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OER, Resources for learning – Experiences from an OER Project in Sweden

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Abstract

This article aims to share experience from a Swedish project on the introduction and implementation of Open Educational Resources (OER) in higher education with both national and international perspectives. The project, *OER – resources for learning*, was part of the National Library of Sweden Open Access initiative and aimed at exploring, raising awareness of and disseminating the use of OER and the resulting pedagogical advantages for teaching and learning. Central to the project's activities were a series of regional seminars which all featured a combination of multi-site meetings combined with online participation. This combination proved highly successful and extended the reach of the project. In total the project reached around 1000 participants at its events and many more have seen the recorded sessions.

Several unresolved issues beyond the scope of the project became explicit but which are absolutely crucial challenges. Firstly, the evolution from OER towards open educational practices (OEP) and open educational cultures (OEC). OEP and OEC imply the establishment of national and international policies and strategies where the use of OER is officially encouraged, sanctioned and developed. Secondly it became explicit that the issue of metadata is crucial for finding OER and facilitating their use and reuse for teachers and learners. Thirdly, the sustainability of OER must be stimulated by ensuring the creation of material that can easily be adapted and reused by teachers in other countries and contexts.

Keywords: OER, OEP, OEC, open educational resources, connectivism, innovation

Introduction

This paper aims to share experience from a national project in Sweden on the introduction and implementation of Open Educational Resources (OER) in higher education. The project, *OER - resources for learning*, was part of the National Library of Sweden Open Access initiative, aiming to maximize the visibility, transparency and accessibility of open resources. The objectives for the project aimed at exploring, raising awareness of and disseminating the use of OER and the resulting pedagogical advantages for teaching and learning towards an open educational practice and culture.

This article starts with a background to the concept of OER and current international trends in open education. Secondly, there is a short explanation of the situation in Sweden and the aims of the project. Thirdly, the project results are briefly described. Following that, a discussion of some crucial areas for development and recommendations for future project focus are outlined. Finally there is a conclusion on the need for a focus on open educational practices and culture, OEP and OEC.

Background

Over the past few years a significant number of initiatives and projects have emerged to support the development and sharing of OER (Hylén, 2007; OPAL, 2011; UNESCO, 2009; UNESCO-COL, 2011). As a response to the urgent needs of global open education and the needs for collaboration around free education, the OER University (OERu) was launched in 2011. The term OER describes digital materials offered freely and openly for use and re-use in teaching, learning and research usually under explicit terms of reuse, such as Creative Commons licences. The term OER was first used in 2002 during a UNESCO forum on the potential of open courseware for higher education in developing countries (Hylén, 2007). Most definitions agree that OER include content, software tools, licences and best practices (UNESCO, 2009). Kanwar, Balasubramanian and Umar (2010) take the definition a step further and emphasize the practice and culture aspects of OER such as empowerment processes. Accordingly they emphasises the movement from OER towards OEP and OEC. In addition they points out that the OER movement demands various types of stakeholders and on different levels. The OER movement is thus not just a single task for a single teacher. Moreover they claim that OER includes both material and pedagogical issues. Their definition is consequently as follows:

> *"The phenomenon of OER is an empowerment process, facilitated by technology in which various types of stakeholders are able to interact, collaborate, create and use materials and pedagogic practices, that are freely available, for enhancing access, reducing costs and improving the quality of education and learning at all levels".*

As underlined above Kanwar et al. (2010) points out there are various types of stakeholders in the adoption and implementation of OER, where all play a crucial role *per se,* but there are demands for co-operation and integration for successful implementation. According to UNESCO-COL (2011) there are at least five groups of stakeholders and for each of them urgent guidelines are proposed aligned with embedded quality issues. The stakeholders are defined as:

- *Governments,*
- *Higher educational providers*
- *Teaching staff*
- *Student bodies*
- *Quality assurance/accreditation bodies and academic recognition bodies*

(UNESCO-COL, 2011 p.13)

Ossiannilsson and Auvinen (2012) emphasise as well and in accordance to Kanwar *et al.* (2010) that the identification of stakeholders for generating knowledge about actors, intentions, inter-relations, responsibilities and interests is crucial for decision-making and implementation. Stakeholder analyses (Bryson, 2004) are especially important according to learning in the 21st century where formal and informal learning are more and more integrated. The use of OER is due to several demands: internationalisation, demography, quality, widening participation, technical and digital development in society and student completion are usually emphasised (Ossiannilsson, 2012).

In a global perspective issues such as environmental sustainability and social issues are high on the agenda. Sustainability is ...*"acquiring a new meaning and as an inclusive concept, where its scope extends far beyond purely environmental dimensions."*(EDEN annual conference 2011) Movements on ecology and environmental issues have changed human approaches in radical ways, even in everyday life. However, changes are urgently demanded now even for education, in the perspectives of *education for all* and *inclusiveness* (UNESCO). The smart and flexible use of technology can make a vital contribution to global sustainability in a wider perspective (Ala-Mutka, et al., 2010; Bates, 2010, 2011). The OER-movement and its wider concepts OEP and OEC in educational institutions contribute to democratization, social and environmental sustainability as well as, social and cultural inclusion (Ehlers, 2010a, 2010b; Ehlers & Schneckenberg, 2010). Equality and access to learning and education are other aspects in this area (Atkins, Brown & Hammond, 2007) .

According to Siemens (2005) and (Downes, 2010) learning is seen as complex, arising rapidly in changing domains and takes place through processes of connections and collaboration. The report *Collaborate to compete* by JISC (Joint Information Systems Committee) particularly emphasizes collaboration (HEFCE, 2011). Regional development and triple helix (academia, society and industry) Figure 1, or quadric helix approaches in education have become increasingly important since so many stakeholders are involved in education, not at least in open educational environments where the learners are in focus, which is the case with the use of OER and within OEP and OEC. The quadric helix approach also includes civil services. Besides, the triple helix approach or the quadric helix approach there are increased demands for inter-university co-operation nationally and internationally and according to OECD *"Collaboration has become the key to creativity and innovation."* (OECD, 2010a, p. 41). Thus, there are demands to develop, use and re-use OER and international resources, competences and intelligences have to be shared.

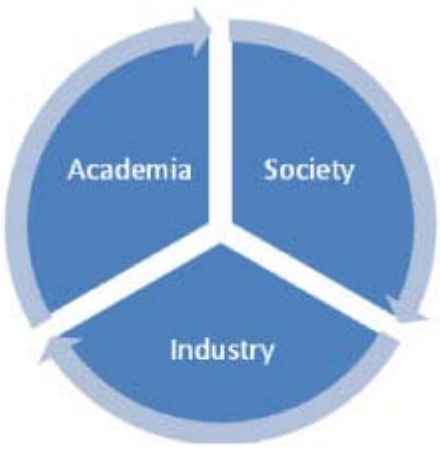

Figure 1. Model of the Triple Helix concept

The concept of OER has its foundation and base in connectivism theory (Siemens, 2005) thus it has to be

understood in the light of the movements on collaborative education and learning. Current open initiatives such as Peer-to-peer University, University of the People, Do-It-Yourself University (Kamenetz, 2011) and MOOCs (Massive Open Online Course) are examples of educational environments where the use of open and shared resources is fundamental to the course structure.

The global trend towards increasing openness in higher education, particular in the USA, has lead to increasing numbers of European institutions distributing lectures and course material via channels such as iTunes U, YouTube Edu and Academic Earth. An increasing number of European universities offer OER, but the resources are hard to find unless you know where to look and they are seldom distributed in a consistent manner. There is, however, a general lack of awareness about OER among teachers and an element of suspicion against open publication. Discussions tend to focus on copyright issues and protection of intellectual property (IP) instead of fostering a climate of sharing and transparency. The use of Creative Commons (CC) licenses is also rather limited at European universities and there is a need to raise awareness among university teachers of the opportunities inherent in its use (Ehlers, 2010a, 2010b; OPAL, 2011; Ossiannilsson & Creelman, 2011a, 2012).

If university course material is made more visible, protected by CC licenses, there will be several benefits for all interested parties: good material will be widely used thus heightening the teacher's and university's reputation, open publication stimulates higher quality, potential students will be able to preview the courses they wish to take and the freely available material will enhance the field of informal learning/lifelong learning. In addition, by encouraging the reuse and sharing of existing resources the teacher's focus shifts from material production to mentorship and facilitation. The future role of the teacher is to provide context rather than content (Batson, 2010). Obstacles for academic teachers that should be mentioned concerning usage of OER is the lack of quality control. There are well-established structures for the quality control of scientific communication and peer review but for OER there is no corresponding system or common agreement and it is often up to the individual teacher to evaluate the quality and validity of a resource. Social media offer potential solutions in that material that has been reused and recommended by many users clearly has a certain degree of quality. More consistent use of tagging, recommendations and linking to related material will become increasingly evident but there is still a need to draw up quality guidelines and a system for metadata describing the relevance and context of resources (Ossiannilsson & Creelman, 2011a, 2011b, 2012). One European project currently examining possible criteria for assessing the quality of open resources, in particular user-generated content, is CONCEDE. (CONtent Creation Excellence through Dialogue in Education). The overall aim of CONCEDE is to improve the effectiveness of teaching and learning by enhancing the quantity and quality of user generated content that can be incorporated into higher education learning provision. (Concede, 2011)

The OER movement leads to a radical rethink of how course material and educational resources are produced, shared and reused (EADTU, 2011; Ossiannilsson & Creelman, 2011a, 2012). By sharing resources and ideas teachers can build communities of practice and widen the concept of scholarship of teaching and learning (Trigwell & Shale, 2008). Furthermore a wiser use of shared resources frees up teachers from the onerous and time-consuming role of material production and allows more time for the role of facilitator/motivator/mentor. The opportunities created by OER for more learner-centred and collaborative learning are numerous but these are sometimes outweighed by the lack of accurate and comprehensive search criteria. This makes searching for relevant OER extremely difficult, especially in the case of multi-media content.

About the project

The project *OER – resources for learning* was run by representatives from eight Swedish universities and co-ordinated by the Linnaeus University. The seven others were Lund University, Blekinge Institute of Technology, Mid-Sweden University, Gävle University College, the Royal Institute of Technology, Karlstad University and Jönköping University. All participating universities are also members of the Swedish Network for IT in Higher Education (ITHU). The National Library of Sweden funded the project as part of its Open Access initiative as mentioned above. The project ran from spring 2010 until spring 2011 (Creelman & Forsberg, 2010; Ossiannilsson, 2011; Ossiannilsson & Creelman, 2011a, 2011b).

The project aimed at addressing a limited number of issues with the principal aim being to awaken interest in OER among higher education teachers by highlighting examples of good practice. We wished to stimulate interest in using other teachers' material and hoped that by doing so many teachers would also realize the advantages of making their own materials freely available. The project did not intend to tackle the legal aspects of copyright but focused instead on the practical use of CC and demonstrated how teachers can share material correctly and fairly.

The project also aimed at stimulating a continuous and more informal discussion of OER through a variety of social media, such as Facebook, Twitter, the social bookmarking tool Delicious and the Swedish teacher network DELA! Through those networks links and resources to other relevant OER materials were shared. Furthermore these communities were used for discussions on the use of OER and its further consequences of OEP and OEC. All seminar presentations were made available on the net via social networks, the project's home page and several other relevant Swedish sites for news on net-based learning. Filmed interviews with a variety of experts from Sweden and abroad were also published on the project's portal.

The project's main target group was teaching and library staff in Swedish higher education. Project resources were made as freely available as possible so that students, teachers and library staff from other levels of education could also be involved.

The project's final report is available in Swedish on the National Library of Sweden's OpenAccess.se project site.

Results

The project succeeded in achieving its objectives and in many respects had a greater effect than expected. Central to the project's activities were a series of regional seminars which all featured a combination of multi-site meetings combined with online participation. This combination proved highly successful and extended the reach of the project. Around 1000 people attended the various seminars and many more have viewed the project's films and recorded lectures. In addition there have been numerous spin-off activities such as workshops and additional seminars both at the participating universities and at others.

The primary channel for communicating with our target group was by organizing a number of regional seminars from spring 2010 to spring 2011. These were all free of charge and the material was distributed as widely as possible. Although each seminar aimed mainly at a regional audience they were also streamed on the net and therefore available to all. In several cases the seminars were held on several campus sites linked by video conference or the e-meeting tool Adobe Connect. Using Adobe Connect enabled us to reach a national audience and facilitated the recording of all sessions for reuse. In addition a completely web-based seminar (over 400 registered participants) was held and was open to a national audience from all levels of education. This experience has contributed to further projects aimed at stimulating the use of webinars in Swedish higher education.

The main achievements of the project can be summarised as follows:

- The seminars reached an audience far in excess our preliminary estimates and due to demand the number of seminars/workshops grew to nine (six were planned) as well as presenting at two international conferences.
- The project was a pioneer at organising large-scale webinars and live transmissions using the e-meeting tool Adobe Connect Pro. Our main webinar attracted a national record number of participants in such a meeting and provided valuable test results for the Swedish national university data network SUNET, who host the national Adobe Connect platform for universities.
- The project was carried out with only two face-to-face meetings within the project team. We used the project to sharpen our own skills at working in virtual teams. All internal discussions and collaboration have taken place through e-meetings (Adobe Connect), LMS (Moodle) and social networks like Facebook and Twitter.
- By using social media to disseminate the project's activities we attracted considerable interest from other educational sectors and there were teachers from schools, adult education and vocational training who participated in our seminars as well as our discussion groups.
- The project resulted in 15 publications (academic journals, conference papers, newspaper/magazine articles) which was much more than originally planned (2-4 publications).

At present (March 2012) a new application has been submitted for a follow-up project. Here we intend to offer a program of online seminars and workshops aimed at various key stakeholders to highlight issues such as copyright issues, quality in e-learning, digital literacy, OEP, metadata issues and creating a culture of sharing.

Discussion

The project has succeeded in stimulating discussion and interest in OER but there is still a great deal of work to be done before OER becomes mainstream practice in Sweden with a culture of openness and sharing such as within the understanding of OEP and OEC. The meaning of OER, OEP and OEC related to Kanwar et.al. (2010) can be illustrated as in Figure 2. OER can be seen as the inner wheel, but as according to Kanwar et al. (2010) the mere use of OER is not enough to stimulate real change. Instead a practice and a culture have to be developed so OER are embedded in the educational environments. On top of that OER, OEP and OEC in their fullest and widest extent lead to consequences in terms of processes, pedagogy and stakeholders which have to be elaborated and consciously considered.

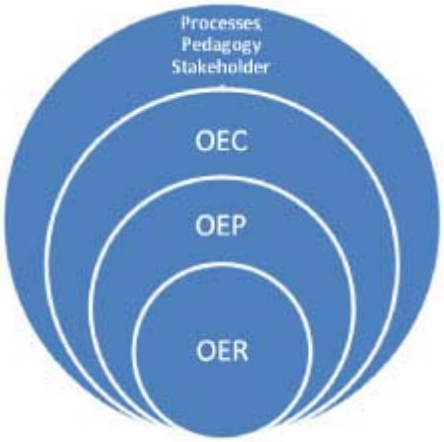

Figure 2. The understanding of OER, OEP and OEC were the processes, pedagogy and various stakeholders are involved (Ossiannilsson & Creelman, 2012).

To achieve a culture of openness and the realization of OEP and OEC as illustrated in Figure 2, current educational theories such as connectivism, and developments in educational technology have to be taken into account in course design, course delivery and assessment in higher education (Ossiannilsson & Creelman, 2012). With the huge amount of educational content already available on the net the teacher's role is fundamentally changed. The role from being a content provider and source of knowledge has moved to the role of being a context provider and facilitator. It is essential to see the development of OER in such terms and not as simply a cost-effective method of delivering lectures.

Several unresolved issues that were beyond the scope of the project are among the crucial challenges facing the OER movement today. Firstly, the development of OEP is the natural extension of OER whereby national and international policies and strategies are established and where the use of OER is officially encouraged, sanctioned and developed. Secondly, the issue of metadata is crucial in that existing OER are often poorly tagged and hard to search for. The future of open learning depends on video and audio material being as easily accessible as text-based material is today. Thirdly, the reuse of OER must be stimulated by ensuring that material is created with secondary use in mind so that it can be easily adapted by teachers in other countries and contexts. Finally there is the issue of inclusion whereby local OER production is encouraged and the importance of material being available in languages other than English. Key areas for future development have been identified, and will be elaborated as below. The key areas are development of OEP, metadata, reuse of OER, inclusion, innovation and creativity, and a culture of sharing

Development of Open Educational Practices (OEP)

One key group was largely absent from the project's seminars, namely the decision makers within higher education. Grassroots enthusiasm can achieve a lot, but the work with OER will remain fragmented and ad hoc without the commitment of the universities' policy makers and government authorities. The key to progress is the commitment of top management and policy makers and the development of national strategies for open learning. The growing interest in OER at grassroots level must be met by a clear coherent strategic commitment from above. As emphasised by Kanwar et.al. (2010) there are various stakeholders to be included and involved in the processes of developing successful OEP and OEC environments and the culture of sharing. It is often emphasised that there is a need for successful business models for the implementation and maintenance of sustainable open educational environments and cultures (EADTU, 2011).

A practical example of helping decision-makers to adopt OEP is the ongoing European project Open Educational Quality Initiative (OPAL, 2011). OPAL has produced a set of guidelines for educational institutions to assess their own maturity in relation to the use of open resources. The following Figure 3 represents different stages in the development of open educational practices and decision makers should assess which box their institution belongs in at present and then plot a course towards a more mature position. Tools like these are essential to stimulate a more strategic approach to the use of OER in education though the backing of national educational policy makers will be essential for any significant development. In Sweden today most institutions are at the lower end of this path, but it would be of interest to use the tool as a discussion for further development on institutional or national level.

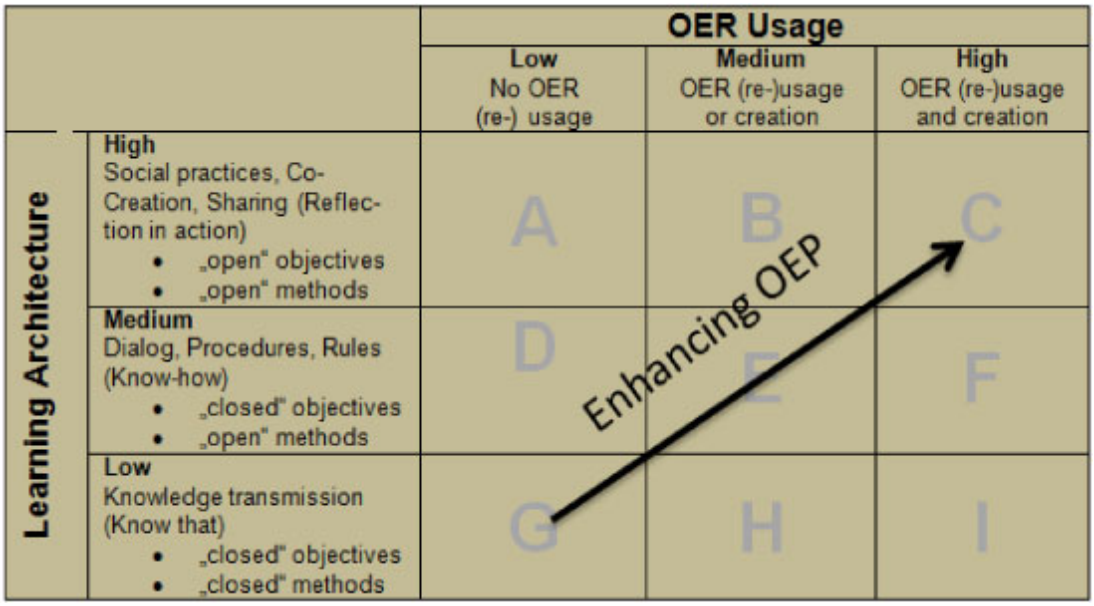

Figure 3. Stages of OEP (OPAL, 2011, p. 4).

Metadata

Although this was out with the scope of the project it is clear that one major barrier to the mainstream adoption of OER is the lack of a consistent structure for tagging and classifying resources. There is a vast wealth of resources available but they often lack information on vital factors such as educational level, prerequisites, context, related material, learning outcomes etc. There are still no satisfactory tools for searching video and audio material apart from by title and some basic facts. One recurring concern amongst teachers is the difficulty in finding relevant material and the lack of precision in most search engines for OER.

Reuse of OER

Measures need to be taken to ensure that resources are used in a sustainable manner, avoiding unnecessary duplication and ensuring that resources really are shared. There is clearly an enormous wealth of OER available today but there are urgent needs to develop a culture of trust within the global academic community to facilitate reuse. A crucial factor here is the production of material that can easily be reused in other contexts and cultural settings and that re-usability should be a critical factor in the planning of all OER.

All too often we see resources that are simple fly-on-the-wall recordings from a specific situation and no thought has been devoted to secondary use (Bates, 2011). It is vital that open resources are designed to be easily adaptable to different contexts, for example by producing shorter clearly tagged lecture modules rather than a one-hour continuous lecture. This of course demands a framework for planning the production of resources and that is an integral part of OEP, as explained above. Material that is too context specific is unlikely to be reused by teachers in other cultures and contexts. As Batson (2010) points out the role of the educator is to take the best and most relevant content and then provide context.

In the discussion and discourse of reusing OER quality will be improved as the resources are used by different users and within different contexts. Thus the resources are reviewed by peers in a learning and educational community. Through this process quality issues are secured. Again the key here is increasing teachers' awareness, providing arenas for collaboration (physical and virtual) and creating a culture that embraces sharing and innovation.

Inclusion

The vast majority of OER is produced in the USA and is in English. There is still relatively little material available in Swedish and this is a barrier to adoption here. Several noteworthy projects have built up repositories for schools and universities such as lektion.se and Digiref but without clear top-level endorsement teachers have been unwilling to contribute or even make use of the resources provided. The mere existence of resources and repositories does not stimulate the adoption of OER; there must also be practices and a culture of openness sanctioned from the top.

In addition there is a risk that the developing world becomes over-reliant on material produced by western universities. This factor is of course linked to the issue of re-usability described above. The development of local OER is crucial as is the development of material adapted to facilitate secondary use and adaptation. It

is however important to develop OER which are international or easily can be adapted re-used to different cultures and local environments, depending aim. Content may be the same, but again it is a matter of context where OER is used.

Innovation and creativity

The use of social media, OER and virtual learning environments undoubtedly offers immense scope for innovative approaches to learning. According to OECD *ICT support innovation* (2010a, p. 139). However the slow uptake of ICT in education in general threatens to create a serious mismatch between a highly digital society and a largely analogue education system. If universities are unable to radically change their teaching and examination methods they will not be preparing their students for careers that will increasingly be based on the ability to network, filter information and draw conclusions with the net as a prerequisite. The business world calls increasingly for graduates who are innovative, self-directed and entrepreneurial and such qualities are seldom the focus of traditional academia, as stated by OECD education systems and curricula need to adapt to changing needs:

> *Formal education is the basis for forming human capital, and policy makers should ensure that education systems help learners to adapt to the changing nature of innovation from the start. This requires curricula and pedagogies that equip students with the capacity to learn and apply new skills throughout their lives. Emphasis needs to be placed on skills such as critical thinking, creativity, communication, user orientation and team- work, in addition to domain-specific and linguistic skills. (OECD, 2010b, p. 9).*

OECD also emphasizes that lifelong learning need to be encouraged:

> *The acquisition of skills is a lifelong process; it does not end with formal education. Schools lay a base for lifelong learning, but ongoing skills acquisition needs to be encouraged. This involves recognising all forms of learning and making them visible, including through qualification systems. Rewarding lifelong learning and making it attractive may help enhance participation. (OECD, 2010b, p. 10)*

The current economic squeeze on education will force academic leaders to seriously review operations. The increased use of ICT including OER would seem to offer a number of cost savings in terms of the production of course material and freeing up teachers' time to concentrate more on tutoring and mentoring. The question is whether or not there is a real will to change and that university can foster a climate of innovation and creativity despite financial constraints. The greatest temptation is a "back to basics" policy and there is already some evidence of this. Bates (2010) outlines the dilemma facing universities and suggests that the "appropriate use of technology" is an essential part of the change process. To ignore this would seem to risk becoming irrelevant to students' and society's needs.

A culture of sharing

The development of open learning will also make radical demands on teachers, students, leaders of educational organisations and policy makers. A major reason behind the general reluctance to adopt OER is insecurity. OER calls into question many of the most central concepts in education: the closed but secure classroom, the teacher as authority and the view of teaching as the transmission of knowledge. Many teachers see their lectures and course material as symbolising their value as teachers and are highly reluctant to sharing since doing so may make them redundant. Ala-Mutka, Redecker, Punie, Ferrari, Cachia and Centeno (2010) stress the need for teachers to receive much more support and training to be able to fully exploit the opportunities of open educational resources and e-learning in general. Institutions must develop incentives for creativity and innovation and reward educators who are willing to experiment and incorporate new theories and practice into their own teaching.

A culture of sharing course material will demand new structures of course design and course delivery. Fully adopting OER and moving towards OEP and OEC will require teachers to relearn teaching and students to relearn learning. A culture of sharing and collaborative learning will thus become the new educational and learning paradigm. This is well stated by Ehlers (2010b):

> *"Teachers …*
>
> - *need **skills** and lean [learn] about how to [learn] with user generated content rather than expert content*
> - *have to become **knowledgeable** in guiding students to become professional in self-assessment processes and embracing the notion of assessment for learning rather than assessment of learning.*
> - *are faced with a **powershift** in the way that not their own resources are subject of teaching any longer but those of other experts as well.*
>
> *Students …*
>
> - *need to become **autonomous** learners*
> - *have to lean [learn] about **assessing** their own progress and taking responsibility*

for their learning
- *are faced with being **peers** to each other and validating each others' learning*
- *Leaders of educational organisations*
- *are faced with the question how they can **make content** which has been produced in teaching and learning processes relevant to other actors within the organisation*
- *how an open **policy can be lived** within the institution and express itself not 'just' in the use of just another open educational resources repository.*

Policy makers

- *want to stimulate the use of open educational resources to improve the quality of education – **not just the access** to educational opportunities. But what is quality of open resources? "*

Conclusion

The educational paradigm in the use of OER emphasises education for all, inclusion, democracy, internationalisation, virtual mobility and sustainable development among other issues. Furthermore it is intimately linked to concepts like connectivism, collaborative learning, digital literacy, open access and lifelong learning and as a result it is impossible to deal with the one without involving all the others. The implementation of OER in academic curriculum can be compared to opening Pandora's Box. By accepting the use of OER the university must also address a wide range of crucial related issues: the role of the teacher, the role of the university, policies for IPR, culture of sharing, business models, administrative concepts etc. OER cannot be seen in isolation, it is one aspect of a radical and disruptive new approach to learning.

We see clear parallels between OER and both the Open Access movement and the Bologna process. Bologna and Open Access would not have been possible without clear directives from EU level. Grassroots movements can achieve a great deal but it is highly unlikely that the European university credit system would have changed only through a bottom-up approach. With a clear European strategy in place national authorities and universities could then act within that framework. We believe that it will be extremely difficult if not impossible to achieve coherent and sustainable use of open educational resources without clear support and acceptance from above.

As stated above, the challenges facing higher education today to provide education in line with the demands of tomorrow's global digital economy are enormous. The workplace of the future will value agile learners and it is this type of skill that needs to be fostered in school and university. Learning how to learn is one of the key skills for our students since they will be expected to take responsibility for their own competence development. Twenty-first century skills such as advanced information retrieval and source criticism need to be an integral part of school and university education so that students will be able to find and filter the resources they need for their own development. Jane Hart describes the growing need in industry for "smart" learners.

> *The consequence of this for Learning & Development is that they now need to concern themselves more with helping employees become dynamic, agile, self-directed, independent and interdependent, i.e. what we might also term "smart" learners and less with creating and managing learning solutions for dependent learners. Helping employees become smart learners includes supporting them acquire a set of trusted resources and networks, using the most appropriate tools; and having the right mix of skills to make effective use of the tools and (re)sources (Hart, 2011).*

Many of today's fundamental educational concepts must be questioned and some phased out as we move towards a greater emphasis on collaborative net-based learning and a marked increase in part-time lifelong learning. This type of radical change cannot be achieved just through grass-roots agitation; it must be part of an international development.

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Acknowledgements

We would like to thank the National Library of Sweden (Kungliga biblioteket – Sveriges nationalbibliotek) and the network for IT in Higher Education in Sweden, (Nätverket för IT i högre utbildning) for funding and making this national OER project, O*ER- Resources for learning*, possible.