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Niall Sclater

Director of Learning and Teaching. The Open University. United Kingdom. nsclater@strath.ac.uk

MOOCs, Open educational resources and social networking: bridging the gap between informal and formal learning

MOOC, recursos de educación abierto y redes sociales: acortando la distancia entre aprendizaje informal y formal

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Abstract

MOOCs and open educational resources (OER) provide a wealth of learning opportunities for people around the globe, many of whom have no access to formal higher education. OER are often difficult to locate and are accessed on their own without support from or dialogue with subject experts and peers. This paper looks at whether it is possible to develop effective learning communities around OER and whether these communities can emerge spontaneously and in a self-organised way without moderation. It examines the complex interplay between formal and informal learning, and examines whether MOOCs are the answer to providing effective interaction and dialogue for those wishing to study at university level for free on the Internet.

Keywords

Open Educational Resources (OER); social networking; informal learning; formal learning; MOOCs; Facebook, Twitter

Resumen

Los MOOC y los recursos educativos abiertos (REA) proporcionan una gran cantidad de oportunidades de aprendizaje para las personas de todo el mundo, muchos de los cuales no tienen acceso a la educación superior formal. Frecuentemente los REA son difíciles de localizar y se accede por cuenta propia, sin el apoyo o diálogo con expertos o compañeros. En este artículo se analiza si es posible el desarrollo de comunidades de aprendizaje eficaces alrededor de los REA y si estas comunidades pueden surgir espontáneamente y de manera auto organizada sin necesidad de moderación. Se examina la compleja interacción entre el aprendizaje formal e informal, y examina si los MOOC son la respuesta a la necesidad de interacción y proporcionan el diálogo eficaz para aquellos que deseen estudiar a nivel universitario de forma gratuita en Internet.

Palabras clave

recursos educativos abiertos (REA); redes sociales; aprendizaje informal; aprendizaje formal; MOOC; Facebook; Twitter

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1. Introduction

A highly motivated and disciplined learner with adequate digital literacy and study skills could educate themselves through the studying of open educational resources (OER). However, the vast and complex range of resources available on the Internet presents a huge burden to individuals in sifting through and evaluating the content for its relevance and accuracy. One consolation is that those that manage to do this are simultaneously developing valuable skills in learning how to learn (Lynch, 2008).

Open content, while undoubtedly beneficial for some learners, is arguably not enough on its own to help the majority of people gain a higher education. Textbooks or lecture videos may be provided as OER and may encapsulate the teacher's view of the key elements which need to be understood, and the order in which they are best presented. However, these can be delivered without real contact with the subject expert or other learners and without any personalisation. Benefits of a university education include interaction and debate with experts and peers, and the co-creation of knowledge rather than accessing stale catalogues of content (Cormier & Siemens, 2010).

Learning objects failed to take off as an approach to the design of online learning, perhaps partly because the objects required the writing of descriptions and the creation of metadata, which was time-consuming (McAndrew, 2010). OER is frequently found by typing a phrase into a search engine, thus bypassing complex hierarchical navigation systems. It may also increasingly be located via a number of evolving mechanisms such as recommender systems (e.g. people who viewed this resource also viewed this one) and content indexing (e.g. this image is similar to this one). Meanwhile, social networking tools increasingly connect learners with people who can point them to further learning resources either socially (e.g. do you know this person), by reputation (e.g. people who rate her also rate him) or by learning objective (e.g. this person wants to learn about the subjunctive in French) (Ferguson & Buckingham Shum, 2012).

The emergence of MOOCs has brought some of the advantages of structured courses in higher education to students who have not been able to afford it before, or have not had the skills and discipline to organise their own learning by combining multiple OER. MOOCs arguably sit in the middle ground between formal and informal learning. They usually have many attributes of formal learning, such as an ordered and fixed curricula and timetables, cohorts of students learning at the same time, assessments which test the individual's achievement of learning outcomes, discussion forums which may have expert input from staff, and the ability to obtain a (usually paid-for) certificate of achievement for those who pass the assessments. However, there are other aspects which feel more similar to the world of informal education, e.g. usually there is no real obligation on the student to participate at all once they have signed up, no payment is required, there is no pastoral support (though subject experts may be on hand to participate in the forums), the identity of the student is not verified, therefore reducing the validity of any certification, and courses can be studied in any order.

1.1. The complex interplay between formal and informal learning

A worthy aim for formal education is to attempt to recreate some of the delight, enthusiasm and dedication people have for the learning they carry out informally, often in areas about which they are passionate and connected with other knowledgeable people. A good example is that of a football fan who may have great knowledge of the history and current performance of his team yet might choose to avoid engaging in any kind of formal education, perhaps after unhappy experiences of school education.

There are many definitions of informal and formal learning and much disagreement about how to categorise them. Simplistically, formal learning can be coordinated by an institution and is

normally highly structured. It happens in courses and classrooms or lecture theatres; grades and certificates are awarded. Informal learning is the responsibility of the learner and tends to take place through observation, listening, discussion and asking for help or trying something out (Dabbagh & Kitsantas, 2011).

Listing some of the attributes of formal and informal learning may help to clarify their supposed differences (see Table 1).

Table 1: The attributes of formal and informal learning

Formal learning	Informal learning
Compulsory	Voluntary
Planned and Structured	Organic and evolving
Sequenced	Unsequenced
Assessed	Non-assessed
Fixed, limited time-frame	Open-ended engagement
Teacher-led	Learner-led
Teacher-centred	Learner-centred
Classroom-based	Outside classroom
Curriculum-based	Non-curriculum-based
Education	Not regarded as education
Fewer unintended outcomes	Many unintended outcomes
Mainly individual	Mainly social
High status	Low status

Adapted from Hofstein & Rosenfeld (1996) and Colley et al (2002)

Other benefits of informal learning may include holding the learner's attention and remembering information for longer. Sometimes the student's knowledge in formal learning contexts has been built up initially from informal learning. Hofstein & Rosenfeld (1996) quote a study (Fortner & Teafes, 1983) which showed that knowledge of marine biology among 15-16 year olds was related to their recall of National Geographic articles they had read together with Jacques Cousteau television programmes they had watched informally.

Most commentators now agree that there is considerable cross-over between the two types and that it can be impossible to place learning exclusively into one of them. Formal learning can take place in an informal setting (e.g. a student checks a forum comment from her tutor while waiting for a bus) and informal learning can take place in a formal setting (e.g. a learner sets off on an engaging exploration of relevant web-based resources on his laptop while sitting in a lecture).

Millions of learners have accessed OER content but a much smaller number have the motivation, skills and persistence to devise their own programmes of study. Learning requires coherence, and a course can provide a central point for information and discussion (Cormier & Siemens, 2010). There are clear parallels between OER-based learning and informal learning however OER can of course be used in formal contexts as well as informal ones. Open content can also be highly structured and taken from a formal learning curriculum. Interestingly, many MOOCs appear to demonstrate more formal than informal learning attributes. One commentator suggests that learning is most effective when the learner engages in both formal and informal activities and that these two worlds should be brought together to maximise learning (Hall, 2009). This may, though, simply be a reflection that the most successful learners

are the most engaged ones, those who see the relevance of learning to other aspects of their lives as well as in helping to meet the requirements of formal education.

1.2. Social learning

The wealth of OER now available can be overwhelming and leave learners unable to gauge their progress or to solve problems they have not themselves properly articulated. Even where social spaces are available, many learners need help to move from informal chat to focussed dialogue around learning. They may find or share a learning resource but fail to engage further with other learners. Social learning becomes possible when individuals can (1) clarify that they want to learn something, (2) define their learning objective, and (3) engage in a learning conversation about it. Deep learning in higher education sometimes requires people to avoid reinforcing existing beliefs and to put aside cognitive and emotional security (Ferguson & Buckingham Shum, 2012).

The openED initiative (Aczel et al, 2011) makes modules available freely under a creative commons licence and supplements the content with chat sessions, group activities and moderated discussions. While the project partners provided the facilitators initially, the intention was that ideally future facilitation should be provided from within the learning community itself.

A similarly laissez faire approach is recommended by Coursera to its institutional partners who provide MOOCs (Parr, 2013). However, experiences at Edinburgh University showed that monitoring the discussions on their first MOOC was extremely time consuming: "when the teacher-to-student ratio is 1:8,000, any interventions you make are going to be tiny, tiny contributions to the whole, however hard you work. I think we might need to come up with some alternative strategies for making our presence felt next time" reported one of the academics involved. Unlike many other MOOCs they had chosen not to organise the learning around lecture videos, instead curating open content such as YouTube videos and academic papers.

The openED course aimed to encourage active participation. The social side of learning proved popular and participants enjoyed meeting other learners and the facilitators. However not everyone is interested in social learning. The Open University has found that the majority of its users of OER in its OpenLearn platform are "volunteer students" looking for authoritative content, assessment and ways to collate their learning experience. A smaller number of "social learners" are drawn to the site initially by its content but become more interested in interacting with others than working their way through the learning tasks detailed in the content (McAndrew, 2010).

In Edinburgh University's Coursera MOOC, an engaged group formed a community before the course started, and during the course there were around 700 tweets using the course's hashtag per day, with almost 1,000 blogs started by the students. It may be that with the large numbers of students (42,000 initially with around 2,000 submitting the final assessment) a critical mass was achieved that made such a large and vibrant community possible in a way that cannot be achieved with traditional courses. However some students at The Open University report avoiding social forums when too many participants take part and keeping up with the discussion becomes overwhelming.

Familiarity with Twitter may help people to feel comfortable that they don't have to read every comment and can simply dip in and out of forums as required. However, learners may miss a key instruction from a moderator if it is submerged within hundreds of other comments.

Online discussions can enable deeper levels of reflection than face to face ones. In a study of fourteen staff, all active in social networking at the Open University, Wilks (2009) quotes one participant: "Conversations online tend to be more rich than face to face as they can include links or you might go off and think about something or gather more information and contribute

more." In addition online contact frequently now enables greater possibilities for meeting people face to face. One of the academics reviewed by Wilks reported that because of his academic use of Facebook he received a lot of invitations to conferences. Building up an active following for an engaging blog or twitter stream also helps to build individuals' reputations for being experts in a particular field and is increasingly leading to collaborations on projects, invitations to events and even employment opportunities. Some of these may be beyond the world of casual users of OER however the Internet does present the opportunity for those quickly able to master a topic to present on it engagingly, share resources, develop a reputation and become a valued member of a learning community.

The Open University provides moderated forums as part of its formal learning modules to help distance students make contact and reduce isolation. There are no formal restraints however in most of these forums and many encourage a "café-style" atmosphere for students to meet and discuss matters related to the module. Providing moderated forums for registered students in a "walled garden" enables a safe environment which may be less daunting than one open to all. Many students also set up their own groups on Facebook; some of these too are closed to outsiders. Lamy (2013) discovered that students of Chinese used the various forums to share links to resources such as poems, articles, songs, photos, videos and audio clips. They then discussed these, reviewed them and even modified them. The sharing included resources designed specifically for the Chinese language such as character recognition applications and tone-recognition tools. Thus we see that forums can not only be developed around OER but can also be used to help others discover further OER. Lamy found too that Facebook and other social networking sites did not seem to serve learners any better than more traditional institutionally-provided forums which enabled the upload of content or at least the incorporation of links.

1.3. Learner motivation and the affordances of different tools

In order for learners to participate in dialogue around OER there need to be advantages in them doing so. The affordances of the tools available provide different benefits. Blogging for example can help students to direct and organise their learning, and increase their engagement with the materials. Microblogging tools such as Twitter are used for informal communication as well as project-oriented communication for group work (Dabbagh & Kitsantas, 2011). iSpot, a site for sharing and identifying observations of wildlife, gives incentives to provide positive, accurate comment and provides no facilities for negative, potentially demotivating feedback (Clow & Makriyannis, 2011). The importance of reciprocity in encouraging participation cannot be underestimated: users who receive no feedback on their uploads or postings will quickly stop contributing, while activity which is reciprocated will encourage further contribution. Facebook's "like" feature provides an instant, almost effortless way for friends to give positive affirmation on a posting, if at a somewhat surface level.

Even where tools allow dialogue around OER they may have features which put a barrier in front of the user. Viewers are free to access the many thousands of hours of content on the OpenLearn site but in order to participate in the forums they need first to register with the site (Lane et al, 2009).

Other tools have emerged to make it easier to share potential OER, such as academic papers. SWORD is an application which allows people to place items into repositories from within Facebook and then notifies one's friends and gives them a link to the paper (Wilks, 2009).

Sites such as busuu.com for language learning merge learning content with community in highly effective ways. After studying the first learning episode in a free online Russian course, this author was invited to introduce himself to the community. Within two minutes corrections to his introduction had been submitted by eleven Russian speakers, presumably themselves on the site to learn other languages. The suggestions for improvement varied to some extent between contributors but the learner was able to decide what the correct version should be by assessing

the "wisdom of the group". Subsequently, he was invited to make corrections to the submission of a participant studying English. Having been strongly motivated by the instant feedback from the community he was only too pleased to be able to contribute something back to it.

Students have reported that some of the features in MOOC platforms have helped them to learn. These range, for example, from seeing a progress part indicating the proportion of the module completed, to subtitles in one's own language on videos, to the ability to read reviews of courses by previous students before undertaking the module. (Mihaescu, Andone & Vasiu, 2016).

2. Problems encountered with OER and social learning

Dropout is a well-documented issue with all distance education, ranging from traditional correspondence courses to simple OER use to MOOCs. In the openED course (Aczel et al, 2011) fewer than half of those joining a group managed to complete the activity. There were multiple logistical problems including working in different time-zones, different working speeds and confidence levels. Meanwhile, there is evidence that many people are reluctant to engage in discourse online; some also have personal reasons for not revealing their identity on the internet (Cormier & Siemens, 2010). While there may be value in having public forums associated with a specific OER and merging the dialogue with the object, it is unlikely that learners will keep returning to such a forum and they therefore stand little chance of building any relationships with other users. In a recent study one lecturer outlined why she preferred closed to open forums: "I have a much more defined role and [the learners'] involvement in the forum is much more intensive. In an open forum … the definition of moderation would be more vague … [In closed forums] there is a policeman's role … and there is the teacher's role and they're very defined" (Wilson, 2011).

One study (Wilks, 2009) reports that academics are worried that learners are unsure about where they can deposit their academic work safely. The informal, relaxed nature of social networking sites was said to conflict with the more formal mode of academic discourse. Another academic in the study reported that he had deliberately avoided social networking sites during his PhD in order to avoid "timewasting". Others felt that social networking saved them time as they could get quick answers to questions without being concerned about formal writing styles.

It is possible to observe students using their laptops in any university campus, checking Facebook and Twitter updates, seemingly unrelated to any formal learning. To what extent this performs a vital role connecting them socially with other learners as part of a community or whether this acts as a major distraction for the learner may depend on their levels of motivation, focus and self-discipline.

OER while initially disembodied from a learning community can quickly evolve into a social object. Users of the Open University's YouTube channels invite comments from users which are then attached to the resource and can be regarded as an integral part of it. Similarly, users of the same university's *OUAnnotate* system can attach comments to a part of any online learning resource or webpage which can then be seen by other users of this social annotation facility. Users can "follow" those whose annotations they find useful and be notified when new comments are made. The concept of encapsulating the dialogue within the learning resource could be extended to ebooks, potentially allowing mini-forums at different points within the text.

Schaffert & Geser (2007) propose various attributes of an OER:

1. Open access – content (including metadata) is provided free of charge
2. Open licensed – liberally licensed for re-use, free from restrictions to modify, combine and repurpose

3. Open format – produced in open format and designed for easy re-use
4. Open software – produced with open source software

Laudable though these attributes may be are they necessary for an OER to evolve into a social object? Arguably content which is embedded in proprietary, closed systems can become just as social if freely available software such as annotation tools can access it.

3. The engaging nature of user-generated content

Greenhow (2008) refers to the growing tendency, particularly among the young, of creating and sharing resources online. The ease of taking photographs and video with smartphones and instantly sharing them with friends or commenting on others' creations has proven highly engaging. Greenhow wondered whether educators could somehow bring this enthusiasm into education, making it more relevant and meaningful. iSpot has subsequently emerged as a highly successful example. Learners upload photos of wildlife they have observed and details of where and when they saw it, together with their suggestion of the species if they think they know it. The application can check spelling and find scientific names from common ones. Other users can then agree with the identification or suggest an alternative. There are over 18,000 registered users who have made more than 100,000 wildlife observations (Clow & Makriyannis, 2011).

Learners are increasingly finding ways to share their own content in formal as well as informal learning contexts. Lamy's (2013) research identified students of Chinese who uploaded personal photographs or videos, filmed both in the UK and China. One was of a student's Chinese wife preparing a favourite dish. Others were designed for collaboration around culture, vocabulary, tone and character writing. One student developed a flashcard application to help peers test themselves on the key vocabulary in the course and shared it with the other students. Many of these resources and the associated dialogues amounted to mini projects, some taking an issue from the course and exploring it further. The boundaries of formal and informal learning truly seem to blur in this example – if they ever really existed at all.

Mobile devices make generating and sharing some forms of content particularly easy. Mobile learning may take place primarily in informal contexts; certainly much of it occurs outside traditional educational settings. The addiction to smartphones across all societies is partly due to the dynamic nature of social networking software where users are constantly updated on their contacts' activities and thoughts. The smartphone itself has become indispensable for a whole range of purposes including listening to music and taking photographs. One study (Trinder et al, 2008) demonstrated however that some students see their smartphones as devices for leisure and social purposes rather than for studying or "work". This is in contrast to attitudes towards computers where learners often mix recreation and study during the same session. It seems likely that learners will increasingly adopt mobile devices for learning purposes and this is borne out by significant growth in access from smartphones to student-facing systems at The Open University.

3.1. Improving the quality of OER

Delivering OER in a social context means that the content is more likely to be enhanced over time rather than remaining static or becoming out of date. Creative Commons licences allow resources to be modified or adapted to local requirements and re-posted, creating a focus for dialogue among educators. The openED project demonstrated that problems such as broken links or unclear instructions were reported directly to the moderator rather than through forums, allowing them to be fixed quickly (Aczel et al, 2011). One study found a strong correlation between the number of edits and editors – and the quality of the articles on Wikipedia (Wilkinson and Huberman, 2007). A problem with adapting OER however is that it can be

difficult to refer to content which is continually being altered, particularly without version control (Franklin and van Harmelen, 2007). Wikipedia and other platforms easily allow editors to revert to previous versions of articles but OER by its very nature is not bound within one carefully controlled system.

The publicising of OER through mass media can also have a beneficial effect on their quality. iSpot's integration with BBC broadcasts encourages greater usage which brings about enhancements to the content (Wilks & Pearce, 2011).

3.2. Incentivising users through reputation

iSpot utilises a reputation system which aims to build trust among users and encourage reciprocity (Clow & Makriyannis, 2011). User profiles contain two separate dimensions of reputation:

1. Social points – awarded for posting observations and making identifications, and for giving and receiving agreements.
2. Scientific scores – measuring how accurate a user's identifications are, taking into account the relative ease of identifying some species over others.

Another feature of iSpot relating to reputation is the display of *badges* for members of some of the more than 80 natural history expert organisations participating. Not only does this clearly mark the expert as someone whose opinion is likely to be worth taking note of, it also links directly to the organisation's website, giving the expert an added incentive to contribute to the community.

Another excellent feature of iSpot is the deliberate bringing together of expert and novice in the same environment. Experts and mentors are at the heart of the community and encourage social conversation with less experienced members through comments and the forums. Knowledge is transferred between users and also with other wildlife-related communities.

3.3. The journey from informal to formal learning

iSpot has been referred to frequently in BBC radio and television wildlife broadcasts, and subsequent spikes in usage of the system can be observed. The Open University also offers an open-entry university-level course called *Neighbourhood Nature* which provides potential access to a related degree course (Clow & Makriyannis, 2011).

Free resources and OER such as those available in iSpot are important in helping to demonstrate what it means to participate in higher education. While it does not replicate the full experience of university study it does give a taste to users of the kinds of content and modes of learning they are likely to encounter. The Open Universtiteit in the Netherlands made OER available to the public in a high profile project from 2006-08. Around 10% of visitors stated that the OER had influenced their decision to engage in formal learning (Lane, 2011).

Meanwhile around 15% of registered users of OpenLearn are also students of The Open University (UK) and some of them are trying out parts of formal modules before enrolling on them. They also take the opportunity to connect with others who have already studied the full module or are considering doing so (Lane et al, 2009).

Another high profile Open University initiative which brought education to a very large audience and combines informal with formal learning was the TV series, *Frozen Planet*. Watched by 44% of the UK adult viewing population, there was an associated website on OpenLearn with educational resources for viewers to try out. At the end of each episode the TV presenter, David Attenborough, suggested that viewers might wish to access this content from the Open University. Some of them then went on to study a formal module which the lead

academic advising on the TV series, Mark Brandon, had developed alongside it. In this module he integrated many freely available OER such as simulations of the melting of a glacier and images of heat loss from polar bears as well as core Open University learning content and links to relevant academic papers. The course was quickly oversubscribed and the whole project proved to be a highly successful example of taking learners on a journey from viewers of public television broadcasts to consumers of OER and then onto formal higher education.

4. Conclusions

Dialogue around social objects enables users to build learning communities and enhance their knowledge and understanding of the OER they locate on the Internet. It can be argued that without such learning conversations, resources remain sterile and become quickly outdated. However it is not strictly necessary to upload content or engage in dialogue: many users may simply be happy to access some content, learn a little and move on. There are vastly more readers of Wikipedia than editors, for example, and far more people who view YouTube videos than who upload them (Wilks & Pearce, 2011).

iSpot builds on the concept of shared social objects, aiming to facilitate social interactions through the object. The *object* is the observation, comprising an image and any associated text entered by the user. The conversation around the object includes identifications, agreements and comments (Clow & Makriyannis, 2011). The dialogue around a social object can help to build communities and aid learning. Users contribute to these communities in four different modes (Markriyannis & Deliddo, 2010):

1. Browsing, gathering and sharing content
2. Giving and receiving feedback and expertise
3. Collaborating and jointly deciding about actions
4. Sharing control with other members over the community and content

One group of learners who may benefit the most from OER is the teachers who wish to adapt and deploy them in their own courses. Petrides et al (2010) found that teachers were sharing ideas about learning resources, the challenges of and approaches to teaching and other matters such as policy issues and teaching events. Through an OER training network they were able to reduce feelings of isolation and learn from each other to become more innovative. OER invite collaboration and knowledge sharing in a way perhaps not possible through other forms of professional development.

MOOCs are arguably the most high profile development in online education in recent times. They have attracted vast numbers of learners and can be seen as a logical extension of the OER movement, surrounding educational resources with a ready-made community and providing the structure and coherence that OER often lacks. MOOCs suffer from high dropout rates but that does not necessarily matter; perhaps many users just try them out as they might do OER but have little incentive to complete the course.

Most MOOCs do however demonstrate many of the more restrictive aspects of formal learning such as tightly controlled curricula and cohorts of students learning at the same time. Meanwhile there is little incentive for an institution to make their MOOC content available as OER under Creative Commons licences, allowing another provider potentially to bundle it with their own assessments and certification. It will be interesting to see whether the OER movement can continue to move forward whilst scarce institutional resources are targeted at MOOCs instead. Whatever happens next, the blurring of boundaries between informal and formal learning, the provision of learning resources freely on the internet, and the ongoing evolution of engaging and effective learning communities around that content are providing significant benefits to millions of individuals.

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