Open Educational Resources: The Key to Embedding ICT in Education?

by

Sir John Daniel & Stamenka Uvalić-Trumbić
Education Masters: DeTao Masters Academy, China

Sir John Daniel

Introduction

It is a pleasure to be in Moscow again.

Thank you for inviting us to come and speak at your conference. UNESCO's Institute for Information Technologies in Education is doing great work and we are pleased to contribute to it.

Stamenka Uvalić-Trumbić, former Head of Higher Education at UNESCO, Paris and I will make this presentation jointly. Our title is *Open Educational Resources (OER): The Coming of Age of ICT in Education?* I will first set the scene by examining both the potential and the disappointments of ICT in Education. Then, in the second part of the address Stamenka will argue that Open Educational Resources have great possibilities for making ICT more effective and describe what we have done in the last year to alert educational leaders and governments to their importance.

Almost everyone believes that, in principle, Information and Communications Technology (ICT) has the potential to improve education and here at IITE you are doing much to put that principle into practice. However, around the world most objective observers (we mean people who are not trying to sell you ICT hardware and software) consider that current impact of ICT in education falls far short of its potential to improve education.

What do we mean by improving education? Let us be ambitious and state that we would like ICT to widen access to education while at the same time making it quality better and lowering its cost.

We shall first explore why ICTs have greater potential for achieving a better combination of access, quality and cost than all previous educational technologies.

Second, we shall look briefly at the generally disappointing record of the introduction of ICTs in both basic and higher education and offer a diagnosis of why they are not achieving their potential. This diagnosis suggests weaknesses on several dimensions but in the subsequent sections of the paper we shall focus on the lack of good eLearning materials and argue that Open Educational Resources are a very promising development in this regard.

<u>Why do ICT have the potential to transform education?</u>

What is so special about information and communications technologies that they inspire dreams of transforming education? Educators and academics realise, almost instinctively, that the combination of digitally-based information and communication technologies gives much more powerful possibilities for extending and improving learning and teaching than all previous educational technologies from the blackboard to television.

The fundamental reason for this instinctive – and accurate – assessment of ICT is that much of teaching and learning is about the manipulation of symbols, whether those symbols are words, numbers, formulae or images. ICT are qualitatively different from previous teaching or learning 'aids' in their power to help manipulate symbols. Instead of being an aid on the side, ICT connect directly to the mental processes that define education and the academic discourse.

My UK Open University colleague Marc Eisenstadt coined the term 'knowledge media' to describe contemporary forms of ICT. Knowledge is a dynamic process, a living thing. It is not something that teachers can pour into students' heads. In the same way 'science is less a statement of truth than a running argument'. That is why I called my book about technology strategies for higher education *Mega-universities and Knowledge Media.*

In this context ICT should not only be a tremendous asset to education, but an asset that is becoming ever more powerful and useful as the capacity for interactivity and data linking continues to increase.

Furthermore, in addition to these advantages of principle, ICT is also a great facilitator of the practice of learning and teaching because the Internet is an extraordinary vehicle for the wide distribution of information, knowledge and educational material generally at low cost. More recently, as the Internet has also become a vehicle for interaction, its significance for teaching and learning has become even greater.

<u>Why is the potential of ICT in education as yet unrealised?</u>

It is easy to say that ICT have the potential, both in principle and in practice, to transform education. However, not only technology cynics but also many objective analysts observe that ICT has yet to fulfil this potential.

For example, Toyama (2011) reviewed many projects and concluded that the history of electronic technologies in schools is fraught with failures. He adds: 'there are no technology shortcuts to good education. For primary and secondary schools that are underperforming or limited in resources, efforts to improve education should focus almost exclusively on better teachers and stronger administrations. Technology has a huge opportunity cost (compared to) more effective non-technology interventions.'

In my book *Mega-schools, Technology and Teachers* I analyse a concrete example of the disappointing impact of introducing computers in school: the high-profile 'One

Laptop Per Child' programme. An assessment by *The Economist* magazine reaches a similar conclusion.

In higher education the situation is different but also discouraging. In his analysis of the state of online learning in North American Bates (2011) found that, despite strong student interest, public sector higher education does not have ambitious goals for online learning.

The intelligent use of ICT could help higher education to accommodate more students, improve learning outcomes, provide more flexible access and do all this at lower cost. Instead, he found that costs are rising because investment in technology and staff is increasing without replacing other activities. There is little evidence of improved learning outcomes and often a failure to meet best quality standards for online learning.

A combination of factors explains why ICT are underperforming and also suggests how to improve matters. Politicians and institutional leaders are too often dazzled by the headlights of oncoming technology and launch ICT projects without taking three vital preliminary steps.

First, the objectives of introducing ICT are too often unclear. ICT is almost always introduced into an already functioning educational system. How is the use of ICT meant to improve that system: by improving learning outcomes, by widening access, or by cutting costs? Achieving such objectives requires purposeful policy and planning. UNESCO Bangkok has developed helpful tools for this process.

Second, the addition of ICT to a system will achieve little unless teachers are fully involved in the process. This means inviting them to help mould the aims of the project, as well as training them in the use of ICT – not merely computer literacy but also how to use computers to enhance student learning.

Here again, we can draw on the careful work of UNESCO and its partners. They have created a complete ICT Competency Framework for Teachers, which starts with computer literacy but goes far beyond it, including all elements that teachers need to master in order to use computers confidently in the classroom to teach subjects wider than computing.

The Commonwealth of Learning has created courses based on this Competency Framework within a Commonwealth Certificate for Teacher ICT Integration programme that is available on COL's website

Third, most ICT applications require software that presents content in a manner that exploits the power of ICT, using them as true 'knowledge media'. Accessing such content software through Open Educational Resources is the main focus of this paper.

Where do you find good eLearning materials?

From the early days of open universities in the 1970s their leaders enthused about the possibility of cutting costs and improving quality by sharing materials between institutions. However, even where people wanted to share course material there were

many obstacles to doing it.

First, since courseware that crosses national frontiers must be adapted to the local context, sharing required the re-keying of text and the replacement of illustrations: a tedious process before materials were produced in digital formats.

Second, institutions rarely cleared the copyright for the third-party material in their courseware with sharing in mind, so that process had to be gone through again.

Happily, developments since the late 1990s are removing both these obstacles. Once materials are in digital formats adapting them becomes a simple matter and the more significant obstacle of copyright is now yielding to the spread of Open Educational Resources (OER).

Open Educational Resources: early history

Open Educational Resources are part of a wider trend towards greater openness and sharing that has been gathering momentum for over twenty years. It is helpful to divide its manifestations in education into three inter-related elements.

First, Open Source Software has a long history. Second, the term 'Open Access' usually refers to open access to research results, especially where the research has been supported by public funds. The open access movement is thriving although still controversial, particularly with the publishers of scientific journals.

Third, Open Educational Resources are defined as educational materials that may be freely accessed, reused, modified and shared. This includes materials in all formats because, while nearly all OER are generated through digital technology, they are often used in print formats. For example, senior secondary school OER produced through collaboration among six small countries in Africa and the Caribbean will likely also be mostly used in print formats, at least in the next year or so

The term Open Educational Resources, or OER, was coined at a forum held at UNESCO exactly a decade ago. The topic was the *Impact of Open Courseware for Higher Education in Developing Countries* and reflected the growing movement, launched a little earlier by the Massachusetts Institute of Technology (MIT), to make educational materials freely available for adaptation and reuse. Participants at the Forum declared "their wish to develop together a universal educational resource for the whole of humanity, to be referred to henceforth as Open Educational Resources".

The Open Educational Resources movement has gathered accelerating momentum since that 2002 Forum thanks to the commitment of educational institutions, NGOs and some governments to making educational material freely available for reuse, notably where that material was created with public funds.

Earlier this year a World OER Congress was held in Paris, partly as a celebration of the tenth anniversary of that important UNESCO 2002 Forum, which created a global movement for the open licensing of educational and creative works. Educators and institutions are beginning to appreciate the great breakthrough it represents.

Back in 2009 the UNESCO World Conference on Higher Education brought together 2,000 participants representing higher education worldwide. It urged governments to give more attention to the roles of ICT and OER and the same year General Conference told UNESCO to promote OER more actively to governments and educational leaders.

UNESCO and the Commonwealth of Learning then teamed up to work on awareness raising and advocacy, beginning in 2010-2011 with workshops for educational leaders in Africa and Asia.

Following those meetings UNESCO and COL produced two basic documents that are available for download: *A Basic Guide to OER* (UNESCO/COL, 2011a) and *Guidelines for OER in Higher Education* (UNESCO/COL, 2011b).

Let me now hand over to Stamenka to bring you fully up to date.

Stamenka Uvalić-Trumbić

OER: advocacy with governments

This year the focus of our advocacy of OER moved to governments. Governments' attitudes to OER are crucial because they make policies for education; they are major purchasers of textbooks; and they produce a range of educational material.

Survey

A first step was to discover more about governments' expectations for OER and whether they were developing policies for their use. We conducted a questionnaire survey of all governments and received responses from 100 countries.

These were analysed in South Africa by Sarah Hoosen and you can download the report. We shall comment on two issues raised by the survey. To quote from Sarah Hoosen's report:

There appears to be great interest in OER across all regions of the world, with several countries embarking on notable OER initiatives. Indeed, the survey itself raised interest and awareness of OER in countries that may not have had much prior exposure to the concept.

The Business Case for OER

Why should governments and institutions have this great interest in OER?

When the OER movement began it was motivated primarily by the ideal that knowledge is the common wealth of humanity and we should share it. Most institutions that created OER relied on donor funding. But the OER movement could not rely on donor funding indefinitely, so institutions and governments started to look at to the economics of OER. Is there a business case for investing in them?

Our project commissioned a report by Neil Butcher and Sarah Hoosen on *Exploring the Business Case for Open Educational Resources,* which you can also download.

Butcher and Hoosen look the contribution of OER in the wider context of the

challenges facing education at this time of economic difficulty. They argue to widen access to education we must make more use of resource-based learning, rather than large-group teaching. The authors show clearly that using OER can reduce the cost of creating learning resources substantially. In the case of textbook production they show that investing in OER can create considerable savings for governments and students.

Our second quotation from the report raises other important issues:

...there appears to be some confusion regarding understanding of the concept and potential of OER. Many projects are geared to allowing online access to digitized educational content, but the materials themselves do not appear to be explicitly stated as OER. Where licences are open, the Creative Commons framework appears to be the most widely used licensing framework, but licensing options varies between countries.

Open licensing of educational materials

Our project did propose particular approaches to the open licensing of educational materials but governments and institutions must face this issue. It is not enough to place materials on a website and say that anyone can use them.

Producers must realise that open licensing takes place within the framework of copyright legislation, not outside it. Users need the assurance they can use the material subject to any restrictions that apply.

There is no consensus among countries on the restrictions that should apply to open licensing. A majority of countries support the commercial use of OER but a minority is opposed.

Regional Policy Forums on OER

As well as conducting our questionnaire survey we held regional policy forums in all parts of the world for three reasons. First, we wanted to stimulate dialogue between government policy-makers and OER practitioners. Second, we wanted to heighten interest in the World OER Congress and encourage governments to come. Third, we wanted to consult widely on the Paris Declaration on OER and revise it in the light of comments from the regions. These regional policy forums were very successful. They allowed us to learn about the situation of OER around the world and to refine the Paris Declaration in a very consultative way.

In drafting and revising the Paris Declaration we followed three general principles. First, the Declaration is at the level of principles and aims. Second, it is focussed tightly on OER rather than including the other aspects of openness, notably open source software and open access to research literature. Third, the Declaration avoids technical language.

Let us give you the flavour of the Regional Forums, which were very stimulating events. We held them in Barbados for the Anglophone Caribbean, Pretoria for Africa, Rio de Janeiro for Latin America, Cambridge, U.K. for Europe and North America, Bangkok for Asia-Pacific and finally Muscat for the Arab States. Full reports of the

forums can be found on the COL website.

Caribbean

The first Regional Forum was held for the Anglophone Caribbean in conjunction with an ICT in Education Leadership Forum based on UNESCO's Competency Framework for ICT for Teachers that we mentioned earlier. Most Caribbean countries are introducing computers into their schools and the lack of good learning materials for this purpose made them very receptive to the notion of Open Educational Resources.

Africa

The forum for Africa, took place in Pretoria at the University of South Africa (UNISA) and 17 African countries reported on the status of OER in their countries. Although none, with the exception of South Africa, have a distinct governmental policy on OER, the majority are active in the OER movement, mainly through institutions and individuals.

These results from Africa showed the progress that has been made since the 2009 World Conference on Higher Education. In Pretoria we found a vibrant culture of creation, re-use and re-purposing of OER in Africa and UNISA, our host, now has a proactive institutional strategy for OER. The flow of OER is now becoming truly global. For example, OER created at the Kwame Nkrumah University of Science and Technology in Ghana are used at the University of Michigan.

African inputs to the Paris Declaration included emphasising issues of connectivity and electricity, the sharing of OER across languages, stressing research on OER and developing business models for OER that embrace a range of stakeholders, including industry.

Latin America

The Forum for Latin America took place in Rio de Janeiro. 10 countries reported on the status of OER with the majority saying that they had some governmental policy related to OER or intend to develop one. The Latin American meeting linked the Paris Declaration to various internationally agreed statements, from the Universal Declaration on Human Rights to the Convention on Diversity of Cultural expressions, clarified some terms and qualified open licences "with such restrictions as judged necessary".

Europe

For the Europe region forum we went to the UK and the University of Cambridge. Austria, Finland, Hungary, the Netherlands, Poland and Slovenia are the most active countries in taking advantage of OER in Europe. Europe added an action item to the Declaration about encouraging private and non-governmental organizations to contribute to OER.

Asia-Pacific

As you know well, the Asia-Pacific region is large and diverse. The forum was held in Bangkok. 19 countries had responded to our survey of which five reported that they have government policies on OER in place. Most of these refer explicitly to the open licensing of educational materials.

For example, Australia places OER in the wider context of its policy of opening up public data and resources through the Government's Open Access and Licensing Framework. In this context a number of Australian states reported on their different approaches to OER.

In China, the Ministry of Education has an OER policy, within which it has developed several OER action plans. Examples involving Chinese universities are the Video Open Courseware project and Open Digital Learning Resources for Continuing Education.

The discussion of the Declaration in Bangkok strengthened the references to capacity building and to incentives for teachers and institutions as well as respect for indigenous knowledge.

Arab States

Finally, just before the World OER Congress, Oman hosted our Forum for the Arab states in Muscat. 11 countries had reported on the status of OER and although none said they had explicit governmental policies on OER, five have strategies related to eEducation or eLearning that includes or could include OER. Morocco is particularly active.

The discussion of the Paris Declaration stressed that governments should develop policies and strategies for OER.

We have described our world tour with the Paris Declaration in some detail because we want you to appreciate that there really is great interest in OER around the world. These forums showed that it is important for governments to take an active role in promoting OER. That is because, first, education systems and institutions in most countries rely on government leadership. Second, governments can gain much by using OER by making their large investment in educational materials more cost effective.

The Paris Declaration

Having completed our world tour we took the draft Declaration, now in its 7th version, back to our International Advisory Group at UNESCO, which added some extra revisions to it before and during the Congress.

We are delighted to say that the Paris Declaration was accepted by acclamation at the World OER Congress with no further amendments. Copies of the Declaration are available on the UNESCO website.

This was a very proud moment for Sir John and me. We had been living intensively with the Declaration for six months. Its enthusiastic acceptance by the Congress

confirmed our hope that we had conducted a model process of global consultation and substantially increased the awareness of the significance of OER in countries rich and poor, large and small.

The process also confirmed the value of partnerships, in this case between COL, a small intergovernmental agency based in Vancouver, and UNESCO. The Hewlett Foundation, which has an admirable record of supporting work on OER, awarded a grant to COL for the project, which allowed us to hold the regional policy forums.

We are also proud that the Declaration is coherent and conceptually clear. Its ten clauses list the steps that need to be taken to bring OER fully into the mainstream of education for the benefit of students, institutions and governments. We will not take you through the Declaration but simply note its ten headings:

1. Foster awareness and use of OER.
2. Facilitate enabling environments for the use of ICT.
3. Reinforce the development of policies and strategies 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 open licensing of educational materials produced with public funds.

Declarations from UNESCO meetings like the OER Congress are not legally binding. Governments are free to follow up on them in whatever way they choose, either nationally or internationally. Nevertheless, experience with similar declarations in the past shows that governments often use them as guidance for their policy making at country level. We sense that this is already happening.

Conclusion

We end by recalling that the aim of this project was to encourage governments to promote OER and the use of open licences. The OER movement is developing fast but it needs government and institutional involvement to bring it fully into the mainstream of education. Moreover governments will be major beneficiaries of a stronger OER movement thanks to the potential of OER to improve the cost-effectiveness of their large investments in education.

We believe that ten years after the term Open Educational Resources was first used, OER will now make a major difference to the effectiveness of the use of ICT in education.

At the beginning of this paper we said the introducing ICT in education often fails for three reasons: inadequate policy and planning; limited teacher training and lack of good ICT-based courseware. As the pressure to use ICT effectively in education

grows, institutions and governments will give more attention to policy and planning.

This will lead them to focus more closely on the training of teachers, which is not simply a matter of imparting ICT skills, but also encouraging teamwork instead of the 'lone ranger' approach to developing and offering eLearning. Teachers will also need training in locating appropriate courseware.

The rapidly growing pool of OER is already a rich source of quality courseware relevant to all levels of education and the development of tools that make it quick and easy to find and retrieve appropriate OER is continuing apace.