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## **MOOC and the workplace: key support elements in digital lifelong learning**

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### **Abstract**

This paper examines the relationship between trends in workplace learning and training; the EU policy for lifelong learning; and describes the role that alternative forms of educational delivery such as MOOC can play in supporting future scenarios such as automation and digitalization. The research conducted is based on synthesis of prior research results, literature analysis, qualitative research, specifically course evaluation through roundtable discussion. This paper draws together research into MOOC delivery and impact and contextualises these in relation to both recent workplace trends (digitalisation and automation) and lifelong learning policies within the EU. A conceptual model for differentiating flexible, open and online forms of delivery is introduced.

**Keywords:** MOOC; lifelong learning; e-learning; digitalisation; heutagogy

**JEL codes:** I26, L26

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### **INTRODUCTION**

The objective of this paper is to contextualise the research outcomes of the BizMOOC project in relation to future delivery of flexible lifelong learning. It draws on the development and evaluation of a Massively Open Online Course (MOOC) focused on lifelong learning by the project partners (Pitt *et al.*, 2018) and synthesizes research from the

project as a whole. Context for the synthesis is provided by an examination of trends in workplace and lifelong learning in recent years. The expansion of MOOC into business reflects a growing awareness of flexible educational delivery among employers, but uptake remains relatively low.

### METHOD

The primary method employed in this discussion paper is the synthesis of results from the BizMOOC project with other relevant recent literature. Schick-Makaroff *et al.* (2016) identify four categories for research synthesis methods: conventional synthesis (including traditional literature review; quantitative synthesis (aggregation of empirical research); qualitative synthesis (integration of qualitative data into a single narrative, meta-research); and emerging synthesis (systematic integration of diverse data types; executive reports; meta-narratives; critical interpretation). This article offers an emergent synthesis of results from several projects to describe key MOOC elements that can support lifelong learning in the workplace. As Suri & Clarke (2009) note this approach presents an inclusive way to “open spaces, raise questions, explore possibilities, and contest taken-for-granted practices”.

### LITERATURE REVIEW AND THEORY DEVELOPMENT

This paper draws on the findings of the BizMOOC project which are captured in the *MOOC BOOK* (BizMOOC, 2018). Within the BizMOOC project partners worked on a range of documentation and collectively wrote an extensive account of the state of the art for MOOC theory, development, application and evaluation across the 11 countries involved in the project.

Results from the *Models for Open, Online, Flexible and Technology enhanced Learning* project (Orr *et al.*, 2018) are used to provide a theoretical framework for describing the changing landscape of educational delivery. In addition, a range of reports on lifelong learning, digital skills and educational outcomes were consulted and are cited below. Key factors are identified and synthesized in the discussion section with conclusions drawn.

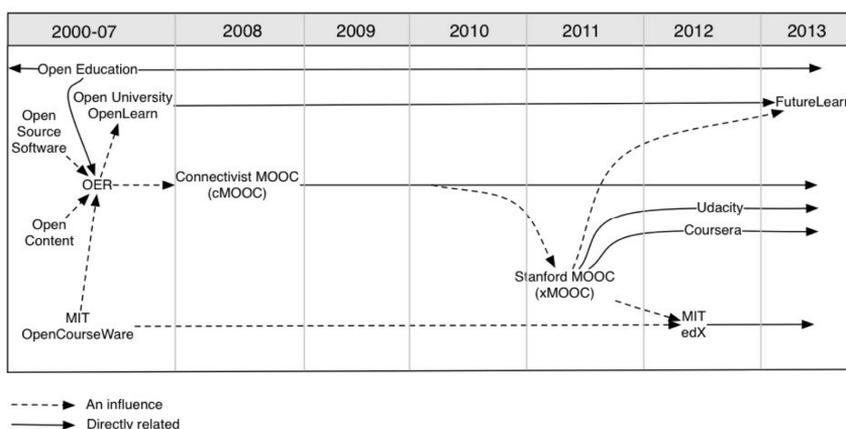
### A BRIEF HISTORY OF MOOC

In 2012 many universities in the USA invested heavily in making their courses available online, either through a platform like EdX, Coursera or Udacity. Most of these were based around a didactic pedagogy which allowed the course to be taken by large numbers of distributed learners. These have become known as xMOOC to distinguish them from the early, experimental connectivist/constructivist cMOOC. Figure 1 describes the development of key MOOC providers as a timeline.

As Baynes & Ross (2014) note, it is possible to divide these two broad MOOC categories of cMOOC and xMOOC into many variants, some of which may neither be massive, open, or online. Programmes of study which draw on MOOC terminology may be entirely closed to a specific group of learners or restricted to users within a specific company. MOOC thus now take their place within a wider network of online learning opportunity and flexible delivery. The MOOC concept has come to stand for widely

available learning content and has a greater penetration into society than similar approaches (e.g. open educational resources).

There continues to be a massive amount of investment in platforms that provide free access to learning materials in anticipation of a brighter future. In a review of MOOC trends, Shah (2017) identified more than 9,400 courses offered; more than 500 MOOC credentials; a dozen graduate degrees available through MOOC; a million new users for 2017; and an estimated total of 81 million MOOC learners. The two largest MOOC providers – Udacity and Coursera – have attained a market valuation of more than \$1bn (which the *Financial Times* (Knee, 2016) termed “unicorn valuation status”). Even without the emergence of a clearly sustainable business model, higher education providers strive to dominate the MOOC space. Much of this investment is targeted at recruitment of students into higher education through providing some learning for free, but there are also substantial numbers of MOOC providers focused on training, career development and lifelong learning.



**Figure 1. MOOCs and Open Education Timeline**

Source: Yuan & Powell (2013)

### MOOC IN THE WORKPLACE

The expansion of MOOC into business reflects a growing awareness of flexible educational delivery among employers. Radford *et al.* (2015) found that though awareness of MOOC remains relatively low among employers, once the concept is explained to them they could see the benefits in terms of demonstrating employee commitment; recruitment (especially for technical skills); and professional development. Sreeleakha and Manikandan (2015) note that employers are increasingly likely to recognize MOOC learning and use it as part of their own training provision. They identify the following general benefits to employees/learners (*ibid.*, 31).

1. Content is packaged attractively for online learners
2. The financial outlay is minimal
3. Engaging in learning enhances job performance
4. Less disruption to working/life duties

## 5. Supporting the autonomy and career direction of workers<sup>1</sup>

Several authors have identified the potential for MOOC to support both workplace learning and lifelong learning more generally construed (e.g. Brandi & Iannone, 2015; Pouezevara & Horn, 2016). However, the research suggests that this potential has yet to be met. In a review of articles on the use or potential of MOOC to upskills existing employees, Calonge & Shah (2016:20) identify a disparity between higher education providers and employers on whether graduates are able to meet the needs of businesses. Similarly, a report by the European Centre for the Development of Vocational Training found that there is little interaction between higher education providers and businesses when it comes to organizing curricula and identifying key skills – 40% of graduate employers reported never having done so (CEDEFOP, 2015:37). Lambert & Hassam (2018) make the case that development focused international organisations have failed to make good use of the potential of MOOC to support learning; at least partly because of the higher procurement and administration costs than those faced by higher education institutions. The possibility for MOOC to support lifelong learning was identified relatively in their development cycle but few MOOC are directly focused on lifelong learning. Indeed, there is some reason to think that those who are most excluded from MOOC opportunities are also those who would benefit most from lifelong learning. Steffens (2015) argues that MOOC support lifelong learning for experienced learners without widening participation, since those that take MOOC are typically already educated to degree level.

### LIFELONG LEARNING: CHALLENGES & OPPORTUNITIES

*“We are currently preparing students for jobs that don’t yet exist, using technologies that haven’t been invented, in order to solve problems we don’t even know are problems yet.”<sup>2</sup>*

Lifelong learning refers to both a long-established opportunity and a longstanding set of challenges. Lifelong learning may be defined as the need to effectively and creatively update and apply learning and skills throughout one’s life. Most broadly construed this is all learning that takes place between birth and death but typically the focus is on some combination of workplace learning; continuing education; workplace training; professional development; and private study. Competencies associated with lifelong learning include: self-management; learning to learn; intuitive and entrepreneurship; information acquisition; digital competencies; and decision-making (Hürsen, 2011 cited in Kaplan, 2016). In practice, lifelong learning may be realized quite differently in different cultures and contexts (e.g. in terms of policies; degree of emphasis on professional/personal development; cultural expectations; etc.). In the context of the European Union, more than €7 billion has been invested in lifelong learning since 2007 (European Commission, n.d.).

It is anticipated that in future years there will be a greater need for lifelong learning. The trend towards automation of existing roles (and the creation of new roles) is likely to continue. Brynjolfsson & McAfee (2014) describe four impact vectors pertaining to digi-

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<sup>1</sup> The authors also suggest that self-motivated learners will benefit most, but as it is not a general benefit it was omitted from the present list.

<sup>2</sup> Richard Riley, cited in Gunderson *et al.* (2004)

talization of the workplace: improved real-time measurement of business activity; facilitated and more cost-effective business experimentation; easier sharing of ideas more widely; and the ability to replicate innovation more quickly. Digital technologies are shortening feedback loops across industry and services. It is anticipated that these “smart” operations (Hüther, 2016) will result in efficiencies across the workplace but this will require more rapid upskilling and training as unskilled jobs are replaced by new industries and job roles have a shorter life cycle. There is some indication that we are not yet preparing sufficient numbers to enter the workplace with the skills required for the future. Calonge & Shah (2016:20) analysed the literature on graduate employability and found that almost half of IT employers surveyed in the UK in 2013 did not believe that the education system was meeting their needs. Lifelong learning therefore should be seen as a fundamental element of the experience of the workplace and an essential element of delivering an agile workforce.

### **MOOC FOR LIFELONG LEARNING: KEY ELEMENTS**

Lifelong learning requires self-motivation and self-organisation on the part of the learner. Blaschke (2012) notes that “[d]istance education has a particular affinity to the heutagogical approach, due to distance education’s inherent characteristics of requiring and promoting learner autonomy, its traditional focus on adult learners, and its evolutionary and symbiotic relationship with technology.” This affinity with heutagogical (self-determined) learning is the key to understanding the potential of MOOC to empower lifelong learning.

Sharples (2013) highlights three key factors that make MOOC more accessible to some learners: digital literacy; independence; and already being educated to degree level. These are also essential features of lifelong learning, and good MOOC design should support lifelong learners. Albert & Sekhon (2015) propose a best practice model for MOOC development and presentation. The “7 Cs” indicate a pattern of approaches that could be equally useful to lifelong learners by supporting heutagogical practices. Focused around engagement and real-life application, it is noteworthy that these indicators are much more closely aligned to the cMOOC principles of collaboration and co-creation of knowledge than the didactic approach typical of xMOOC. Table 1 summarizes these elements.

While effective MOOC design can ameliorate the effects of the “digital divide” (Norris, 2001) and encourage marginalized learners to participate, solutions for digital lifelong learning must be approached with a holistic perspective. Many of these actions needed to prepare for digitalization must be taken by policymakers. These include identifying collaborative partnerships; building policy frameworks; allocating funding; providing clear vision; raising awareness; and addressing complacency (Broadband Commission, 2017).

As Stiglitz & Greenwald (2015:507) argue, access to the kind of knowledge and skills required to take advantage are distributed unequally, with divisions resulting from geography, economic difference, prior learning or cultural difference. Like MOOC, lifelong learning has the potential to act as an equalizer but also to entrench inequality.

**Table 1. "7 Cs" for bridging skills gaps with MOOC**

"7 Cs"	Positive factors that influenced success
<b>Content</b>	<ul style="list-style-type: none"> <li>• Up-to-date content</li> <li>• Added value to existing expertise</li> <li>• Relevance</li> <li>• Taught by trusted instructor</li> </ul>
<b>Context</b>	<ul style="list-style-type: none"> <li>• Learning content was relevant to practical situations and could be applied</li> </ul>
<b>Curation and Co-creation</b>	<ul style="list-style-type: none"> <li>• Co-creation of content</li> <li>• Social construction of knowledge</li> <li>• Working collectively</li> </ul>
<b>Communication</b>	<ul style="list-style-type: none"> <li>• Consistent instructor presence</li> <li>• Effective (concise) messaging</li> <li>• Timely reminders</li> <li>• Clarity of expectations</li> </ul>
<b>Collaboration</b>	<ul style="list-style-type: none"> <li>• Reality-based learning activities</li> <li>• Teams working together to deadlines</li> <li>• Working offline with colleagues and sharing difficulties</li> </ul>
<b>Competition</b>	<ul style="list-style-type: none"> <li>• Collective score-keeping of progress</li> </ul>
<b>Certification</b>	<ul style="list-style-type: none"> <li>• An appropriate certification of learning</li> </ul>

Source: Adapted from (Albert & Sekhon, 2015) quoted in Calonge & Shah (2016).

### LEARNING TO LEARN: RESULTS FROM A BIZMOOC EVALUATION

The European-wide (Erasmus+) Knowledge Alliance project BizMOOC ran between 2016 and 2018. The EU-funded project tackles the European challenge of enabling businesses, labour force and universities to increase their activities and exploitation (economies of scale) of the MOOC potential. It focuses on workforce & HEI training and the acquisition of labour market key competences through applying new methodologies for online teaching & learning in order to unlock the potential for MOOC to be exploited in the world of business. The project consortium comprised 11 full partners and 3 associate partners across 11 countries, including higher education providers, non-governmental organisations and businesses of various size.

Three MOOC for different European audiences were developed, presented and evaluated as part of BizMOOC. The content of these MOOC was based on key lifelong learning competencies identified by the European Commission, including entrepreneurship; "intrepreneurship"; innovation, creativity and problem-solving (Pitt *et al.*, 2018). At The Open University (UK) a MOOC entitled *Learning to Learn* was presented between January 2016 and December 2018. This MOOC specifically focused on individual learning skills, reflective analysis and critical thinking skills in order to align to the key competencies of "learning to learn" as described by the European Commission (2018:24).

Presented on the OpenLearnCreate platform hosted by The Open University (UK), the course was evaluated through surveys and a series of focus groups across Europe (N=45), being iteratively improved throughout its presentation. The target audience for this MOOC was those who normally would not engage in MOOC learning or other forms of free online education. A fuller account of the evaluation can be found in Pitt *et al.*

(2018) but it is worth noting the following key outcomes in relation to lifelong learning proposed by the report:

1. It is crucial to ensure that MOOC promotion is targeted to those who have most to gain from the learning experience
2. Ideally learning in this kind of MOOC will be personalised as much as possible in order to engage with the diversity of target audiences.

This need for more flexible delivery is a key consideration in the future use of MOOC for lifelong learning. This is a finding that also arose from other evaluation work conducted as part of BizMOOC. The expert Round Table took place on 23 October 2018 at The Open University (UK). The event brought together 16 key stakeholders from education and business to discuss project outcomes and findings. Table 2 presents the key emergent themes: these are general rather than specific to a particular MOOC audience.

**Table 2. Thematic Analysis of BizMOOC UK Round Table Discussion**

Thematic Area	Key Themes and Critical Points Raised
Cultural	<p><i>Closed by default</i>: the idea that businesses will not make organisational knowledge open was raised several times</p> <p><i>Adapting to change</i>: Many businesses need to be more proactive about lifelong learning as we move into automation &amp; more flexible career pathways</p> <p><i>Culture shift</i>: businesses think in terms of training, not learning; used to a culture of competition, not peer collaboration</p> <p><i>Trust</i>: this is still a massive issue for connecting competencies and the recognition of skills; undergraduate degree remains standard</p> <p><i>Awareness</i>: still low among human resource professionals; for whom the distinction between e-learning and MOOC is often opaque</p>
Professional Development	<p><i>Lifelong learning</i>: Tension between business objectives and lifelong learning needs to be overcome in business strategies</p> <p><i>Timing</i>: Interest &amp; engagement with MOOC seems easier earlier in career</p> <p><i>Heutagogy</i>: Self-paced learning easier to integrate into business activities than c-MOOC</p>
Strategy	<p><i>Alignment</i>: MOOC rarely aligned to direct business need and each business perceives needs differently</p> <p><i>Solutionism</i>: MOOC branding has a habit of trying to be all things to all people but this means it's not seen as solution to specific issue</p> <p><i>Moderation</i>: Any cMOOC or peer learning based approach requires a moderator for interaction spaces which can affect cost savings</p> <p><i>Branding</i>: make MOOC less "academic" and more corporate</p> <p><i>Supported choices</i>: make it easier to right the right MOOC course for a specific need from the many choices available</p>
Cost/Benefit	<p><i>Perceived value</i>: Free/low cost branding still seen to imply low quality; needs to be connected to concrete outcomes</p> <p><i>Resourcing</i>: Smaller businesses &amp; voluntary sector could benefit most from MOOC but have fewest resources to invest</p> <p><i>True costs</i>: more work is needed to demonstrate the cost-effectiveness of MOOC as a training solution</p> <p><i>Certification</i>: fast-tracking presents possibilities but differentiated certification raises concerns about value</p>

Source: <https://www.slideshare.net/robertfarrow/bizmooc-uk-round-table>

The vision of openly sharing does not always harmonise with business culture. The overall picture that emerges is that academic and business approaches do not sufficiently overlap. Openness is a disruptive approach to education, but in business it is quite radical. There remains great potential for flexible delivery of learning but we also must find ways to enhance communication between business and academia.

If the real learning and training needs of business don't quite align to the educational theory of MOOC, then how should we proceed? In the remainder of this paper I will approach this question from the perspective of increasingly flexible delivery of education.

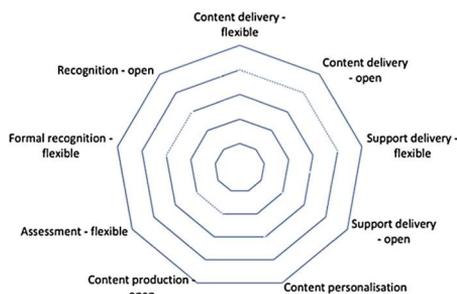
### LEARNING: THE TREND TOWARD FLEXIBLE DELIVERY

A recent study (Orr et al., 2018) funded by the International Council for Distance Education and conducted by Forschungsinstitut für Bildungs- und Sozialökonomie (FIBS) and The Open University (UK) reported on a range of educational delivery styles around the globe. The study identified a range of key vectors that can describe alternative forms of delivery; educational strategy and business models in one model.

The OOFAT study proposes nine questions that can be used to help organisations conceptualise and strategize their approaches to delivering learning (*Ibid.*, 46-7).

1. How flexibly is content delivered according to differences in time and location?
2. How open is access to the content for learners?
3. How flexible is access to support for learners?
4. How open is access to support for learners?
5. How personalised is the content to an individual learner?
6. How open is the process of content production?
7. How flexible is assessment for each learner assignment?
8. Who is responsible for assessing learners/learning?
9. How open are the elements in final recognition of learning?

It is proposed that these be attributed values on a Likert index and used as an artefact for thinking about institutional delivery. The outcomes can then be plotted as radial diagrams and compared, or associated with a particular business model approach according to what is emphasized. Figure 2 reproduces the analytic tool developed in the project to visualise differences between providers. (The typology is indicated for higher education, but its categories can apply to any educational context.)



**Figure 2. OOFAT Radial Model**

Source: Orr, Weller & Farrow (2018).

## DISCUSSION

The OOFAT models study is informed by MIT research (Kane *et al.*, 2015) which emphasizes that it is strategy (rather than technology) which ultimately drives digital transformations. Consider again the idea of MOOC contributing to the kind of flexible delivery of education described above. Standard MOOC models usually meet some aspects of flexible and open delivery; this is usually enough for a MOOC to call itself “open”. (Indeed, the OOFAT study found that content delivery displays the greatest levels of openness while assessment and recognition of learning were the least open/flexible.)

It is crucial that MOOC offer support for both digital skills and learning skills since these are the foundation of digital lifelong learning. The models developed in the OOFAT project illustrate well the multivalence of flexible and open forms of delivery across the dimensions of content, delivery and recognition of learning. Support for digital lifelong learning throughout a person’s life will be offered by those MOOC which can most effectively take advantage of flexible and open delivery in a manner that can be suited to a range of learning scenarios. In this light, MOOC have an obvious role in supporting digital lifelong learning but it is important not to mistake MOOC for a one stop solution. It cannot be assumed that because some e-learning describes itself as a MOOC it is adequately flexible/open in its delivery.

Increased flexibility is also anticipated with respect to skills and qualifications which are likely to be both more diverse and more granular. More broadly, there is a need for systems that can integrate and codify formal, non-formal and vocational development into a consistent framework. University degrees and other formal qualifications are likely to remain a standard for employability but will be part of a richer, more diverse tapestry of personal learning and development. Strategies should recognize the importance of digitization and digital technologies for an effective digital lifelong learning strategy by adopting a more granular approach to curriculum; embracing effective learning design; making better use of metadata; and exposing relevant information about what is being learned (e.g. through an application programming interface) to centralized databases. Strategic frameworks for lifelong learning, transversal skills and competencies typically focus on standards and qualifications that are compatible with national qualification frameworks to facilitate compatibility and comparison. However, as lifelong learning systems move in the direction of granularity it is expected that the focus will shift to “skills” rather than “qualifications” as a main point of orientation. In this respect, digitally enhanced lifelong learning provision requires a method for consistently describing bundles of skills that are commonly recognized across different regional, national and international contexts.

## CONCLUSION

This paper has reviewed trends around MOOC, lifelong learning and society. It has been argued that MOOC to realise their potential for lifelong learning they must be enhanced by attempts to widen participation in education through the wider proliferation of basic study skills and the use of learning technologies. The same criteria that can be used to identify effective MOOC learners are also features that support lifelong learning. In the ‘smart’ economy that is anticipated to be brought by the future we expect to see in-

creased demand for lifelong learning, including more agile training and development; more rapid reskilling; and ongoing professional and personal development.

MOOC can support lifelong learning – especially digital lifelong learning – through the proliferation of technical skills; study skills; and through building the confidence and existing knowledge of learners from a wide range of backgrounds. The key elements pertaining to effectively supporting lifelong learning through MOOC identified here provide a route into reflecting on the presentation of MOOC learning to audiences identified as particularly in need of lifelong learning skills. Conceptual models from the OOFAT study (Orr *et al.*, 2018) indicate a way of contextualising MOOC strategies and identifying implicit elements of a more holistic lifelong learning strategy.

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