Global Trends in OER: What is the Future?

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It's a pleasure to be back in Hong Kong and I'm grateful to Prof KC Li and the organisers of ICOIE 2018 for the invitation. My presentation on 'Global Trends in OER: what is the future?' has been prepared jointly with my colleague Dr Sanjaya Mishra.

As you know, the Commonwealth of Learning is an intergovernmental organisation established by Commonwealth Heads of Government with headquarters in Metro Vancouver, Canada and a regional office in Delhi. Our mission is to help Commonwealth Member States and institutions to use technologies for expanding access to education and training.

COL believes that learning is the key to sustainable development. Learning must lead to opportunities for economic growth, social inclusion and environmental conservation. Opening up education can support this agenda and Open Educational Resources or OER are a key element in this process.

We work in 53 Member States of the Commonwealth which span all regions of the globe.

I'll first begin by giving you an overview of the context of education today followed by a short account of the history of OER. I will then list five key challenges in mainstreaming OER as identified by the global community. A review of selected research in OER will indicate the trends. In conclusion, I will focus on four areas for future research and development.

But first the situation of tertiary education and why we need OER.

The previous decade has seen a steady growth of tertiary education globally and the average GER is 35%.

While the GER in OECD countries is in the range of 40-50%, the Asian average barely exceeds 30%. In some countries it is well below 10%--whereas the World Bank estimates that for any country to achieve sustainable development participation in HE must be in the range of 40-50%. How will we increase access to large numbers?

One of the barriers to opening up higher education is the issue of costs, and this is not just in the West. The cost of Asian tertiary education is considerably high in relation to the percentage of the average income in 2015—61% of the average income in Japan, over 95% in South Korea, nearly 100% in China, 350% in Indonesia and 500 % in India. Even though families want to invest in educating their children, can they really afford it? Therefore, access and costs will continue to remain a priority issue going forward.

Textbook costs in the US have gone up in the last 20 years by 181% in comparison to the overall growth of Consumer Price Index at 48%.

In the US, students on average spend between USD 1,200 to USD 1,400 per year on textbooks and supplies to study at College and University level and 65% students do not buy textbooks because of high costs. 94% of those who had not purchased a textbook were concerned that doing so would hurt their grades (Student PIRGs, 2014). This situation is not limited to the West alone. 76% of the students in Malaysia do not buy textbooks because of high costs.

The cost of textbooks even impacts the school sector. In Cameroon, 12 students in Grade 2 shared one textbook and there was one maths textbook between 14 students. The situation was not much different in neighbouring Togo. Does it matter? A study in 22 sub-Saharan African countries shows that pedagogical resources, especially textbooks for the core subjects of reading and mathematics, are effective in improving learning; providing one textbook to every student in a classroom increased literacy scores by 5–20% (Fehrler et al., 2009). Open Educational Resources or OER are increasingly being seen as a means of putting a textbook in the hands of each child.

OER can also enhance access to quality content. India's National Project on Technology Enabled Learning offers free content developed by experts at the Indian Institutes of Technology and this is being used by both teachers and students in hundreds of remote engineering colleges which do not have adequate resources.

In short, why do we need OER? As we have seen, OER have the potential to address the challenge of the high costs of textbooks by opening up access to affordable resources and by tapping into global quality knowledge flows to enrich the teaching learning experience.

This is one reason why we have seen such a phenomenal growth in OER in less than two decades. Let us review some of the landmark developments during this time.

This is the most recent definition of OER proposed by experts last year. Open Educational Resources are educational materials which are free and freely available, are suitable not just for higher education but for all levels including primary and secondary education. OER can be reused and repurposed to suit different needs and could be available in any medium, print, audio, video, digital. One key difference between OER and other educational resources is that OER have an open license, which allows adaptation and reuse without having to request the copyright holder.

Sharing and repurposing educational materials is not new. What is new however, is the developments in technology which have made it easier to collaborate, share and disseminate content. It was back in 1999, well before the word OER was coined, that COL initiated STAMP 2000+. COL brought together 140 course writers from 8 countries to develop 46 modules of teacher training materials. The main objective was to build the capacity of teachers and then share the resulting content. Massachusetts Institute of Technology's (MIT) Open Courseware (OCW) initiative took a leadership role in which teachers placed their lecture notes online for free use, which also resulted in more applicants to the university. The Open University UK's Open Learn followed by placing existing self-instructional materials, in online format. This was another step that the OUUK took in opening up education. Even though the objectives of the organisations differed, the common strategy was to share free content.

This new development led UNESCO to convene a meeting of experts in 2002 at which the term OER was coined.

The idea of opening up content captured the imagination of both policy makers and practitioners who met in 2007 and brought out the Cape Town Declaration which called on educators and learners to actively participate in this movement, authors and publishers to release their resources as OER. They made an important recommendation to governments and institutions that all tax-payer funded educational content should be released as OER.

Some of these ideas were captured in the Paris Declaration, an outcome of the first World OER Congress that UNESCO and COL organised in 2012. This made ten important recommendations. Let me just refer to three:

- Foster awareness and use of OER
- Encourage the development and adaptation of OER in a variety of languages and cultural contexts
- Encourage the open licensing of educational materials produced with public funds.

This was an important development as governments tend to take such internationally-agreed documents led by multilateral organisations like UNESCO and COL, seriously.

Another key milestone in education was the Qingdao Declaration in 2015, which seeks commitment for sector-wide strategies and capacity building so that OER can be harnessed to provide access to quality education and lifelong learning for all.

Last year UNESCO, the Government of Slovenia in partnership with COL organised the 2nd World OER Congress in Ljubljana, with the theme 'OER for Inclusive and Equitable Quality Education: from commitment to action'.

In the lead-up to the Congress, COL organised six regional consultations. Let me share the outcomes of the Asian regional consultation where participants from 20 Asian countries participated, including from Hong Kong, Bhutan, Nepal, and Mongolia.

Some of the highlights that emerged were that several countries were already implementing OER initiatives. A major project of the Indian government —the National Mission on Education through ICTs uses the CC licence to open up its educational content. Malaysia has committed to opencourseware in its elearning policy. There are OER repositories in China, Hong Kong, India, Indonesia, Malaysia, Pakistan, Philippines, and Vietnam.

The Asians had concerns about poor connectivity, lack of capacity and unavailability of OER in local languages. They also flagged the need for more attention to developing OER for people with disabilities. While there are many emerging initiatives in Asia, there was no OER policy at the national level.

COL developed the OER Global Report 2017 based on the findings of surveys and consultations carried out worldwide. It is a rich resource of data, trends and actual practice.

What are the global trends that emerged and what are the actions needed to provide more inclusive and equitable quality education for all? There are OER policies at the institutional level. Governments are supportive but this does not always translate into explicit policies. However, the OER activities are still thriving even without the overarching policies.

There are many more repositories today in developed and developing countries. Most repositories are at the tertiary level and those from the global north are more likely to be used. Limited use of these repositories suggests that they must be more widely publicised and user-friendly.

More people are aware of the benefits of OER and the circle of champions and advocates has certainly grown. However, the meaning of 'open' means different things to different people. Even as more governments are supporting MOOCs, these are not always open. While there is a growing recognition for promoting open textbooks, there needs to be more emphasis on learning resources for lifelong learning.

But OER have not been adopted at the speed and scale envisaged in 2012. In 2012, our main objective was to foster governmental commitment for OER internationally. Today we want to involve many more stakeholders so that OER initiatives can be implemented at all levels. Six years ago, the focus was on promoting policies but now there is greater emphasis on mainstreaming OER. At that time, getting commitment was a key concern. Today there is a shift towards concrete action for impact.

Let us now turn to the five key challenges in mainstreaming OER as identified by the global community at the 2nd World OER Congress last year. I will also share examples of the steps different stakeholders have taken to address these challenges.

The five challenges are: the need for enabling policies; ensuring inclusion and equity so that no one is left behind; building capacity in the use and re-use of OER; promoting the development of OER in local languages and taking into account cultural considerations and finally developing sustainable business models.

First, the issue of policy. Interestingly, there is a great deal of OER activity in Asia even without a national OER policy. There are more OER policies at the institutional level in Bangladesh, India, Sri Lanka and Malaysia. There is a project level OER policy in India and provincial policies in Sri Lanka.

Despite the lack of national OER policies, Asia has implemented several successful OER initiatives promoting the use of free courses and research such as OERAsia. The China Open Resources in Education, the National Repository on OER in India, the Open Courseware initiatives in Pakistan and Japan all promote the development and sharing of open content to improve the quality of education in their countries. Many of the materials are also available in national languages.

Let's turn to the second barrier—inclusion and equity. 15% of the world's population has some form of disability. In which ways can OER be made accessible for people with disabilities? There are some open resources available for people with disabilities today—this website shares open educational content, open access research and free and open source software.

How accessible are available OER? The College Open Textbooks Collaborative[1] in the USA promotes awareness and adoption of open textbooks in more than 2000 community colleges. Their website reviews open textbooks for accessibility. In most cases, they found that the robustness criteria scores low indicating that the OER surveyed were less amenable to use through assistive technologies. But things are changing. The Open University UK has invested much effort in making Moodle accessible and has offered the developed version back to the open source community.

What of equity? These women are part of COL's L3F under which they have learnt agriculture and enterprise development skills using OER in their local language through basic mobile phones.

The third major barrier is capacity. A survey of how OER are being used in 13 Asian countries, sums up the key challenges that different constituencies face.

Teachers felt they did not have either the time or the capacity to locate, adapt, and re-purpose OER material relevant to their work.

[1]Source: http://www.collegeopentextbooks.org/textbook-listings/accessibility-reviews

Learners felt that OER should be fully open, half-open didn't help and materials should be accessible on alternative technologies such as mobile devices.

Technical support personnel said there were no standard practices in the packaging and re-use of OER.

Management was concerned about the challenges relating to intellectual property and copyright issues. Concerns regarding competition and revenues were also raised.

Capacity building is key to mainstreaming OER in education and training. COL has been supporting capacity building activities in partner institutions. It has developed an online course that has been taken up by over 19,000 people from across the world. COL's publications on OER are used and cited widely. Please visit our repository to access some of these publications.

Linguistic and cultural diversity continues to be a challenge within the OER movement, which is predominantly in English. However, modern technological advancements in natural language processing and real-time translation have enabled teachers to contextualize material to suit their learners with minimum effort. CORE has translated MIT course materials into Chinese. The Open University of China has translated several COL publications into Chinese.

OER repositories are beginning to be developed in local languages. The Lifelong Learning for Farmers in India has now developed an OER repository, which is created by farmers for farmers in their language Tamil.

Research on the use of OER in remote communities in Nepal found that localisation is an important strategy for promoting OER in different languages and cultures. It was important to establish a community of practice, understand local contexts and then use the idiom preferred by the communities—for example, OER in Nepali for shopkeepers, housewives, community workers would have to be adopted to the way they use language.

The OER movement so far has been funded by governments, foundations etc. What happens when the funding and endowments end? Would a membership model be more sustainable? The freemium model—in which the content is free and the services monetized—works well in some contexts such as Siyavula in South Africa. There are ad-supported models such as Google, the gift economy model such as Wikipedia where labour exchange is based on shared free time.

The OERu is a good example of a collaborative model. Students access free OER-based courses from a consortium of universities and get free tutorial support from Academic Volunteers. Students pay for assessments and certification from the participating institutions which award the credential.

The use of OER saved about $2500 per student in a degree programme at a community college in the USA and thanks to the investments made by the provincial government, the 40 participating institutions in BC, Canada saved CAD 9 million.

What can be done to overcome these five barriers? Evidence based advocacy and capacity building is key, especially for teachers. More policies at the national and institutional levels will facilitate the mainstreaming of OER. We need a targeted approach to developing OER in accessible formats for equity and inclusion. Educators need to be supported to develop culturally and linguistically relevant OER. There is a need to create a win-win framework for new business models which would include public-private partnerships and social enterprise models.

OER are only two decades old—What has been the quantum of research and what are the trends?

So far, the research on OER is minimal. We found over 1850 publications recorded in the OER knowledge cloud – most of them published between 2010 to 2017. However, not all of these are peer reviewed publications.

First an overview of OER research. A study of research papers published in IRRODL (International Review of Research in Open and Distributed Learning) shows that over 500 publications were contributed by researchers from 61 countries. IRRODL published the highest number of papers on OER, with the maximum number of contributions from the OUUK.

The same study finds that the key topics researched were technology, quality, open education, sustainability, open licences and barriers.

Another study carried out by the OER Research Hub at the OUUK, found that currently the studies were descriptive with less emphasis on impact. Most were implementation reports and the researchers found inadequate policy research.

Teachers are key stakeholders--what does the research tell us about their perspective? A COL study in India indicates that in general teachers had a positive attitude towards OER. However, they preferred to share their content as OER rather than to adapt the OER shared by others.

What are the barriers that Chinese teachers face? Lack of time, inadequate capacity in how to develop OER and no incentives.

When teachers in the US were asked to respond to how they benefited from the use of OER, the majority believed that the use of OER had expanded their teaching and learning methods. They also reported having made wider use of multi-media and reflected much more on their practice.

What does research tell us about the learners' perspective? A global survey of research shows that reduced cost was the most important reason for the use of OER by students. This was followed by considerations of flexibility in terms of time and ease of access.

In the same survey, students reported that the use of OER led to increased interest in the subjects taught, more satisfaction with the learning experience and higher motivation for further studies.

In the US, studies show that using Open textbooks can reduce the costs of a college degree by as much as 30%.

Several studies have found that the use of OER has not just cut costs but also increased performance. Students enrolled in face to face open courses were 7% more likely to succeed and their counterparts in online open courses were less likely to drop out. Interestingly, student success in open courses was 6% higher than those opting for commercial textbooks.

The IDRC (International Development Research Centre) supported research on OER projects in 21 developing countries. Over 100 research team members worked on 18 projects. The studies covered school teachers, teacher educators, university lecturers, and university students.

One finding was that OER use appears to be slightly differentiated by region: 50% in South America, 46% in Sub-Saharan Africa, and 56% in South and Southeast Asia. It is interesting that the highest use of OER is in Asia followed by Latin America.

The researchers have proposed an adoption model which shows how external factors determine the desire to use OER. The external factors are access to computers and connectivity; permissions which depend on institutional policy; awareness of what OER are; capacity to develop and use OER and availability of

relevant content. All these factors impact the adoption of OER at the personal, institutional or social levels.

The project report sums up the three phases of OER engagement. The first phase is access which relates to the external environment; participation, which is supported by enabling policies and capacity and finally empowerment when institutions and individuals create and share OER.

Annually about 2.5 million research papers are published globally, while the total recorded in OER is less than 2000 over several years. Most research activities in OER in English come from Europe and North America, with few contributions from the global south. Most studies, as we have seen, focus on attitudes and barriers. There was a limited focus on the cost-effectiveness and pedagogic impact of OER.

Given this context, what are the future directions for OER? In which areas do we need future research and development? Let us look at four.

As we know, the international community adopted the SDGs in 2015. Goal 4 aspires to ensure inclusive and quality education and promote lifelong learning opportunities for all. In which ways can OER contribute to the achievement of this goal?

First, we have seen the growth of OER in the formal education sector especially in tertiary education. Our rapidly changing world requires that each of us become lifelong learners constantly skilling and reskilling ourselves. There is a need to develop OER in the formal, non-formal and informal sectors and in local languages so that the world community can realise lifelong learning for all by 2030.

Second, enough attention has not been paid to developing OER for people with disabilities. When an OER is developed for people with disabilities, it is more accessible to everyone. How can Universal Design Principles be integrated into OER development? How can we promote research on multi-media OER that can provide affordable and accessible learning options for people with disabilities?

Third, blockchain, a major development in the area of financial technology, is, in effect, an open source online register. It is important to note that the records cannot be modified at all. Blockchain have the potential to help track OER thereby supporting quality content and discouraging plagiarism.

Fourth, for the promise of OER to be realised fully, we would need to move from the creation and sharing of OER to Open Educational Practices. How can we develop open rather than closed systems for OER to thrive? This would mean creating an ecosystem supported by policies and capacity to go beyond the command and control system of traditional learning to a more collaborative and equitable practice.

OER are a means of promoting more effective learning. Learners can become producers rather than simply consumers of content; they use a range of multi-media resources for a rich learning experience. Increased collaboration, sharing and interaction can help develop OER suitable for individual contexts and requirements.

OER can become an effective innovation if we use a participatory approach, encourage decentralised institutional structures and learner-centricity. The *"open"* in OER should reflect the institutionalisation process which facilitates all types of stakeholders to participate on equal terms. It is in this context that we define OER as:

an empowerment process, facilitated by technology in which various types of stakeholders are able to interact, collaborate, create and use materials and processes, that are freely available, for enhancing access, reducing costs and improving the quality of education at all levels.

With that let me thank you for your kind attention.