OPEN PRAXIS

INTERNATIONAL
COUNCIL FOR OPEN AND
DISTANCE EDUCATION

Recognising informal elearning with digital badging: evidence for a sustainable business model

Patrina Law
The Open University (United Kingdom)
patrina.law@open.ac.uk

Abstract

Digital badging as a trend in education is now recognised. It offers a way to reward and motivate, providing evidence of skills and achievements. Badged Open Courses (BOCs) were piloted by The Open University (OU) in 2013. The project built on research into the motivations and profiles of learners using free educational resources which the OU makes available through its OpenLearn platform (Law, Perryman & Law, 2013). This research found that an increasing proportion of learners are keen to have their informal learning achievements recognised (Law & Law, 2014). Based on these data, a suite of free BOCs, assessed through the deployment of Moodle quizzes, was launched. This paper reports on evaluation of the BOCs and what we now know of the strategic importance of informal learning recognition. The initiative aligns with University strategies to provide accessible routes into formal learning for those who might not otherwise have the opportunity.

Keywords: open educational resources; OER; digital badges; elearning; MOOCs

Introduction

The importance of open educational resources (OER) has been discussed not only from the perspective of philanthropic contribution by educational institutions and individuals, but also in their relation to a larger picture of community and partnerships and as a sustainable business model (Downes, 2006; Perryman, Law & Law, 2013). As the diversification of OER across multiple platform types and formats has evolved to suit different learners and educators alike, so the notion of recognition for informal learning in these spheres has become accepted provision by some educators, where it can be achieved at scale.

The creation of OER, whereby individuals and institutions make their learning content freely available, has grown rapidly over the last decade. At the OU, developing and publishing OER is now a by-product of the course production process, although OER more generally ranges from tutors posting lecture notes online, to philanthropically-funded content production projects and educational institutions resourcing free content creation. The OU uses OpenLearn (http://www.open.edu/openlearn) to deliver its OER and also syndicates much of this content to third party platforms such as iTunes U and YouTube.

Awarding digital badges to reward participation and to recognise learning is growing across all educational sectors. As a coming together of games culture and the traditional badge issuing by clubs and societies, a digital badge has developed to become ". . .an online visual representation of an accomplishment or skill" (Ostashewski & Reid, 2015). Whilst the issuing of digital badges can be undertaken manually by a tutor observing a classroom-based activity, digital badges can also be used to validate learning experiences that are undertaken outside of the classroom (O'Byrne, Schenke, Willis & Hickey, 2015).

The literature surrounding the application of digital badges in higher education is new and focuses largely on case studies where it has been used with new undergraduates, ostensibly as a tool to motivate and reward students as they begin their progression through a curriculum. The work

described in this paper outlines how digital badging has been developed in a fully open, online, unsupported environment, not only to motivate formal learners in higher education, but informal learners alike, from a range of backgrounds.

Free learning provision from The Open University

OpenLearn was launched in 2006 and hosts thousands of hours of learning material under a Creative Commons licence. The site is accessed by over 4.5 million people a year and also serves as the channel through which the OU promotes its partnership with the BBC and the related broadcasting and free content that is created as co-productions.

Since its launch, OpenLearn has received 40 million unique visitors (internal OU data) and has grown from being a platform that hosts extracts of existing decommissioned units from undergraduate and postgraduate courses, to one which delivers specially commissioned interactive games, videos, audio and free online courses. Much of the course extract content is developed using structured authoring tools and then made available to users in multiple formats such as Microsoft Word and PDF, which are then syndicated to other platforms as ebooks. Around 5% of OU course content is released for free each year in support of the OU Charter "...to provide education of University and professional standards for its students and to promote the educational well-being of the community generally". This 5% now equates to around 900 courses available on the platform as OER. The primary aim is to introduce the opportunity to learn to those that might not otherwise have considered the option, and to help prepare those who want to make the next step from informal to formal learning.

The business case for free learning

Like many institutional providers of open content, the OU faces the challenges of balancing its widening participation aims with the need to develop a sustainable business model for OpenLearn. Open educationalists have long been discussing sustainable business models around OER (e.g. de Langen, 2013; Guthrie, Griffiths & Maron, 2008; Downes, 2006). The 2007 Organisation for Economic Co-operation and Development (OECD) report remains particularly influential on debates around OER business models, identifying six arguments for why institutions might develop and share OER: Altruism; leveraging taxpayers' money; efficiency in cutting content development costs; providing a showcase to attract new students; offering potential students a taster of paid-for content; and to stimulate internal development and innovation (OECD, 2007, pp. 64–5). Stacey (2012) takes a broader view of OER sustainability and OER projects' impact on educational institutions, arguing that:

> "The business case for OER includes both cost savings and revenue generation. Making something open is not always a means of direct revenue generation. It often is indirect...Using OER as a means to market reputation and institutional prowess can convince students to enrol. While better quality learning resources may not directly generate revenue they can lead to faster learning, greater learner success, or reduce drop outs."

Stacey identifies 10 benefits to educational institutions of OER initiatives: Increasing access to education; providing students with an opportunity to assess and plan their education choices; showcasing an institution's intellectual outputs, promoting its profile and attracting students; converting students into fee paying enrolments; accelerating learning; adding value to knowledge production; reducing faculty preparation time; generating cost savings; enhancing quality; and generating innovation through collaboration. Stacey's view of the benefits of OER to educational institutions offers useful criteria against which to assess whether OER initiatives are in competition with formal education, a frequent claim from detractors of openness.

The development of badged open courses

The OU has attempted to demonstrate an ongoing institutional commitment to new models of teaching, learning and assessment in the open to serve both informal learners and students. Existing metrics show that OpenLearn attracts a very balanced demographic (compared to the potentially well-educated cohorts attending MOOC engines). Of those surveyed on OpenLearn in 2014, 60% felt more confident after using the materials, 80% stated they were more likely to recommend the content to others and take another free course and 30% are more likely to take a paid-for course. As a business model, the site also attracts new students: for the period August 2014 to July 2015, the OU reports a 13% click-through from OpenLearn to the OU homepage to learn more about becoming an OU student.

Pilot projects around digital badging at the OU were undertaken in 2013 on OpenLearn, using Moodle as an embedded course presentation platform, adhering to the Mozilla Open Badge Infrastructure to issue the badge. Digital badges were awarded via entry-level courses – 'Learning to learn' and 'Succeed with maths' – for the successful completion of the course and passing of quizzes. The courses were unsupported and open, in that they had no start and finish date, but ran over a period of notional 'weeks' with a set number of hours. Hence the provision of badges as a motivating factor was a key driver to examining the completion of these courses over non-badged open courses also delivered on the OpenLearn platform.

The evaluation of these badged courses was performed through online surveys to participants at the enrolment stage and at the end of each course. The evaluation results demonstrated that a) the IT infrastructure and the user experience of providing badges needed further development; b) learners who achieved badges were highly motivated by the experience; and c) the courses attracted learners who were more inclined to become students and were key to meeting the OU's widening participation agenda (Law, Perryman & Law, 2014). The data showed that there were significant variations in relation to prior education, numbers of retired learners and numbers of learners reporting a disability compared to OpenLearn users overall:

- Fewer learners on the badged courses already held an undergraduate qualification or higher compared with the general OpenLearn population.
- 12% were retired compared with 20% of the general OpenLearn user population.
- 31% considered themselves to have a disability compared to 23% of the general OpenLearn learner population; 40% of 'Learning to learn' learners who completed the enrolment survey declared a disability.

As a result of the pilot study, the OU introduced a strategy to drive the development of a suite of Badged Open Courses (BOCs) as a new form of course on OpenLearn. The titles of the courses developed were: 'Succeed with maths part 1'; 'Succeed with maths part 2'; 'Succeed in the workplace'; 'English skills for learning'; 'Succeed with learning'; and 'Taking your first steps in HE'.

In developing these courses, the OU is augmenting its employability offering for both informal and formal learners by providing tangible recognition and reward for study in an informal learning space. The project aligns with the University's priorities and core values in that it:

- Aligns with the Journeys from Informal to Formal Learning strategy.
- Helps to provide accessible routes into the University for students who might not otherwise have the opportunity to participate in HE.
- Supports the OU Charter.
- Aims to deliver a high quality student experience in relation to careers services and employ-ability skills development.

All learners that study a BOC participate in a number of online assessments delivered through the deployment of Moodle quizzes that provide the technical mechanism for the issuing of the digital badge. Those who pass receive a printable certificate (Statement of Participation) and a digital badge which they can share online. The BOCs aim to provide a structured means to prepare those about to study and to provide employability skills for informal learners and for those already studying. The courses are designed to be as robust as any of the University's modules in terms of quality and pedagogy: they follow strict learning design procedures, academic authoring, assessment and critical readership.

Methodology

Mixed method surveys were made available at the start and end of each of the BOCs, linking to the SurveyMonkey platform. Across all BOCs, each Start of Course Survey and each End of Course Survey is identical and comprise a combination of likert scale, multiple choice and open questions. Data on number of registrations and onward journey of learners was gathered using Google Analytics and DAX (digital analytics software). The aim of evaluating the BOCs through surveys and data captured via platform data analytics was to examine the impact, both short and long term, of BOCs, with particular emphasis on examining:

- Demographics (in alignment with OU data collected about informal learners on OpenLearn overall).
- Tracking data to show informal to formal movement of learners.
- A picture of the types of learners who are more likely to convert to formal learning.
- A picture of the types of learning methods and course elements (e.g. facilitation, use of quizzes, badges) most likely to encourage learners to study in an open, unsupported environment.
- The motivation of badging and whether learners showed their achievements to an employer or prospective employer.

The Start and End of Course surveys from the six courses listed above received 1942 responses from February to June 2015.

In addition, this paper draws on data gathered from surveys undertaken by the author in 2013 and 2014 on OpenLearn, again conducted using the SurveyMonkey platform, to gather data on learner demographics and motivations to study. Each comprised a combination of likert scale, multiple choice and open questions. In both years, the surveys were promoted via web-links embedded within the areas of the OpenLearn site that host course content, in order to increase the likelihood of reaching informal and formal learners using the site to study whole courses (rather than people dipping in to short videos and editorial content). The survey included questions drawn from the OER Research Hub (OERRH) open research question base (www.oerrhsurvey) to allow for comparison with existing data collected through OERRH research with OER projects globally. The 2013 OpenLearn survey received 1177 responses and the 2014 survey, 3133 responses. BOCs were not present on OpenLearn when the 2013 and 2014 surveys were live.

Findings

OpenLearn and accelerating learning

Stacey (2012) suggests OER can "lead to faster learning, greater learner success, or reduce drop outs". The OERRH Evidence Report (de los Arcos, Farrow, Perryman, Pitt & Weller, 2014, pp. 11–12)

draws on its global dataset to explore assertions such as this and summarises: "Learners believe that OER use improves the grade performance…There is stronger evidence for OER improving related factors for learners, such as improved enthusiasm for study, confidence and overall interest." (The conclusions in the OERRH report are partly based on data from the 2013 OpenLearn survey.) A comparison with the data from the 2014 survey reveals a considerable increase in the number of formal students believing that OER positively affect their studies, across several different categories (see Table 1).

Table 1: OpenLearn-using formal students' perceptions of the impact of OER
(% agreeing with each statement)

Studying OER has led to my…	2013	2014	Studying OER has led to my…	2013	2014
Increased participation in class discussions	16%	34%	Increased engagement with lesson content	39%	57%
Increased interest in the subjects taught	53%	72%	Increased experimentation with new ways of learning	42%	67%
Increased satisfaction with the learning experience	49%	74%	Increased collaboration with peers	12%	29%
Grades improving	14%	36%	Increased enthusiasm for future study	55%	80%
Gaining confidence	37%	65%	Becoming interested in a wider range of subjects	58%	75%
Increased independence and self-reliance	39%	56%	Being more likely to complete my course of study	29%	58%

A number of interpretations are possible for these changes in perceptions, for example:

- Learners may be becoming more skilled at self-directed learning with OER.
- The increased cost of paid-for higher education may be leading formal students to more determinedly seek out support for their studies through OER, to increase their chances of success.
- With the continued and ever-more systematic release of content from the OU's paid-for curriculum into OpenLearn there may now be more parity between the OpenLearn content and the content of OU modules, with the content being increasingly up-to-date.
- Educators may be getting more skilled at using OER in their teaching and/or directing learners to OER for self-study.

Demographic profile of BOC learners

Comparing BOC learners' demographics to the OpenLearn demographic overall (see Tables, 2, 3 and 4) provides a picture of those who are more inclined to study online specifically to gain reward and recognition (the achievement of the OU-branded digital badge) and become an *identified informal learner* (Law & Law, 2014).

Table 2: Age ranges of general OpenLearn learner (2014) compared to OpenLearn BOC learner (End of Course surveys 2015)

Age	OpenLearn survey data 2014	Succeed with maths part 1	Succeed with maths part 2	English skills for learning	Succeed with learning	Taking your first steps in HE	Succeed in the workplace
Under 16	4%	1%	0	1%	0	0	0
16–18	5%	1%	0	3%	4%	0	1%
19–25	15%	10%	9%	16%	11%	12%	13%
26–35	18%	24%	25%	28%	21%	26%	17%
36–45	15%	24%	22%	23%	26%	21%	30%
46–55	19%	19%	25%	19%	26%	26%	31%
56–65	13%	14%	6%	7%	10%	9%	7%
66–75	7%	6%	9%	3%	1%	6%	1%
Over 75	2%	2%	3%	1%	1%	0	0

Table 3: Highest education qualification of general OpenLearn learner (2014) compared to OpenLearn BOC learner (End of Course surveys 2015)

Highest educational qualification	OpenLearn survey data 2014	Succeed with maths part 1	Succeed with maths part 2	English skills for learning	Succeed with learning	Taking your first steps in HE	Succeed in the workplace
School leaving (16)	9%	11%	18%	17%	14%	25%	12%
School leaving (18)	9%	12%	14%	10%	14%	25%	8%
College cert	22%	26%	23%	21%	43%	8%	10%
Vocational	6%	12%	5%	2%	7%	17%	13%
Undergrad	26%	18%	23%	14%	7%	17%	34%
Post grad	17%	11%	14%	9%	7%	0	17%
Doctorate	3%	14%	5%	2%	0	0	1%
None	5%	5%	0	10%	0	0	3%

Table 4: Percentage of learners declaring a disability from the general OpenLearn learner population (2013 and 2014) and the OpenLearn BOC learners (End of Course surveys 2015)

| OpenLearn survey data 2013 and 2014	Succeed with maths part 1	Succeed with maths part 2	English skills for learning	Succeed with learning	Taking your first steps in HE	Succeed in the workplace
23% (2013) 21% (2014	18%	28%	15%	37%	24%	16%

Across all courses, BOC learners who completed the End of Course Survey are more concentrated in the 26–55 age range than the OpenLearn population overall. With the perhaps obvious exception of 'Succeed in the workplace', learners are also less qualified than OpenLearn learners overall, 26% of whom already hold an undergraduate degree.

The relatively high percentage of disabled learners, their motivations and perceptions of free learning on OpenLearn will be the subject of future studies. Both the 2013 and 2014 OpenLearn surveys showed that 21% (2013) and 23% (2014) of learners using the platform perceived themselves as having a disability. Compared to BOC learners, this varies over the courses, with 37% declaring a disability for 'Succeed with learning' and 16% for 'Succeed in the workplace'.

Reasons for studying a BOC

Data from the Start of Course BOC surveys showed that the reasons for undertaking a BOC varied across subject areas. Respondents could select more than one answer, with *Personal interest* being the key reason (78% averaged across courses), followed by *Preparation for future study (*54% averaged across courses). The exceptions were the 'English skills for learning' BOC, which attracted a 54% audience of non-native English speakers, the majority of whom (62%) gave *To improve my English* as the main reason for study. (For the other BOCs, 75–90% of respondents declared English as their first spoken language.) For 'Succeed in the workplace', the key reason given for study was *Professional development* (84%).

Learners could also provide additional comments for their reasons to study. For 'Succeed with Maths part 1' these are shown as a word cloud in Figure 1. (The words *children* and *school* appear prominently, as some learners were studying in order to support their children's maths homework.)
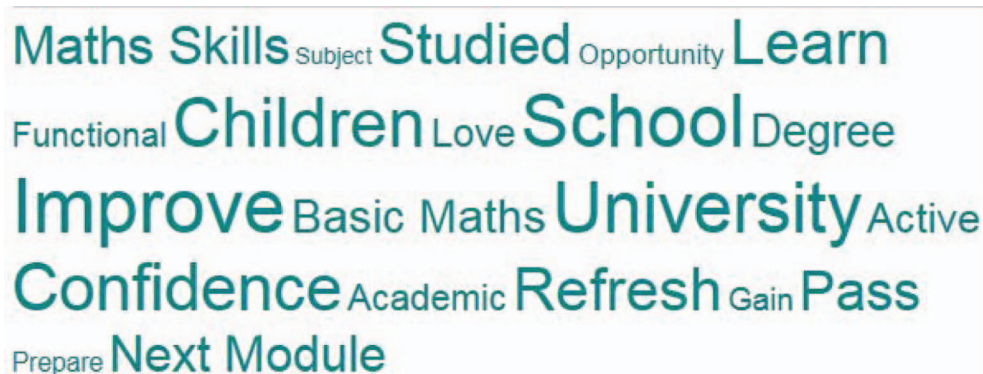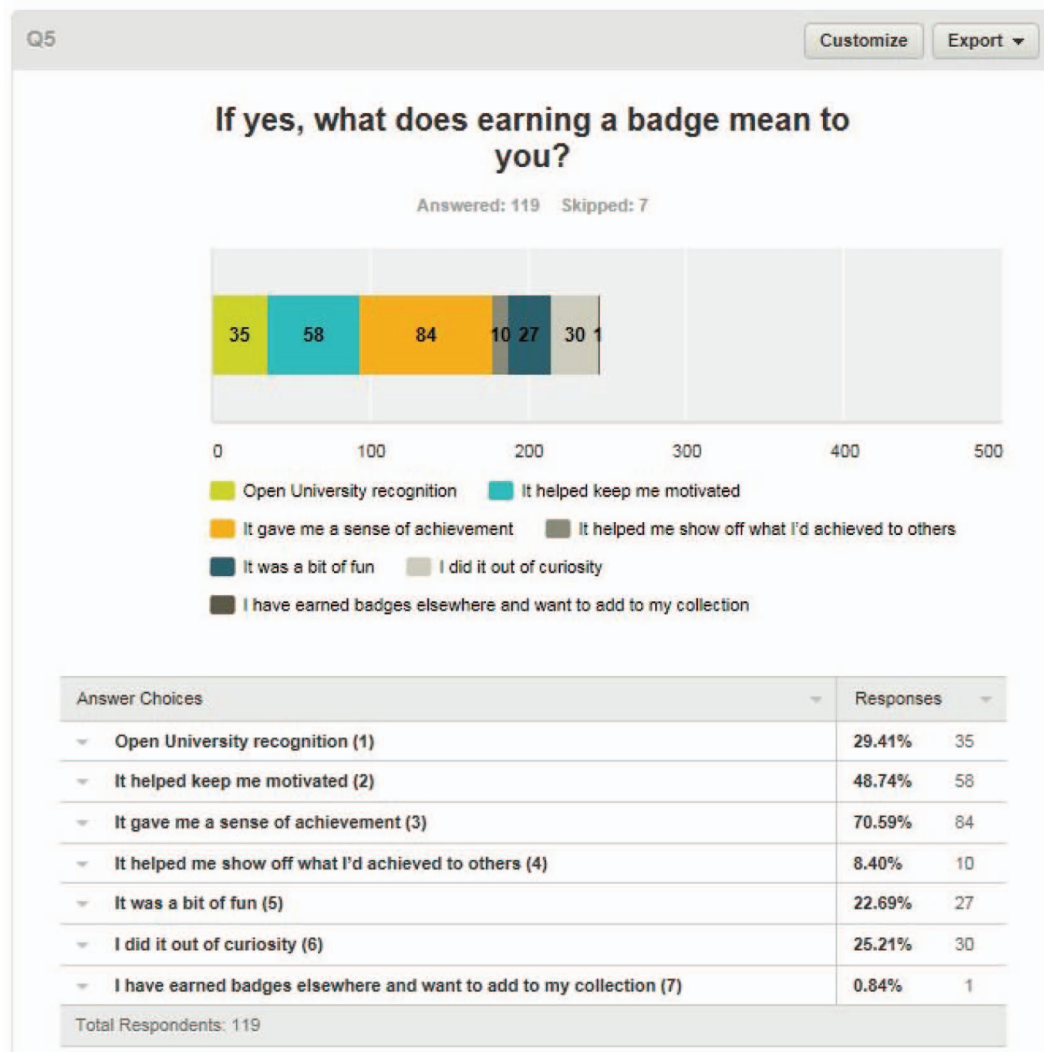

Figure 1: Reasons given for studying 'Succeed with maths part 1'

With the exception of 'Succeed in the workplace' and 'Succeed with maths part 2' (because these learners had taken 'Succeed with maths part 1') 58% of learners had not taken a course delivered mostly or fully online before.

Perceptions of digital badges

Learners were asked in the End of Course Survey, what they thought was more important to them, the OU digital badge, the OU Statement of Participation (certificate) or that both were equally important. Across all courses 71% declared that both were equally important.

Learners who had completed courses and gained a badge were asked what it meant to them. Figure 2 shows responses averaged across all BOCs with the majority declaring that it gave them a *sense of achievement* (84%) and that it helped keep them *motivated* (58%). Less are interested in sharing their achievements online or had earned digital badges elsewhere.

| Q5 | | Customize | Export ▾ |

If yes, what does earning a badge mean to you?

Answered: 119   Skipped: 7

Answer Choices		Responses	
▾	Open University recognition (1)	29.41%	35
▾	It helped keep me motivated (2)	48.74%	58
▾	It gave me a sense of achievement (3)	70.59%	84
▾	It helped me show off what I'd achieved to others (4)	8.40%	10
▾	It was a bit of fun (5)	22.69%	27
▾	I did it out of curiosity (6)	25.21%	30
▾	I have earned badges elsewhere and want to add to my collection (7)	0.84%	1

Total Respondents: 119

Figure 2: Responses to the question 'What does earning a badge mean to you?'; respondents could select more than one answer

The course creators also developed formative assessment exercises, video and audio excerpts (both as original OU material and other's OER) and weekly guide videos featuring the key academic author to further encourage learners. Learners were asked what their preferred ways of learning were within their BOC. For all BOCs, *Doing quizzes and tests, and getting feedback* was most strongly liked. Figure 3 shows the responses to this question from the 'Succeed with maths part 1' End of Course survey.

	Strongly disliked	Disliked	Neither disliked nor liked	Liked	Strongly liked	Not applicable	Total
Reading articles	0% 0	3% 4	16% 20	38% 46	20% 25	22% 27	122
Watching videos	2% 2	11% 13	21% 25	39% 47	17% 20	11% 13	120
Doing quizzes and tests, and getting feedback	0% 0	0% 0	1% 1	14% 17	83% 101	2% 2	121
Following links to other related content	0% 0	0% 0	29% 35	24% 29	11% 13	36% 43	120

Figure 3: Responses to the question 'Please rate from "strongly disliked" to "strongly liked" how you felt about the different ways of learning on OpenLearn'

Discussion

BOCs as a motivation to complete in an unsupported online environment

BOCs on OpenLearn require commitment by learners in an open, unsupported environment. Learners move through courses at their own pace and are required to pass two assessments at over 50% to earn the badge and associated Statement of Participation in the absence of any tutor-led instruction. Data from this study shows that the digital badge serves as a motivating factor within the BOCs but that on completion, it is valued equally with the Statement of Participation, portable and displayable in different ways.

> "I love studying and do it for myself but the even basic accreditation from these badges adds a little more value to the work I put in."

BOCs supporting professional development

At time of writing, over 1000 OU digital badges had been issued by the Open University over a 5-month period for the courses discussed in this paper. Beyond the accomplishment of passing the course and obtaining a digital badge, 39% declared that they would be sharing their achievement with their employer. Follow-up studies are being undertaken to track these learners to discover more about their onward journey and how their BOC may have contributed to professional development. It provides an environment for learners to move from a previously anonymous informal learning world to one of identified informal learning.

> "I'm mostly a freelance teacher so I can almost always find a way to share what I learn with others. Of course, if I find myself applying for any particular vacancy, I can imagine this would be a good talking point and something to include on a form/in my CV."

BOCs as preparedness and driver for study

As a mechanism for preparedness for study for existing or potential students, BOCs hold great promise. Data gathered from the BOC End of Course surveys, concurs with that of the pilot conducted

in 2013 and strengthens its conclusions (Law, Perryman & Law, 2014) offering further evidence that:

- University-provided OER can be complementary, rather than competitive, with formal education.
- Badged courses attract learners who are particularly inclined to become students and are key to meeting the OU's widening participation agenda (e.g. BOC learners are less well educated than the average OpenLearn learner).
- The provision of a digital badge acts as both motivator and incentive to learners to complete learning in the open.

The data also shows that for distance learning institutions, informal learners studying on OpenLearn and in particular BOCs, show a promising demographic for undergraduate recruitment in terms of their age and existing qualifications.

Haywood *et al.* (2013) report that for the first six MOOCs offered by Edinburgh University on the Coursera platform, 70.3% of respondents had achieved degree-level study: undergraduate 30.1% and postgraduate 40.2%. The OU's MOOC learners on FutureLearn are a highly qualified group too, with around 80% already holding an undergraduate degree (internal OU data). OpenLearn itself, and the open, unsupported environment it delivers, attracts a far less qualified learner with a greater potential for formal study, particularly for BOCs and the range of entry-level, study and and career-supporting subjects they cover.

> "Having proven to myself that it is possible to learn at my age I have started the English: skills for learning and will continue with Part 2 of the mathematics course."

BOCs as a sustainable development in online and distance learning

The first tranche of BOCs reported in this study were developed partly from existing module material, partly from others' OER (audio and video) and partly written from scratch. They followed the same process as full course production but scaled down and compressed. Learning design, academic editing, authorship and critical readership were essential elements to the commissioning of the courses, alongside the data gathered from the pilots and what is known of OpenLearn overall.

Assessment was developed using Moodle quizzes (compliant with the Mozilla Open Badge Infrastructure) two of which per course were mandatory for the issuing of a digital badge. As Moodle is open source software, the developments made by the OU to link Moodle with Mozilla digital badges, is now shared with the wider community.

As stated earlier in this paper, 13% of the 4.5m annual visitors to OpenLearn will click through to make an enquiry about becoming a formal student with the OU. For BOCs, the click-through rate to make this same enquiry is between 30 and 35%: this is more than twice the average of an OpenLearn learner viewing other material on the site. This extremely high level of click-through and subsequent student registrations met the costs of the development of all six BOCs within four months of them going live.

> "Refreshed my math skills and going on to do the open learn English course, will be applying to do an access [OU formal] course in March."

Conclusions

The evidence in this paper indicates the value to institutions of regularly surveying users of their open content platforms to ensure those platforms are meeting institutions' and users' changing needs and to identify trends in learner priorities and motivations. Whilst sign-ups to formal learning

at the OU provide OpenLearn with a sustainable business model going forward, its primary function is to support the OU's Charter in the delivery of free learning, ostensibly to underserved groups. Stacey's (2012) observation that OER "may not directly generate revenue" is now questionable for OpenLearn overall, where such high motivation and formal course sign-up seen in BOCs can be achieved by providing:

- Branded Statements of Participation and digital badges as recognisable markers of achievement.
- Motivational elements (digital badges) and online formative assessments with feedback.
- Access/entry-level and career-supporting subjects.
- Open, non time-pressured open, online course environments.

Data show that OpenLearn continues to function as a showcase for the OU and as a bridge to formal learning, giving new and existing students a taster of the OU's paid-for provision whilst also contributing to the development of existing students' confidence and study skills. The analytics from BOCs in terms of formal sign-ups is both surprising and gratifying in its scale. It justifies the balance between delivering a robust widening participation agenda with a business model for revenue generation at a time when fee increases have made higher education prohibitively expensive for some. OpenLearn does this to an extent; the BOCs appear to do this in spades.

Much of the BOC material was adapted from existing modules or those no longer part of the formal curriculum but whose material is still relevant, which served to reduce the costs of academic writing time. Other financial benefits may be realised in the future as the retention of formal learners who had studied informally first, is further investigated.

The case for extending the provision of BOCs on OpenLearn is strong. The strategic importance of informal learning recognition that can be provided for free is particularly relevant considering the growing, and questionably profitable, rise of MOOC providers issuing certificates for a fee.

Production challenges have largely arisen around the training of academic and academic professionals, to create short pieces of learning and associated formative assessment using Moodle quizzes that adhere to the quality and rigour normally associated with full, semester-length courses.

Any BOC achieved via OpenLearn can be made visible via a learner's OpenLearn public profile or shared on social networking platforms, and hence, to any HEI or employer. In addition, the achievement of an OU digital badge by the University's formal students will be displayed in their Higher Education Achievement Record in the future.

With these encouraging first data in mind, the BOC curriculum is being extended and developed to further support journeys from informal to formal learning, improve retention and learner confidence in new learners, to support postgraduate students who have been out of study for some time and to continue to provide key skills for those keen to move on in the workplace.

Acknowledgement

References

de Langen, F. H. T. (2013). Strategies for Sustainable Business Models for Open Educational Resources. *The International Review of Research in Open and Distance Learning (IRRODL). 14*(2). Retrieved from http://www.irrodl.org/index.php/irrodl/article/view/1533/2485

de los Arcos, B., Farrow, R., Perryman, L.-A., Pitt, R., & Weller, M. (2014). *OER Evidence Report 2013–2014.* OER Research Hub. Retrieved from http://oerresearchhub.org/about-2/reports/

Downes, S. (2006). Models for Sustainable Open Educational Resources. *Interdisciplinary Journal of Knowledge and Learning Objects, 3*, 29–44. Retrieved from http://ijklo.org/Volume3/IJKLOv3p029-044Downes.pdf

Guthrie, K., Griffiths, R., & Maron, N. (2008). *Sustainability and revenue models for online academic resources (An Ithaka Report)*. Retrieved from http://sca.jiscinvolve.org/2008/06/03/download-final-ithaka-report-on-sustainability

Haywood, J., Macleod, H., Bayne, S., Ross, J., Dutia, M., Tate, A., Sinclair, C, Murray, J-A & Caquineau, C. (2013). *MOOCs @ Edinburgh 2013: Report #1.* Retrieved from https://www.era.lib.ed.ac.uk/handle/1842/6683

Law, P., & Law, A. (2014, October). Digital badging at The Open University: recognition for informal learning. Paper presented at The Open and Flexible Higher Education Conference 2014: New Technologies and the Future of Teaching and Learning, Krakow, Poland.

Law, P., Perryman, L-A. & Law, A. (2013, October). Open educational resources for all? Comparing user motivations and characteristics across The Open University's iTunes U channel and OpenLearn platform. Proceedings of the Open and Flexible Higher Education Conference 2013, Paris, European Association of Distance Teaching Universities (EADTU) (pp. 204–219).

Law, P., Perryman, L-A. & Law, A. (2014, June). Badging and employability at The Open University. Paper presented at *The European Distance and E-Learning Network (EDEN) 2014 Annual Conference,* Zagreb, Croatia.

O'Byrne, W. I., Schenke, K. Willis, J. E. & Hickey, D. T. (2015). Recognizing, Assessing, and Motivating Learners in and Out of School Contexts. *Journal of Adolescent & Adult Literacy*, 58(6), 451–454. http://dx.doi.org/10.1002/jaal.381

OECD (2007). *Giving Knowledge for Free: the emergence of open educational resources.* OECD/CERI. Retrieved from http://www.oecd.org/edu/ceri/38654317.pdf

Ostashewski, N. & Reid, D. (2015). A History and Frameworks of Digital Badging in Education. In T. Reiners & L. C. Wood (Eds.). *Gamification in Education and Business*. Springer International Publishing, Switzerland (pp. 187–200).

Perryman, L-A., Law, P., & Law, A. (2013, October). Developing sustainable business models for institutions' provision of open educational resources: Learning from OpenLearn users' motivations and experiences. *Proceedings of The Open and Flexible Higher Education Conference 2013*, Paris, European Association of Distance Teaching Universities (EADTU) (pp. 270–286). Retrieved from http://oro.open.ac.uk/39101/

Stacey, P. (2012, March 4). *The economics of open* [blog post]. Retrieved from http://edtechfrontier.com/2012/03/04/the-economics-of-open/