomers, encourage late arrivals to register for another course or for a later presentation, and provide bridges between course weeks, stressing links between those weeks.
- Do not assume that shortening the length of a course will necessarily increase learner engagement and course completion.

Examining engagement: analysing learner subpopulations in massive open online courses (MOOCs)

Ferguson & Clow, 2015

<http://oro.open.ac.uk/42345/>

also deals with this subject

Investigating self-directed learning dimensions: adapting the Bouchard Framework

de Waard, et al., 2015

<http://oro.open.ac.uk/44494/>

Interest is growing in self-directed learning in MOOCs, as learning in these contexts is increasingly learner-centred and autonomous. The assumption has been that self-directed learning is a feature of connectivist MOOCs. This conference paper looks at the experiences of learners enrolled in two MOOC courses during the early trials of the FutureLearn platform and finds that they engage in self-directed learning.

Recommendation

- Course designers should take into account that many learners do not follow a predefined path but are active participants in their learning process. They mediate, adapt and direct their learning while taking into account daily events, technical aspects, individual and collaborative preferences and realities.

Self regulated learning

Mikroyannidis, et al., 2013

<http://oro.open.ac.uk/40050/>

This book stresses the importance of self-regulated learning for effectively accessing and using online resources such as MOOCs. It details new learning technologies that empower self-regulated learning and personal learning environments.

Recommendation

- MOOC designers should consider how they can support self-regulated learning within their MOOCs.

Online learning and experimentation via interactive learning resources

Mikroyannidis, et al., 2015

<http://oro.open.ac.uk/43381/>

Recent trends in online learning such as MOOCs and open educational resources are changing the landscape in the education sector by allowing learners to self-regulate their learning and providing them with an abundant amount of free learning materials. This paper presents FORGE, a new European initiative that provides learners and educators with access to world-class facilities and high quality learning materials, thus supporting constructivist and self-regulated learning approaches.

Interactive learning resources and linked data for online scientific experimentation

Mikroyannidis & Domingue, 2013

<http://oro.open.ac.uk/39269/>

also deals with this subject

MOOC factors influencing teachers in formal education

de Waard, 2015

<http://oro.open.ac.uk/44528/>

This paper looks at the differences between face-to-face teaching and MOOC opportunities for teachers, in order to provide insight into what is needed for teacher development. In order for teachers to deliver quality in both face-to-face and online learning environments, it is important that they experience and understand MOOC options. Teachers need to be informed about MOOC diversity to enable them to perform in the MOOC learning and teaching environment. This will allow teachers to overcome their doubts, deal with the complexities that come with these new online environments, and gain the necessary confidence and insights to use MOOCs to achieve their teaching goals.

OpenQuest: designing a motivational framework for MOOCs instruction.

Mystakidis & Herodotou, 2015

<http://oro.open.ac.uk/44934/>

These PowerPoint slides introduce an innovative motivational framework for MOOC instructional design. The Open Quest Framework is designed to improve learning and user engagement in MOOCs by drawing lessons from the success of quest-based initiatives, gamified web platforms, and massive-multiplayer online games. The framework is grounded in established motivational theories. It features specific motivational mechanisms including, quests and narration, reputation systems, progression mechanisms, multiple learning pathways, well-designed feedback and social elements, which can be used to enhance learners' engagement and personalise learning.

Addressing the retention gap in MOOCs: towards a motivational framework for MOOCs instructional design

Herodotou & Mystakidis, 2015

<http://oro.open.ac.uk/44387/>

also deals with this subject

MOOCs: striking the right balance between facilitation and self-determination

Beaven, et al., 2014

<http://oro.open.ac.uk/40077/>

This journal paper provides a detailed, critical exploration of assumptions about learners in MOOCs and how these are related to MOOC design. Data are from the OU's MOOC on open translation tools and practices, which was run in 2012. As this was designed using a task-based / connectivist MOOC approach, where students had to engage with participatory elements, it assumed stronger self-determination and participatory literacy than a 'content-based' MOOC. For those without confidence in participatory literacies and prior knowledge of the subject, embedding tasks within the MOOC can exacerbate anxieties. However, the learning experience for those who do have confidence and skills can be highly valuable.

Recommendations

- Provide clear definitions for learners about the nature of each MOOC, what success means for the educators, how much this focuses on participation, and the forms of participation that are expected of learners.
- Participation generally requires some skills and it should be clear to learners from the outset what these are. These skills should be modelled and shown through facilitation.

Motivation in a language MOOC: issues for course designers

Beaven, et al., 2014

<http://oro.open.ac.uk/41520/>

This chapter offers insights into the profile and motivations of those who take language MOOCs. The analysis and the literature review suggest that learners who take language MOOCs do so out of personal interest. They tend to be young and in education or employment, with a good level of existing education and with a level of language skill at, or exceeding, that prescribed in the course description. Areas of tension that may be particularly de-motivating to MOOC learners are: ICT-

related tensions, language proficiency, and a lack of time. Time was the issue that concerned learners the most of these three.

Desarrollo de competencias esenciales en la cibercultura con co-aprendizaje basado en co-investigación

Okada, et al., 2013

<http://oro.open.ac.uk/41783/>

For Spanish speakers, this conference paper looks at the competencies required for learning online and at ways of connecting the collective construction of knowledge with collaborative scientific research.

Working together in MOOCs

Although MOOCs on the big US platforms such as Coursera and EdX have tended to take an instructivist approach to learning, The OU has typically taken more social and conversational approaches. The FutureLearn platform, for example, is underpinned by the pedagogy of conversational learning. Some of the papers in this section focus on the connectivist approach taken in the OU's Open Translation MOOC, some look at social interaction in the more instructivist xMOOCs, while others look at possibilities for increasing collaboration.

translators. It included a range of activities and tools to promote discussion and evaluation of open translation tools and practices. Data were collected through several online questionnaires about learners' backgrounds, prior experience as translators, expectations and motivation for participating in the MOOC, and evaluation of the outcomes of the MOOC. The primary motivation was to learn more about translation.

The Open Translation MOOC: creating online communities to transcend linguistic barriers

Beaven, et al., 2013

<http://oro.open.ac.uk/39099/>

Language, in terms of translation and adaptation to a particular region, is one of the main barriers to the reuse of open educational resources. A MOOC was designed with the aim of Exploring crowdsourcing of them as a solution to this problem. The MOOC was designed to create an online community of volunteer

The Open Translation MOOC: creating online communities to transcend linguistic barriers

Beaven et al., 2013

<http://oro.open.ac.uk/37583/>

also deals with this subject

Clustering, collaboration and community: sociality at work in a cMOOC

Lewis, et al., 2015

<http://oro.open.ac.uk/43950/>

Why it is that learners collaborate with one another rather than simply identifying and pursuing their own individual goals? This chapter focuses on the transition between different stages of networking and clustering, and reports on a case study based on the OU Open Translation MOOC. This draws extensively on sociality theory, which explains the importance of learner empathy and altruism.

Exploring co-studied massive open online course subjects via social network analysis

Jordan, 2014

<http://oro.open.ac.uk/40384/>

The paper analyses the subjects studied by students on the Coursera MOOC platform. Social network analysis is used to create a network graph of co-studied subjects, based on public Coursera profiles. This has the potential to identify communities of learners who study in similar patterns. Learners are not restricted in their choice of MOOCs and many take a broad range of subjects. This could also impact on the potential for gaining credit via taking many MOOCs, as the courses studied may not form a coherent study programme.

Digital learning hubs: theoretical and practical ideas for innovating massive open online courses.

Kucirkova & Littleton, 2015

<http://oro.open.ac.uk/43549/>

A more refined distinction than the one

proposed by the connectivist model is necessary to address the issue of student engagement and realise transformative educational visions. There are important differences between MOOCs and community-organised digital learning hubs, the understanding of which could potentially alleviate some of the limitations currently faced by major MOOCs providers.

Recommendations

- Create opportunities for experts to emerge within the community, by, for example, issuing calls for showcasing members' work or letting the community assess their merits.
- Support symbiotic relationships among learners and teachers and create a sense of 'felt engagement' in the online community. This can be achieved by making subtle changes to the ways the course is structured by, for example, according someone a star or other marker showing a more personal appreciation.
- Include more individualised feedback on students' work and run smaller, perhaps interest-based Google Hangout sessions to engage students in their learning.

Roles and student identities in online large course forums: implications for practice

Baxter & Haycock, 2014

<http://oro.open.ac.uk/38884/>

This paper provides a detailed exploration of learners' perceptions and the value of forums in online learning. The research was conducted in the context of formal online learning (a survey of a large OU level 2 module) but the findings could be relevant for MOOCs that are associated with forums. Students see the value of forums as associated with student-to-student, and tutor-student interactions, rather than general social engagement. Confidence

about posting is variable amongst learners and is related to the scope of forums, facilitation, previous experience of social media, and the conduct of other learners.

Recommendations

- Moderation / facilitation / expert interactions in forums are essential to shape discussions and produce an atmosphere in which novices can develop their learning.
- The purpose of a forum should always be defined so that learners understand what to use it for and how to approach it.
- Moderators should think about intervening to prevent off-topic postings, with the understanding that

some learners will expect forums to have the same norms as Facebook, while many others will judge the value of the forum by its academic content and be put off by irrelevant posts or inappropriate replies.

Developing 21st century skills through co-learning with OER and social networks

Okada, et al., 2014

<http://oro.open.ac.uk/41724/>

This conference paper discusses the potential of online collaborative learning to support the development of 21st-century skills. It draws upon a virtual ethnography that investigates colearning – collaborative open learning – with open educational resources and social networks.

MOOC assessment

Providing robust methods of formative and summative assessment at scale has proved a challenge for MOOC providers worldwide. As this set of papers shows, the OU is well advanced in consideration and development of different methods. The first paper provides a broad overview of many types of assessment. Others consider digital badging, proctored (supervised) exams, a computer-mediated social interaction system and peer assessment.

E-assessment: past, present and future

Jordan, 2013

<http://oro.open.ac.uk/38536/>

This review of advancement in computer-based assessment deals with:

- selected response (e.g., drag-and-drop, multiple-choice questions)
- constructed response (users construct the response)
- confidence-based marking; clickers
- peerWise (construct multiple-choice questions or comment on some aspect of tests that others have written)
- CALM system of assessment (use of 'steps', allowing a question to be broken into manageable steps for the benefit of students who are not able to proceed without this additional scaffolding)
- OpenMark assignments
- iCMAs
- computer algebra-based systems
- short-answer questions and essays
- system that releases feedback to students but stalls the release of grades until they have reflected on the feedback received
- use of audio feedback and screencasting
- use of e-portfolios, blogs, wikis

and forums to encourage student engagement, collaboration and reflection.

Recommendations

- MOOCs should provide a variety of question types, with the potential for instantaneous meaningful feedback and for students to attempt the question several times.
- Different students should receive different sets of questions (question banks or multiple variants of questions are required).
- MOOC authors must be trained to write high quality questions.

The use, role and reception of open badges as a method for formative and summative reward in two massive open online courses

Cross, et al., 2014

<http://oro.open.ac.uk/40593/>

The roles, reception and use of badges as an assessment strategy are explored through data from two OU MOOCs that ran in 2013. There was variability in views about badges. Many were positive, citing them to be motivating or a means of evidencing their learning, but others felt that badges seemed childish. Transparency of the process of badge approval was seen as an important potential improvement in order to assure quality and avoid cheating. The paper argues that badges can provide formative guidance to learners and should not be seen simply as an award following summative assessment.

Digital badging at The Open University: recognition for informal learning

Law, 2015

<http://oro.open.ac.uk/44910/>

The OU piloted badged open courses (BOCs) in various forms to provide a digital acknowledgement of learners' participation in three entry-level, unsupported courses. This paper outlines how the evaluation of the 2013 pilots has informed the development of a suite of free employability and skills BOCs that are assessed through the deployment of Moodle quizzes. It also discusses how the motivational aspects of digital badging support the growth in free, micro-credentialised courses against a backdrop of MOOC providers issuing certification for a fee. The BOC project, which aligns with the University's Journeys from Informal to Formal Learning (JIFL) strategy, is designed to provide accessible routes into the University for students who might not otherwise have the opportunity to participate.

Digital badging at The Open University: recognition for informal learning

Law & Law, 2014

<http://oro.open.ac.uk/41354/>

also deals with this subject

Recommendations:

- The OU needs to provide better site navigation and signposting to free courses, as this is the dominant content people are looking for.
- The OU should also provide better signposting to 'soft certification'.
- We need more engaging signposting of content for those looking at shorter pieces of learning to improve the informal learning journey.
- Informal learners expect to gain a certificate for informal study, and these expectations should be

met through the provision of 'soft certification'.

MOOC badging and the learning arc

Cross & Galley, 2012

<http://oro.open.ac.uk/42038/>

The blog post sets out the thinking behind the digital badging strategy used in the 2012 OLDS MOOC by using a pictorial representation to explain the place of the badges in the course. This is predicated on (a) the idea that a course, just like a novel, a movie or a video game, contains a broad central story arc – a 'learning arc' or journey with a start (beginning of course) and an end, and (b) the idea that there are different types of badge that have different relationships with this learning arc.

Effective web videoconferencing for proctoring online oral exams: a case study at scale in Brazil

Okada, et al., 2015

<http://oro.open.ac.uk/44033/>

This paper reports best practices on the use of the web videoconferencing application FlashMeeting to quality control student assignments through online oral examination at scale. In this case study, the key benefits identified from the perspective of assessors and students were: reliable examination, credible technology, authentic assessment, interactive e-Viva, low cost, scalable process and practical testing in terms of time, effort and money.

Recommendations

- The University should select an easy-to-use technology for online exams that does not require training and allows recording of the event as a way to keep evidence of the exam.
- It should provide clear instructions to students related to both written and oral exams: purpose, requirements, recommended venues (e.g. quiet and good web connection) and

criteria for approval (in order to confirm identity and authorship). It should also clarify the minimum requirements for assessors related to quality assurance (e.g. successful interaction with audio, webcam and/or chat), minimum and maximum time, and flexibility for choosing best format of the oral exam based on the circumstances (e.g. long or short time after delays or technical problems).

- Learners should be made aware of the overall requirements and recommendations as well as other factors that influence the exam: punctuality, minimum equipment (computer, webcam, audio and good web connection). They should be prepared to address questions with objective answers and to interact in a short time in case of any initial problem.
- Examiners should be trained to select the most suitable format of online exams. They should be prepared to interact not only through audio but also chat (e.g. copying/pasting questions to the chat in case of any technical problem). They should be aware of the need to provide clear questions and instant feedback, and to interrupt if necessary to keep the exam objective and efficient.

Machine and social intelligent peer-assessment systems for assessing large student populations in massive open online education

Jimenez-Romero, et al., 2013

<http://oro.open.ac.uk/42087/>

This conference paper addresses the challenge of creating an automated assessment system for large student populations that is of sufficiently high quality to be used for certified higher education. It describes a computer-mediated social interaction system to assess student coursework and examination in MOOCs: 'machine and socially intelligent peer assessment'. The main elements of this system are peer assessment and reputation. A reputation score discriminates the better

markers from the weaker markers, those not being systematic in their assessment or systematically giving low or high marks. The proposed system was found to be promising. Reputation-based systems may give a small benefit in performance compared to score-averaging systems.

Peer assessment in architecture education

Teixeira de Sampayo, et al., 2014

<http://oro.open.ac.uk/42631/>

This conference paper describes an experiment in the use of peer assessment as a formative activity. This provides a potential template for a peer assessment activity that could be considered for application in a MOOC.

MOOC accessibility

MOOCs appear to offer access to higher education for a range of people who are unable to attend traditional universities. However, as this set of papers shows, there is still much to be done before our MOOCs will be truly accessible to all, widening participation for those who are currently distanced from education.

Inclusion in, and exclusion from, open education communities

Lane, et al., 2014

<http://oro.open.ac.uk/41676/>

As open education matures it will be the communities we develop that make a difference to the success (or failure) of transforming education through openness. This paper introduces the chosen papers in a journal special issue, each of which exemplifies one facet of building communities of open practice – how people may, in theory and in practice, be included in or excluded from such communities despite the potential of the openness on offer.

Challenges for conceptualising EU MOOC for vulnerable learner groups

de Waard, et al., 2014

<http://oro.open.ac.uk/40381/>

MOOCs are generally designed with particular cultural linguistic and educational imperatives and this is problematic in contexts such as the EU. This conference paper suggests that MOOCs have the potential to address the needs of vulnerable groups, but need to be optimised towards doing so. This includes understanding how they can reflect institutionalised patterns of power and authority.

Towards open educational practice

Cannell & Macintyre, 2014

<http://oro.open.ac.uk/41230/>

Significant claims are made for the potential of open educational resources and MOOCs to widen access to higher education. However, the evidence from the first wave of MOOCs suggests that the participants are primarily individuals with prior experience of higher education. While this indeed widens access, there is no evidence that it is widening participation from those distanced from education. This paper explores recent examples from Scotland of partnership-based approaches to the development, design and delivery of open educational resources. It notes that openness is not simply a matter of barriers to access related to licences or technological aspects, but is inherently cultural, social and situational. Widening participation requires a shift in emphasis, a shift that accounts for peoples, places and the practices of open education.

Accessible user profile modeling for academic services based on MOOCs

Iniesto & Rodrigo, 2015

<http://oro.open.ac.uk/45196/>

The flexibility of MOOCs allows students to learn at their own time, place and pace, enhances continuous communication and interaction between all participants in knowledge and community building, benefits people with disabilities and therefore can improve their level of employability and social inclusion. This conference paper presents a strategy for the use of metadata regarding content and user preferences in order to achieve a better accessibility level when designing MOOCs or other learning services for people with functional diversity.

Recommendations

- Course designers and developers should be aware of the different strategies that can be applied to improve the accessibility level of MOOCs. Some of these add accessibility to MOOC content repositories of learning materials via specific metadata schema; others define the user profile and preferences.
- Different themes should be available so that users can choose the interface layouts that best meet their needs.
- Any MOOC platform used by the University should be compliant with accessibility standards, and should take into account the possible accessibility needs of both educators and learners.

Holistic vision for creating accessible services based on MOOCs

Rodrigo & Iniesto, 2015

<http://oro.open.ac.uk/45194/>

also deals with this subject

Accessibility assessment of MOOC platforms in Spanish: UNED COMA, COLMENIA and Miriada X

Iniesto & Rodrigo, 2014

<http://oro.open.ac.uk/45193/>

also deals with this subject

Accessibility analysis in MOOC platforms. A case study: UNED COMA and UAbiMOOC

Iniesto, et al., 2014

<http://oro.open.ac.uk/45192/>

also deals with this subject

MOOC privacy and ethics

Consideration of issues of ethics and privacy in the context of MOOCs are beginning to emerge at the OU. Building on work by Prinsloo and Slade, the University has already established a leading role in the management of these issues in relation to learning analytics. This gives us a firm base to build on as we extend the same thinking to the ethics of MOOCs.

Student privacy self-management: implications for learning analytics

Prinsloo & Slade, 2015

<http://oro.open.ac.uk/42395/>

Within higher education, our assumptions and understanding of issues surrounding student attitudes to privacy are influenced both by the apparent ease with which the public appear to share the detail of their lives and our paternalistic institutional cultures. This paper explores issues around consent and the seemingly simple choice to allow students to opt-in or opt-out of having their data tracked. It considers how three providers of MOOCs inform users of how

their data is used, and discusses how higher education institutions can work toward an approach that engages and more fully informs students of the implications of learning analytics for their personal data.

Recommendations

- The OU must engage proactively with students, to inform and more directly involve them in the ways in which both individual and aggregated data are being used.
- The way forward involves (1) developing a coherent approach to consent, which accounts for the social science discoveries about how people make decisions about personal data; (2) recognising that people can engage in privacy self-management only selectively; (3) adjusting privacy law's timing; and (4) developing more substantive privacy rules.

Ethical and aesthetic considerations in language MOOCs

Álvarez, 2014

<http://oro.open.ac.uk/41682/>

This chapter examines the ethical and aesthetic dimensions of language education in the context of e-learning, in particular in the context global learning via MOOCs. It considers how the context, the content, the medium and the agents involved in education can be approached from an ethical and aesthetic perspective, and the reasons why these considerations are important.

MOOC quality

As yet, the published work on MOOC quality assurance by OU staff is fairly limited. However, the OU recently brought together a global team of experts to discuss this issue and generate guidelines, so this is an area of research that is likely to increase in importance in the near future.

Benchmarks for MOOCs: the OpenupEd quality label

Rosewell, 2015

<http://oro.open.ac.uk/44837/>

This paper reports on the development of the OpenupEd Quality Label, a self-assessment and review quality assurance process for the European OpenupEd portal for MOOCs. This process is focused on benchmark statements that seek to capture good practice, both at the level of the institution and at the level of individual courses. The benchmark statements for MOOCs are derived from benchmarks produced by the E-xcellence e-learning quality projects. A process of self-assessment and review is intended to encourage quality enhancement, captured in an action plan. The paper suggests that a quality label for MOOCs will benefit all

Recommendations

- There is an opportunity for language educators at the OU to use the global scale of MOOCs as an opportunity to move away from conceptions of language learning as a simple acquisition of skills and aim to explore a range of human values and fundamental principles of intercultural relations.
- OU language MOOCs could be seen as a unique platform to foster 'languaging', a practice of languages that embraces reflective approaches, intercultural understanding and diverse values.

MOOC stakeholders.

The OpenupEd quality label: benchmarks for MOOCs – journal article

Rosewell & Jansen, 2014

<http://oro.open.ac.uk/41173/>

also deals with this subject

The OpenupEd quality label: benchmarks for MOOCs – conference paper

Rosewell & Jansen, 2014

<http://oro.open.ac.uk/40206/>

also deals with this subject

Recommendation

- The OU should explore the option of making use of the OpenupEd Quality Label as a way of ensuring that its MOOCs offer a good quality educational experience.

Other areas of MOOC research

This section includes single papers in areas that have not yet been widely taken up by researchers at the OU, as well as papers that only touch on MOOC-related areas.

Editorial: eLearning Papers, 33

Mor & Koskinen, 2013

<http://oro.open.ac.uk/37631/>

This special issue of eLearning Papers brought together in-depth research and examples from the field to generate debate within this emerging research area. The issue was designed to shed light on the way MOOCs affect education institutions and learners and to explore the role of MOOCs in the education system and, especially, in higher education.

Moons: a MOOC and open education resource with games and a microscope

Kelley, et al., 2014

<http://oro.open.ac.uk/39393/>

This conference paper describes the OU Moons MOOC, an interactive and media-rich model that mixes short videos, animations, HTML5 activities, games, and conventional text and images. Following the first presentation in early 2014, the intention was to offer all the content as an open educational resource, allowing the content to be used and re-used in full or in part for teaching purposes.

Massive open online courses (MOOCs) and their impact on academic library services: exploring the issues and challenges

Gore, 2014

<http://oro.open.ac.uk/40563/>

This paper considers the implications of MOOCs for a librarian audience. The need for information literacy as a means to effective participation in MOOCs is highlighted. Copyright and licensing of MOOC and learner-created material are also identified as areas where librarians will play a role in MOOC production.

Raising the stakes in linked data education

Mikroyannidis, et al., 2014

<http://oro.open.ac.uk/40595/>

This short piece describes the EUCLID project, which is developing a comprehensive educational curriculum, supported by multimodal learning materials, tailored to the needs of data practitioners. It relates this curriculum to the possibilities offered by MOOCs.

Literacy and the digital university

Goodfellow & Lea, 2016

<http://oro.open.ac.uk/41123/>

This discussion of the relation of literacy research to the digital university provides a historical overview of work on literacy, learning, and the 'social turn'. It discusses the conceptualisation of the digital university, and exemplifies a socio-material perspective on literacy research in the digital university, using the instance of MOOCs. The chapter argues that research in literacy and e-learning should not be confined to investigating issues of pedagogy and technology but must take on the much larger project of mapping all the connections amongst people and things that are necessary for a real 'digital

university' to come into being.

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