TREND REPORT: OPEN EDUCATIONAL RESOURCES 2013
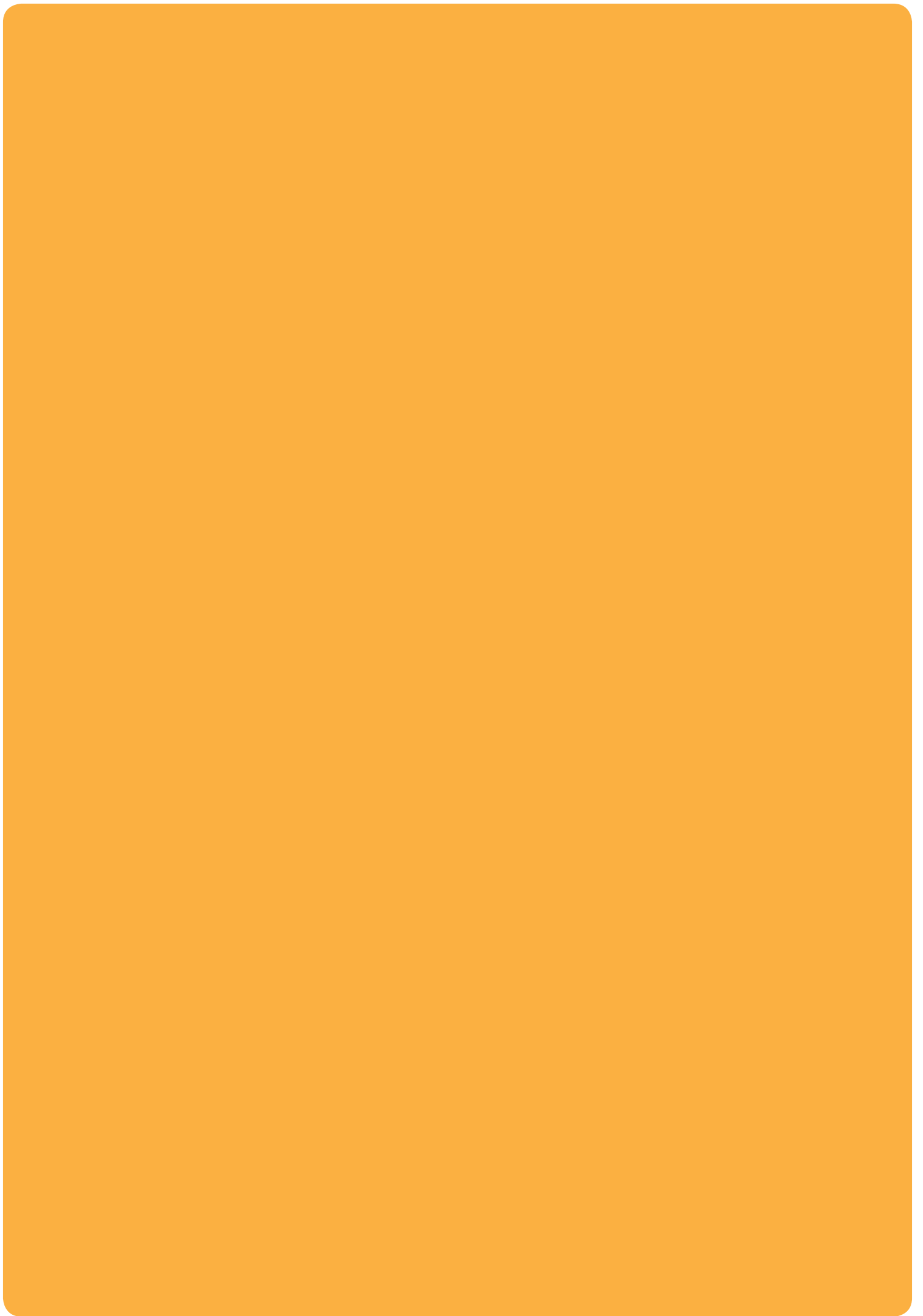
PUBLISHED BY THE OPEN EDUCATIONAL RESOURCES SPECIAL INTEREST GROUP

SURF

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FOREWORD

The theme of Open Educational Resources (OER) has been of great interest to SURF and its OER Special Interest Group since 2011. Since 2012, we have noted that the thinking concerning OER has spread around the world and grown more in-depth. This is apparent not only from the enromous interest in consortiums such as Coursera and Udacity but also from the adoption of UNESCO's OER Declaration in June 2012 and the Opening up Education initiative by the European Commission.

In the Netherlands too, there is growing interest in OER and more understanding of their possibilities but also of their potential limitations and of the objections to them. Some examples are the initiatives by a number of universities, including those in Delft, Leiden and Amsterdam, in the field of open education. These involve such things as placing open courses online, producing MOOCs (massive open online courses), and starting an open online Master's degree programme. There is also the Wikiwijs programme, which aims to adopt a specific approach for higher education.

The OER Trend Report for 2013 provides an extensive survey and explanation of these developments, primarily from the perspective of experts. It thus provides a balanced picture of the opportunities and possibilities of OER but also of the objections to them.

It is my pleasure to recommend this OER Trend Report for 2013 because I believe that Open Education – if used effectively and with proper consideration – can offer entirely new opportunities for education, both in the Netherlands and internationally. This Trend Report will also form the basis for a number of seminars and symposiums on this topic to be organised by or in cooperation with SURF and the OER Special Interest Group in 2013.

Frans van Kalmthout

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INTRODUCTION

The Trend Report: Open Educational Resources 2013 describes trends in open educational resources (OER) and open education in the Netherlands and elsewhere, from the perspective of Dutch higher education. It comprises fifteen articles by Dutch experts in the field of open and online education. It also includes fifteen short "Intermezzos" giving high-profile examples.

The report is published by the Open Educational Resources Special Interest Group (SIG OER), The SIG OER promotes and facilitates the creation of communities, knowledge generation and sharing, collaboration, and strategic planning regarding Open Educational Resources and Open Education in higher education in the Netherlands. The activities of the SIG OER are co-ordinated by a core team of experts from the various institutions concerned. The SIG has therefore been set up by and for the higher education sector, and is supported by SURF.

The Trend Report can be downloaded from www.surf.nl/trendreportOER2013, where there is also a link to the Dutch version, the online book environment, and the app. For more information about the SIG OER, go to www.surfspace.nl/oer; more information about SURF's OER innovation programme can be found at www.surf.nl/openeducationalresources.

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OER 2013: THE NEXT STEP

When SURF first installed its OER Special Interest Group and started the OER Innovation Programme two years ago, the term "open educational resources" – OER – was relatively unknown in Dutch higher education. A handful of experts and stakeholders joined forces and made vigorous efforts to raise awareness of this subject. In early 2012, when SURF and Wikiwijs surveyed the current status of OER in Dutch higher education, it became clear that interest in the subject was growing, and that many higher education institutions were already developing their own strategy or policy on OER. And then, out of nowhere, massive open online courses (MOOCs) appeared, putting open and online education on the map for good – not only abroad, but in the Netherlands too.

Beyond the hype?

As the 2013 OER Trend Report goes to press, we can confidently state that OER have moved beyond the initial hype. Or, as Batson puts it so aptly in his blog: "When Tom Friedman writes in The New York Times about MOOCs, you know they've reached the level of national conversation, not just in education circles but out there." We can extend that parallel to the Netherlands, where the topic has attracted the attention of the national media, for example national newspapers NRC and De Volkskrant, TV news show Editie NL, specialist magazine ScienceGuide, and the Dutch news agency for higher education, Hoger Onderwijs Persbureau. OER are no longer an unknown concept. The higher education sector is talking about them and thinking about them – and not just the trendsetters.

Further proof that OER have moved beyond the initial hype is that UNESCO, the OECD, the European Commission, and other similar bodies have become interested in them. The EU's Education Ministers have committed themselves by launching the extensive "Opening up Education" initiative. And the authors of the Horizon Report 2013 observe that openness is now a key trend in education.

The next phase

What the Trend Report also shows is that OER appear to be entering the next stage of their development and maturity. Until now, discussion has focused largely on the "why"; now, however, we are actually making use of open and online education and working on their ongoing development.

According to Gartner's MOOC Hype Cycle, we have almost reached the peak of the initial hype: platforms have been created, masses of MOOCs are being offered, certification systems are being put into place, and the list of applications is growing. Such peaks are often followed by several years of disillusionment and maturity, a phase of correcting the innovation's weaknesses, meeting challenges in order to produce a better product, and fine-tuning business models. Only after several years is the product fully mature and truly mainstream. Hill describes a similar cycle with respect to OER and MOOCs in Educause Review Online (Hill, 2012): he believes that after their initial success, the current systems will have to resolve a number of urgent questions concerning their "revenue models, credentialing, badges or accreditation, course completion rates, and student authentication" before they can evolve. Having said that, we will hazard an educated guess and say that OER have moved

from phase A (pioneers) to phase B (early adopters); in doing so, they have opened up a whole new range of possibilities for new applications and uses. That point is clearly made in the articles in this report, for example those linking OER and specific applications such as open textbooks (Gorissen) and mobile devices and apps (Thuss and De Vries), those concerning the impact of open education on individual learning pathways giving students the freedom to assemble their own study programmes (Kruiderink and Didderen and Sloep), and those discussing the certification of open and online education (Dopper and Draaijer).

Shifting target groups

Another trend that we note in this report is the shift in target groups. For a long time, the primary target group within the OER movement consisted of instructors, with the emphasis being on the reuse of educational resources. The arrival of MOOCs and the growth of open and online education is increasingly shifting the focus to students as the primary target group. This group consists not only of students enrolled at higher education institutions but also "self-learners", everyone from pupils to professionals to retirees who, for their own reasons, want to learn without enrolling in a mainstream programme or needing/wanting a diploma or academic degree at the end. Personal development and employability are important motives for engaging in open education; for example, there are employees who use open education for continual professional development, or for retraining or refresher training.

This shift offers higher education new opportunities, especially since the new target groups are located not just in the Netherlands but around the world, massively extending the reach of open and online education. The demand for open education is enormous, as evidenced by the unprecedented popularity of MOOCs. The article "MOOCs: Trends and Opportunities for Higher Education" (Schuwer, Janssen and Van Valkenburg) looks more closely at this.

Another development covered in the article "New Role for Libraries in Content Curation" (Bijsterveld) is the creation of new roles for staff, for example information specialists who can step into the role of content curators. What role publishers can play is described in the article "OER, Open Access and Publishers" (De Rijk and Vermeulen).

Personalised education

A growing number of people want to have the freedom to choose when and where they work and learn, and how and what they learn. Open education and open educational resources are two trends that meet those demands. The rise of MOOCs is a good example: millions of learners/self-learners are taking MOOCs at the moment – something almost unimaginable just a year ago. In the previous Trend Report, MOOCs were still a relatively unknown phenomenon; now they have become ubiquitous. Alongside MOOCs, the present report also contains articles discussing the idea of personalised education, for example "Learning Paths and OER" (Janssen, Berlanga and Koper) and "Open Buffet of Higher Education" (Kruiderink). The article about open textbooks (Gorissen) cited previously also fits in with this theme, since open textbooks can be assembled for specific learning situations. The article on learning analytics (Doove) shows that it is possible to give/receive personalised feedback based on data. The common denominator in all these trends is flexibility; education tailored to the learner's own needs and learning pathway. The user is at the centre.

Hybrid education

The article "OER and Informal Learning" (Didderen and Sloep) points out that formal and informal learning can be combined much more than they are now, and should no longer be treated as belonging to separate compartments. There is plenty of opportunity to blend the two. For example, MOOCs often take the form of informal learning, but institutions are already being asked whether and how they will recognise the knowledge gained in open and online education. This is true not only of bricks-and-mortar higher education institutions, but also of employers, who are hearing the same question from learners enrolled in professional development programmes (additional or refresher training and retraining). The EU's Opening up Education programme, described by Mulder and Jelgerhuis in their article, advocates cooperation. Educational institutions, businesses, and training and social facilities should build bridges between formal, informal, and non-formal learning by working together.

Network learning and didactics for open education

Another form of "education beyond boundaries" is that learning will no longer be limited to a course or class. Learning will itself transcend boundaries, with the learner being part of various teams, projects and settings. These will take the form of both formal and informal communities and networks, with each one contributing to the learner's progress and with the learner contributing to knowledge generation both for him/herself and for others. After all, the community consists of peers from all sorts of different backgrounds and at different levels of skill and expertise. The community makes use of and shares in that multidisciplinarity, giving rise to learning networks (both formal and informal) in which the didactics of network learning play an important role. A number of different authors worldwide have pointed out that our knowledge of this subject and its application in open education is still in its infancy. There is, however, the expectation that the didactics of open education will increasingly draw on our experience in network learning. In addition, authors have noted the abundant influence of self-directed learning, lifelong learning, and flexible learning pathways. OER experts are currently discussing the fact that many of today's MOOCs are didactically poor, and that improving their didactic approach would be highly beneficial (see, for example, http://jeremyknox.net/2012/03/28/five-critiques-of-the-open-educational-resources-movement-oer-highered-elearning-edtech/).

Opportunities and critical remarks

What is interesting about the OER movement is that it raises all sorts of unprecedented questions about education. Why do we structure education as we do? What is the added value of an instructor? Are we making the best possible use of the opportunities presented by technology? Why are learning and knowledge generation restricted to institutions? What is the added value of a higher education institution if open and online education is so readily available?

We must not miss out on this opportunity to discuss the structure and added value of higher education. The fact is that open and online education offers many opportunities, as made clear in the article "Trends in Business Models for Open Educational Resources and Open Education" (Schuwer and Janssen). For example, OER can be used as an aid to choosing a study programme, to improve the quality of educational resources and course success rates, for knowledge valorisation purposes, and in multidisciplinary collaboration.

But there are criticisms as well. For example, one fundamental debate concerns the precise definition of "open". Does it mean getting rid of all sorts of restrictions in order to make resources freely available (e.g. copyright, budgets, institutional regulations)? Or does it mean providing access to wide-ranging knowledge so that new opportunities can be created? And how open should "open" be? Is the point to provide open access to education, or free access to resources published under an open licence that can therefore be copied, amended and distributed? We see the same discussion concerning the Coursera MOOCs, which are freely accessible but do not make the educational resources available under open licences. And are we talking about an institution's image or about a more idealistic motive, i.e. that everyone around the world should have access to high-value knowledge? The real question is perhaps what type of open education the world actually needs, and what features should be understood as belonging to the description "open". That is the topic of the article "Open Up Education" (Mulder and Janssen).

Open education emphasises the potential for flexibility and self-directed learning: the freedom to choose what you want to learn and how you want to learn it. But does "self-directed learning" – i.e. a learning pathway in which the learner sets the goal, surveys the open educational resources available, and assembles an appropriate learning pathway – in fact exist? Or are there always contexts, structures or people (instructors or peers) needed to encourage learning?

And is the discussion perhaps too focused on opening up and sharing resources and the conditions necessary to do so? Should the discussion concerning open education not also consider how OER can enhance learning? After all, isn't that one of the core tasks of education? But how do we do that? How can we use OER – whether separate educational resources or combined learning arrangements – in such a way that they enhance learning? How do we, as instructors, construct an effective, didactically responsible educational environment in which we can use OER?

The article "The Human Factor in Accepting OER" (Rubens and Didderen) looks at instructors' willingness to share open educational resources. The question, however, is why an instructor would want to share. After all, sharing content and making knowledge available are not enough – the point in doing so is to enhance learning.

So there are many different flowers blooming in the OER garden. In its current stage of evolution, open education continues to change rapidly, giving rise to many new products and fast-evolving systems. Social trends and the business interests of education providers and venture capitalists continue to drive new initiatives. We now know a great deal about instructional design and learning design, but that knowledge is being used only sparingly to create didactically rich open learning environments and to forge them into a lasting, resilient whole. It is no wonder that a growing army of bloggers, researchers, and instructors are arguing that we must turn our attention to the knowledge base on which OER rest. Similar arguments have also been heard for several years now concerning the design and development methodologies for OER systems, based specifically on the idea that OER providers should design, develop, govern, and manage their resources as ecosystems. This is explained in the article "Ecosystems for Open Education" (Van der Woert). Here is where educational theory can provide input!

How open are you?

Despite these critical remarks, we feel confident that OER have gone beyond the initial hype. They are in the spotlight at such organisations as UNESCO, the OECD, and the European Union. And they are on the agenda of Dutch higher education – and not just among the trendsetters.

What is patently clear is that MOOCs made the enormous worldwide demand for good quality education visible in 2012, and in that sense they have been an immense catalyst. The question is: how can educational institutions find the right balance between meeting that demand and an appropriate level of "openness" for them?

The basic premise is that open education must not become a doctrine. Openness is a choice. It is up to educational institutions to determine their position on the openness spectrum, which is precisely why the expression "opening up education" is so well chosen. In doing so, they can use open education to help them achieve their own strategic objectives/reinforce their own image and meet the growing demand for open education.

In short, the question that we cannot avoid is: what are you doing in terms of Open(ing up) Education? What is your overall approach to open education, given your institution's strategy/image and the opportunities and critical issues discussed above? How open do you wish to be as an educational institution? What role will you play in open and online learning? And how will you deal with the open education strategy of other educational institutions?

How can the Dutch higher education sector mobilise itself and take existing initiatives a step further? And above all, how can we learn from and share with one another? The authors of this Trend Report have set an example for us.

OPEN TEXTBOOKS: TRENDS AND OPPORTUNITIES

by **Pierre Gorissen**

Since the introduction of affordable e-readers, and certainly since the arrival of tablets (in particular the iPad), it has become clear that electronic books are on the up and up. Discussion continues as to whether printed books will ever disappear entirely. What is clear is that e-books and e-textbooks are becoming increasingly important in education. This article considers the trends and opportunities for a particular category of electronic books, namely open textbooks. I define the concept, consider the relationship to "open educational resources" (OER), and look at the trends, developments, opportunities, and threats associated with open textbooks. It will become apparent that educational institutions have a steep learning curve ahead of them if they do not want to fall behind in this field.

Electronic books

In the 2011 edition of the Horizon Report (Johnon, 2011), electronic books were classed – along with "mobile" – as one of the technologies that would be adopted within the next year. It is therefore unsurprising that neither of these technologies is to be found in the 2012 edition (Johnon, 2012), which does, however, find space for "tablet computing". It is in fact precisely tablets that are used most frequently in order to read electronic books.

Despite a great deal of experimentation with electronic books in education in the United States, researchers still do not always agree on whether they provide added value in the educational context (Martin, 2012). There is, however, agreement on the benefits. It is easier for a student to take along "a stack of books" on his or her tablet than a literal stack in a satchel. Students can also insert annotations and quickly look up relevant passages. Electronic books can also be provided with animations, audio, and videos.

Electronic books do have some problems, however. They are cheaper to purchase than printed books but they cannot be lent out or sold on, meaning that the ultimate cost for students can turn out to be higher. Students also need to purchase an expensive tablet, which will often have insufficient space to store all the books that they need. Providers of electronic books often protect them with DRM (Digital Rights Management), a means of preventing them being copied. This means, however, that they cannot necessarily be read on all the available devices.

The linear nature of books also gives rise to discussion, namely as to whether modern education would not benefit more from flexible, dynamically composed, non-linear packages of multimedia materials that can be adapted to the needs of the reader.

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Open textbooks

Open textbooks can remove at least some of the problems associated with electronic books. An open textbook is an electronic textbook, published under an open licence, that can be shared online by the author/authors or via a commercial or non-profit publisher. The open licence allows it to be downloaded, printed, or read online without additional payment (Keller).

The general assumption is that if the book is to meet the definition of "open textbook" users must at least be able to use it without paying to do so, to copy and distribute it for non-commercial use, and to convert it to a different format to the original. Rightholders also often permit content to be added or removed, thus making it possible to create new, d erivative works on the basis of the open textbook. Commercial use can also be permitted.

The various rights regarding open textbooks are regulated by means of a licence, with Creative Commons licences being frequently used. The freest type of licence, with only attribution being required (http://creativecommons.org/licenses/by/3.0/), allows the open textbook to be freely duplicated, printed, translated, combined with other source materials, and even used commercially. The sole condition with such a licence is that the original creator is credited.

Other Creative Commons licences used for open textbooks may require that the result only be shared subject to the same licence (http://creativecommons.org/licenses/by-sa/3.0/) or that it only be used for non-commercial purposes (http://creativecommons.org/licenses/by-nc-sa/3.0/).

Open textbooks and OER

Open textbooks are a logical consequence of the developments in OER and OCW (open courseware) that have been taking place worldwide since 2001. Instructors and educational institutions are increasingly making their educational resources available online for reuse. Expensive commercially published textbooks are being replaced by textbooks assembled on the basis of such open resources. Making textbooks openly available makes education more broadly accessible because it removes financial barriers.

Open textbooks also make it possible to provide only those learning resources that are necessary for an optimum match with a specific educational situation. Materials can be taken from a variety of different sources so as to put together a tailor-made textbook. Instructors can correct errors and add tailor-made material to the open

textbook. The use of open textbooks is not limited to digital books; if necessary, a paper version can be provided by means of "printing on demand" (POD).

Trends and developments

The extent to which open textbooks can be used is closely related to the availability of open educational resources. As with OER and OCW, it is the United States that is pioneering the use of open textbooks. That is not only because of the wide availability of English-language educational resources but also because of the relatively high cost of commercially published textbooks. In 2009, for example, the latter consideration led to California deciding to make open textbooks available as a way of saving money (DeSantis).

Needless to say, the majority of publishers are not very happy about such initiatives and three of them have in fact initiated legal proceedings against a provider of open textbooks. The publisher concerned considered that the content of the open textbook was too similar to that of its own publications. An additional issue was that students could find the open textbooks using the titles of the commercially produced books. By contrast, other publishers, for example O'Reilly, are investigating whether to include open textbooks in their range.

It is no surprise that in the Netherlands, as in the US, it is mainly educational institutions that already use and provide OER which are among the first to make those materials available in the form of open textbooks. After all, they are already familiar with gathering OER, assessing their suitability for their own particular situation and students, and if necessary adapting or customising them. It is then only a relatively small step to combining these materials in open textbooks.

At research universities, providing materials in English is not a problem, and use can therefore be made of the wide range of materials available in that language. At universities of applied sciences and in other educational sectors, Dutch-language materials will also be needed, and these are far less readily available.

Open textbooks – certainly if they are also provided in printed form – currently stick to the familiar pattern of linear learning resources, primarily in the form of text, selected by the lecturer and presented to the students in a fixed structure and form. Electronic textbooks, however, can also utilise multimedia (audio, video, animations, etc.). Generally speaking, it is the instructor who selects the materials and provides them to the students. This is in many cases necessary in order to check the quality of the source materials. Students can only do that for themselves if they have metadata available to help them. One can also expect students to increasingly demand OER in non-linear form, for example maths textbooks with a self-test function or supplementary content for those components that the student has not yet fully mastered.

Objections and obstacles

There are also certain problems associated with open textbooks. I have already referred to the struggles with some publishers regarding copyright. It is also no easy matter to draw up an effective business model for the long-term updating of open textbooks. Somebody will need to ensure that they are in fact updated and revised. A certain level of quality control is also necessary to guarantee that the information provided is correct and up to date.

The technology for producing, managing, and consuming open textbooks is still developing. The tools available to authors are certainly improving, but environments are also needed within which authors can collaborate on materials. Those environments need to make it easy to generate different formats and types of open textbooks, i.e. both electronic and printed.

Another requirement for the rapid development of open textbooks is a further reduction in the cost of the devices needed to read them. The iPad, specifically, would appear to be on the way to being almost universally available, but it has not yet reached that stage. In addition, the problem of the limited storage capacity of a device will become even greater with increased use of open textbooks. The additional multimedia that can add to the value of open textbooks also take up a lot of space.

Instructors, students, and publishers will need to get used to their new roles. If students demand more flexible educational resources, then instructors will need to know how they can provide them. Publishers can continue to play a role if they are able to respond to these changing demands. They can do so, for example, by assuming a support role in the production of open textbooks and abandoning the controlling role that they used to play.

Conclusions

The rise of open textbooks is a logical consequence of the online provision of open educational resources. They make it possible to reduce the cost of using textbooks. But developing open textbooks is not without its problems. The parties that have a stake in the current situation will attempt to maintain that situation. Other stakeholders, for example instructors and students, will not automatically know how to take full advantage of the new possibilities. As is often the case with new technological developments, there will initially be an "old wine in new bottles" situation. In other words, there will be substitution of the technology utilised – digital versus paper – rather than a transformation of the educational process. Open textbooks would seem to represent an interim stage in the transition to open online learning resources that provide students with tailor-made support in their learning process. That is a stage that educational institutions cannot simply skip. It is in fact not only a technological interim stage but also a growth phase for the education sector on the way to a more flexible, customised educational resources.

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TOOLS FOR CONTENT CURATION

Anyone who wishes to get involved in content curation needs not only the actual sources but also effective tools. Fortunately, there is an up-to-date list of content curation tools. The great interest in this topic means that the number of tools is also increasing rapidly.

The list is subdivided as follows:

- popular tools (some of them free of charge)
- enterprise-level curation tools (more powerful tools, not always free of charge)
- secondary content platforms (indirectly associated with content curation)
- curation reading platforms: tools intended for reading and consuming content
- other tools.

http://www.youbrandinc.com/ultimate-lists/ultimate-list-content-curation-tools-platform/

OER AND INFORMAL LEARNING

by **Wim Didderen** en **Peter Sloep**

Informal learning activities occupy an increasingly important and more high-profile place in how people learn. Open educational resources (OER) will play a growing role in integrating formal and informal (non-formal) learning. OER are not just useful for informal learning; they are in fact indispensable because otherwise the independent learning that is such a feature of informal learning cannot get off the ground. In this article, we analyse this trend, supporting our findings with a description of current developments.

Background

In a recent posting on his blog On the movers and shakers of corporate e-learning, Tony Bates writes: "We in post-secondary education could learn a lot from our colleagues working in the corporate training sector" (Bates, 2013). The essence of Bates' message is that the corporate sector can provide important lessons for those working in the context of formal education (i.e. at schools etc.). That message is worked out in greater detail by two people with a prominent place on his list of corporate movers and shakers, namely Harold Jarche (blog: Life in Perpetual Beta) and Jane Hart (blog: Learning in the social workplace), but a lot of other people on Bates' list also stress the same theme. The message is that learning and working are always two sides of the same coin; that the two activities flow smoothly into one another; that the distinction that we make between first learning and then applying is untenable; and that that distinction needs to disappear (if it has not already).

It is not perhaps immediately apparent from the relatively isolated position of higher education, but a trend is in fact developing before our eyes: informal learning is becoming increasingly important, to the extent that the formal education system can no longer ignore it. As a consequence, formal and informal learning can no longer be treated as belonging to separate compartments. We are in fact dealing here with a new kind of "blended learning", one more radical and exciting than the old blended learning, which combined face-to-face instruction with e-learning (Sloep, 2012b).

Anyone who has carefully read the article by Hester Jelgerhuis in the previous OER trend report (Jacobi & Van der Woert, 2012, Article 4) will have spotted a precursor to this trend. Repositories of educational resources (OER) intended for instructors and students in a formal educational setting are also used to a great extent by independent learners, for example professionals and alumni. A total of 28% of users of the Delft OpenCourseWare repository and no fewer than 43% of those using MIT's Open Courseware belong to this category. But the advent of Massive Open Online Courses (MOOCs) also illustrates this trend (Fussell, 2013). It is true that MOOCs are set up by and for the formal education sector and discussion of them primarily concerns the threat that they may constitute to mainstream higher education (Cost et al. 2013; Guzdial, 2013). Some people fear that the higher education sector will only continue to exist so as to award certified diplomas. It will probably not come to that, but the fact remains that many people are warmly embracing the option of taking courses of their own choice and at their own convenience. The popularity of MOOCs shows, above all, that informal learning is more popular than universities tend to think.

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There are all kinds of reasons for drawing attention to this new kind of blending, but a major role is played by the advent of the knowledge society and the resulting change in the nature of a great deal of work within that society (Onderwijsraad, 2003). Jarche and Hart emphasise that it is becoming increasingly awkward to design training programmes for professionals that are interesting and relevant for all of them. As they explain, the work that professionals currently carry out does not lend itself to a uniform approach. It has been apparent for some time, for example, that programmes of professional development for secondary school teachers do not actually work; what does work is professional training keyed to the subject in terms of content and didactics and appropriate to the classroom situation (Van Veen, Zwart, Meirink & Verloop, 2010). But numerous arguments for this can also be given – and have in fact been given – from a more theoretical perspective (see for example Sloep et al., 2011; Sloep & Jochems, 2007; Rajagopal et al., 2012).

Whatever the causes of the trend towards more kinds of blended learning, they have far-reaching consequences for the way we think about education and the role that educational and knowledge institutions play. When people learn within and outside the context of their formal education, it is an obvious step for institutions offering formal education to recognise the knowledge they have acquired, for example by noting it in their portfolio. The EU-sponsored TRAILER project is in fact attempting to do this. It is also obvious for institutions offering formal education to design their training programmes differently, for example when they realise that instances of formal learning should be viewed as brief episodes within a period of individual-specific informal learning that covers the whole working life of that individual ("lifelong learning"). We will not deal with this any further here and will restrict ourselves to considering the consequences that the above-mentioned trend has for our thinking regarding OER.

Why is this is topic relevant to OER?

OER have traditionally been associated with formal education. The main argument for developing them – an argument that incidentally also applied to learning objects that can be seen as the intellectual predecessors of OER – concerns improving quality and cutting costs in education (Jacobi & Van der Woert, 2012, introduction; Littlejohn, 2003; McGreal, 2004). Teachers do not fall for these arguments (Jelgerhuis op. cit.), although it is not yet clear what effect pleas for a community approach to the design, updating, and use of OER will have (Carey, 2007; Fetter et al., 2012; Margayan & Littlejohn, 2007). But as we have seen, informal learners do seem to know how they can benefit by using OER.

Our thinking regarding OER therefore needs to be brought in line with the new blended learning. This means that informal learners need to be taken seriously and that business-to-business thinking (between the institution and the instructor) must be replaced by business-to-consumer thinking (from the institution to the learner). What consequences will this have?

In the first place, the way in which OER are accessed will need to change, becoming focused more on end-users who are learning for themselves and less on institutions. This again has consequences for repositories and the way they are accessed (Masson & Udas, 2009). The provision and ordering of search results needs to take account not only of the perspective of the instructor but also that of the student who is browsing and learning for him/herself. Repositories must become social in the sense that self-learners can make recommendations to one another. Instructors can probably also benefit from this (Fetter et al. op. cit.). In addition, facilities for "content curation" must be created so that, by selecting from repositories, users can assemble collections of OER around a theme and provide comments on individual resources, thus having a filtering function on behalf of fellow users. Content curation is currently one of the most important trends on the Internet, precisely because of this filtering function (Kanter, 2011; Seitzinger, 2012).

The strength of closed repositories – i.e. closed from the perspective of contributors, not of users – is quality assurance. MERLOT is a repository that applies quality assurance by means of peer review. This approach is not feasible, however, from the organisational point of view in the case of repositories to which users also contribute themselves, i.e. the "prosumers". Wikipedia is an example that can be followed, but other possibilities will doubtless present themselves before very long. Google, for example, intends prioritising search results that lead to content placed by "Google+ connections" (Griffith, 2013; Sloep, 2013). This allows spam to be suppressed and means that the user primarily sees content contributed by trusted persons. This also serves to strengthen the personal learning network that is so important for independent learners (Rajagopal, 2012).

This brings us to the third consequence, namely the social aspect. The current OER approach is very much content-driven, and little attention is paid to social aspects (Carey, 2007; Margaryan & Littlejohn, 2007). As long as it is primarily instructors who are addressed, that is probably not such a problem. Instructors are able to assess the quality of individual resources and to make a sensible choice on the basis of the learning objectives. They do not need their peers in order to do this, and if they do need them then they already have a network (but cf. Margaryan & Littlejohn, 2007). For independent learners, things are much more difficult. Their learning pathway is generally a lonely one because, as a knowledge worker, they have such specific requirements. The social dimension must therefore be embedded in OER repositories from the very beginning so that users can already invest in their social network starting from the very first time that they participate (Carey, 2007; Fetter et al., 2011; Margaryan & Littlejohn, 2007).

Looking towards the future

Students in the context of formal education can rely on their instructor, the curriculum, and the virtual learning environment (VLE), whereas independent learners generally have to do without this kind of support. In order to serve them properly, some serious work needs to be done on the social embedding of OER and the repositories containing them. We believe that this can best be done by encouraging network learning (Sloep et al., 2011). Precisely how that should be done needs to be worked out in detail, but it is important not to think in terms of setting

up a dedicated community for each separate repository. Such an approach, which is extremely obvious from the institutional perspective, is unnecessarily restrictive and creates an image of OER repositories as knowledge silos.

The Internet has now evolved – and will undoubtedly continue to evolve – to such an extent that independent learners can already be provided with sufficient support – and soon a great deal more – to enable them to search between and across repositories to create social contacts. This can be done, for example, by linking repositories to recommender systems that suggest not only relevant follow-up content to independent learners who access them but also recommend people who can be useful contacts (Drachsler, 2009; Fazeli et al., 2012; Fetter et al., 2012; Manouselis et al., 2010).

Conclusions

OER have an obvious, almost intrinsic connection to informal learning; the two are in fact mutually dependent. The use of OER by independent learners in informal settings would appear to be beneficial, both as regards the learning result and the organisational and economic aspects involved in designing educational pathways. Conversely, an effective blend of formal and informal learning will only be possible with the flexible deployment of high-quality OER. The popularity of MOOCs, for example, shows that informal learning is more popular than universities tend to think.

When designing and organising OER repositories, it is important to give greater priority to the social aspects of network learning, with a further shift taking place – necessarily! – from communities associated with (static) institutions and repositories to flexible and dynamic institutions and repositories associated with ad hoc communities of students and professionals who are learning independently. This is a development that can be expected to gain momentum in the years ahead, particularly as regards workplace training for professionals. In fact, it must continue if learning and professional training are to be more effective.

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GLOBAL OER GRADUATE NETWORK

The Global OER Graduate Network (GO-GN) was initiated by the UNESCO Chair in OER at the Open Universiteit in the Netherlands, in collaboration with the UNESCO/COL Chair in OER at Canada's Athabasca University. Although there has been relevant research in the field of OER in recent years, these efforts are still fairly fragmented and many research questions remain unaddressed or unanswered. There is a clear need for a major expansion of the OER research base in order to:

- generate and explore new knowledge in the broad field of OER, linked to a variety of disciplines;
- provide a solid foundation for the introduction and implementation of OER innovations;
- monitor and evaluate the outcomes of institutional, national and international OER initiatives;
- increase the evidence and practical guidance for OER.

A special point of concern is the research context, in particular given the diverse nature of the societies involved (developed, emerging, and developing economies, but also global cultural diversity). More generally, OER have a strong international dimension with specific implications for the research agenda.

In summary, the goals of the Global OER Graduate Network (GO-GN) are to:

1. explore and considerably expand the OER research base;
2. do this mainly through good quality PhD programmes;
3. distribute these programmes among universities in a variety of different societies on all the various continents;
4. connect the research projects and researchers through a global learning network;
5. provide free and easy access to the knowledge generated by making papers, conference presentations, theses and dissertations available, as well as reports and publications for non-specialists.

Membership and partnership

GO-GN has both individual members (PhD candidates as well as OER experts) and institutional partners (universities and other research organisations). The network started up in the autumn of 2012 with 15 PhD candidates, 26 OER experts and 16 institutional partners on all the continents, and it continues to grow.

PhD candidates take their degree at their supervisor's university (which awards the doctorate) and follow the rules and regulations of that institution. They can be full-time or part-time students. GO-GN adds two co-supervisors from its international pool of experts. GO-GN guides PhD candidates to relevant courses and organises an annual seminar for them and for their supervisors/co-supervisors. It also seeks funding options in the form of scholarships. GO-GN is also involved in creating an open access online journal for OER-related research.

OER experts can serve as supervisors or co-supervisors for PhD candidates at their own university or at other universities (as long as they are GO-GN partners). An individual can also become an expert member of GO-GN (and a co-supervisor) based on his or her personal reputation in OER research.

Institutional partners may be universities that are entitled to award PhDs (full partners), universities that are not entitled to do so (associate partners) or organisations that have an active OER research programme (associate partners).

http://portal.ou.nl/en/web/go-gn/home
contact: go-gn@ou.nl

MOOCS: TRENDS AND OPPORTUNITIES FOR HIGHER EDUCATION

by **Robert Schuwer**, **Ben Janssen**, and **Willem van Valkenburg**

This article looks at massive open online courses (MOOCs) and the opportunities that they offer for higher education in the Netherlands. We look at what a MOOC actually is, the context of "open education", and the discussion of the possibly disruptive impact of MOOCs on higher education. We conclude by presenting our views on how Dutch higher education institutions can respond to this development. This article is partly based on a Web article by Robert Schuwer (Schuwer, 2012).

What is a MOOC?

In 2011, two Stanford University professors, Sebastian Thrun and Peter Norvig, decided to make their course on Artificial Intelligence open to interested parties from outside the university. The response surpassed all expectations, with 160,000 people enrolling for the course, 23,000 of whom passed the examination.

Thrun left Stanford and on 23 January 2012 launched Udacity, a company that provides "massive open online courses" (MOOCs) free of charge via the Internet. That was the start of a development that led to 2012 being named the "Year of the MOOC". In addition to Udacity, 2012 saw the introduction of Coursera (with Stanford and Princeton among the affiliated institutions), and EdX (including MIT, Harvard, and Berkeley).

A MOOC offers a complete "course experience": course material; an instructor who explains matters or who is available as a coach; forums where students can consult with fellow students; homework assignments that can be submitted, with feedback being provided; and a final examination with the option of acquiring confirmation of participation or a certificate (at low cost). The courses sometimes have thousands – or even tens of thousands – of participants.

The term MOOC was first used by Dave Cornier (University of Prince Edward Island) in 2008 to describe an online open course given by George Siemens (Athabasca University) and Stephen Downes (National Research Council Canada) on Connectivism and Connective Knowledge. There were 23,000 participants (Wikipedia, 2012). Other MOOCs quickly followed provided by other universities, for example Jim Groom's DS106 course (Groom, 2012).

Four different types of MOOCs can be distinguished (Lane, 2012):
- **cMOOC (network-based)**: a MOOC with connectivist learning as its didactic model (Siemens, 2005). The instructor acts as a coach. Participants formulate their own learning objectives and attempt to achieve them together with fellow students. Example: the course by Siemens and Downes.
- **xMOOC (content-based)**: a MOOC with the lecture as its didactic model. The instructor provides subject matter via video lectures. Participants watch the lectures, carry out assignments, and take a final test. Examples: courses provided by Udacity, Coursera, and EdX.

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- **Task-based MOOC**: a MOOC in which the emphasis is on skills, and participants carry out tasks. The instructor acts as a guide. Example: DS106.
- **mMOOC (mechanical MOOC)**: an intermediate type between the cMOOC and the xMOOC. The platform consists of existing open platforms, for example OpenStudy to create study groups, Codecademy to offer interactive assignments, OpenCourseware for the learning resources, and a P2P University mailing list (see P2pu, 2012).

The start of Udacity and the announcement quite soon after of Coursera and EdX attracted a great deal of attention in the international press; in particular, the fact that participants could gain a certificate was contentious.

MOOCs, higher education, and open education

Open provision of education – in all kinds of forms – dates back decades. In a recent survey article, Sir John Daniel placed MOOCs in the broader context of the open provision of education over the course of time. Open universities have now built up a strong tradition in this field. In this open education, one can distinguish a number of different types of openness:
- open access (no entrance requirements);
- open as regards pace (no restricted period of time for the course);
- open as regards location (no obligation to be physically present somewhere);
- open as regards time (no fixed starting date, no cohorts);
- open as regards the programme (choice of a complete curriculum or individual courses);
- openly available (free of charge);
- open as regards alteration (freedom to reuse the material, to combine it with other materials, to edit it, and to distribute it further under certain conditions).

The first five are the "classic" types of openness, and are characteristic of the education provided by open universities (for example in the Netherlands and the UK). The two final types of openness listed arose from the open education movement. Open Educational Resources (OER) are resources that must comply – by definition – with both types of openness.

If we compare the openness of xMOOCs, cMOOCs, normal bricks-and-mortar institutions (i.e. research universities and "universities of applied sciences" [hogescholen]), and open universities, we arrive at the following table:

	xMOOC	cMOOC	normal higher education institution	Open University
Open acces	✔	✔	✘	✔
Open as regards pace	✘	✘	✘	✔
Open as regards location	✔	✔	✘	✔
Open as regards time	✘	✘	✘	✔
Open as regards programme	✔ Yes as regards the range of courses but not within the course	✔	✘ Choices within the programme but students must take the whole programme	✔ Yes as regards the range of courses but not within the course
Openly available	✔	✔	✘ Partly (if OER or OCW are offered)	✘ Partly
Open as regards alteration	✘ EdX is planning this	✔	✘ Partly (if OER or OCW are offered)	✘ Partly

This comparison leads to two conclusions that are relevant to discussion of the impact of MOOCs on higher education institutions in the Netherlands:
• normal research universities and hogescholen have hardly any kind of open education in their model;
• the materials for xMOOCs, in particular, cannot be freely used/reused.

An xMOOC involves more than the provision of OER/OCW: a complete educational experience is offered. In the case of xMOOCs, this often in fact involves the free use of learning resources that are subject to ownership rights.

So how open is education by means of a MOOC? To answer that question, we will use a model in which education consists of learning resources, learning services (tutoring, communities, testing, certification), and teaching (presentation, explanation, communication). Each of these elements can have a particular level of openness. For learning resources, this is determined by free availability and/or freedom as regards alteration. In the case of learning services and teaching, the level of openness is determined by the free (online) availability and the cost to the learner. If at least one of these three elements has a certain level of openness, then one can speak of "open education". From that perspective, a MOOC is a type of open education. After all:
• the learning resources are freely available;
• the learning services are freely available online.

In the case of a cMOOC, the learning resources are also openly available for alteration. Specifically in the case of an xMOOC, the teaching is not freely available, with a few exceptions, for example if the instructor is active within the associated forums.

Various parties have now developed all kinds of services in connection with MOOCs, mainly as regards certification. Pearson offers examinations within a controlled environment, making it possible to guarantee the authenticity of the examinee. Accreditation organisations (for example the Council for Higher Education Accreditation) are investigating whether MOOCs can be accredited. If that can be done, it will provide guarantees for a certain level of quality and certificates will become more valuable.

Are MOOCs disruptive?

This brings us to the question of the significance of MOOCs for higher education. Will they have a disruptive effect (Adams, 2012)? Or will they in fact create new opportunities? Do they represent the big development that will bring about the major breakthrough into higher education for one and all? Given the above considerations, we can identify the following characteristics of MOOCs that may have a disruptive impact on higher education institutions:

• Reputation: most MOOCs come from Ivy League universities.
• Total educational experience: a MOOC provides a total package of open education at course level, with learning resources, testing (with feedback), examinations, and a certificate.
• The potential to ensure the "unbundling" of higher education. It used to be that to gain a higher education degree the learner had to follow a fixed route within a curriculum decided on by a single institution; now, however, he/she can follow several routes. Teaching, learning, and certification can be organised and offered as separate activities with their own scale advantages (Sheets, Crawford, and Soares, 2012). The diagram below shows an example of such "unbundling" as applied in the case of an experimental Mechanical MOOC (Carson, 2012).
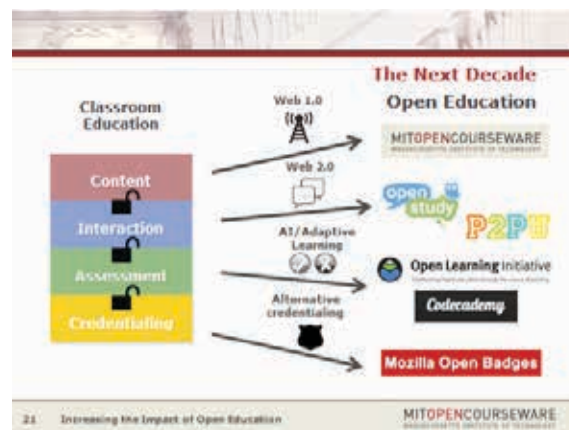
Their partly open nature means that MOOCs are disruptive mainly for open universities and providers of online learning. After all, they operate within the same market with a competitive product. However, they may also have an impact on normal higher education institutions. An increasing number of research universities wish to provide programmes (or parts of programmes) online in addition to on campus. If this trend continues, MOOCs – as a cost-free alternative – will have a disruptive impact on them too.

In the world outside, a certificate from a MOOC may become valuable for employers. Certainly if the learner gains a certificate within a controlled environment and if the MOOC is accredited, then the MOOC can have a competitive effect vis-à-vis higher education institutions. A number of learning pathways will in fact come into being,

leading to a level that employers find interesting. If the potential value for employers is great enough, the "unbundling" referred to will become a reality. Educational institutions will need to respond to this. More flexibility can therefore be expected as regards accepting informal (MOOC) certificates within a formal system (Matkin, 2012).

Opportunities for higher education in the Netherlands

We envisage the following scenarios and potential developments as regards MOOCs within Dutch higher education.

- Research universities and universities of applied sciences will provide MOOCs themselves. Leiden University already announced a MOOC in November 2012 (European Law, Coursera). These MOOCs can distinguish themselves by means of an innovative didactic model, combined with high-quality learning resources, two aspects that have been criticised in the current xMOOCs.

- MOOCs work with extensive monitoring of students' activities on the basis of learning analytics. This gives students a clearer idea of their progress and performance, with the instructor being able to see more clearly whether they are achieving the learning objectives. It provides an alternative means of assessment (Severance, 2012). It also allows the instructor to see where the course can be improved.

- Institutions provide additional services, for example the (paid) provision of a controlled environment in which MOOC students can take examinations, or tutoring (also paid) for study groups taking the MOOC.

- Institutions offer existing MOOCs from other institutions within their own curriculum. This increases the range available to their students, resulting in more choices within the curriculum. A MOOC can also replace a course that has been developed by the institution itself, thus saving money.

- Institutions use MOOCs to support students' choice of programme. Taking a MOOC and gaining a certificate says a lot about a future student's motivation and talent. This could even be made part of the intake procedure.

We will need to wait to see whether MOOCs are any more than just a hype. What is certain is that they caused a fair bit of consternation and also raised expectations in 2012. The fact is that venture capitalists are making substantial investments in this kind of open education. This "monetarisation" of international higher education may also have consequences for higher education in the Netherlands. In our opinion, this is another reason for Dutch university administrators to give careful thought to their institution's OER strategy.

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DELFT UNIVERSITY OF TECHNOLOGY'S OPENCOURSEWARE

Since 2007, Delft University of Technology has been making high-quality educational materials freely available on the Internet, at no cost, as courses via TU Delft OpenCourseWare. There are now more than a hundred such "courses" available. With this initiative, the university is increasing access to educational materials and promoting free exchange of those materials, and giving a representative picture of the education it provides.

Broad range of educational resources

The range comprises educational resources available to the university's own students in the normal Bachelor's and Master's degree programmes and includes literature, recorded lectures, lecture slides, assignments, and previously used or practice tests (together with the answers). It often includes not just the actual thematic content but also planning documents and evaluation tools. No registration is required to use Delft OpenCourseWare, but no interaction with instructors is possible: it is not education that is provided but educational resources. The resources therefore do not guarantee a diploma or certificate, and they do not give access to the faculties at Delft University of Technology. Students can utilise the resources, however, in their own learning process.

Besides resources at Bachelor's and Master's degree level, TU Delft OpenCourseWare also offers materials for high-school pupils and their teachers (Dutch "VWO" level) (http://ocw.tudelft.nl/high-school/), for example an entrance test in mathematics and the Delft Chemistry Curriculum. Users can also view separate flash lectures and OER.

The range also includes educational resources that do not form a specific part of the normal programme at Delft University Technology, for example lectures and courses on information skills (http://ocw.tudelft.nl/more/).

Who are the educational resources intended for?

The educational resources available as OpenCourseWare can be viewed and reused by anybody in the world. Many users are in fact located outside the Netherlands, and they are of all ages. Many of them make use of the resources purely because they are interested, but also so as to brush up their knowledge of a subject (the university's own students, national/international students, professionals in the field), to reuse material (instructors), and to get an idea of what studying at the university involves (high-school students, students at universities of applied sciences, students selecting or already taking a Master's degree course).

In recent years, the university's range of educational resources has focused increasingly on specific target groups, for example young people making the transition from a high school or a university of applied sciences – i.e. information about studying in Delft – and the university's own students (for reference).

Other OER initiatives

Since 2010, Delft University of Technology has made it possible to download videos (including lectures) via iTunes U (http://ocw.tudelft.nl/ocw/itunes-u/) and to synchronise them with an iPod, iPhone, or iPad. Recordings of lectures that had been published as OpenCourseWare are also available in iTunes U.
The university is also associated with OpenStudy (http://openstudy.com/). OpenStudy provides study groups in which people from all over the world can get together to study OpenCourseWare, including that provided by Delft University of Technology.

In 2012, OpenStudy started a pilot project – in collaboration with the OpenCourseWare Consortium, the University of Notre Dame, UC Irvine, the 20MM Foundation, and Delft University Technology – making it possible to earn OpenStudy "badges" (http://openstudy.com/courses). Based on evidence of activity within a study group, one can earn an informal badge for study skills. The badge provides informal recognition, in this case of study skills.

Delft University of Technology Online Education

OpenCourseWare has been a kind of catalyst for Delft University of Technology as regards providing online education. In 2013, for example, the university initiated three Master's degree programmes in which a number of subjects are offered as online distance education. TU Delft Online Education offers the prospect of an accredited Master's degree, with the programme being provided entirely online. Students do need to register, however, and pay a registration fee to the university.
In 2013, the university will also start offering a number of massive open online courses (MOOCs). Registration for these is free of charge, and teaching is in fact offered. In this way, Delft University of Technology is supplementing the range of educational resources available online.

More information

- TU Delft OpenCourseWare: http://ocw.tudelft.nl/
- TU Delft OpenCourseWare Slideshare: http://www.slideshare.net/DelftOpenEr/
- TU Delft OpenCourseWare weblog: http://opencourseware.weblog.tudelft.nl/
- Presentation about six years of OpenCourseWare during the 2012 Education Days.
  http://www.youtube.com/watch?feature=player_embedded&v=qQbdR1Y0Zrk

EVALUATION AND CERTIFICATION OF OPEN EDUCATIONAL RESOURCES

by **Sofia Dopper** and **Silvester Draaijer**

The past ten years have seen a steady increase in the number of open educational resources (OER) available, and in the number of institutions that provide them via the Internet. Many of these resources are unsuitable for independent study purposes because they are only separate components of a course, for example a diagram, a separate film clip, or a video of a lecture. Open courseware (OCW) does comprise a coherent body of course material, but the learner using it is not given any guidance and it does not lead to any kind of certification. However, that situation has been changing recently, and more and more specially designed independent study courses are becoming available free of charge to anyone interested (Camilleri & Tannhäusser, 2012). One example are Massive Open Online Courses (MOOCs), which really took off in 2012. Many kinds of open education offer the learner a large number of options for acquiring new knowledge and skills outside the context of formal education.

Given the greatly increasing demand for higher education, it is necessary to continue to invest in open and online education (Daniels, 2012). In the opinion of the authors of the present article, making the evaluation and certification of learning activities sustainable is a key challenge, and one of the main conditions for the long-term future of OER. This applies above all to higher education with its accreditation system for guaranteeing quality and standards. It also applies to learners from whom the labour market demands formal evidence of competence, knowledge, or skills. But providing informal evidence of one's competence is in fact becoming increasingly important, for example in the form of recommendations on LinkedIn and other networking sites.

Up to now it has been virtually impossible to acquire formal recognition for learning objectives achieved by means of OER. In particular, it is difficult to prevent fraud on the part of students as regards the authenticity and validity of their performance. How does one know whether a student has in fact delivered that level of performance him/herself under controlled conditions? But if we can succeed in developing a method for evaluating and certifying open learning in an effective, efficient, and confidence-inspiring manner, then an entirely different learning and studying landscape will be opened up.

This article looks at ways of putting informal recognition of learning outcomes on a more formal footing. Formal recognition can, however, be expected to have to meet more conditions in order to guarantee the criteria of transparency (what knowledge or skills does the learner have after this component?) and reliability (how do I know for certain that this person has achieved this level of performance him/herself?). In order to benefit to the full from OER, higher education institutions need to determine the role that they can and wish to play within this process.

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Informal learning and certification

Badges

One emerging trend is for organisations and peers to award "badges". A badge is a (digital) insignia awarded to a person who has achieved a particular level of performance (Casilli, 2012). Various different names are applied. The OpenStudy platform, for example, uses "medals" and "SmartScores", leading to "certificates". Codecademy works with "points" and "streaks" as well as badges. At Coursera, participants who have completed all the components of a course can acquire a "certificate of participation".

Assessing how a badge system works and how reliable it is requires a knowledge of the specific system concerned. One interesting example are OpenStudy Certificates, which involve cooperation between OpenStudy and the worldwide OpenCourseWare Consortium (OpenStudy, n.d.). Participants taking an OpenCourseWare course supported by OpenStudy can sign up for a (worldwide) study group, which has a forum where they can ask and answer questions. Activities within the course are tracked, as is progress in the course and in the community. By answering questions put by fellow participants, the learner can demonstrate his/her understanding of the material, thus gaining medals. A participant can gain a certificate if he/she has been active within the system for at least four weeks, with questions having been posted and questions answered for at least 70% of the course topics. If the participant complies with the requirements and his/her SmartScore has increased by 20 points, he/she receives a certificate of participation for a "self-directed learner": "You have demonstrated engagement, teamwork, problem solving as you participated in this open online course and created an online portfolio of your activity. Everyone can see that you are a smart, savvy digital citizen with 21st century skills!" It is difficult to organise formal recognition for this system. The primary function of the badges is to act as a signal for participants in determining who plays an important role or knows a lot. Another interesting development is the Mozilla Open Badge Infrastructure (Mozilla Open Badges, n.d.). People can increase their competencies via a number of different channels, earning badges that are allocated to them by individuals or organisations. The learner can collect, manage, group, and share his/her badges on the website. He/she can then decide which badges to make visible (via a personal website, a blog, a social network profile, or a jobs website). Using this system can be good for the reputation and profile of those who allocate them.

To increase the value of badges, it would be good for there to be national or European cooperation so that agreement could be reached on the kind of badges and the criteria for validating learners' performance.

Recognition of online learning

For various groups of learners, recognition of results achieved via freely accessible online courses can be a decisive factor in their choosing whether to take and complete such courses. It will allow "normal" students in higher education to put together their own individual curriculum, for example. They can then take the online courses offered by their own university – or another university anywhere in the world – and integrate those courses into their own curriculum. This offers possibilities for taking a minor or enrolling in joint Master's degree programmes or exchange programmes. In the case of lifelong learners, recognition for knowledge and skills acquired via open online courses can be important in improving their career prospects. Providing evidence of learning results achieved can also be relevant as regards access to a Master's degree programme.

To make use of open learning results, it is necessary for the content, level, and quality of the open course or educational component to be guaranteed and also for it to be guaranteed that the learner has in fact achieved the relevant level of knowledge or skills. The simplest way of assessing the quality of OER courses is to have individual instructors or departments examine the course content, including the learning activities that students are expected to perform. As soon as the content and the learning activities fit into the framework and curriculum objectives of a programme, then the first step has been taken on the way to recognition. The educational institution that offers the OER module can also clarify how students are intended to show that they have achieved the learning objectives. One important consideration here is the extent to which the institution can show that the learning objective has actually been achieved by the person concerned under the intended conditions (individually, in a group, within a limited period of time, with or without aids).

It goes without saying that such a form of recognition is not future-proof, and is still far removed from guaranteed certification. The process will depend too much on the individual efforts and commitment of instructors and departments.

Trust

Within the process of recognition, partnerships between institutions are important. The institution that recognises must have confidence in the quality of the education offered, and must be able to assess it for itself. Compare, for example, the recognition of credits in the case of Erasmus student exchanges (Camilleri & Tannhäusser, 2012). In this exchange programme, recognition is institutionalised on the basis of the relationship of trust between the participating institutions; as such, it can therefore be successfully incorporated into accreditation procedures. In the case of OER education, that relationship of trust does not yet exist. The question of how it should be forged is therefore an important one.

Developments in assessment and certification for MOOCs

MOOCs are primarily offered by top American universities via specially developed platforms such as EdX, Coursera, and Udacity. These platforms utilise the Internet and social media to provide an integrated range of online instructional resources, assignments, digital self-tests, peer interaction and feedback, and contact with the institution or professor. The free accessibility and global profile of the top universities concerned mean that the number of students taking a MOOC can be enormous.

Some MOOCs can be concluded with a non-formal certificate of participation. Assessment takes place by means of a final unsupervised digital test or a system of peer feedback and assessment. Although the certificate is not a formal one, it does have value. In Brazil, for example, it has been shown to increase the holder's prospects on the labour market (Inamorato dos Santos, 2011). A number of universities, including Colorado State University (Mangan, 2012), have acknowledged that it is worth recognising learning results achieved by means of MOOCs offered by top universities.

The possibilities for formalising that recognition are increasing now that the providers of MOOCs are actively making secure supervised examinations possible. Udacity and EdX have signed a contract with Pearson VUE, an independent commercial provider of examination services. Pearson has testing centres worldwide where the identity of learners can be verified and exams can be taken under controlled conditions (Gaber, 2012).

Coursera is about to introduce two measures The first involves "keystroke biometrics", i.e. analysing the user's pattern and rhythm of typing (Young, 2012). It will also be possible for students to take exams at home under controlled conditions. This will involve "remote proctoring" systems (http://www.proctoru.com/coursera/), with prohibited resources being cut off, webcam monitoring, and videoing of the candidate.

All these technological developments will greatly boost the certainty that the student concerned is actually delivering his/her own authentic performance. In this way, the competencies acquired by means of free open online education can be more successfully converted into a formal recognised certificate.

Consequences

It is no easy matter to determine the consequences of these developments. On the one hand, it is possible that these technologies will become available to all providers of free online learning resources, for example in the case of MOOCs offered by less renowned institutions that are made available via platforms such as Blackboard CourseSites or Canvas Network. This will allow the whole range of providers of OER and OCW to benefit, with the value of their teaching increasing. This effect can be reinforced if an independent assessment institution determines the value of the material, learning processes and certificates, by analogy with the Dutch Doorstroommatrix (http://universitairebachelors.nl/), Nuffic, Times Higher Education Ranking, or Elsevier. Systematically surveying initiatives and collecting comparison data for presentation to experts makes it possible to rate the quality of learning resources and certificates. The same lists can include information from institutions that administer tests.

On the other hand, the volume and reputation of the providers of MOOCs on the major platforms – Coursera, Udacity, and EdX – may have put them so far ahead that it will not be possible to catch up with them. They are the only ones who can afford the necessary level of investment in technology, that are interesting for providers of examination services, and that can award certificates of undisputed value. This means that which institutions will produce material and which will reuse it has been decided more or less de facto. The latter institutions will need to go to greater trouble to offer added value.

Conclusion

Supply and demand for open education can be expected to rise enormously in the next few years. Non-formal certificates are increasingly being offered. Technology provides more and more options for secure testing, either at examination centres or at the candidate's home. This will make accepted and validated open education certificates increasingly realistic.

Once the certification hurdle has been overcome, the next challenge will be to gain recognition by the education sector and the business community. How can the many different types and contents of open education be made comprehensible so that there is a reliable possibility for comparing and accepting them, for learners, the education sector, and the business community? If this can be achieved, then it will bring about drastic changes in the education landscape. Learners will then be able to put together "learning packages" more flexibly. This is an irreversible trend, and higher education institutions will therefore need to consider the role that they can and wish to play in the world of open and online learning.

The question is whether, given these trends, the business model of traditional higher education institutions is still tenable. What the learner of the future will ask is "What do I need in order to gain a particular diploma, and what free open online learning module or test can enable me to achieve that objective?"

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WIKIWIJS AND HIGHER EDUCATION

Wikiwijs is a programme intended to promote the use of open educational resources (OER) in the Dutch education sector. It includes an Internet portal where instructors can search for OER, adapt them, combine them with other educational resources, and share them with other instructors. The resources intended for higher education come from the collections of higher education institutions in both the Netherlands and other countries.

http://www.wikiwijs.nl/task

OPENING UP EDUCATION

by **Fred Mulder** and **Ben Janssen**

Open education is the object of increasing interest, including in the Dutch higher education sector. But just what are the features that characterise open education, and how can we utilise them? In this article, we describe how the classic "established" world of open and distance education is complemented by the innovative "emerging" world of digital openness. Open education has thus gained a number of new dimensions. This is acknowledged as a fact internationally, but has not yet been reflected sufficiently at the conceptual level. In this contribution, we present a model – the "5COE model" – that makes this multiple openness comprehensible, and that also offers prospects for action by the Dutch higher education sector.

From open educational resources to open education

Opening up education is popular. This is largely due to the (silent) digital revolution that commenced in 2001 when MIT published all its courses as open courseware (OCW). In 2002, UNESCO assigned a new name to this development, namely "open educational resources" (OER), the term still central to the recent Paris OER Declaration (2012). Later on, the term was broadened to "open education" (OE), which, for example, is the term used in the Cape Town Open Education Declaration of 2008. Beginning in 2011, there was an expansion in the form of "massive open online courses" (MOOCs). Finally, in 2012, the European Commission published a document, intended to promote broad consultation, entitled Opening up Education, in preparation for the official launch of this far-reaching initiative in mid-2013 (Mulder & Jelgerhuis, 2013). Besides all these terms, others are also in circulation such as "open educational practices", "open learning services", "open policies", etc. And we should not forget that for decades now open universities, with their own profile, have been pursuing their own educational mission aimed at lifelong open and flexible learning (Mulder, 2010).

A terminology jungle has been created, and there is a growing need to clarify what it represents, and how the various terms and concepts relate to one another. For a start: the term "OER" has a number of solid, well-considered definitions which may perhaps differ somewhat from one another but which are broadly accepted and applied. One frequently quoted definition is that by the Hewlett Foundation:

"OER are teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others. Open educational resources include full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials, or techniques used to support access to knowledge."

What about the other terms we have referred to?
1. In general, OER is taken to be a broader term than open courseware, and OER has a more open character.
2. To an increasing extent, open education is referred to as a broader concept than OER. This is highly plausible, but people rarely indicate what they actually mean by this. Open education is primarily used as a kind of catch-all concept.

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Ben Janssen (ben.jansen@ou.nl) also works at the Open Universiteit in the Netherlands and has been involved in its OER projects since the beginning. He was the project coordinator for a study of business models and business strategies based on OER.

3. Where MOOCs are concerned, a distinction is made depending on the main types. There is therefore no unanimity in the use of the term. There is also robust debate as to whether MOOCs in fact deserve the label "open" (Schuwer, Janssen & Valkenburg, 2013).
4. "Opening up Education" would seem to be a well-chosen designation for the EU initiative, particularly where the subtle addition of the word "up" is concerned. That addition implies a process or movement, and it also does justice to the diversity that people so much desire: not all education should be equally open in every respect.

The collection edited by Iiyoshi & Kumar (2008) has the same title (*Opening up Education*) and comprises a wide range of highly relevant articles, but it unfortunately fails to justify the expectation aroused by that title, namely that it could assist us in our exploration of the terminological jungle. A recent special issue of Open Praxis (2013), dedicated entirely to Openness in Higher Education, is very much worth reading but – despite the hope aroused by the title and even after targeted searching – it gives us little to go by. So what about Wikipedia? This is what it has to say:

"Open education is a collective term that refers to educational organizations that seek to eliminate barriers to entry. Such institutions, for example, would not have academic admission requirements. Such universities include Open University in Britain and Athabasca University in Canada. Such programs are commonly distance learning programs like e-learning, mooc and opencourseware, but not necessarily…"

A meagre result with only a very restricted point of view ("open entry at Open Universities"), unclear, open to dispute in some respects, and definitely open to improvement…

In this article, we will attempt to bring about a change in the terminologically vague and confused situation that we have outlined.

Two worlds of open education

We can distinguish two worlds of open education (Mulder, 2011; see Figure 1):
1. The classic "established" world of open and distance learning (ODL) – in somewhat more modern terminology "lifelong open and flexible (LOF) learning" – comprising the open universities and all kinds of institutions offering distance education (for more than a century now).
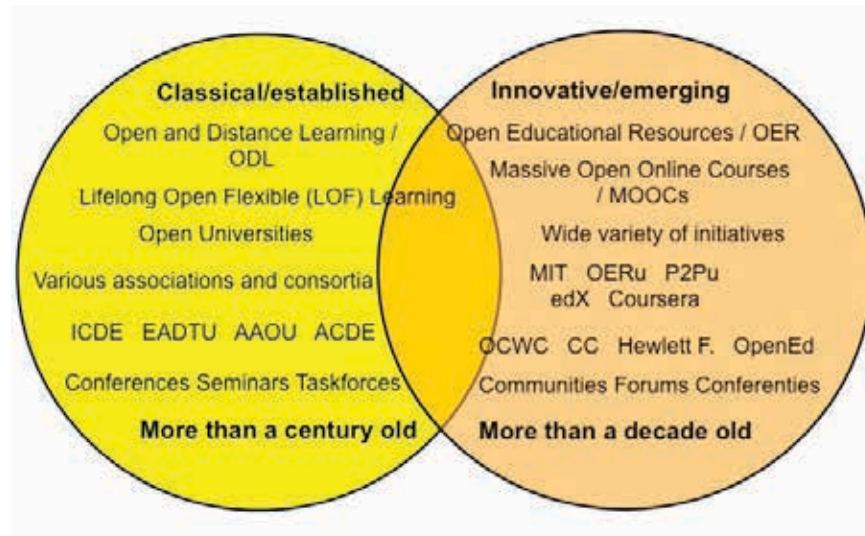
Figure 1   The two worlds of open education

2. The innovative "emerging" world of OCW, OER, and MOOCs; this involves a great variety of initiatives, from MIT to the Khan Academy, from Peer2Peer (P2P) university to OER university, from the OCW Consortium to edX and Coursera (now more than a decade old).

These two worlds have their own genesis, motives, ambitions, culture, philosophy, approach to innovation, and scenarios for the future. Viewed in this way, they are very different to one another. But their target groups overlap, and they both make far-reaching use of ICT in their teaching. They have come to overlap since 2006, when the British and Dutch open universities were the first within this "classical" world of open and distance education to start up an OER project (Mulder, 2010). And we can now see more collaboration and synergy but also – what else? – competition.

Classical and digital openness

Based on the genesis and culture of these two worlds of open education, we can identify two kinds of openness: classical and digital.

In the case of classical openness, we can distinguish the following six degrees or dimensions (Mulder, 2010):
a. *Open access*: Anyone can basically participate regardless of their prior education. Strictly speaking, no diplomas are required for entry.
b. *Freedom of time:* Students can begin a course or programme at any point during the year and study at any time.
c. *Freedom of pace:* The student can basically determine his/her own pace and schedule.
d. *Freedom of place:* The student can study using course books and with online learning resources and services; he/she can do so at home, at work (assuming permission has been granted), at a library, in a virtual classroom, on the train or on a plane, abroad, on a boat, in prison, etc.
e. *Open programming:* The programmes involve certain freedoms as regards their content and order; the student can take and if necessary combine modules/courses as he/she wishes; there are partial programmes and complete open programmes.
f. *Open to target groups:* The population is very varied, comprises all ages, and has a wide range of contexts, with the common feature being that the student is combining his/her (part-time) studies with work, care duties, or other activities: a wide variety of lifelong learners.

Nowhere in the world is there an educational institution that is 100% open on all six of these dimensions, or wishes to be so. As expected, open universities score significantly higher on the six degrees of openness than mainstream higher education institutions, which generally apply a more closed model. It should be noted, however, that the distinctions are beginning to become blurred because of the increasing blending of open and closed features in education, in all sorts of types and gradations.

The latter trend is also encouraged and facilitated by the digital revolution that has brought about the other kind of openness, namely digital openness. Here, we can distinguish various domains to which it can relate (Mulder, 2010):

a. *Open source:* A term introduced in 1998 that refers to the practice that gives free access to the source code of the software produced.

b. *Open access:* A label referring to free access to cultural and scientific/scholarly outputs, in particular making these available free of charge online, on the understanding that no changes can be made to them (something particularly important in the case of scientific publications and underlying material, open data).

c. *Open content*: Open content is a collective name for creative work – for example texts, illustrations, audio, and video – which is published under a licence explicitly permitting the work to be copied and often also to be adapted and distributed (for example Wikipedia; note the difference to open access).

d. *Open educational resources (OER):* These have already been dealt with and can be viewed as the fourth branch on the tree of digital openness, concerning learning materials.

In the same way as there is blending of open and closed features of education, the classical world of open and distance education is increasingly also embracing digital openness, while conversely the innovative world is discovering and adopting important elements of classical openness. Here too, the distinction is becoming blurred.

A five-component model for open education

The two previous sections were the lead-in to what this article is actually about. The dichotomies – in the worlds of open education and in the concept of openness – are attractive in terms of modelling, but they are also simplifications. The reality is not binary but displays a whole range of interpretations, by means of blending, profiling, collaboration, and competition. There is therefore a need for a solid model that does justice to that diversity and can map it clearly.

We present a five-component model here consisting of three components on the educational supply side and two on the demand side (Mulder, 2011 and 2012). For the sake of convenience we refer to the model by the abbreviation "5COE" (Five Components for Open Education).

The supply-side components are as follows:

1. *Open educational resources (OER):* the familiar first component.

2. *Open learning services (OLS)*: a wide range of online and virtual facilities that are available free of charge or with payment, meant for tutoring, advice, meetings, communities, teamwork, presentations, consultation of sources, navigating the Internet, testing, examining, etc., etc.

3. *Open teaching efforts (OTE):* The human contribution to the education provided, the efforts of teachers, instructors, trainers, developers, and support staff in their various roles, in a professional, open, and flexible learning environment and culture. In most cases, these need to be paid for.

Figure 2 is a diagrammatic representation of the supply side of the 5COE model.
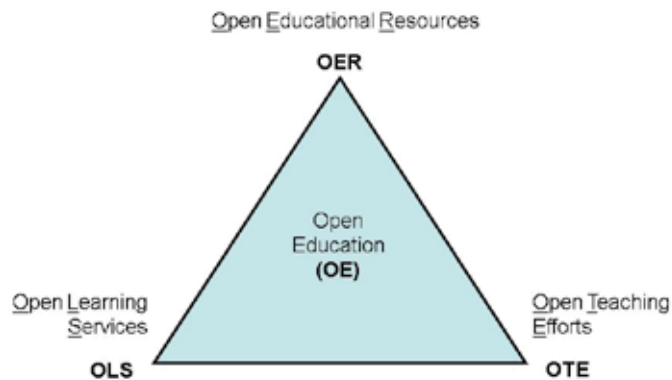

Figure 2   The three supply-side components of the 5COE model

It is not sufficient to view education solely from the supply side; there needs to be a match with the requirements. On the demand side, the 5COE model comprises the following two components:

4. *Open to learners' needs (OLN):* Learners want education that is affordable, "do-able", of good quality and interesting, and that also produces benefits for them. In order to be open, the education offered must not impose any restrictions on admission requirements, time, place, pace, or programme. And there need to be provisions for lifelong learning, certification of practical experience, easy switching between formal and informal learning, etc.
5. *Open to employability & capabilities development (OEC)*: The education offered must also be open to a changing society and labour market, the decisive role of knowledge and innovation, and the influence of globalisation; at the same time it must offer scope for new skills, critical thinking, ethics, creativity, and personal growth and citizenship.

In Figure 3, the 5COE model shown in Figure 2 is completed by the addition of these two demand components.
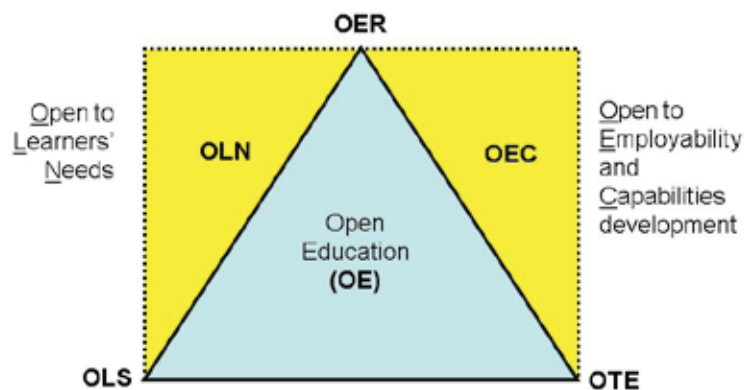

Figure 3   The 5COE model with all five components (supply and demand)

Openness is a choice

With the 5COE model in hand, we can make "fingerprints" of educational institutions. Such a fingerprint shows where an institution finds itself – or positions itself – as regards the five components or dimensions of openness. Figure 4 shows a hypothetical example. The scale runs from 100% closed on the left-hand side to 100% open on the right-hand side. The five sliders in the diagram indicate the profile and position of the institution in the context of open education.
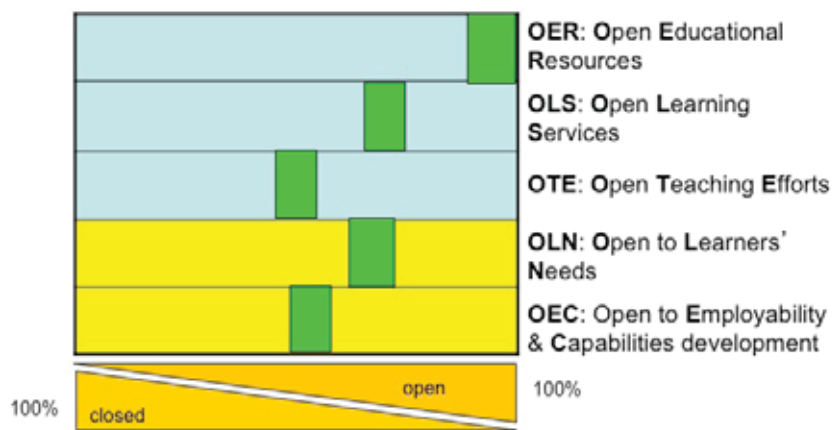

Figure 4   Example of an institution's 5COE fingerprint

In our view, open education is not a doctrine. Rather, it is an orientation with which it is increasingly possible to more effectively address the diversity of characteristics, circumstances, and needs within society where education is concerned.

Educational institutions can choose their position in this context. We do not intend advising them to take up a position entirely on the right of all five dimensions because the sustainability of such a profile is open to doubt – although an exception can be made for OER because a 100% score on that dimension is probably favourable for each and every institution, regardless of its profile (Mulder, 2012). We would also discourage institutions from selecting the profile entirely on the left of all five dimensions. Given the developing societal context, the viability of such a profile would not seem to be very promising. The 5COE model that we have presented in this article offers scope for such a nuanced approach to open education. At the same time, it creates a framework within which the concept of openness can be used as a basis within various different dimensions/components. It can't be avoided.

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OER DECLARATION

The OER Declaration was adopted during the World OER Congress in Paris in June 2012.

The OER Declaration recommends that UNESCO member states, within their capacities and authority:

1. Foster awareness and use of OER.
2. Facilitate enabling environments for use of Information and Communications Technologies (ICT).
3. Reinforce the development of strategies and policies on OER.
4. Promote the understanding and use of open licensing frameworks.
5. Support capacity building for the sustainable development of quality learning materials.
6. Foster strategic alliances for OER.
7. Encourage the development and adaptation of OER in a variety of languages and cultural contexts.
8. Encourage research on OER.
9. Facilitate finding, retrieving and sharing of OER.
10. Encourage the open licensing of educational materials produced with public funds.

The ten-point declaration was drafted by OER experts from around the world and calls on UNESCO member states to foster the use of OER. In effect, it argues the case for OER. The experts see OER as a tool for increasing access to education and improving the quality of educational resources. OER can thus make an important contribution to achieving the Millennium Development Goal "Education for All".

The OER Declaration can be downloaded at http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/CI/pdf/Events/English_Paris_OER_Declaration.pdf

Video in which executive board members of Dutch universities share their thoughts on the OER Declaration:
http://www.youtube.com/watch?v=uqBkvkOSoDM

Open Educational Resources

NEW ROLE FOR LIBRARIES IN CONTENT CURATION

by **Cora Bijsterveld**

Since MIT started putting its educational resources online, the quantity of open educational resources (OER) has increased enormously. Optimal use of these resources in education requires filtering. This can create a new role for library information specialists as "content curators". After all, information specialists are experienced in collecting content and making it accessible – something they have been doing since well before the digital age. Besides collecting and providing access, they can also coach students and instructors in tracing and discovering other online educational resources to supplement their own study materials.

The content curator

A great deal of information is generated every day all over the world, and it is easy to lose track of it. More and more open educational resources (OER) are also being published. It is difficult for students and instructors to find the right content, which means that they are not maximising the potential of OER. To get the most out of all the available content, it will need to be well organised and traceable. A study by Masterman, Wild, White, and Manton (2011) shows that searching reveals either too much about a subject – meaning that it is only checked superficially – or too little that is of good quality. It needs to be possible for instructors to perform searches with a minimum of effort. As long as that is not yet possible, "content curation" can help. A "content curator" searches for, collects, and presents digital content concerning a specific topic. He/she does not generate new content but collects content that is already available online. High-quality content curation depends on content related to specific themes being collected in a meaningful way (Kanter, 2012).

Content Curation: Step-by-Step
Goal
Topics
Sources
Sense Making
Sharing
Process Before Tools
Beth Kanter
www.bethkanter.org

Information about a particular educational topic should be collected, interpreted, and kept up to date by a content curator (Robertson, 2012). This would give students and instructors easy access to the best information. The task of a content curator is therefore to collect, provide and interpret educational resources that are available free online, to make them accessible and to keep them up to date. Interpretation is important (Kanter, 2012). A good content curator is helpful for anyone who is looking for high-quality content. The information specialists at libraries can play an important role here, given that libraries specialise in this kind of work. They have already been collecting information and making it accessible for a long time, since well before the digital age (Robertson, 2012).

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How content curation is becoming the linchpin between OER and mainstream educational materials

Up to now, Delft University of Technology has published open courseware (OCW) without providing supplementary guidance, and with the target groups being potential students, instructors, and people engaged in "lifelong learning". The university now considers that OER can also be valuable for normal students. In consultation with students and student associations, TU Delft OpenCourseWare has therefore started a pilot project for normal students in which content curation is deployed in various ways so as to improve students' results. In this way, the university is experimenting with integrating OER into its existing range of mainstream materials. OER can supplement mainstream materials by explaining difficult subject matter or complex concepts in a number of different ways. For normal students, the standard educational resources for a course are available within an electronic learning environment, with OER being added according to a particular methodology. It has been decided that this should be done specifically for subjects with a high failure rate.

How does content curation work?

A number of different "shells" are brought together around a particular subject (in the case of the pilot project, a subject with a high failure rate), thus creating a broad spectrum of educational resources, materials, and services (Ouwehand, 2012). The course and the subject matter to be tested (the "essentials") are at the centre. For the surrounding shells, content curators search for openly available supplementary educational resources on the same topic. Those resources can serve to clarify the material or broaden/deepen students' understanding of it ("additionals"). The content curator also explains why the particular resources provided can help the students.

In the Delft pilot project, it is student assistants who are acting as the content curators, in collaboration with the university library. They preselect the resources, which are then approved by the instructor. At some point in the future, students will ideally be able to search for and select resources themselves, with the instructor then incorporating that material into his/her teaching. At the moment, TU Delft is experimenting with providing supplementary services for an existing subject so as to support students and instructors. For the extras, TU Delft checks whether practice questions can be generated that automatically provide students with immediate feedback on the exercises they have done. This gives normal students more opportunities to select educational resources that meet their needs. It also increases the number of resources for a subject that the instructor can draw on.

Essentials: *Reference works.* Educational material (subject matter tested) Subjects with high failure rate at TU Delft as OpenCourseWare

Additionals: *Broadening/deepening/supplementing.* Supplementing Supporting educational material TU Delft and non-TU Delft

Guidance: *Tailor-made guidance.* F2F/online additional lessons TU Delft and non-TU Delft

Extras: *supplementary services and resources* Possible supplement

The information specialist as content curator

This approach assigns a new role to libraries at higher education institutions. Content curation makes demands on the curator's time, whereas instructors have little time available outside their teaching and research; they will therefore not be inclined to act as curators. It will therefore be necessary to facilitate the process for them. The majority of students will also not tend to go looking for supplementary resources of their own accord. That will probably be different if assistance is offered in the framework of study activities. In the longer term, students will be able to help one another by acting as content curators, but we are not yet that far.

The task of the library at a higher education institution is to search for and collect information for the staff and students. In order to carry out that task, the library employs information specialists; these would make excellent content curators for their particular discipline. Besides finding the right articles about a particular topic, they can also find OER for that topic, make them accessible, and add comments. After all, content curation means more than merely collecting links. It is extremely important for the information to be placed in a context (Ryan, 2012).

At the moment, instructors make insufficient use of OER, perhaps because they are not aware of them or because they can't see the wood for the trees. It takes time to find the right educational resources for a particular target group. But why reinvent the wheel when so much excellent material is already available online (Curran, 2012)? Most instructors will want to adapt the OER to their target group, or make use of them without any changes as a means of deepening students' understanding. It is therefore unnecessary to rewrite the instructions and the material, for example when combining one's own teaching with free online teaching. We should therefore let the library's information specialists be the content curators.

In actual practice, the instructor could put together a team of experts to design the learning path. The instructor would define the learning objectives and the target group, with the information specialist finding and filtering the existing digital learning resources. The instructor would then use this as a basis for the educational programme, providing additional content to fill in any gaps (Curran, 2012). Utilising educational resources that are already available on video will give the instructor more time to make use of activating lessons during his/her teaching. The instructor can then use his/her teaching sessions to broaden and deepen students' understanding, and will have more time to answer their questions. During the sessions, the instructor can also have the students actively search for other open educational resources.

Besides having information specialists as content curators, other constructions are also possible. The instructor can make searching for additional educational resources an active learning method during his/her sessions, deploying information specialists to assist both the students and him/herself. The information specialists can help the instructor in his/her search for the right educational resources and also guide students in developing the skills needed to localise, filter, and evaluate the right materials for their studies. This is the best way of training students to also develop new ideas in the field of content curation, which they can then share with their fellow students (Robertson, 2012).

Conclusion

Information specialists can play a meaningful role in searching for and finding OER. As Masterman et al. point out (2011), finding OER content is not always an easy matter and content curation can therefore help instructors to access and utilise such material in their normal teaching. Based on their experience, the library's information specialists can provide a service as content curators. They can also guide students in searching for and finding OER to help them study difficult topics.

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OPENU

With OpenU, the Open Universiteit in the Netherlands (OU) aims to give professionals a flexible way of keeping up with their subject at academic level. The learning requirements of knowledge workers cannot be satisfied solely with courses and training programmes. With OpenU, the OU is focusing on the diverse learning requirements of a variety of highly educated professionals by offering a number of web-based services. Open educational resources (OER) form part of this approach in five different ways.

1 Registered users can share knowledge via blog posts, with their contributions being visible within specialist portals and communities. Staff of the faculties participating in OpenU regularly upload blog posts and articles in their field. With their blogs, they increase the transparency of their research field, help interested parties to focus on topics that are actually important, and reinforce their position as an expert.

2 Each discipline has a number of important themes that have long been a focus of attention within the profession. Within OpenU, information, discussions, and learning activities are arranged within "topic communities". Within the discipline of Education and Training, there are some fifteen different topics. One of them, for example, concerns learning analytics.

3 A number of free courses are offered via OpenU. The Computer Science faculty, for example, has used OpenU to develop a course about Scala through interaction with users within a topic community. Scala is the programming language used, amongst other things, to help develop Twitter. It has now been made available as open courseware. The course is a basic one with a study load of 30 hours, enabling the student to program in Scala.

4 Potential students/visitors are given an idea of existing courses by means of "snapshots" of a portion of the course material that gives a good impression of the course as a whole. One example is the introduction to the development of information systems. Initial experience shows that these snapshots give potential students/visitors a better idea of the courses as a whole. A total of some 10% of the course content is available via OpenU. The technology used within OpenU allows educational developers to quickly and easily open up or restrict access to parts of courses (such as study tasks) , without needing to move or delete curriculum content. This enables the OU to deal flexibly with OER.

5 The OU offers online lectures and online master classes within OpenU. The technology used allows faculties to make these online lectures and master classes freely available (either wholly or partly), or to restrict access to them. Thanks to OpenU, the OU can experiment with the "freemium" model. For example, only the introduction and the live sessions for an online master class may be made available to registered (non-paying) users. Paying participants can then be given access to additional sources, assignments, and interaction options. Cooperation with Kennisnet has made a number of online master classes about ICT in education fully accessible.

During OpenU master classes, participants deepen their understanding of a specific topic in this field. They can follow the master class online from their PC. An expert is interviewed about a topic in his/her discipline, for example about the use of tablets in education. Students can participate actively in the master class by putting questions to the expert via the chat function. After the master class, discussion can continue within the forum. Participants are also offered relevant resources.

http://www.openu.nl

MOBILE DEVICES AND APPS AS ACCELERATORS FOR OER

by **Fred de Vries** and **Frank Thuss**

At first sight, open educational resources (OER) and mobile devices would not seem to have much to do with one another. Mobile devices are rapidly replacing normal computers where creating and studying educational resources are concerned. That offers opportunities, but there are also downsides. These are explored in the present article.

What developments are relevant to using mobile devices?

The higher education sector is gearing up for major changes, with new providers, new educational models (OER, Open Education, MOOCs), and an emerging open European education market influenced by the Bologna process. Today's prospective students no longer become proficient in using desktop PCs but are used to working with mobile devices such as tablets and smartphones, and to being almost constantly connected to the Internet with social media and sources. The combination of these two trends means that the use of mobile devices is beginning to gain a serious place in Dutch education too, not only so as to access up-to-date information but also to support mobile learning and learning in a context. The latter is an important option for mobile learning: the learner's location is taken into account and can be enhanced with artefacts. An example is mobile fieldwork with augmented reality (Ternier, 2013).

A number of higher education institutions are implementing pilots to identify the didactic scenarios in which learning with mobile devices can offer added value, and to determine how mobile learning can be integrated into the educational process after the pilots have been completed. The educational resources and apps utilised can be categorised as OER.

Student fieldwork in Florence supported by Augmented Reality

Recent years have seen the establishment of "repositories" (i.e. storage areas) for educational resources; these may or may not be freely accessible. The educational resources that they contain can be searched using a Web browser and then incorporated into one's own educational material. The work of arranging and processing the material to create a new publication is almost always carried out on an ordinary computer. Besides obvious problems concerning traceability and ease of use/adaptation, most open content is not suitable for simple and effective use by students on mobile devices. It is also difficult or laborious for instructors to make their educational resources available in such a manner that they can be used in that way. That is because not all the file formats used can easily be displayed on mobile devices, either because of file incompatibility or the limitations of the smaller screen. The most commonly used authoring tools often lack an export option with suitable templates for mobile devices.

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Opportunity

The challenge for providers of digital educational resources in general, and OER in particular, is to encourage use of that content by making it suitable for mobile devices, preferably with open standards being applied. The content itself can be adapted, for example by reformatting text or making use of file formats such as ePub, HTML5, and mp4. Needless to say, educational apps designed for mobile learning can also be made available subject to an open licence.

We are now waiting for the first Dutch educational institution – or even better, a group of institutions acting in partnership – to develop an application that makes it easy to select, edit, and share educational resources using mobile devices.

Khan Academy app

Here are some examples of applications (whether or not "open") for mobile devices:

The Khan Academy (Dutch version to appear in 2013). This is a popular platform offering all kinds of freely accessible educational resources. The Khan Academy has a number of mobile apps for accessing these resources.

iTunes U is a platform developed by Apple where users of iOS devices can access a large range of freely available educational resources. However, a lot of the material cannot be reused subject to an open licence.


course in iTunesU on an iPad

Temoa is an iPhone app providing mobile access to the OER portal of the University of Monterrey (Mexico).


Temoa app

Jetpack is an authoring environment developed by Purdue University with associated mobile apps to enable educational developers to develop interactive resources for mobile devices. Purdue has opted for this approach because it considers that publishing educational resources in the form of e-books offers little added value from the didactic point of view.
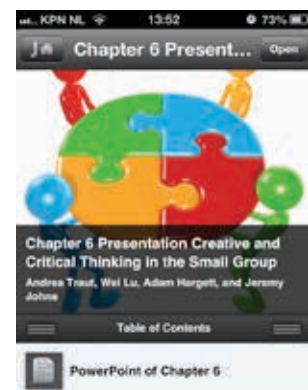
Jetpack app
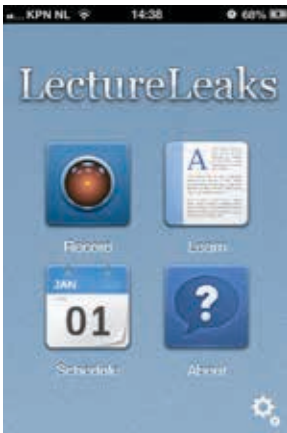
LectureLeaks is an app that enables students to use a smartphone to film lectures and immediately upload them to the LectureLeaks website. The lectures can also be played back again with the app.

Numerous audiovisual educational resources are also available on YouTube. YouTube apps are available for the standard mobile platforms.

Downsides

A mobile device can no longer be viewed as something isolated; it in fact forms part of an "ecosystem" made available by a supplier or manufacturer and accessed via a cloud function. By "ecosystem", we mean a system involving close cooperation between the hardware, the mobile operating system, the associated app store, and accessories. An iPhone user, for example, can download apps and digital resources from the app store. These systems are often "closed", both as regards access from certain devices and restrictive licences. Educational resources from iBooks and iTunes U, for example, can only be accessed on iOS devices, and are not subject to any open licences.

The closed nature of these ecosystems can be seen as a threat to the open nature of OER. It is therefore advisable never to develop educational resources for only a single distribution platform, always to consider carefully what legal restrictions may apply if it is published for a particular platform, and to utilise open standards and open licences such as Creative Commons. The video clips developed by the Open Universiteit in the Netherlands are a good example. These are stored in a video database but are published automatically on a number of different platforms, including an internal website, iTunes U, and YouTube.

Mobile content creation

Smartphones and tablets long ago ceased to be used only to access content. Adding a photo and video camera and all kinds of sensors, as well as integration with various social media, mean that mobile devices are increasingly being used to create, edit, and share content. Examples include:

- *Shooting your own films.* Students use their smartphone to video tutorials and share the recording via Facebook or YouTube. This is already being done at a number of universities of applied sciences.
- *Study Buddy.* This app was developed in the framework of the "Apps On" competition organised by SURF and the Waag Society. Learners photograph objects and can add notes.
- *Evernote.* This app is an easy way for users to make notes via a smartphone, and to collect, annotate, and share content via social media and the cloud.
- *Tumblr and Wordpress.* These microblog apps enable learners to create and share content using their mobile device.

These innovations turn students into co-developers of educational resources. Instructors who use and develop OER can come up with appropriate rewards to encourage students to do this seriously, for example by expecting not just comments but also suggestions for improvements, which can then be taken into account in the student's assessment.

If these content collections are to be used in educational resources, then the "small print" is also important. It may be that a company that provides a social media facility

imposes restrictions on its use and claims rights of use itself; this impedes its free use as part of OER. Many instructors and students will find this a bore, but it is still important for them to give some consideration to the consequences of their choice of tools.

The future

Taking explicit account of mobile use when publishing OER makes it possible to keep up with the explosive increase in the use of smartphones and tablets. Mobile devices lower the threshold for users considerably when it comes to providing feedback, annotations, and recommendations. Material initially found with a mobile app can also refer to other material that can be accessed on an ordinary computer using a Web browser. Authors of material can encourage use and reuse via the social functions referred to. The selection and improvement of OER can also be promoted via social media.

Ultimately, the distinctions between using PCs, laptops, tablets, and smartphones will become blurred, with the use of open educational resources increasing explosively. Where producing such resources is concerned, computers with a keyboard and a mouse will continue to play a major role for the present. Apps can also be developed that make it easy to publish mashups of OER collected using mobile devices. Developers will still need to be cautious about unintentionally giving away rights of use when utilising certain apps.

The world of education has become inconceivable without the mobile use of tablets and smartphones. Student will assume that teaching and OER will be available on their mobile devices. The Dutch higher education sector can collaborate in this area, for example by sharing expertise and tools, whether or not via cloud services. There may also be opportunities for joint development of applications, for example in the context of SURF: apps that can be used for teaching and educational resources provided by various different higher education institutions.

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• Jetpack is available at http://www.itap.purdue.edu/studio/jetpack/

EDX EN COURSERA

EdX is a non-profit organisation started by Harvard University and MIT in 2012. Other universities have since joined, including Delft University of Technology and the University of California (Berkeley). The aim of edX is to provide university-level online courses (MOOCs) free of charge for people all over the world. With Coursera and Udacity, edX is one of the best-known providers of MOOCs. What distinguishes edX from the other two is its aim of providing educational resources subject to a Creative Commons open licence, and of making edX a platform for experimentation with e-learning.

http://www.edx.org

Coursera Coursera is a for-profit enterprise started in 2012 by Daphne Koller and Andrew Ng of Stanford University. On their website, they describe Coursera as follows "We are a social entrepreneurship company that partners with the top universities in the world to offer courses online for anyone to take, for free. We envision a future where the top universities are educating not only thousands of students, but millions. Our technology enables the best professors to teach tens or hundreds of thousands of students."

Coursera is one of the first and best-known providers of MOOCs. Currently (mid-February 2013), it offers 222 courses from more than 30 universities (including Leiden University). All the courses are freely accessible, but the course material may not be freely reused by third parties. The revenue model for Coursera is based, amongst other things, on giving external parties paid access to student data, for example so that they can find the best candidate for a job vacancy.

http://coursera.org

OPEN BUFFET OF HIGHER EDUCATION

by **Nynke Kruiderink**

Social media and co-creation are democratising technologies that have helped give shape to the current "age of personalisation". These technologies give independent self-learners the option to take matters into their own hands and determine their own educational pathway. Under pressure from high unemployment, they are perhaps looking for educational options in "buffet-style" that offer greater career opportunities. This article considers how these factors can encourage the Dutch higher education sector to offer new kinds of open higher education.

The age of personalisation

Wanting to influence the composition of your educational programme is in line with the way we can nowadays put together many other products for ourselves. It used to be that consumers had to choose which music album they wanted to buy; nowadays, a range of platforms such as Spotify or Pandora allow them to select the individual songs they prefer and to put together their own playlists. Book platforms like Unbound allow people to read an excerpt from a book and then vote on whether or not it should actually be produced. This means that it is no longer just publishers that decide which books should be published. Another example is MixMyMuesli, a home delivery service that allows you to design your own muesli and have it delivered. In this context, Wikipedia can be seen as a platform where information is provided and where consumers can add information in their role of producer. The market keys in to the wish and demand of the consumer to put together his/her own product and to give shape to individual requirements. There is an increasing expectation that one should be able to do this – in all kinds of contexts.

Until recently – apart from a few pioneers – there were only limited possibilities for expressing one's own personal requirements and interests in higher education, and thus for creating a tailor-made programme. Utrecht University, for example, gives Bachelor's degree students considerable freedom of choice to construct their own study programme. The form is still quite traditional: you select an institution, a discipline at that institution, and a programme within the discipline. At some institutions, however, the options for personalising your programme are in fact decreasing because of the growing pressure to accommodate more and more students but with limited resources.

While higher education often still applies a traditional form, all other sectors are allowing consumers to influence products for themselves. The traditional "one-to-many" and top-down structure applied in higher education is incompatible with the "many-to-many" culture that is being reinforced and driven by social media and co-creation technologies. What one does see in the higher education sector however – although still only sporadically – is the use of social media and co-creation within a discipline. For example, wikis (a co-creation technology) can be used to have students define lemmas, and to expand them in succeeding years. Assessment of the information is carried out initially by students and only later by instructors. Other examples include the use of Facebook and discussion forums for particular disciplines. This encourages people to ask questions and to learn from one another.

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A didactic learning theory has developed in this context, namely "connectivism" (Siemens, 2004), in which technology and the Internet play an important role. Learning takes place by the student forming part of a network of knowledge and information exchanges, for example within an online community or network. Connectivism incorporates the enormous source of information provided by the Internet, and emphasises being able to find the right information as opposed to mastering that information. As with all learning theories, there are some snags, for example the need to build up knowledge oneself if one is to be able to assess and analyse information. The theory does perhaps provide a framework that one can apply to learning processes in today's information age.

MOOC's en self learners

The demand for massive open online courses (MOOCs) is reaching unprecedented proportions, and the range on offer is continuing to increase. It is important to note that the use of the term "open" can be misleading. Most MOOCs do have open registration, but they do not provide an open licence for reuse. The fact remains that MOOCs do make free education available and accessible for a large target group, without any real barriers or conditions.

MOOCs are also being developed in the Netherlands, for example at the University of Amsterdam's Communication Science department, where the MOOC will go live in 2013. So will the MOOC on European Law developed by Leiden University. A handful of educational institutions are also starting to accept MOOC credits, and the American Council on Education intends evaluating ten Coursera courses in order to advise on whether the credits that they award should be officially accepted. This shows how MOOCs are set to gain increasing official recognition by accredited educational institutions.

The phenomenon of MOOCs is perhaps an indication of the changing "consumer" of higher education. A shift is in fact taking place from consumers who passively select complete programmes to consumers who construct their own educational pathway for themselves on the basis of their own preferences and requirements. They put together a study programme that keys in better with their own wishes and those of the labour market. As a result, new combinations of higher education are developing in which learners create their own specialisation by constructing their own programme. By "learners" we mean not only students enrolled at an educational institution but also people studying on their own initiative, for example school pupils, graduates, and people within the workforce.

MOOCs and the labour market

January 2012 saw the announcement of Udacity, with courses being offered a month later. This extraordinary speed shows the flexibility of MOOCs, and it indicates that they can focus more quickly on the needs of the labour market then can large educational institutions ("Learning New Lessons", The Economist). This is perhaps their greatest strength given that the labour market is currently confronted by large-scale unemployment amongst graduates and a structural shortage of suitable candidates for high-demand jobs. This trend has been noted in Canada and the United States, including in areas where few higher education graduates are living (The Canadian Press & The Atlantic Cities). Leading universities can perhaps help fill this gap by offering accredited courses online, regardless of location or admission requirements. MOOCs can also clarify which participants achieve a good score, allowing them to function as "scouts" for businesses.

A study of students taking Udacity MOOCs showed that almost 50% were doing so with their future career in mind (Matkin, 2012).
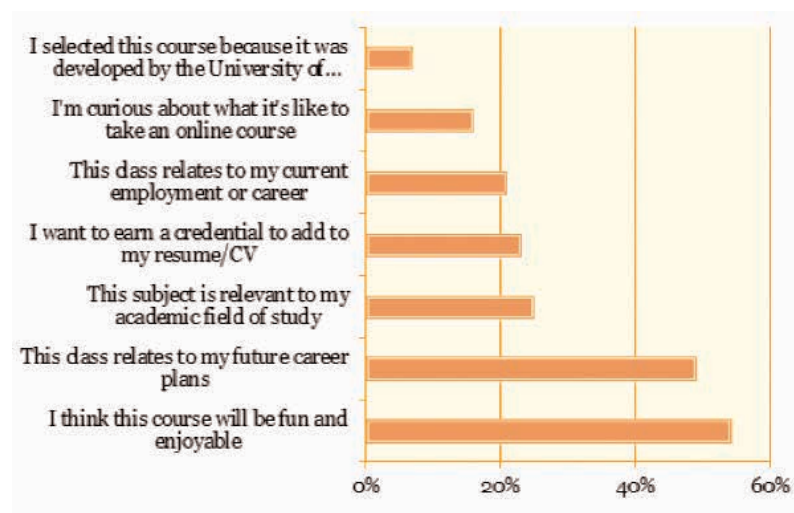
In short, both technology-driven changes in the habits and expectations of self-learners and the dynamics of the labour market are putting pressure on the higher education sector to adapt. This would appear to be creating a kind of "modules buffet". It used to be the educational institution itself that determined the proper composition of programmes; the programmes of the future will more frequently be constructed by learners themselves.

Up to now, open educational resources (OER) have mainly taken the form of content that could be used/reused within existing programmes, with the focus being more on the makers than the learners. These OERs were intended for use within existing educational structures by instructors applying a "one-to-many" approach. For learners, the enrolment threshold here is significantly higher than that for an open or online course. However, a study by Delft University of Technology revealed that 52% of those using its open courseware were students or people trying to decide on a course of study (Jelgerhuis, 2012). That does not detract from the fact that MOOCs are very appealing. The difference to open courses – for example the well-known MIT open courseware courses– lies in the fact that MOOCs strongly promote interaction between learners, something that keys in well with the trend to share knowledge via social media and platforms.

Education and ICT

We are perhaps seeing a turning point in higher education. When technology is adopted, it is often initially applied in order to make better, more efficient, and more effective use of existing educational processes. At first, the traditional form does not change but gradual adoption of the new technology brings about a shift, including in the form.

Take Web lectures, for example. They begin as a kind of reference work for exams but then the new possibilities that they open up come to be utilised, meaning that the way the instructor teaches changes. He/she begins to organise the lecture differently, knowing that it is being filmed and can later be cut up into sections which will need to be easily comprehensible separately. The lecturer can reuse Web lectures from previous years – or parts of such lectures – and provide them again online. He/ she can then structure the live lecture entirely differently, referring for some of the material to the online content.

Technology has always been an integral component of education – one need only consider the impact that the development of printing had. Before the advent of social media tools, flows of information and communication focused on "one-to-many". A single author – or just a few – wrote a book for consumption by a large number of people. There were just one or a few instructors who had knowledge at their disposal and who shared it with learners within educational programmes. Social media and co-creation tools are bringing about a shift in the role of learners from passive consumers of educational programmes to learners who select and construct programmes for themselves. There are already initiatives in which students taking a MOOC organise themselves and construct follow-up courses themselves, for example in the case of the follow-up to the MITx 6.002x course in Circuits and Electronics. A student taking that course joined with others who had done so to develop the 6.003z course (Watters).

The traditional lectures that were shown on a screen for a restricted target-group have now moved to world-wide platforms such as iTunes U and YouTube EDU, which make available countless lectures by leading professors. Nevertheless, the form continues to be "one-to-many", an approach that is sufficient for critical learners with strict quality demands who tap into the sources of knowledge for themselves. What is still missing, however, is a knowledge network made up of learners who support one another and collaborate on the basis of a "many-to-many" approach.

Critics will perhaps argue that the structure of education has remained relatively stable despite the adoption of countless technologies. Here, however, I believe that the adage "Cars did not beget better cars" applies. What makes social media and co-creation tools significantly different to earlier technologies introduced in the education sector is that they facilitate networking and collaboration between people on a scale that was never previously possible, enabling the power of shared knowledge to be accessed. The current generation of MOOCs and the 6.003z course bear witness to this.

Conclusion

It would be naive to think that educational institutions with an excellent reputation will simply cease to be attractive. It is precisely highly respected institutions that are keying into the demand for "buffet-style" education by making their professors available and by collaborating within MOOC platforms. It would also be naive to think that the traditional type of higher education will disappear. "Online networked learning" has countless advantages, but so does getting together in a lecture hall

or classroom. Interaction facilitated by technology is perhaps approaching live interaction, but so far it is still only just approaching it. On the other hand, there is no point in continuing to utilise educational methods merely "because that's how we've always done it". The benefit is to be found in the options for broadening the spectrum by adding educational methods that can better meet the rapidly changing demands of the labour market and the growing number of critical self-learners.

The Netherlands – one of the most "networked" countries in the world – can benefit from adapting its higher education, in other words by making it more flexible and open. The partnerships thus created would make it possible to utilise the strengths of each institution. This would focus worldwide attention on education in the Netherlands, with all the accompanying positive effects such as strengthening the country's position on the international labour market.

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UNIVERSITY OF THE NETHERLANDS

Top professors at Dutch universities will be giving free Internet lectures at the University of the Netherlands. Unlike existing platforms such as iTunes U, YouTube Teachers and TED Education, this platform focuses on Dutch scientists and scholars giving video lectures in Dutch for a Dutch target group of people aged "from 8 to 80". The intention is to make the knowledge of the country's top scientists and scholars available and permanently accessible for the whole of the Netherlands. The lectures can be followed in AIR, and the recordings will be available at www. universiteitvannederland.nl from September 2013: fifteen minutes each day and a new instructor each week. The initiators of the University of the Netherlands are Marten Blankesteijn and Alexander Klöpping.

http://universiteitvannederland.nl

Presentation at De Onderwijsdagen, the annual SURF education event:
http://www.youtube.com/watch?feature=player_embedded&v=gzbDmtY5WbU
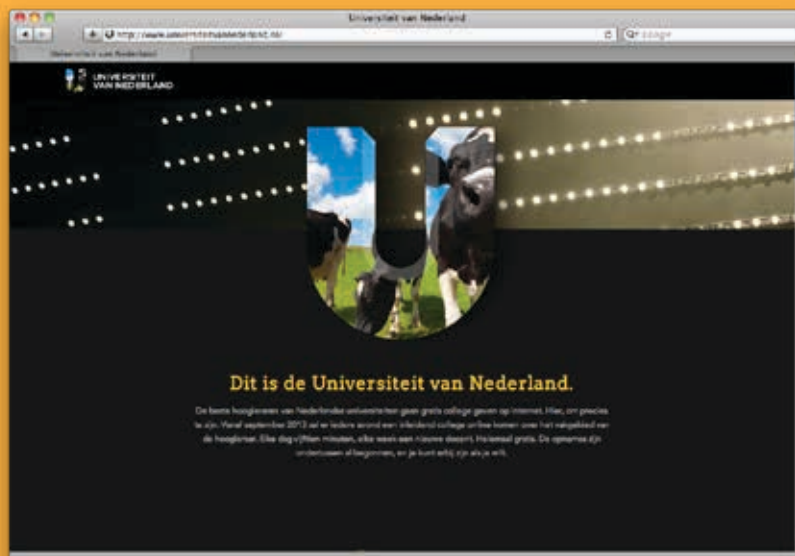
TRENDS IN BUSINESS MODELS FOR OPEN EDU-CATIONAL RESOURCES AND OPEN EDUCATION

by **Robert Schuwer** and **Ben Janssen**

This article deals with the various aspects of the business models associated with open education (OE) and in particular open educational resources (OER). After a brief sketch of international trends in business models for OER and OE, we describe the challenges facing Dutch higher education institutions because of government requirements and developments in the world outside, in particular the rise of massive open online courses (MOOCs). Finally, we present two potential strategic solutions for higher education institutions.

Trends in business models for OER

In Janssen en Schuwer (2012), we introduced Osterwalder's canvas (Osterwalder and Pigneur, 2010) as a means of clarifying a business model for an institution, but also as a way of indicating how a change, for example in the range offered, has effects – or must have effects – on all other aspects of the organisation. In that article, we distinguished three perspectives or approaches that a Dutch higher education institution can select regarding OER, with three different associated types of sustainability:

1. an OER project so as to gain experience, with a funding model;
2. a relatively independent OER activity, intended to generate its own income (revenue model);
3. OER as part of the institution's strategy to provide education for the future.

The number of institutions that say they will be exploring the value and function of OER is increasing (approach 1); this is an international trend. See, for example, the large number of newcomers at the 2012 OpenEd Conference in Vancouver and the growing number of members of the Open Courseware Consortium (OCWC, 2012). More and more complete OER-based courses are also becoming available (OCWC, 2012), generally in the form of projects with external or internal funding. It still appears to be very difficult to apply a sustainable OER-based business model after the pilot phase.

It appeared for a time that Flat World Knowledge (FWK) had a sustainable model (approach 2). It applied a "freemium" business model, in which money is earned by customers paying for OER in printed form. However, the rise of Coursera and Udacity led to FWK adapting the strategy and the business model (Howard, 2012). FWK no longer makes the educational resources available "for free"; they are now exploited commercially. The resources continue to be "open" to the extent that users can alter and add to them. The intention is to continue to use the "wisdom of crowds", but income is necessary in order to guarantee quality.

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Ben Janssen (ben.jansen@ou.nl) also works at the Open Universiteit in the Netherlands and has been involved in its OER projects since the beginning. He was the project coordinator for the study of business models and business strategies based on OER.

The xMOOCs provided by Coursera, Udacity, and others indicate the advent of a new business model (approach 2). The dominant model in commercial distance education is one of education – including testing and certification – on a large scale and at a low price. Revenues are achieved by having a large number of participants. By contrast, the new competitors' model involves providing a complete educational experience, free of charge, created by leading universities such as Stanford, MIT, and Harvard. Parties such as Coursera and Udacity expect to generate their revenues from activities such as testing and certification. A second source of revenues is for third parties to be permitted – on a payment and profit-sharing basis – to make use of copyright-protected materials, with anyone who wishes to take the course having free access. A third source involves the analysis and sale of data that can generate mass participation. A potential fourth flow of revenue is from job placement services, i.e. providing companies with the details of appropriate job candidates from among course participants (in return for payment). See, for example, the details of the contract between the University of Michigan and Coursera (Young, 2012).

It will need to become clear in the next few years whether the new business model is effective, and whether mass participation continues. If that is in fact the case, xMOOCs can become major competitors for open and distance education. Venture capitalists are in any case confident, even if in the way typical of Silicon Valley: build fast, worry about money later.

Two challenges for higher education

In the previous Trend Report, we indicated that we saw the best prospects for higher education institutions when OER could be embedded within their strategy and core activities (approach 3). OER can make a major contribution to the performance and quality of higher education, thus helping tackle a number of challenges.

However, many higher education institutions have neither an overall strategy nor a policy as regards OER. Cost-cutting and performance agreements with the Minister of Education, Culture and Science take precedence (Boon et al, 2012). Nevertheless, the next step can be to make use of the opportunities provided by OER and open education precisely so as to comply with those performance agreements.

What is also relevant is the rapid rise and relatively broad embracing of freely available higher education in the form of MOOCs. Making educational materials

available free of charge – whether or not in the form of OER – is being expanded to the provision of open education (Mulder, 2012). This involves not only providing free materials but also free services such as certification, feedback, and assistance from tutors within discussion forums. As a result, types of education are created that can compete with traditional education (or parts of traditional education). They offer the same product virtually free of charge, an extra-attractive educational method, or a great deal of freedom as regards time and place. The MOOC trend may also be disruptive for the existing education market. Christensen (Christensen et al., 2009) characterises innovations that are disruptive (as opposed to those which are not) as follows:

1. lower gross margins;
2. aimed at smaller target groups;
3. simpler products and services;
4. therefore affordable by a client population that cannot afford the existing products or services;
5. ultimately resulting in improved facilities for customers, meaning that customers are enticed away from existing providers.

Their (partly) open nature means that MOOCs are disruptive mainly for open universities and providers of online learning. After all, providers of MOOCs operate within the same market with a competitive product.

They may also have an impact on normal bricks-and-mortar universities because of developments both within the university and outside it. An increasing number of research universities wish to provide programmes (or parts of programmes) online in addition to on campus, and methods of guaranteed and alternative certification are also being offered (for example by means of "badges"). Examinations for MOOCs can be taken at Pearson test centres in a controlled environment (Boston, 2012). For a few of its open courses, Saylor.org offers assessment (in return for payment) for credits (Saylor, 2012). Accreditation organisations such as the Council for Higher Education Accreditation (CHEA, 2012) and the American Council on Education (ACE, 2012) have now expressed the intention of accrediting MOOCs, thus making their quality apparent.

If this development continues, MOOCs can become important alternative learning pathways – virtually free of charge – not only for lifelong learning but also for initial programmes. This will force higher education institutions to think hard about their position.

From threat to opportunity

As we have seen, many higher education institutions do not seem to be aware of the opportunities that OER and MOOCs can provide in complying with the Ministry of Education's quality agenda and the associated performance agreements. The table below shows how we envisage that contribution.

Quality aspect	Potential contribution of OER/Open Education
Study culture, study success, and quality of education	
Improved coordination within education: - higher-quality intake - better choice of study programme - selective entry requirements	- MOOC as a means of selecting prospective students - OER as an aid to choosing study programme - use of OER for remedial purposes when students go on to a Master's degree programme, for example
Intensive and motivational education	More effective and innovative types of education through availability of external OER, for example flipped classroom (Educause, 2012) or connectivist model for cMOOC (Siemens, 2005)
Excellent educational program-mes, more diverse range of courses, more tailored to target group	Broader range of courses through reuse of OER or use of MOOCs, more tailored to target group through combination with more options for intensive and motivational education
International orientation	Higher profile for institution through publication of high-quality OER (internationally attractive for students and researchers)
Clearer profile and greater differentiation in range of courses available	
Greater range of educational programmes	More educational programmes and learning pathways through use of external MOOCs
Flexibility in higher education for people within the workforce	Flexibility and efficiency through blended learning pathways that reuse online OER of MOOC components

Besides effects on quality, OER and MOOCs can also affect efficiency agreements such as those concluded by the Ministry of Education, Culture and Science.

Efficiency aspect	Potential contribution of OER/Open Education
Fewer first-year drop-outs	See entries on higher-quality intake and better choice of study programme in previous table
Duration of studies/success rates	Better quality and also subject offered several times per academic year, with non-standard version being based on OER. See also quality entry in previous table
Educational intensity (contact hours, staff/student ratio)	More efficient educational processes by sharing the programme via online variant; use of OER or MOOCs for efficient development of educational resources
Quality of instructors	Use of freely available educational resources for professional training, including through independent study

Integration of OER into business strategy and model

In order to utilise the potential of OER and MOOCs, higher education institutions will need to include them in the range that they offer. We illustrate what this may mean by giving two examples, using Osterwalder's canvas in order to visualise matters.

### Example 1: OpenU at the Open Universiteit in the Netherlands

At OpenU, 10% of each Open Universiteit course is provided in the form of OER. Customers can remain anonymous or can register free of charge and create a profile, or can be paying customers. Each individual or organisation can take out a subscription to products or services. Communities are encouraged and all forms of education are provided free of charge, for example online master classes. The following figure shows the consequences for the Open Universiteit's business model. Black indicates what remains the same and red what changes.
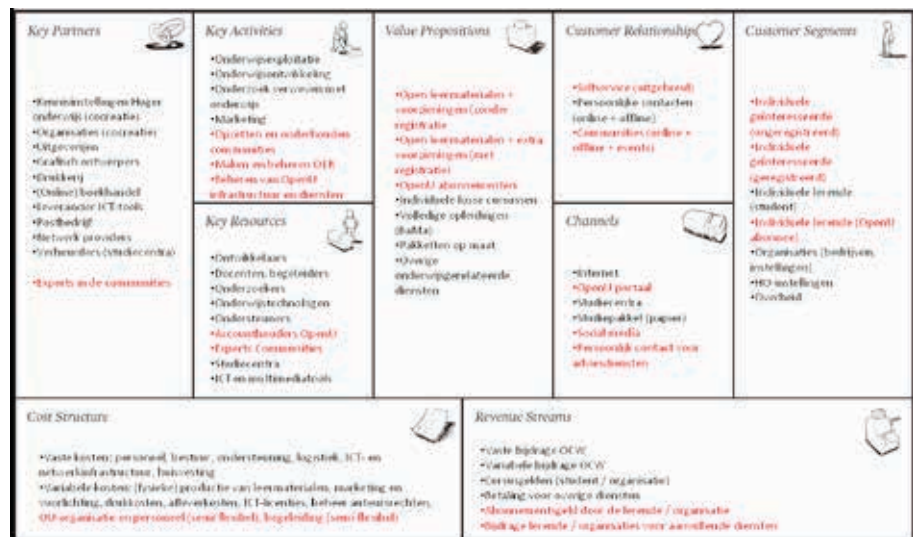
The figure shows that all elements that determine the business model have an influence. The richer value proposition allows more target groups to be reached via more channels. The use of communities intensifies and expands relationships with the target groups. Internally, new activities are created, requiring new kinds of expertise. All this leads to extra costs that are primarily associated with the semi-flexible deployment of expertise and supervision because of greater dependence on demand. These additional costs will at least need to be covered by additional revenues via subscription fees and the sale of extra services for freely available course material.

Example 2: "Normal" university begins publishing OER

The second example is of a university that already makes some of its educational resources available within an ELE. It then decides to make the resources for a number of subjects available as OER, so that prospective students (both Dutch and foreign) can get a better idea of what its programmes involve. This decision is implemented across the board and leads to the following changes in the business model. Once again: black indicates what remains the same and red what changes.
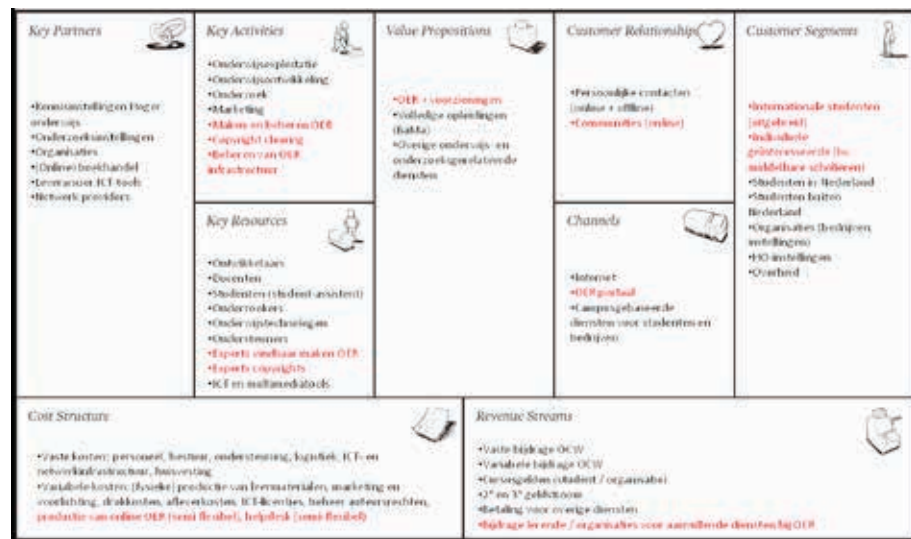
The expansion of the value proposition makes it possible to reach a larger target group, which also creates numerous contacts (via the communities). In order to offer OER, the organisation will need to carry out specific new activities, which will also require specific additional expertise. The extra cost of this can perhaps be compensated for because target groups will utilise the OER for different purposes to those originally foreseen, and will want support – for which they will pay – from the institution. Another possibility is a higher intake of students and – because of the higher profile – more money from indirect funding and from contract work.

In conclusion

Every Dutch higher education institution is currently confronted by two issues: how to comply with the performance agreements concluded with the Ministry of Education, Culture and Science and how to deal with the competitive rise of freely available education via MOOCs. In this article, we have shown why and how OER can make a substantial contribution to dealing with both these issues. This does mean that OER will need to become part of each institution's strategy and core activities, which will also lead to their becoming sustainable.

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Illustrations

The figures showing the business model canvas are based on the model at http://www.businessmodelgeneration.com. If this article is reproduced, these figures must be published subject to a CC BY-SA licence.

MOOC MOOC: THE MOOC ABOUT MOOC'S

It was inevitable: The mania for MOOCs has resulted in a MOOC about MOOCs, and there's even a MOOC mascot.

If you want to learn all about the nature of the beast, then you need to wait till the next feeding time. The little sweetie is in its cage just at the moment, until the next time it's allowed out, and the public can't play with it live for a while.

Fortunately, the course materials are available online in the museum setting.

Surf and shudder ...

http://www.moocmooc.com/
https://learn.canvas.net/courses/27/

AN INTERNATIONAL PERSPECTIVE ON OPEN EDUCATIONAL RESOURCES: THE INFLUENCE OF IGOS ON THE OER MOVEMENT

by **Fred Mulder** and **Hester Jelgerhuis**

A growing number of educational institutions and governments worldwide are investing considerable sums of money and effort in open educational resources (OER), learning materials that are freely available for use/reuse online. But a wide variety of international organisations are also active in the area of OER. This article focuses on three intergovernmental organisations (IGOs), UNESCO, the OECD and the European Union. We briefly describe their initiatives and the importance of their efforts for the OER movement. We also consider what this may lead to in future, including for Dutch higher education.

OER: a worldwide movement in a world in transition

The year 2001 saw the start of a new trend in education when the Massachusetts Institute of Technology (MIT) began publishing open – i.e. free – digital courses online (known as OpenCourseWare or OCW). This led to a worldwide OER movement at educational institutions. That movement received a tremendous boost in the autumn of 2011 when a number of top US universities introduced massive open online courses (MOOCs) (Schuwer, Janssen and Van Valkenburg, 2013).

National and other governments now also play a role in the worldwide OER movement. India was the first country to embrace OER (in 2007) as the ultimate road to the future. The Netherlands followed with its own national "Wikiwijs" programme, aimed at making OER mainstream in every sector of education, and involving approximately EUR 8 million in public funding in the 2009-2013 period. Between 2011-2014, the US government is investing USD 2 billion in a programme set up by the Departments of Labour and Education aimed at improving education at community colleges. In the programme, all the educational resources will be OER. The United Kingdom's large-scale JISC/HEA OER programme has been running since 2009 and has an overall budget of more than GBP 13 million. Poland introduced its digital school programme in 2012. This EUR 13 million programme also involves the development of open educational resources. A similar initiative is under way in Slovenia. Indonesia recently decided to make an across-the-board transition to OER, and other initiatives have been launched in Brazil, China, Korea, South Africa, Turkey and Vietnam.
Countless international parties are also promoting OER. Examples include the Open CourseWare Consortium (a worldwide community of hundreds of higher education institutions, consortiums and associations), Creative Commons (a non-profit organisation that focuses on "open" copyright licensing), associations of open universities (EADTU in Europe, ACDE in Africa, AAOU in Asia, and ICDE worldwide), and funding foundations (Hewlett Foundation, Gates Foundation, and Open Society Foundation). Finally, there are intergovernmental organisations (IGOs) that are advocating OER, the main ones being UNESCO (2002 onwards), the OECD (2007 onwards), and the European Union (2012 onwards). They are the subjects of this article.

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1. UNESCO (a decade of promoting OER awareness and policy worldwide)
http://www.unesco.org/new/en/communication-and-information/
access-to-knowledge/open-educational-resources/

**United Nations
Educational, Scientific and
Cultural Organization**

The United Nations Educational, Scientific and Cultural Organization (UNESCO) is the United Nations' leading organisation for education, science, culture, and communication. As an IGO, UNESCO is a trailblazer in the OER movement; indeed, it foresaw the enormous potential of OER in ensuring "education for all", specifically in developing countries, as far back as 2002. That was also the year in which UNESCO introduced the term "OER" during the first Global OER Forum. In UNESCO's vision, OER can contribute to making education accessible to everyone, all around the world. UNESCO views OER (and the broader concept of open education – see below) as an effective means of meeting the learning requirements of children, teenagers and adults worldwide, and of increasing their chance of getting an education. UNESCO believes that access to good education is the key to peace, sustainable development, and intercultural dialogue.

In the past ten years, UNESCO has made a major contribution to the OER movement, specifically in terms of raising OER awareness internationally and advocating and encouraging OER policy among governments and other relevant parties. It has built a large-scale network and offers a discussion platform to that end, organises seminars and conferences at regular intervals, installed two UNESCO chairs for OER (at the open universities in the Netherlands and in Canada; these will be followed in early 2013 by chairs in Brazil and New Zealand, with plans being made for Africa, Asia and Latin America), and frequently issues useful publications about OER. Recent titles include Guidelines for OER in Higher Education (November 2011), Fostering Governmental Support for OER Internationally (March 2012) and Survey on Governments' OER Policies (Hoosen, June 2012). All three were published in consultation with the Commonwealth of Learning (COL), another IGO that has a good track record in OER. The two organisations have collaborated very closely in the past two years, leading to the World Open Educational Resources Congress in June 2012 in Paris.

The June 2012 survey report functioned as an overture to the world congress. UNESCO's survey reveals various interesting examples of existing or upcoming government-driven OER policy, but it also emphasises that OER still play an

insignificant role in the great majority of countries, let alone serve as the subject of any policy. The world congress led to a notable milestone when it adopted the 2012 Paris OER Declaration (http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/CI/pdf/Events/English_Paris_OER_Declaration.pdf).

This ten-point declaration offers a comprehensive set of arguments in favour of OER. Although it is not mandatory for UNESCO countries, it does summon them to take action, and in doing so serves as a guidepost. The box below presents two of the items in the declaration, which also makes recommendations for developing adequate infrastructures, promoting the understanding and use of open licensing frameworks, supporting capacity-building for the sustainable development of quality learning materials, fostering strategic alliances, encouraging OER in a variety of languages and cultural contexts, encouraging research on OER, facilitating the finding, retrieving and sharing of OER, and encouraging the open licensing of learning materials produced with public funds.

The World OER Congress held at UNESCO, Paris on 20-22 June 2012, ...recommends that States, within their capacities and authority:

a. Foster awareness and use of OER. Promote and use OER to widen access to education at all levels, both formal and non-formal, in a perspective of lifelong learning, thus contributing to social inclusion, gender equity and special needs education. Improve both cost-efficiency and quality of teaching and learning outcomes through greater use of OER. (...)

c. Reinforce the development of strategies and policies on OER. Promote the development of specific policies for the production and use of OER within wider strategies for advancing education. (...)

In terms of a follow-up to the 2012 Paris OER Declaration, the first requirement is to see that it is more broadly accepted. Additionally, countries will need to be induced and encouraged to take the recommendations on board. International projects can help in that regard.

2. OECD (encouraging and instigating national OER policy in OECD countries)
http://www.oecd.org/edu/ceri/centreforeducationalresearchandinnovationceri-openeducationalresources.htm

The Organisation for Economic Cooperation and Development (OECD) is an alliance of 34 countries for discussing, studying, and coordinating social and economic policy. In 2007, the OECD published its report Giving Knowledge for Free: The Emergence of Open Educational Resources. This authoritative, frequently cited report describes the reasons for the rise of OER, the stakeholders involved, and the potential impact on education. It sparked off a process of consciousness-raising. In 2011, OER were placed on the agenda of the OECD Education Policy Committee, and the OECD commissioned a study of government policy on OER in its 34 member countries. The results were discussed by the Education Policy Committee in November 2011. The documents included a draft OECD OER Recommendation, one of the most powerful OECD instruments for inducing member countries to conclude agreements (binding or otherwise). OER met with considerable support, entirely in keeping with the encouraging outcomes of the study, but the member countries failed – unsurprisingly – to arrive at the required unanimity to issue a Recommendation. The research report

was released in 2012 (Hylén, Van Damme, Mulder and D'Antoni, 2012), shortly before UNESCO published its survey, based on virtually the same questionnaire. The most important outcomes are given in the box below.

Some conclusions and outcomes of the OECD study

http://www.oecd-ilibrary.org/education/open-educational-resources_5k990rjhvtlv-en

• 23 out of 28 countries responding indicated they are active in the OER movement in one way or another.
• Looking at the benefits of OER, the most relevant advantage seems to be that OER offers open and flexible learning opportunities. Almost as advantageous is the increased efficiency and quality of learning resources. Cost efficiency is also seen by many as a benefit of OER.
• Copyright issues and publishers, together with the sustainability issue, seem to be the two areas of greatest concern for countries, followed closely by the issue of the quality of resources. … Language and cultural diversity is an area where countries diverge in their opinions.
• Six countries already have such OER strategies or policies in place (at the Ministry of Education or another public agency) and seven more were in the process of developing them. Eleven more countries are currently discussing such strategies.
• Four issues stood out (for possible governmental responsibilities and tasks with regard to OER): 1) promoting accessibility to learning resources, 2) improving the efficiency or cost effectiveness of education, 3) raising the quality of education, and 4) enhancing the awareness of OER.

It was recently agreed that the OECD's Centre for Educational Research and Innovation (CERI) will seek out evidence for the advantages ascribed to OER. That may well provide governments and institutions with a better basis for open education policy (within the context of OER). With the prospect of more evidence on the horizon, the possibility of an OECD OER Recommendation may be revived (in late 2014?).

3. European Union (a new, influential, wide-ranging programme: "Opening up Education")
http://ec.europa.eu/dgs/education_culture/consult/open_en.htm

European Commission

In late 2011, the European Commission's Directorate-General for Education and Culture asked itself what the EU might do to join in the worldwide OER movement. This led to a process with input from various experts, including one of the authors of this article (FM), and which resulted in a proposal for an EU initiative called "Opening up Education". The name refers to the umbrella term "open education" but indicates the transition to a more open form of education, while not dangling the prospect of a single, ideal model. Such nuance is justified, in view of the desired – and, in the view of many, necessary – diversity.

After issuing the document Opening up Education, the Commission organised a public consultation in the latter half of 2012. In November of the same year, the Commission presented its new strategy, Rethinking Education Strategy, in which it calls for a scaling up of the use of ICT and OER. It also wishes to analyse the impact of providing EU support for the use of OER, for example through further public consultation, in order to pave the way towards the start, in mid-2013, of the Opening up Education programme.

In Opening up Education, the Commission proposes to exploit the potential contribution of ICT and OER to education and skills development along three main lines:

1. *Opening up content:* the OER line, considered relevant mainly as a means for increasing opportunities for informal learning, improving access to education, raising the quality of the learning materials, and developing new forms of assessment and certification.
2. *Opening up learning and teaching:* this line focuses on the learner, with personalised learning, customised learning, blending and alternating various teaching methods and locations, and with a dynamic and creative learning environment.
3. *Opening up to collaboration:* this is the line in which learning networks and communities of practice become matter-of-course ways of learning, and in which bridges are built between formal, informal and non-formal learning thanks to collaboration between the education sector, the business community, and training and social facilities.

By supporting EU-wide ICT and OER policymaking, the EU can leverage the efforts of its Member States and build enough critical mass to modernise education and training systems. The entire range of EU instruments can be applied, including policy guidelines, EU regulation, funding mechanisms, sharing of practices, and innovative pilot projects. The point is to:
• help create transparent access to top-quality OER;
• launch an international political dialogue on the relationship between education, business and society, with a view to sustainable policymaking in this area;
• have the EU show leadership with respect to innovating education and training (by means of ICT and OER);
• expand the EU's knowledge base on ICT and OER for education and skills development so that policymaking is preferably evidence-based.

Opening up Education through Technologies was the theme of a special conference held on 9-11 December 2012 in Oslo for the EU Education Ministers and their delegations. The conference clearly embraced the new initiative, especially with regard to content (OER). Below is an excerpt from the address by Androulla Vassiliou, European Commissioner for Education, Culture, Multilingualism and Youth:

"And let us think of the possibilities offered by the approach represented by the Open Educational Resources movement which is playing an increasingly important role, especially in higher education - but the other educational sectors are also catching up. (...) Top university courses are now available interactively, not just to a select few, but to students all over the world. (...) The new possibilities for more personalised learning, collaborative learning, learning by doing, developing critical thinking, complex processing, and for nurturing creativity; these are all ways of learning that will increase both the quality and the efficiency of education. (...) In the coming months, in close collaboration with my colleague Neelie Kroes and in follow up to the ideas I set out in Rethinking Education, I will work on developing a new EU Initiative on opening up education by embedding ICT and OER into the learning and teaching that takes place in our schools and universities."

The conference formulated Presidency Conclusions stressing the urgent need to modernise education through the Opening up Education programme in times of economic constraints, high youth unemployment and social exclusion. The conclusions refer to the need for a digitally competent population, greater flexibility, personalisation, learning networks, lifelong learning, and a solid bridge between informal and formal learning. The document ends with an unmistakeable general conclusion: "Finally, participating ministers and heads of delegation...welcomed the intention of the European Commission to launch a new initiative on 'Opening up education' supporting the uptake of ICT and open educational resources in education and share our commitment to contribute to its development."

The prospects for Opening up Education appear to be good. It is a new, influential, EU-wide initiative that will be accompanied by proven, effective EU instruments and – unlike in the case of UNESCO and the OECD – a substantial budget. It can inspire, mobilise, facilitate and support EU Member States and their educational institutions in their OER efforts. It can harmonise, create synergies and (if desired) emphasise diversity between the EU countries and their educational institutions. And it can clearly make a valuable contribution to the international educational arena.

Opening up Education could well succeed the Bologna process, a notably successful and major innovation for higher education in Europe, which joined top-down and bottom-up initiatives in a shared sense of momentum and a clearly defined purpose, i.e. to contribute to mobility, quality and harmonisation in higher education. Something similar could also happen in the Opening up Education programme, be it that this programme covers all sectors of education and has a different purpose, i.e. to contribute to accessibility, quality, efficiency and innovation right across education (Mulder, 2012).

Looking ahead

In the foregoing, we familiarised ourselves with the initiatives and efforts of three IGOs: UNESCO, the OECD and the European Union. They are significant for the worldwide OER movement but also for individual countries and educational institutions, including the Netherlands and the Dutch higher education sector. UNESCO focuses, quite understandably, on developing countries and emerging economies, but the message conveyed in the 2012 Paris OER Declaration takes a broader view. The Netherlands National Commission for UNESCO has not been sitting on its hands in recent years and has made OER one of its priorities. It is this situation that defines the international context in which countries are encouraged and invited to join the OER movement. The Netherlands is an active member of the OECD, and was definitely so when OER were added to the OECD's agenda. We continue to work towards an OECD OER Recommendation. However, the European Union's initiatives are even more relevant because they offer a greater sense of "ownership", operate on more familiar territory, and are accompanied by substantial budgets. These initiatives could lead to an unstoppable course of action with all the urgency of the Bologna process, resulting in a "European OER Area" that sets an example for other continents.

OER have gone beyond the phase of hype and "believers". We are entering the phase of mainstreaming. The Netherlands and its Wikiwijs are in a very good starting position in that regard, unless we begin to suffer "early adopters' fatigue".

There is one more remark that we would like to make about the developments in the EU. OER are not identical to Open Education; they are simply one of its components (Mulder and Janssen, 2013). In Opening up Education, the Commission is spreading the message that it is not necessary – and in fact undesirable – for all of education to become "open" in every respect. That reservation does not apply to the OER component because the advantages of open educational resources make them attractive for education regardless of its nature, philosophy, or culture. In addition, there is virtually across-the-board political support for an OER approach. In that sense, it would be good for Opening up Education to focus on OER and their mainstreaming – that would be ambitious and difficult enough (Mulder, 2012).

The same applies to the Netherlands and Dutch higher education, where a recent survey of OER in the Dutch educational landscape (OER-Hollands landschap, 2012) reveals that much remains to be done. Wikiwijs is naturally available to higher

education, and SURF has become very active in recent years with its own OER programme and an OER Special Interest Group (as well as with this trend report). But there is still a long road ahead before all institutions of higher education have been mobilised for OER. This is up to the institutions but also to the Ministry of Education. This approach would nurture and perpetuate the Dutch tradition of innovation, top-quality education, and internationalisation. It will require patience and perseverance, but it is not something we can avoid.

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- OECD's OER strategy: http://www.oecd.org/edu/ceri/centreforeducationalresearch andinnovationceri-openeducationalresources.htm
- European Commission's Consultation on Opening up Education: http://ec.europa. eu/dgs/education_culture/consult/open_en.htm
- European Commission's Rethinking Education strategy: http://europa.eu/rapid/ press-release_IP-12-1233_en.htm
- Androulla Vassiliou: http://europa.eu/rapid/press-release_SPEECH-12-933_ en.htm?locale=en
- 'Opening up education through technologies': http://ministerialconference2012. linkevent.no
- Presidency Conclusions: http://www.moec.gov.cy/anakoinoseis/2012/ pdf/2012_12_13_conference_technologies_conclusions.pdf
- Wikiwijs: http://www.wikiwijs.nl/home/
- SURF OER programme: www.surf.nl/openeducationresources
- Study Een OER-Hollands landschap: http://www.surf.nl/en/actueel/Pages/ DutchhighereducationmovingforwardwithOpenEducationalResources.aspx

OER BLOGGERS

Bloggers are playing an increasingly important role in providing news and shaping public opinion about education. Blogs offer a considerable amount of constructive criticism that can be useful in provoking and fuelling the necessary discussions. Dutch education bloggers, some of the authors who have contributed to this trend report, and SURF's OER Special Interest Group are high-profile members of this illustrious company.

We list a number of the relevant blogs below. They are well worth reading and offer trendwatchers ample food for thought!

- OER Special Interest Group: Conference blogs https://www.surfspace.nl/sig/5-open-educational-resources/23-congresblogs/
- Wilfred Rubens: Technology-enhanced learning http://www.te-learning.nl/blog/
- Willem van Valkenburg: Blogging about OER, OCW, Blackboard, Mobile, Social Media and other interesting stuff http://www.e-learn.nl/
- Pierre Gorissen: ICT and education blog http://ictoblog.nl/
- Ria Jacobi: Mobility & open education http://mobiliteitenopenonderwijs.wordpress.com/
- Robert Schuwer: OpenER – open educational resources at the Open Universiteit in the Netherlands http://blog.opener.ou.nl/
- Nicolai van der Woert: Open & participatory education, technology-enhanced learning, educational ecosystems http://futureresources.wordpress.com/
- Peter Sloep: Stories to TEL (Technology-Enhanced Learning) http://pbsloep.blogspot.nl/
- Jeremy Knox: Technology, culture, learning http://jeremyknox.net/2012/03/28/five-critiques-of-the-open-educational-resources-movement-oer-highered-elearning-edtech/
- Audrey Waters: Hack Education http://www.hackeducation.com/index.php
- Ismael Peña-López: ICTlogy http://ictlogy.net/
- Michael Sean Gallagher: M-learning in the humanities http://michaelseangallagher.org/
- Doug Belshaw: Open Educational Thinkering http://dougbelshaw.com/blog/
- Paul Stacey: Musings on the edtech frontier http://edtechfrontier.com/
- Terry Anderson: Virtual canuck – teaching and learning in a net-centric world http://terrya.edublogs.org/
- The Ed Techie: Educational technology, digital scholarship, open education, e-learning, plus some personal stuff thrown in http://nogoodreason.typepad.co.uk/

- Ishan Abeywardena: Ishan Talks http://www.ishantalks.com/
- Michael Feldstein: Phill Hill et al., e-Literate http://mfeldstein.com/
- George Siemens: Elearnspace – learning, networks, knowledge, technology, community http://www.elearnspace.org/blog/
- Stephen Downes: Stephen's web http://www.downes.ca/
- Dave Cornier: Dave's educational blog http://davecormier.com/
- Tony Bates: Online learning and distance education resources http://www.tonybates.ca/
- David Wiley: Iterating toward openness http://opencontent.org/blog/
- Gráinne Conole: e4innovation.com – e-learning innovation, research, evaluation, practice and policy http://www.e4innovation.com/
- David Murphy's occasional blog: Miscellaneous meanderings on matters mostly to do with online and open learning http://opob.edublogs.org/
- David Kernohan: Followers of the apocalypse http://followersoftheapocalyp.se
- Alan Levine: CogDogBlog http://cogdogblog.com/
- Mark William Johnson: Learning Technology, Higher Education, Complexity and Music http://dailyimprovisation.blogspot.de/
- Beth Kanter: How Networked Nonprofits Leverage Networks and Data for Social Change http://www.bethkanter.org/
- Wendy Drexler: Teachweb http://teachweb2.blogspot.com
- Education bloggers: Collection of weblogs (2 sites) about education http://www.edubloggers.nl/ http://edublogs.org/

LEARNING PATHS AND OPEN EDUCATIONAL RESOURCES: TRENDS AND OPPORTUNITIES

by **José Janssen**, **Adriana Berlanga** and **Rob Koper**

Open educational resources (OER) are seen as a potential means of providing more tailor-made education that is both efficient and economical (Evertse, 2011; Jacobi & Van der Woert, 2012). At the same time, however, a number of authors have identified two significant obstacles. The number of OER available and their fragmented nature make it difficult to find suitable material, and there are also concerns about the reliability and quality of that material (Evertse, 2011; Jelgerhuis, 2012; Kuipers, 2012). The first of these problems can be considered one of navigation: how do I find my way around the large range of resources available? In the case of the second problem, "content curation" is seen as a possible solution (Kuipers, 2012). If we can believe Nathan Harden (2013), this problem will however be reduced, given that the successful introduction of Massive Open Online Courses (MOOCs) offers the prospect of a future in which leading higher education institutions will be able to develop high-quality educational resources and make them available worldwide on a large scale. Other institutions ("lesser gods") will need to make more and more use of these resources "becoming, in effect, partial downstream aggregators" (Harden, 2013).

Be that as it may, how to create the best possible learning path remains a challenge, for instructors and learners. And this does not just concern OER, or how OER should be incorporated into an existing curriculum: it is a matter that extends much further, because the problem of "a tailor-made learning path" is not a new one and is certainly not unique to OER, as we will explain below.

This article explains a set of tools developed in order to describe learning activities and learning paths transparently, so that it becomes easier to determine whether they are aligned with the desired learning objectives and are interchangeable (or have interchangeable components). A learning path is defined as a set of one or more learning activities aimed at achieving certain learning objectives. Our argument will make clear that the challenge we face extends beyond the integration of OER within existing curricula, and that we need to view OER as a single source for learning and personal development, alongside many other non-formal and informal sources for learning (CEC, 2000).

OER-problem?

The navigation problem is not anything new. It already occurred within the context of higher education, which is in fact reasonably well structured but increasingly modular. And that is not to mention the broader context of lifelong learning, in which the quest for personal development opportunities transcends the boundaries of formal, non-formal and informal learning (Janssen, Berlanga, & Koper, 2011). The navigation

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problem in fact operates at two levels. In the first place, there is the question "How do I choose a learning path? (in the context of higher education: "Which programme do I choose?"). When the learning path is complex, the next question is "How can I follow this learning path as efficiently as possible?" (in the context of higher education, this involves questions such as "Which course should I take first?" or "Can I replace this course by a course offered by a different institution?") Questions such as these arise, for example, when one looks at MIT OpenCourseware (MIT, 2012), an example of OER comprising a number of complete curricula. Based on the written explanations of the curriculum, the learner him/herself must decide on the order in which to take the courses. And we have not yet considered the question of whether these courses are interchangeable with courses offered by other institutions.

The idea of the instructor as a content "curator" as outlined by Kuipers (Kuipers, 2012) can provide a remedy that also offers guarantees for the quality of the resources offered: the curator selects high-quality material, which may or may not be in the form of a set from which students can then make a selection on the basis of their personal preferences. But there are at least four reasons for viewing "content curation" as only part of a solution rather than an actual solution. In the first place, the navigation problem is not solved but is passed on to a small number of people and consequently restricted to them. But even that is questionable because, secondly, it is not inconceivable that the range of resources offered will remain considerable even after selection and after receiving the content curator's "seal of approval". Thirdly, this solution is restricted to the use of open learning resources in a formal learning context, at least if the role of content curator is linked to formal educational institutions. Finally, the content curator will need to have tools available with which to provide learners with a clear description of the learning resources and learning packages that he/she puts together.

Conole (2010) describes tools to support open learning design, but these focus on the design of a course and they assume a knowledge and understanding of educational design at the level of the instructor. A recently developed learning path specification provides pointers for describing learning paths in a way that offers opportunities for both instructors and learners (Janssen, 2010a). As we have already seen, a learning path is defined as a set of one or more learning activities aimed at achieving certain learning objectives. Learning activities can be very different in their extent and content, ranging from reading a text or watching a video, via participating in a forum or workshop to taking a whole course. This means that a learning path can vary from a small-scale activity to a course or even the description of a full-scale curriculum.

Tools

The learning path specification makes it possible to describe both the content and the structure of all possible learning paths; it does not matter whether one is dealing with formal learning, non-formal learning, informal learning, or a combination of these. The aim of the specification is to draw up transparent descriptions of learning paths so that:

1. it becomes easier to compare learning paths and select them;
2. it becomes easier to adapt learning paths, taking account of competencies acquired previously;
3. it becomes possible to provide automatic support for learners who are following a learning path.

The figure below shows the processes that can be supported by means of the learning path specification.
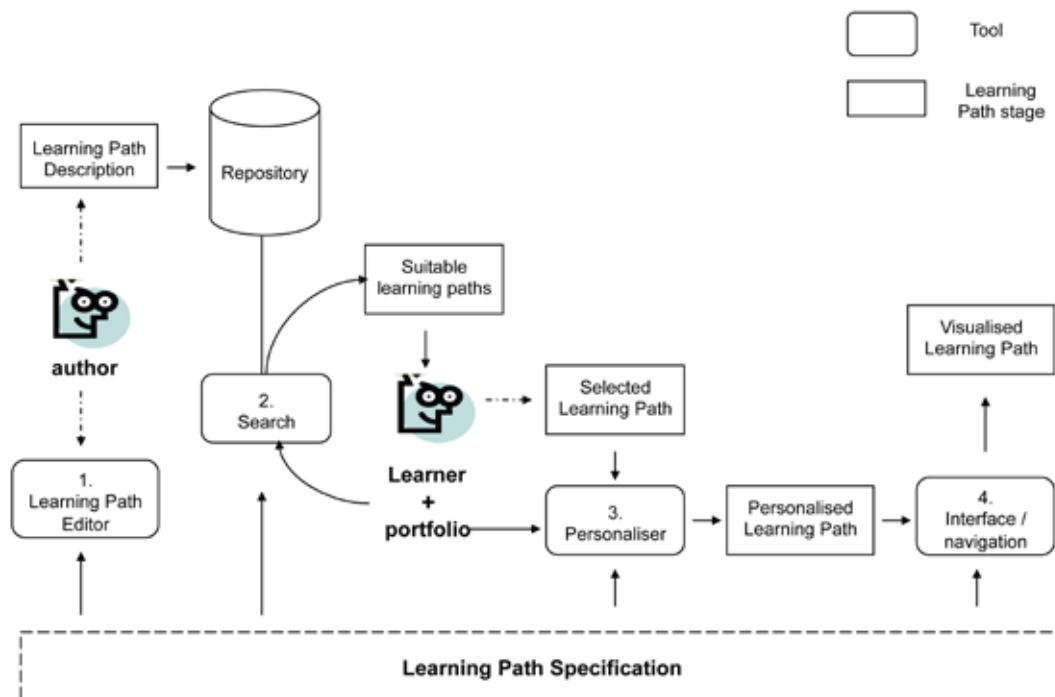

Figure 1: Tools and processes supported by learning path specification (Janssen et al. 2010)

Both the learning path and the learning activities that it comprises are described using metadata that provides information on the content, learning process, and schedule (for example: title, language, provider, supervision, testing, contact hours). This metadata plays a role in selecting a learning path. The structure of the learning path guides the learner along it: "It's better to do activity X before activity O"; "You can only tackle this activity once you've completed activity Y"; or "Do the following activities in the order you prefer". It is also possible, however, to define a set of alternatives – for example alternative OER – for achieving a certain learning objective or only to outline a number of preconditions for selecting an activity, thus allowing the learner scope for constructing a portion of his/her own learning path.

A tool has been developed with which to describe learning paths in this way: the learning path editor (Melero Gallardo et al., 2010). A video demonstration of the tool is available at http://dspace.ou.nl/handle/1820/2403 (Janssen, 2010b). Initial evaluation indicates that education advisers at the Open Universiteit in the Netherlands are able to work with this tool, and most of them see this approach as having benefits for their own teaching as regards saving time, efficiency, and greater professionalism. Describing learning paths in this way requires an investment, but ultimately everyone will benefit. It will become easier, for example, for institutions and learners to describe competencies acquired elsewhere and to determine which existing learning paths they can be incorporated into. Strictly speaking, the learning path specification offers no guarantee for the quality of the learning activities included, but metadata does provide indications when it gives information about the provider, any formal recognition, options for supervision, etc.

Conclusion

Given the extent and fragmentation of the OER options, it is not easy for instructors and learners to find their way and make the best choices. The problem is not specific to OER, however, but even applies within the relatively structured range offered by institutions within the sector of formal education, not to mention the broader context of lifelong learning. This does not mean, however, that OER cannot be an important incentive for revising the existing infrastructure: "The open-source model will offer much more flexibility, though still maintain the structure of a major en route to obtaining a credential. Students who aren't interested in pursuing a traditional four-year degree, or in having any major at all, will be able to earn meaningful credentials one class at a time" (Harden, 2013). Harden draws a parallel with the music industry: it used to be that you had to buy the whole album, but now you only need to buy the tracks that you really want to listen to. In that connection, Harden notes that in the United States 40% of all college students are adult, non-traditional students. The parallel with the music industry may be illuminating, but it only goes so far because in order to know whether you want to buy a track you only need to listen to it, and buying it requires only a small investment; that is definitely not the case when someone is investing in education and their personal development. A uniform, transparent and interoperable model for describing learning paths can contribute to more effective choices in this area.

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OER KNOWLEDGE CLOUD

The OER Knowledge Cloud is a portal giving access to publications about open educational resources. Besides papers from scientific journals, the database comprises reports, conference papers, presentations, and reports of forum discussions. The OER Knowledge Cloud is intended to bring together these openly available publications so as to simplify access to them. The publications are supplied by authors from all over the world.

The OER Knowledge Cloud is an initiative of the UNESCO OER chair at Canada's Athabasca University.

https://oerknowledgecloud.org

THE HUMAN FACTOR IN THE ADOPTION OF OPEN EDUCATIONAL RESOUR- CES: WHAT DETERMINES READINESS TO SHARE?

by **Wilfred Rubens** and **Wim Didderen**

What determines the readiness of instructors to share open educational resources (OER)? To put that question more defensively: what stops them actually incorporating OER into their teaching? We approach that question from the perspective of change. Based on various sources, we identify a number of reasons why people are resistant to change (see for example Nathans, 1994; Moss Kanter, 2012; Cuban, 2011; Grush, 2011). To what extent are these reasons relevant to the use of OER? And what can one do to counter them?

Resistance to change

The implementation of OER in Dutch higher education is currently shifting from the pioneering phase to a phase of broader development (Boon et al., 2012). This is a phase in which – following in the footsteps of the genuine trailblazers within the organisation – a broader group – the "early majority" (Rogers, 1983) – comes into contact with the innovation concerned. This phase raises questions, concerns, and also resistance among instructors. We will consider a number of types of potential resistance in the context of the implementation of OER. Here are a number of possible situations.

1 Undermining of autonomy
The changes run counter to instructors' autonomy. They are therefore afraid of losing control of matters, something that can happen, for example, if the institution obliges them to make use of OER. This kind of resistance can be avoided by involving staff in the decision-making regarding OER, and by giving instructors freedom of choice within the framework of the change. This promotes a feeling of ownership.

2 Uncertainty
If OER policy is formulated without any concrete objective or perspective, it leads to uncertainty, which the majority of people do not like. This expresses itself in a number of different ways. A recent survey of OER in the Dutch educational landscape (OER Hollands landschap, Boon et al., 2012) shows evidence of a Catch 22 situation that is typical of the pioneering stage of innovation:
- If there is no established OER policy – which was the case in 2012 at more than 90% of Dutch higher education institutions – then individual OER-related activities become vulnerable and susceptible to being classed as a "hobby" or "illegal". That does not invite more and wider sharing.
- As long as no substantial (quantifiable) benefit or added value on a broader scale has been demonstrated, development of an OER policy will enjoy only low priority.

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A second possible cause of uncertainty is concern about a loss of quality. The promise is that OER will in fact lead to improved quality because of the extra transparency resulting from the options for providing feedback on resources and for adapting materials (Feldstein, 2009). At the same time, however, there are concerns about a loss of quality (Richter & Ehlers, 2010; Boyd Myers, 2011; Bates, 2011), particularly if the materials concerned are not reviewed and filtered by experts.

By making OER available, those involved in educational development place themselves in a vulnerable position. This too leads to a feeling of insecurity and uncertainty. As a result, instructors share educational resources with one another within a closed and secure environment. This is probably more frequent than it would appear from investigation of OER in Dutch higher education (Boon et al., 2012).

Fourthly, a feeling of insecurity may be caused by the fact that OER can contribute to students having greater control of their own learning process (Grush, 2011). Many instructors find this a scary idea, for one thing because they believe it will reduce the quality of the education provided. They believe that students will be unable to handle such control.

Fear of uncertainty is difficult to deal with. A system of quality assurance can remove some of the concerns about the quality of the resources. Support from the institution – a centralised approach, policy development, training – has a positive effect (Masterman, 2011), but this kind of support is often lacking (Boon et al, 2012).

3 Losing face

People are afraid to lose face. In fact, they are often tied to the old, i.e. that which is specifically subject to change (Kanter, 2012). This reason for resistance is closely related to the question of quality. Instructors are afraid to lose face if the quality of OER turns out to be substandard, or if remarks are made about the quality of their educational materials. This obstacle can be overcome by showing sincere appreciation for their work and for their being prepared to place themselves in a vulnerable position. Having a system of quality assurance – with professional development for instructors forming part of it – can help prevent any loss of face.

4 Surprises

People generally don't like surprises. One therefore needs to be careful about springing innovations on them. Kanter (2012) advises, for example: "It's better to plant seeds — that is, to sprinkle hints of what might be coming and seek input." Although the adoption of OER is only taking place very gradually, this factor is also relevant to OER. This is because the managers of an organisation sometimes turn

out to have different reasons for adopting OER than they originally announced. For example, an executive board may talk about idealistic reasons for investing in OER – greater access to education, better quality, etc. – but it may then turn out that the real reasons involve marketing or cost-cutting. It is better to clarify the real reasons from the very start.

5 Familiarity

People may feel that everything is changing and that they are being forced to completely abandon everything that they were familiar with (Kanter, 2012, Nathans, 1994). This factor will be less relevant if OER are introduced gradually, given that they will not then replace everything all at once. There will then be sufficient scope for old habits and practices.

6 Need to meet new demands

People are sometimes afraid that they will not meet the new demands that change involves (Nathans, 1994). Guidance and professional training can help overcome this kind of resistance. This is relevant where OER are concerned given that instructors frequently dread having to adapt to using them. Adapting requires specific expertise and sometimes technical skills, for example being able to deal with various different file formats. Richter & Ehlers (2010, p. 6) note, for example: "Revealing such adaptation needs is a far too complicated task and so, the teachers always feel like sailing close to the wind." This reason also plays a role in situations in which using OER requires didactic changes.

7 Unfamiliarity

The fact that instructors are often unfamiliar with OER is an obstacle to their development, use, and reuse. Despite the fact that OER have been around for more than ten years now, by no means all instructors are aware of their existence. When instructors share resources online, they often forget to state explicitly that they can be reused and adapted (Richter & Ehlers, 2010). Communication and information are important tools in this context.

8 More work, increased costs

Changes often initially involve extra work (Kanter, 2012). That is certainly the case with OER. If one has up to now used resources that are subject to copyright, materials will need to be adapted or newly developed. For instructors, quickly finding useable OER is often a complicated matter (Richter & Ehlers, 2010). Where innovations are concerned, educational institutions frequently demand additional efforts on the part of staff, without any extra remuneration in return. Moreover, these additional efforts are not always demanded of all staff to an equal extent. Remuneration needs to be considered, but it does not always need to be material remuneration: public recognition and appreciation are often enough. Daniel Pink (2009) emphasises the importance of unexpected rewards in promoting intrinsic motivation (rather than "if...then..." rewards). Outlining realistic expectations is also important.

9 "What's in it for me?"

Instructors do not always think that they have a personal interest in the change (among others Nathans, 1994). According to Cuban (2011), they often assess innovation proposals from an entirely different perspective to policy-makers or managers. They look primarily at the practical impact on educational practice, whereas policymakers and managers often have more abstract aims in view, of a higher order. The same applies to OER. Instructors often find the ease of use aspect disappointing, and for less common topics not much is in fact available (Masterman 2011). A lot of instructors wonder why they should share materials with other people which they consider they have developed in their own time, without getting anything

back in return. It is therefore a good idea to make clear how OER can ultimately save them time.

10 Ripple effects

Changes also have an impact on departments and processes located further from the centre of innovation (Kanter, 2012), as when one throws a pebble into a pond. It is therefore a good idea to involve all parts of the organisation that are affected. Where introducing OER is concerned, this means identifying which departments and people will be affected by the use and reuse of OER and what role they can play in the process.

11 Unresolved past

Changes often open up "old wounds". According to Kanter (2012), these need to be healed before the organisation goes any further. This may apply to the introduction of OER. For example, has the OER project coordinator previously coordinated another educational innovation that ran into difficulties? Have instructors been told previously about changes that weren't ever in fact implemented? The managers of the organisation can tackle this reason for resistance directly: this time they will need to stay on course.

12 Threats

In some cases, there is a genuine threat (Kanter, 2012). Changes may lead to people losing their job or status. If policy-makers argue for OER as an efficiency measure, instructors may interpret this as a cost-cutting measure, which may be at the expense of their job by saving on educational development. We also assume that instructors may perceive that their role as an expert will be impaired if OER are used that have been developed by other people. Managers need to be honest about aims that instructors may perceive as a threat to their status.

Conclusion

Now that the Dutch higher education sector is proceeding beyond the pioneering phase of OER, resistance in the workplace would seem to be becoming more apparent. We have attempted in this article to explain this resistance in the light of attitudes to change. The main ones are: a lack of institutional support, fear of a loss of quality and a loss of face, a lack of skills among users, and insufficient or unclear personal interest on the part of instructors. OER will be used sustainably if institutions develop and implement policies aimed at acceptance, support, and quality assurance. It all begins, however, by taking people's resistance seriously.

Support and backing from the management are essential. Ingrid Mulder (2008) applies the metaphor of the tango to change processes. The dancer who leads does not say what has to be done but indicates the direction. Only when the follower picks this up does he go in that direction. That metaphor also applies to OER. The management of the organisation indicates the direction for policy development and cultural change, and the instructors then pick this up. Active support from the management helps, as an impact study in the UK shows (Masterman, 2011). This presents a nice task for higher education institutions and instructors, including here in the Netherlands.

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OPENNESS AND MOOCS IN THE 2013 HORIZON REPORT

NMC (New Media Consortium) is an international community of educational experts that collaborated with EDUCASE Learning Initiative in early 2013 to publish the annual Horizon Report. The 2013 Horizon Report describes trends and predicts which ones will be adopted in the short (< 1 year), medium (2-3 years) or long (4-5 years) term.

The 2013 report mentions openness and MOOCs as key trends:
• "Openness — concepts like open content, open data, and open resources, along with notions of transparency and easy access to data and information — is becoming a value.
• Massively open online courses are being widely explored as alternatives and supplements to traditional university courses.
• The workforce demands skills from college graduates that are more often acquired from informal learning experiences than in universities.
• There is an increasing interest in using new sources of data for personalizing the learning experience and for performance measurement.
• The role of educators continues to change due to the vast resources that are accessible to students via the Internet.
• Education paradigms are shifting to include online learning, hybrid learning, and collaborative models."

The 2013 report predicts a short time-to-adoption horizon for MOOCs. It notes, for example, that "The pace of development in the MOOC space is so high that it is likely that a number of alternative models will emerge in the coming year. Ultimately, the models that attract the most participants are gaining the most attention, but many challenges remain to be resolved in supporting learning at scale."

See: http://www.nmc.org/publications/2013-horizon-report-higher-ed

ECOSYSTEMS FOR OPEN EDUCATION: TRENDS AND OPPORTUNITIES

by **Nicolai van der Woert**

The term "ecosystem" is being used more and more frequently in the context of open education. The term has various meanings. Generally speaking, it refers to systems typified by such features as sustainability, resilience, diversity, recycling, and openness. In order to construct optimal ecosystems in which these features are adequately represented, institutions and businesses should collaborate, with co-creation being a necessity. This article looks at various scenarios in which ecosystems can be designed at many different levels, from individual courses to worldwide.

History

The term "ecosystem" was originally introduced by British botanists Roy Clapham (1930) and Arthur Tansley (1935) and elaborated on by American ecologist Eugene Odum (1953). They studied the interplay between living beings and their natural physical environment, for example animals living in a forest and exposed to the weather and the seasons. An ecosystem is always in a state of dynamic equilibrium; it is sustainable, can react to disruptions, offers all the resources and nutrition that living beings need to survive, and benefits from biodiversity. According to Odum, the earth as a whole can be conceived of as a set of interrelated ecosystems.

This take on reality became an important source of inspiration for the environmental movement and, ultimately, for the sustainability philosophy. Ecological principles have now been integrated into the knowledge base of many different scientific disciplines, spurred on by the work of Gregory Bateson (1972) and others.

Sustainability has also gained a firm foothold in education, and certainly in the OER movement, where the reuse of educational resources is paramount and there is an awareness of the need for sustainable systems (Pegler, 2010; Yuan, 2010). Analogous to natural ecosystems, we refer nowadays to ecosystems for (open) education.

Buzziness of business?

"Ecosystem" was a buzzword at OER conferences in the past four years. Some critics joked that no one knew what they were talking about and that there was no scientific basis for the term. It is clear that there is a trend here that invites discussion. But what is an ecosystem for open education, precisely? Does such a thing already exist? What criteria should a sustainable and resilient ecosystem for open education satisfy? Is the term ecosystem being used correctly, or is it simply another catchword borrowed from the marketing sector? Is there a scientific basis, or not? And is there or is there not actually scope for a new, promising vision of open education based on the ecosystem idea?

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Ecosystems and OER

Back in 2008, Brown & Adler indicated that the educational building blocks developed at that point by the OER movement would generate new opportunities in the form of open participatory learning ecosystems. The classical open courseware, MOOCs and Open Textbooks are now in fact being made available through a wide variety of systems and platforms. Multiple higher education institutions and commercial parties now claim that they have a complete "ecosystem" for their open educational resources. What providers usually mean is that all the necessary functionality is available within a single system or set of systems to make a complete, integrated educational experience possible for the participating instructors and learners (Casey, 2011; ALTO, 2011; Baraniuk, Slavinsky & Williamson, 2012). Unfortunately, such ecosystems are often far from complete. They may require systems to be linked together and negotiation with other parties (Caras, Harris & Sher, 2012). The trend, however, is clear and seems irreversible.
There are also other interpretations of the term. Mozilla, for example, is attempting to construct an ecosystem with its partners that will issue quality badges (Casilli, Lee & McAvoy, 2012; Becket, 2012). And some OER providers that have joined forces with assessment centres also refer to their systems as "ecosystems" (Ittelson & Smith, 2012; Harrington, 2012).

Features

More reflective authors analyse the features that an OER ecosystem should possess (Buckingham & De Liddo, 2010; Littlejohn, 2011; Yuan, 2010; Pegler, 2010). Among the most commonly mentioned are sustainability, resilience in the face of disruptions, diversity, biodiversity, reuse and openness. The role of learning networks and networked learning is also important for emerging learning ecologies (Williams, Karousou & Mackness, 2011).

The most frequently discussed attribute is unquestionably that of openness, alongside reuse and sustainability. Other "eco-features" are not as well established. In Figure 1, Mulder & Schuwer (2012) show how many different interpretations there are of the attribute of "openness".

Moore (1996, 2006) suggests additional features for business ecosystems: shared vision, co-creation, innovation, and business networks. In organisations and businesses, the ecosystem approach should be placed on a par with the more familiar commercial thinking and business hierarchies, argues Moore (2006). He believes that modern business segments that innovate continuously can only achieve effective results through cooperation and co-creation. No one company can provide all the necessary knowledge and management capacity on its own. What are needed are

business ecosystems in which multiple business partners work together in networks in various niches that need one another to deliver a good product. Openness plays a role as an extra feature. A business ecosystem can basically be opened up to the entire world, both to contributions on the business side (the supply side) and to system participants (the demand side). Moore also proposes that the management of business ecosystems should not concentrate on individuals, but on the necessary resources.

	xMOOC	cMOOC	normal higher education institution	Open University
Open access	✔	✔	✘	✔
Open as regards pace	✘	✘	✘	✔
Open as regards location	✔	✔	✘	✔
Open as regards time	✘	✘	✘	✔
Open as regards programme	✔ Yes as regards the range of courses but not within the course	✔	✘ Choices within the programme but students must take the whole programme	✔ Yes as regards the range of courses but not within the course
Openly available	✔	✔	✘ Partly (if OER or OCW are offered)	✘ Partly
Open as regards alteration	✘ EdX is planning this	✔	✘ Partly (if OER or OCW are offered)	✘ Partly

Figure 1: The attribute of openness and the features present in MOOCs and normal education.

Moore's features can also be applied to recent developments in OER. There is good reason why successful innovators such as Coursera or EdX (MOOCs) came about through a process of co-creation: multiple providers work together on one and the same platform, allowing them to embark on bigger innovations. Universities in Britain have joined forces for that very reason in the company Futurelearn. European open universities also intend to cooperate. This used to be called competition, but viewed from the perspective of ecology, it becomes diversity/biodiversity – something beneficial for ecosystems.

Scenarios

Kennie and Price (2012) discuss a number of scenarios for the direction in which ecosystems for education could develop. Not all of these are relevant for open education; they also cover more closed models in their reflections on educational ecosystems. This means that their context is broader. The authors believe that there are several disruptive innovations that are exercising an influence, including globalisation, privatisation, other forms of funding and the growing demand for education – factors that are often also mentioned in relation to the rise of open education. Influenced by the advent of OER, Kennie and Price allow for the possibility of new ecosystems such as open source universities, "multiversities" that are not dependent on face-to-face teaching, new and privately funded providers, and "unbundlers" that focus on a segment of the educational services.

Cisco Systems commissioned a study on the ingredients that education will require in future (Hannon, Patton, & Temperley, 2011). The authors propose that innovative challenges can only be resolved by creating a "learning ecosystem". Within that ecosystem, there are links between formal and informal learning, existing and new

providers, and providers and users of education. To ensure that this happens, leading providers of education need to reposition themselves from a primary provider to a "platform provider", on the understanding that the platform concerned is one that a variety of different providers can utilise. Learners claim ownership of their own learning process, and function less as consumers and more as co-creators based on their own understanding of how they learn best, the authors suggest.

Cisco's vision is idealistic and focused on the future. Parts of it can already be seen in existing open practices. What is notable in discussions of various systems (Figure 2; Mulder, 2012) is that there is almost no mention of student-driven demand. The approach is overwhelmingly supply-driven; students are only free to choose the course. It is the provider that often controls the learning process (specifically in the case of MOOCs); it is not self-paced and involves strict schedules, prescribed didactic sequences, and no individual variation in learning pathways. And yet there is growing interest is peer tutoring and peer feedback, for example.

	Offering	Feedback	Certificate	Pacing	Didactics
EdX (Consort.)	Courses	Instructor/ automated	Achievement	Paced	Instructor led
Udacity (Company)	Courses	Instructor/ automated	Achievement/ Participation	Paced	Instructor led
Coursera (Company/ Consort.)	Courses	Instructor/ Automated/ Peer	Achievement/ Participation	Paced	Instructor led
Ted Ed	Lectures	-	-	Self-directed	Instructor led
Khan Academy	Lectures	-	Badges	Self-directed	Instructor led
cMOOC	Courses	Peer	None/Achievement/ Badges	Paced	Connec- tivism
MMOOC (MIT)	Courses	Peer/Instructor	Badges/Recognition	Paced	Connec- tivism
Saylor.org	Programs	-	-	Self-directed	Instructor led
OERu	Programs	-	Diploma	Self-directed	May vary p. course

Figure 2 (Mulder, 2012)

From confusion to structure

As we have seen, the term ecosystem is subject to many different interpretations, within contexts ranging from worldwide and national to institutional and course-specific to teaching and learning processes. Yuan (2010) makes clear that this stratification is in fact interrelated, and that all these levels must be taken into account when designing and developing OER ecosystems.

It is not enough to "dump" ICT innovations in the struggle to make education more open, says Law (2012). Sustainable innovation necessitates that we maintain ecological principles, allow for gradual evolution, and remain sensitive and adaptive regarding both the internal and external environment (resilience). It is furthermore necessary to develop an architecture for communication, interaction and collaboration across and between all the levels of the system/ecosystem. Another requirement is to link the architecture for learning and the architecture for organisational decision-making in order to streamline the process of prioritisation and of safeguarding innovations.

Both Yan and Law belong to a school of thought claiming that the necessary attributes of ecosystems for open education should already be allowed for in the design and development phase of OER platforms and systems. This goes beyond "hard" ICT to include the didactic side and societal factors of innovation and change processes. The question at this time is whether the knowledge base at all four levels is sufficient.

In summary, we can distinguish between four different levels when considering ecosystems for education/open education:
1. Meta-level: interdependent worldwide ecosystem for education/higher education;
2. Macro-level: OER systems and platforms run by private and institutional providers, including the associated management opinions, governance, and business models;
3. Meso-level: an open course or programme, with instructors and students;
4. Micro-level: rules of the game and agreements, didactics, teaching and learning processes, functionality, social networking tools, opportunities for interaction.

Evolution of ecosystems

The educational ecosystem can be interpreted at meta-level in the manner described by Hill (2012). The collective term "open educational practices" and the various types of MOOCs clearly have their own role in this snap-shot (Figure 3). In Hill's view, it is not yet clear whether what he calls "delivery models" will ever flourish, and if so, which ones they will be.
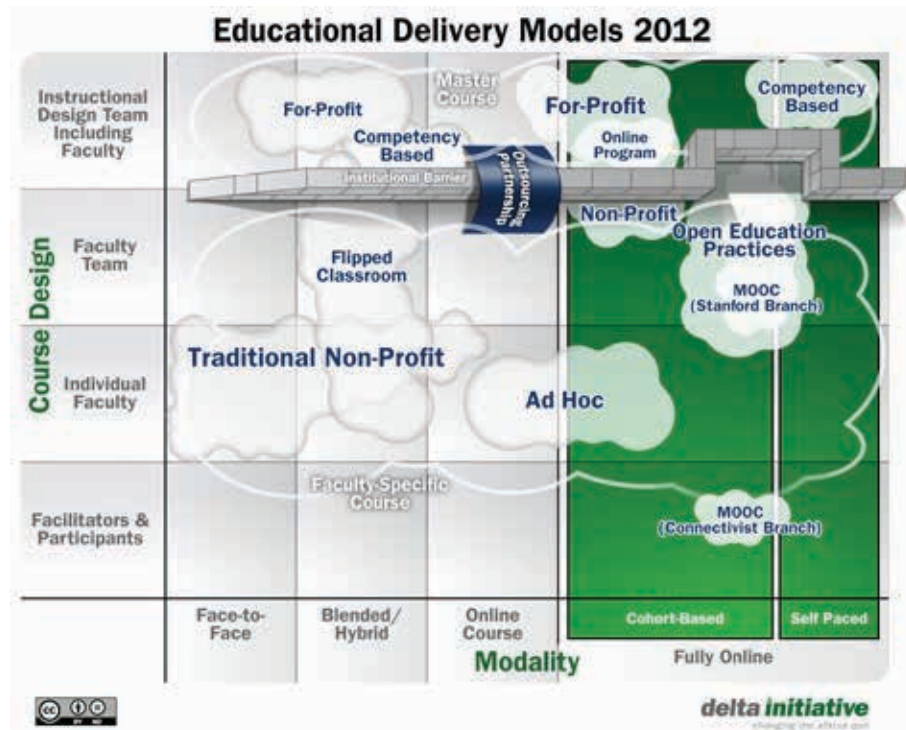
Figure 3

Hill warns that there are challenges ahead in developing the various types of MOOCs (Figure 4). The overriding question is whether ecosystems will be resilient enough. They need that resilience to ensure that missing elements needed to make the entire system sustainable and to shore up weaker spots can be added (evolution). The likelihood of new parties entering the market in that case (biodiversity) is entirely in line with Moore's vision.
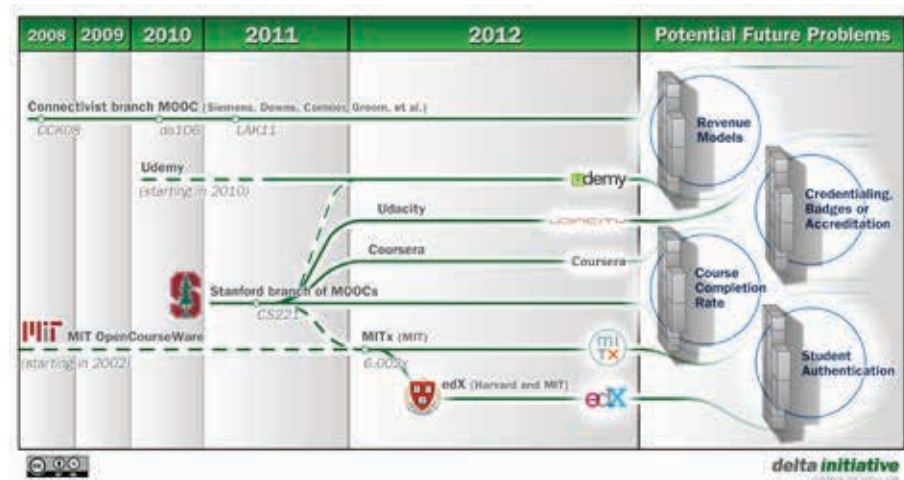
Figure 4

Conclusions and discussion

The knowledge base on ecosystems is generally quite extensive, but its application in education/open education is still in its infancy. There is a school of thought that claims that the necessary attributes of ecosystems for open education should already be allowed for in the design and development phase of OER platforms and systems. It is a positive sign that the term "ecosystem" is being used more and more frequently, because it suggests growing acknowledgement that thinking in eco-terms can produce powerful systems. But there is a large amount of hot air involved in this, with commercial parties frequently bandying the term about without really understanding its meaning. They and others need to get to grips with the variables that play a role at meta, macro, meso and micro-level as well as between those levels. As the market develops, an increasing body of knowledge is becoming available about the way OER ecosystems function and evolve. Whether mature, sustainable, resilient, open and efficient ecosystems for open education already exist is questionable, at the very least. It is also not always clear whether the label "ecosystem" actually describes a particular OER platform. What is clear, however, is that there is plenty of work to be done in a rapidly evolving market.

One of the five constructive criticisms that Knox (2012) has about the OER movement is that it lacks a scientific basis. A wider debate is needed as to whether the body of knowledge connected with the ecosystem philosophy can fill that gap, at least in part. The purpose of this article is to encourage that debate. There is no doubt that the opportunities are there.

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OER RECOMMENDED READING

The core team that coordinates the activities of SURF's Open Educational Resources Special Interest Group has compiled a list of recommended articles, books and other publications about open educational resources. The list also furnishes links to reviews of some relevant publications. There are articles covering such topics as why OER are needed, business models, copyright and Creative Commons licences, the impact of using OER, good practices, and more. The SIG OER intends to add relevant articles on OER to the list regularly.

Website:

https://www.surfspace.nl/sig/5-open-educational-resources/47-oer-literatuur/
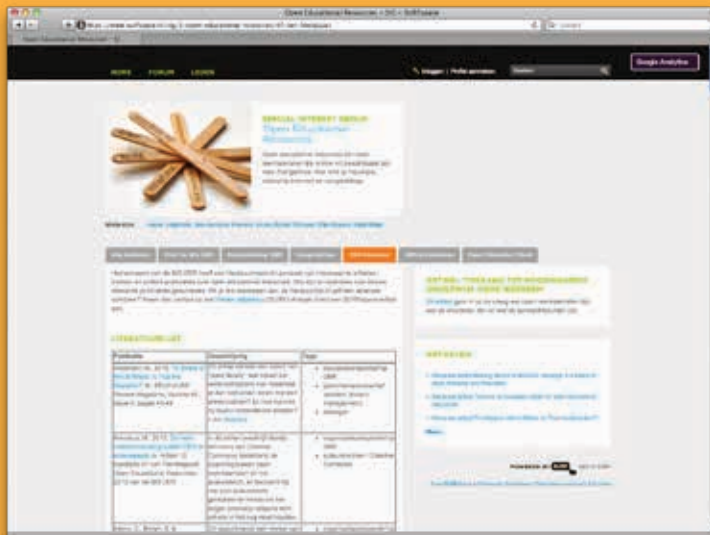
LEARNING ANALYTICS: THE RIGHT CONTENT FOR THE RIGHT STUDENT

by **John Doove**

Higher education institutions collect a great deal of digital data on students and how they perform, not only their grades but also the "digital tracks" that they leave behind as they study. Learning analytics makes it possible for students, instructors, and institutions to understand what is going on within the educational process by analysing that online data and visualising it. As more and more open courseware (OCW) becomes available online, data can be analysed to clarify when and how students make use of it, and what OCW can be recommended for which students.

Learning analytics

Learning analytics means "the collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimizing learning and the environments in which it occurs" (SoLAR, 25 January 2013). Analysing this data can provide various target groups – students, instructors, institutions – with valuable insights into various aspects of the educational process, for example:
- the quality of the educational resources used (instructors, students);
- how the digital learning and working environment is in fact used (instructors, students);
- the quality of test items (instructors, institutions);
- student progress (instructors, students).

Precisely because learning analytics can assist various different target groups, it can make a significant contribution to study performance and success. By providing feedback on a student's online study behaviour, for example, the instructor can not only help him/her understand his/her own progress but also how he/she is doing compared to fellow students and his/her performance during the previous academic year. The feedback should preferably be constructive: "You are the best in the class" or "Students who achieved this level of progress last year finished the course with an 8".

By understanding the learning analytics for his/her students, an instructor can encourage and guide them. The student data from the analysis shows which course components students understand easily and which they find difficult, thus allowing the instructor to improve his/her lectures and course material.

Other staff at an educational institution can also benefit from learning analytics. For example, the success percentages and the relationships between those percentages for various different subjects can enable a programme coordinator to perform an analysis of where the sticking points are within the programme. He/she may discover, for example, that students who only just manage to pass a first-year course will generally fail the second-year practical; he/she can then take appropriate action.

John Doove (doove@surf.nl) is SURF's learning analytics project manager. In that capacity, he was responsible for the exploratory survey of learning analytics that was carried out by SURF in 2012 and involved seven pilot projects in this field in Dutch higher education.

The rapidly growing interest in learning analytics today is not just coincidental. According to Rebecca Ferguson (2012), the development of learning analytics derives from three broader current trends:

- **Big Data**
  Developments in ICT now make it easy to search and analyse large collections of data (for example by means of data mining).

- **Online learning**
  More and more higher education is being provided online, for example by means of Blackboard, Moodle, or Sakai.

- **Political pressure to improve success rates**
  Institutions are required to report their success rates and performance, for example because of performance agreements with the (Dutch) Education, Culture and Science.

Data in educational practice

In an interview (Rubens, 2011) for SURF's Education Days event, the computer science professor Erik Duval argued that in the education sector decisions on didactics are often based mainly on opinions. It would be a good thing for those decisions to be supported by learning analytics.

The SIGNALS project at Purdue University (Lafayette, Indiana, USA) is a good example of the successful use of learning analytics. Students receive feedback on their progress within a system by means of a set of traffic lights. The system derives its information from an algorithm based on indicators such as time spent within the learning environment, interim results for previous tests, and previous performance in other subjects. The system enables the instructor to send the student a traffic light signal – red, yellow, or green – together with the instructor's recommendations (course material, advice, etc.).
The university would seem to be benefiting from this approach. When the Signals system was used, 84.51% of students passed the course in statistics, compared to 63.58% without the use of Signals. Students and instructors are enthusiastic about this approach (Arnold & Pistilli, 2012).

Other applications of learning analytics are also possible in the world of education. Wollongong University (Australia) has developed a tool for visualising a "learning network", based on interaction between students in a discussion forum for a course. The tool – Social Networks Adapting Pedagogical Practice (SNAPP) – can be used within Blackboard, Moodle, and Sakai. It clarifies the collaboration within the course: who the active participants are, who collaborate with whom, and who falls outside
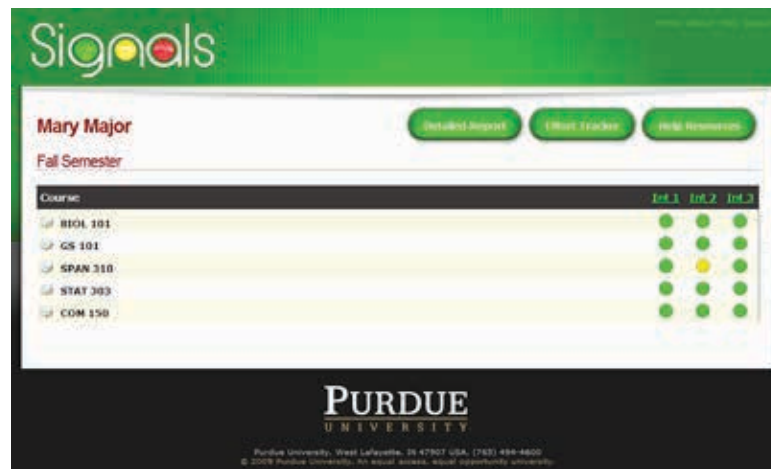
Figure 1:   Screenshot of student feedback screen in Course Signals system
              Source: https://news.uns.purdue.edu/images/+2009/signals-screen.jpg

the group. It also clarifies the effect of a given course module or intervention on students' activity and interaction (Bakharia & Dawson, 2011).

Developing tools like this naturally demands a considerable amount of expertise, for example as provided by software programmers, data analysts, and educationalists. They need to collaborate in order to convert the available data into information that is valuable in the educational context.

Initiatives in the field of learning analytics have also started up in the Netherlands. In 2012, for example, Dutch higher education institutions experimented with learning analytics within seven pilot projects subsidised by SURF.

OER and learning analytics

In an article in the NRC Handelsblad newspaper (8 December 2012), José van Dijck outlined developments in the field of online education. In her view, the rise of MOOCs and online platforms such as Coursera, Udacity, and EdX is not a trend that will simply blow over. The revenue model behind these open platforms is to be found in the user data and the value that data can represent.

In his blog (2012), Joseph Rickert noted that Coursera already sees added value in analysing such user data. For example: a large proportion of the 300,000 students who took the course in Machine Learning all made the same error. In his next web lecture, the instructor therefore dealt with that error explicitly.

The EdX initiative also indicates that data is being used to determine what online learning modules contribute to the learning process. At a press conference (5 February 2012), the founders, Harvard and MIT, said that they would be using user data to analyse how people actually learn, and would adapt the course material and course environment accordingly. They also said that their aim was to educate as many people as possible, including people who could not afford to pay to study. This is relatively uncharted territory for the universities. In order to serve this large new group of students, they will require data on the characteristics of the students and their study behaviour.

The increasing openness of education means that OER and learning analytics will come into contact increasingly often. What concrete benefits can this have? I will attempt to answer that question below.

Insights based on user data

During one of the projects for SURF's Learning Analytics Innovation Scheme, carried out by the University of Amsterdam and VU University Amsterdam, data was studied that showed how students were utilising educational resources. Instructors and students responded enthusiastically to the project – Instructor and Student User Needs in the Use of Learning Analytics. Visualisations of user data gave instructors new insights into the course material and how it was being used. Information about when and how often material is consulted, and the relationship between use and performance, was considered particularly interesting. When open educational resources are concerned and the data is also accessible (anonymized), these insights can be interesting for those creating other courses that use the same or similar material.

Another application of the analysis of user data is in the area of quality assessment. A number of different indicators can be used, each telling part of the story (download statistics, hits, tweets, Facebook likes, evaluations). This development is referred to more frequently as "metrics" than as "learning analytics", but it utilises the same data resources. One relevant discussion of quality measurements of open educational resources based on analysis of user data is that concerning quality measurements of scientific/scholarly resources (often the same as educational resources).

Recommender services

Data analysis can also be used for recommending learning resources ("recommender services"). Resnick and Varian (1997) define this as follows: "using the opinions of a community of users to help individuals in that community to identify more effectively content of interest from a potentially overwhelming set of choices". The aim of recommender services is therefore to make recommendations to users, based on data from all users, as to what content (in this case: what OER) to use.

Kalz et al. (2008) describe two methods used in the TENCompetence project to make recommendations about developing competencies. One method (positioning) is based on textual analysis of student descriptions of knowledge, competencies, and learning objectives and textual descriptions in sources. Sources and learning pathways are offered based on similarities between these descriptions. The second method (navigation) is based on a variety of recommendation techniques. These start from analysis of one's own past search behaviour and that of other users.

Govaerts et al. (2011) present another method based on such behaviour, namely "attention metadata". This involves information about how and in what context users consult sources; that information is then used to recommend relevant sources, for example on Slideshare and YouTube. Feedback from students about the search results is reprocessed as data. Initial response has been positive and the use of such methods is also considered to be promising. Recommender services can also be used for instructors, for example by suggesting educational resources (or supplementary resources) based on other open courses. Verbert et al. (2012) describe how instructors can be assisted, on the basis of datasets, not only in finding educational resources but also in constructing educational materials or learning activities themselves.

In their overview of recommender services in technology-enhanced learning (TEL), Manouselis et al. (2011) also say that these systems can provide a solution to the problem of making targeted choices within the constantly growing range of material available. They provide a good overview of the various technologies and challenges.

The future

The volume of available educational resources would seem to have been growing enormously recently, for one thing because of the increased number of platforms such as Coursera and EdX. This makes it increasingly challenging for students to find the right resources for their personal learning objectives. Because they are open to everyone, the platforms also serve very large numbers of students and very different types of students, as regards their age, location, and entry level.

Another tendency is the wish to personalise the student's learning environment more; this is sometimes referred to as "tailor-made education". This would seem to be at odds with the trend towards large-scale platforms serving huge numbers of students. Learning analytics can provide a solution here by making personalisation of the learning environment possible for large numbers of students and open resources. Specifically by analysing the use made of OER and determining what does and does not work for which students, these large-scale platforms can generate a more personal range of educational resources that really links up with students' needs.

The challenges facing us in this area have been surveyed by Erik Duval (2011). The primary consideration is that we are still only in the initial stage of discovering what data is most relevant to really understanding how students learn, certainly if we not only wish to provide good OER that others have used successfully but also to take account of the individual student's personal preferences and learning strategies.

There are also practical challenges. What data is sensitive from the point of view of privacy? What data are we legally permitted to share with the rest of the world, and what data are we prepared to share from an ethical perspective? Where is this data located? Ideally, systems such as Blackboard and Coursera would share data, so that it can be linked up during analysis, but the various systems are not yet anywhere near being able to do that technically. It is also questionable whether people are prepared to share data. In short: expectations are running high but a great deal still needs to be figured out.

The field of learning analytics and that of OER are both undergoing enormous changes. Data analysis is being used increasingly frequently to generate new insights into the educational process. The number of projects and services in this field is increasing, as is the quantity of OER. The question is therefore not really whether the learning analytics and OER trends will come into contact but when, and above all how the higher education sector can make use of these trends in an effective and responsible manner so as to improve the education provided.

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OER REPOSITORIES AND MOOC OVERVIEWS

The 2012 OER Trend Report listed repositories containing OER. We present two search portals below where the repositories listed can be searched. We also list a number of portals where users can search for open courses in general and MOOCs in particular.

The Directory of Open Access Repositories
http://opendoar.org
This portal makes it possible to search a large number of repositories worldwide. The publications concerned are often available on an "open access" basis.

Wikiwijs
http://www.wikiwijs.nl/sector/ho/home.psml
An ever-growing directory of OER repositories is available on Javiera Atenas' blog.
The list can be searched via Google Custom Search on Wikiwijs.

MOOC list
http://www.mooc-list.com/
This is a list of MOOCs offered by various universities and other providers, with various search options. Users can follow the updates via Twitter or by subscribing to the newsletter.

Stephen Downes' MOOC list
http://mooc.ca
This list makes a good distinction between connectivist MOOCs and other MOOCs. There is a newsletter.

Class-Central
http://www.class-central.com/
This brings together descriptions of MOOCs offered via edX, Coursera, Udacity, and Canvas. net. There are various search options. Users can keep up to date via Twitter or an RSS feed.

Alison
http://www.alison.com
A portal giving access to an enormous collection of freely available courses. Various search options. Each course is described on the basis of a large number of features, and a lot of the courses have ratings by users. One disadvantage of Alison is the need to create an account (free) (or to log in with a Facebook account, for example). The site also has a lot of advertising.

OER, OPEN ACCESS AND PUBLISHERS: TRENDS, OPPORTUNITIES, AND THREATS

by **Saskia de Rijk** and **Paul Vermeulen**

"Professional publishers and OER" – that would seem to be a contradiction in terms. After all, publishers produce books, journals, or databases in order to earn money. They therefore protect their materials and one can speak of protected educational resources (PER). The course pursued by publishers would seem to remain unchanged: they see themselves as the information professionals – including in the field of OER – and they find receiving decent remuneration for their added value to be more than reasonable.

This article explores the thinking and actions of publishers, based on a number of interviews with international publishers that produce materials for the higher education sector, and the way they are perceived by the publishers' customers. There is a gulf between the two sides in how they perceive reality.

What do publishers do and how do they see themselves?

Publishers do not see themselves merely as producers of books, journals, or databases. Those are services that we know about, but as far as the publishers are concerned, they represent merely the exterior. Their concern is not only with producing the end product or with the information itself – the knowledge resources – but above all with enhancing knowledge and making it accessible.

Publishers live from two-way traffic. They have a proposition for those who use information but also for those who create it. Researchers, PhD students, and others have always used publishers as a vehicle for disseminating their ideas. Authors like to work with publishers to increase and improve the reach of their message. Publishers believe in their large reach: they proactively publicise content within networks for higher education. They do this with sales (your work is brought to people's attention at the right moment and via the right channels) rather than with search (people need to find you). They reinforce their position by strengthening their worldwide networks (see for example Springer, Germany, source: Annual Report Axel Springer Verlag 2011).

Saskia de Rijk (s.c.m.derijk@saxion.nl) was trained as a librarian and a P&O adviser. She manages the Saxion Library, dealing with publication policy, copyright, open access, OER, support for researchers, and content licences. As chair of the SHB consortium of libraries at Dutch universities of applied sciences and of its licences working group, she concerns herself with the revenue models of scientific and educational publishers.

Paul Vermeulen (paul_vermeulen@me.com) has a background in the education sector and was also a publisher for many years. He studied English, applied linguistics, and business administration. OER are a recurrent theme in his work as an independent consultant on media and learning, both in the Netherlands and abroad. He regularly collaborates with scientific and educational publishers.

Publishers have great confidence in their own added value. They generate large turnovers with a broad portfolio of digital and printed media. They operate in various markets worldwide with various brands, but often on the basis of a central concept for processing and enhancing information. It is not easy to trace their profit margins, and these are often obscured by additional investments or depreciation.

In its 2011 annual report (Kluwer Annual Report 2011, page 186), Kluwer refers to a profit of 13% on net turnover (excluding VAT). This would mean a profit of about 10% on the sales price. The gap between "what writing costs" and "what a publication costs" is therefore to be found in the enhancing and enrichment of the information (editing, research); wide publicity for products and services (marketing); reliable delivery (systems and connections); distribution (bookstores); discounts (direct discounts to institutions for example); and settlement of transactions (rights and payments).

Publishers do not only wish to sell; above all, they want a long-term relationship with the customer. They therefore create strong relationships between services for the higher education sector and services for professionals (people in the workforce). They attempt to retain users and to provide them with tailor-made information services during the course of their career. In this way, a student who starts off as a user of a collection of law texts later becomes a regular reader of professional journals (a subscriber) or a regular user of an intelligent knowledge system for lawyers or judges. The publishing house grows along with the customer and aims for long-term contracts, with the subscriber from the past becoming the licence holder of the present. In this way, the publisher advances upwards step-by-step in the value chain (see ill., source: Kluwer Annual Report 2011, p. 9).

Customer values
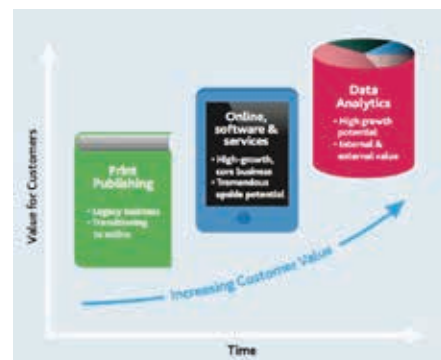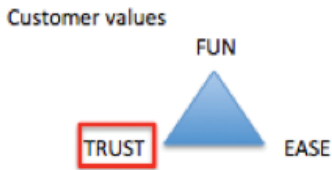
Why do publishers believe in life alongside OER?

There are at least three reasons why publishers believe in life alongside OER. Firstly, there is the fact that publishers will position themselves alongside OER as the reliable alternative. In addition to all the value attributes already mentioned, reliability is the main feature by which they will distinguish themselves. Their content is entirely reliable as regards substance, availability, and the legal aspects. They will continue to wish to achieve a positive score for this "customer value".

A second reason is to be found in the fact that for the foreseeable future customers will make use of various different types of educational resources alongside one another. This means that publishers and OER providers will need to consult on standards and procedures for the integrated use of these two types of resources by the customer. An organised sector will then need to engage with a freely organised network of OER providers. Within that interplay, the publishers will for the moment be a controlling party, especially because it is precisely their relationship with people in the workforce that enables them to exert pressure on the market for professional and educational resources.

A third reason involves learning from one another. The expertise that publishers have built up can be used in the context of policy-making and quality improvement within the domain of OER. In this way, the development of OER can profit from the lessons already learned by the publishers.

Publishers will not inhibit the development of OER

Based on the plans which publishers talk about and given the movements that can be observed within the market, it is unlikely that publishers will inhibit the development of OER. They will respect the wishes and behaviour of users of information – "the customer is always right" – and as always they will deal with this market development as entrepreneurs. They will therefore consider the new opportunities; without exception, the publishers consulted say that these developments are opportunities rather than threats.

Publishers see OER as an important phenomenon and they use them where that is relevant and where they are available, integrated into the total content design. OER can be valuable as a component of that design, in the same way as content produced by fellow publishers or content generated by users themselves. This embedding reinforces the value of the collection of content. Publishers are therefore not inhibiting the development of OER but in a way reinforcing it: they are shifting from scenario I (dealing with and exploiting content as their own content) to scenario II (the publisher acts as a professional content engineer).
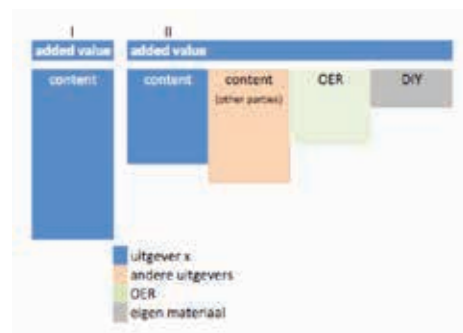
Publishers' and users' ideas regarding OER do not match up

What publishers want is clear enough. The big question, however, concerns what the education sector wants. Will it give publishers a place within the practice of OER? "OER and publishers" does not just sound like a contradiction in terms but it actually

is one. The "O" stands for "open", and it means that resources are made available to other people in such a way that they can be used freely, and may often be altered, edited, and again made available, often without any extra charge for distribution and reuse. This conflicts with the object of a commercial party such as a publisher, namely to maximise profits. The publisher is also losing ground, for example because of the highly inflated charges for scientific and scholarly journals. The fact that a rich and prestigious university like Harvard has found it necessary to cancel subscriptions for financial reasons says enough.

Criticism of the added value of publishers

"We deliver added value," is the motto of the publishers. That is a fine idea, but the question is what exactly that added value involves, and what it should cost. The most frequently quoted example of the added value delivered by publishers is their contribution to quality control by means of their vaunted system of peer review.

Source: http://www.elearningeuropa.info/en/tv/open-access-explained

Supposedly, quality could not be guaranteed without the involvement of the publishers. The final report by the Levelt Committee in the Diederik Stapel case shows, however, that this system does not in fact guarantee quality. "It was only very infrequently that serious doubts were raised regarding his all too fine results…not even within the international review procedures and not even when the fraud was patently obvious. The latter also definitely applied to the editors and reviewers of international journals."

Added value is also to be found in the "real" publishing process, namely the editing and designing of publications. For printed publications, that process was definitely always time-consuming and expensive. The same applies to the cost of production and distribution. But it is precisely all those costs that have fallen in the digital age.

A different attitude among publishers will facilitate cooperation with OER

Publisher not a content owner but a partner

Would educators like publishers to add value to the resources created within the sector? Definitely! Would we be prepared to pay for this? Definitely! But only for the added value and not for the content created by the educators themselves. The publishers therefore need to cease demanding to first become owners of the content before they can be of added value. The education sector must not fall into this trap once again. Giving away educational resources to publishers when those resources have been created with public money, and then spending a lot of money to buy back those resources under licence – and with numerous restrictions – is a mistake. History teaches us that this leads to the publishers having a monopoly, with the all-too-familiar consequences: high costs for the education sector, major profits for the publishers, and countless take-it-or-leave-it deals.

Greater flexibility in types of licences

Institutions pay a great deal of money in the form of licence fees for large clusters of information, whereas what they actually need is tailor-made information. The Guardian rightly noted: "In many cases the publishers oblige the libraries to buy a large package of journals, whether or not they want them all." It's a matter of "take it or leave it". Institutions want the right information, tailored to the individual needs of students, instructors, or researchers; what they do not need is a standard average package of resources.

Source: http://www.elearningeuropa.info/en/tv/open-access-explained
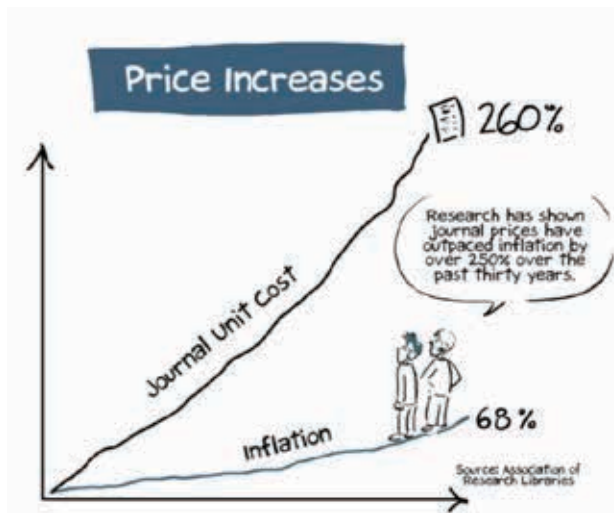
Open or closed?

A lot of higher education institutions have an "electronic learning environment" (ELE) that presents educational resources produced by instructors. Agreement is reached on standards at national and international level. Those standards can be applied to describe and exchange educational resources, regardless of the platform on which they are to be used. This is an absolute precondition for the introduction of OER, and it means that the institutions will need to press for maximum openness and interchangeability.

Precisely that fact once more runs counter to the objectives pursued by the publishers, as is shown by their choices regarding digital educational resources:
- the use of digital rights management (DRM);
- not selling the digital content but only providing access under licence;
- restricting access to works online, without the option of downloading them;
- restricting lending of e-books.

Instructors want it to be possible to seamlessly integrate resources – regardless of whether they come from their own institution or from third parties – into suitable educational modules that can be used and reused online or offline by students or fellow instructors.

Up-to-dateness and speed

Publishing educational materials takes time. The materials need to be submitted well in advance in order to be processed. Instructors are engaged in both the education of today and that of tomorrow. They key into the current situation, and they must be able to do so quickly and easily. The instructor adds something to the ELE and the student can then get down to work. Whether this speed can be maintained if publishers are involved is questionable.

Publishers welcome to join in

Instructors need to be able to adapt available resources to their own teaching practice. They create teaching materials by combining their own materials with resources provided by third parties. In doing so, they come up against major barriers as regards copyright. The copyright on materials originally paid for out of public funds has been transferred to the publishers. Licences for use often also impose conditions that make it impossible for instructors to reuse materials without high costs. The greatest concern for the higher education sector is how open and affordable OER will remain if publishers claim a major role. History shows that this is a justified concern: after all, publishers are also resisting open access.

The technical and digital developments in recent decades show that it is possible for educational institutions to take matters into their own hands. The higher education institutions should above all consider what they can do with OER themselves, without the publishers. They should not give away the content created by educators but should leave it to other parties – but with publishers being heartily welcome – to enhance content with commercial products. If those products really do represent added value, then the higher education institutions will definitely purchase and use them.

Conclusions and recommendations

Publishers and OER would seem for the moment to be unhappy bedfellows. Comparing the perspectives of publishers and educational institutions shows that there is little understanding on either side of one another's aims and possibilities. Matters will become interesting when the parties sit down at the negotiating table and start thinking in terms of collaborative power rather than competitive fear. An open-minded approach would lead to the development of more networked collaboration structures, with a clearer picture being possible of the added value that both sides can deliver. Only then will it be possible to understand the actual market value of services and content and to arrive at a fair pricing mechanism, whereby public parties do not need to make a profit but private parties do – a reasonable profit of course!

The discussion of OER versus PER should not concern the gap between them but the opportunity to arrive at powerful and affordable OES: open educational solutions. The education sector stands to benefit from solutions that give scientists and students all the scope they need, with the focus being on intellectual potential rather than property. With the global trend towards supply chain innovation, networked business development, and ongoing technological advances, more should be possible than we are now seeing. It is time for the next step.

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