

Digital Divide to Digital Dividend: What will it take?



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written by: Sir John Daniel and Paul West
Commonwealth of Learning
presented by Sir John Daniel

Introduction

Good evening and greetings also from my South African co-author and colleague, Paul West. Our title is Digital Divide to Digital Dividend: What will it take? The conference theme is technology-supported learning and training. Our first aim is to flag the greatest challenge in learning and training; namely to give billions of poor people access to it. Can we connect technology to learning and training for their benefit? We shall explore eLearning through a wide-angle international lens taking in the whole world. The larger question is in our title: what will it take replace the digital divide with a digital dividend?

In developing countries the challenge begins with demography. Forecasts indicate a population of 7 - 8 billion people in the developing world in 2025 - more than half of them young people. We have already crossed the threshold of 100 million post-secondary students worldwide, and numbers are forecast to grow to 125 million before 2020. Today there is a huge discrepancy between the proportions of people in developing and developed countries who have access to post-secondary education. 40-50% age participation rates (APRs) are becoming the norm in developed countries, whereas they remain below 5% in some sub-Saharan African countries.

In response new providers of post-secondary education are proliferating. Some of these operate across national borders, sometimes by eLearning. However, a recent study found that cross-border post-secondary education is, for the moment at least, a negligible phenomenon in developing countries (Daniel, Kanwar and Uvaliæ-Trumbiæ, 2005). So developing countries must rely mainly on home-grown solutions to expand post-secondary education. Can eLearning provide the radical reconfiguration of the key variables of capacity, quality and cost that is needed? That is the key question. What will it take for digital divide to become digital dividend?

We link this to the wider challenge of improving the quality of life of the world's poorest people. C.K. Prahalad and his colleagues have looked at how corporations can better serve those at the bottom of the world economic pyramid (Prahalad, 2004). They draw attention to the four billion poor people in the world who aspire to better lives and urge corporations to review their globalisation strategies through a

new lens of inclusive capitalism since, 'for companies with the resources and persistence to compete at the bottom of the world economic pyramid, the prospective rewards include growth, profits and incalculable contributions to humankind' (Prahalad & Hart, 2002).

What would happen if we expanded learning and training amongst these four billion people? A postsecondary education APR of just 35% within this group would yield 150 million additional post-secondary students, far more than total current enrolments worldwide. But education would face the same challenges as business in serving these people. It would require 'radical innovations in technology and business models'; changing from the ideal of "bigger is better" to 'an ideal of highly distributed small scale operations married to world-scale capabilities'; and 'helping people improve their lives by producing and distributing products and services in culturally sensitive, environmentally sustainable and economically profitable ways' (Prahalad & Hart, 2002).

Is eLearning the Solution?

Does eLearning fit this bill, or is it just another over-hyped but underperforming attempt to connect technology to teaching and learning? The potential of the technology is clear, especially the growing availability of Internet connections. Such communication links are changing the way that poor villages in the developing world function. But can we organise ourselves effectively to take advantage of this technological opportunity?

The most promising innovation is the concept - and the developing reality - of open educational resources (OERs). The term refers to open course content, open source software and tools. Essentially OERs apply to teaching and learning the basic principle of sharing that underpins academic research.

Distance educators have talked for years about sharing courseware but the reality has disappointed. One reason is the 'not-invented-here' syndrome that reinforces the immune systems of academic institutions. Other reasons limiting courseware exchange have been copyright and the sheer difficulty of sharing and adapting learning materials that are not in digital formats. Open educational resources could overcome that difficulty and also reduce concerns that the course was 'not invented here'. OERs make possible the sharing and adaptation of courseware on a more equal basis. Re-usable learning objects are the equivalent of the published articles on which subsequent researchers can build. If providers of post-secondary education can successfully combine connectivity and shared courseware into a new business model, they could massively increase access.

eLearning: the Four 'A's

So what is required for this to happen? Potential learners ask four questions about the usefulness of eLearning (D'Antoni, 2002).

Is it accessible?

First, is it accessible? For eLearning to have any impact the learner must be able to access it. To extend eLearning to developing countries the first priority is to provide usable Internet connectivity. The second imperative is to make OERs more accessible and more numerous. At the Commonwealth of Learning we have tackled the problem of accessing multiple learning object repositories (LORs) when connectivity is poor and surfing from one LOR to another is time-consuming.

The software is a combination of eRIB, a product of Canada's Canarie eLearning project, and pakXchange, an open source product from the private sector. The outcome is free open source software with database and security features that enable the creation of multiple libraries of learning content, multiple contributing institutions and multi-level security. This can be downloaded the COL website. www.col.org/lor.

Is it appropriate?

Once eLearning is accessible, is what it offers appropriate? Does the content fit learners' needs and suit their cultural context? Few subjects and delivery methods are universally appropriate. However, OERs allow learning materials to be made appropriate by local adaptation.

Is it accredited?

The third question is accreditation. In cross-border eLearning accreditation is a key concern. Accreditation in the country of origin is one indicator of quality. But for the credential to be useful, the learners' own countries must recognise the credential.

What can we do internationally to promote trust and confidence in post-secondary eLearning? How can we develop the skills of quality assurance amongst providers and regulators and empower learners to assess the quality of eLearning, particularly for cross-border provision? The UNESCO-OECD Guidelines on Quality Provision in Cross-Border Higher Education are an encouraging response to these questions because they promote mutual trust and international cooperation in quality assurance and the recognition of qualifications (www.unesco.org/education/amq/guidelines).

These Guidelines reinforce the key principle that providers and receivers of post-secondary education share the responsibility for its quality. To protect students, the guidelines call for partnership between six stakeholders: governments, institutions and their staff, quality assurance agencies, student associations, professional groups, and qualification-recognition bodies. Stamenka Uvaliæ-Trumbiæ, who is

here from UNESCO, will talk about the Guidelines tomorrow morning.

Is it affordable?

Finally, our fourth 'A': is eLearning affordable to the many? If eLearning is not affordable locally, digital dividend will not replace digital divide. Can OERs make the difference? Their digital formats give them the potential to do so. It all depends on whether the current enthusiasm for OERs is sustained and on whether providers and users quickly merge into an OER community of mutual give and take.

Expanding higher education through ICTs and on-line provision is a global trend (Uvaliæ-Trumbiæ & Varoglu, 2003). Developing countries like Tanzania, Kenya, Nigeria and Iran see it as a way to meet growing demand while reducing the brain drain. Some link eLearning to the development agenda, as in the cyber universities in South Korea, the Nigerian University Network and initiatives such as the Virtual University for Small States of the Commonwealth (see: www.col.org/vussc).

What Does it Take?

So what does it take to make this happen? Who must do what? First, what should governments do and not do? Failed projects like the UK's e-Universities venture suggest that government agencies should not operate eLearning programmes. Governments' role is rather to create the context in which eLearning can flourish. This is crucial in developing countries, where the context for eLearning is usually unfavourable.

What are the barriers to eLearning that governments could surmount? The primary obstacle is that telecommunications legislation and telecom company monopolies limit the availability of bandwidth. Poor access to telecommunications handicaps developing countries. Their institutions can pay over 100 times more for Internet access than in the industrialised world. An individual in an OECD country may have a 500-kilobit home Internet connection, whereas in a developing country a 500-kilobit line is all that an institution can afford for sharing by hundreds of users. Making good Internet bandwidth affordable to institutions is an absolute necessity for any country aspiring to quality post-secondary education. Governments should ensure that their telecoms suppliers provide it. Expensive connectivity handicaps institutions and countries.

Second, what must institutions do? When they club together to buy bandwidth in bulk, the price drops. In South Africa, for example, a small non-profit entity buys bandwidth for nearly 50 institutions at once. To gain this kind of negotiating power institutional leaders and IT departments must cooperate.

Define Use

There is never enough bandwidth and solving these problems will take time. Meanwhile, institutional managers should use bandwidth sensibly by defining acceptable use.

Such policies are an essential stepping stone to technical strategies that maximise the benefits of bandwidth, both day and night. To guarantee bandwidth during the day for research and study, management must focus on those functions. Demand for bandwidth is usually very low at night so it can be used for other tasks.

Learners in developing countries do not usually have computers and Internet links at home. They go instead to Internet kiosks or cafés where access is very expensive in terms of local salaries. Students are unlikely to connect for long enough, at the low Internet speeds available, to gain much information. Institutions should therefore provide Internet access on campus over extended hours from early morning until late at night.

Institutions also face important non-technical issues in developing eLearning. In 2003 UNESCO's International Institute for Educational Planning (IIEP) conducted a series of case studies on the creation of virtual universities on six continents. Susan D'Antoni, who is here from IIEP, can tell you more. (www.unesco.org/iiep/virtualuniversity). Her work highlighted four issues that become particularly sensitive as institutions develop policies on open educational resources.

Institutional Development and Organisation

The first issue is institutional organisation. Face-to-face teaching institutions may find it difficult to develop general policy on eLearning because their existing policies and procedures were conceived for a different learning environment. However, although distance-teaching institutions may already have a general policy framework that is appropriate for eLearning, they may find that developing a policy on OERs is a serious challenge.

Academic Issues

Second there are various academic issues, beginning with the choice of the right programmes. A feasibility study may help to identify subjects that are in demand and for which eLearning is appropriate. ELearning is often touted as student centred. To make this true requires careful planning of student services and student aid. Some services will need to be available continuously (24/7) and developing countries will need study centres.

National and International Environment

Third, expanding eLearning has national and international implications. The high cost of developing eLearning argues for national and international partnerships and cooperation in its production and provision. This is what motivated the ministers of education of the small states of the Commonwealth to call for the creation of a virtual university as a network in which they could work together to create courses and programmes, thus avoiding total dependence on larger states.

Management

Finally, there are plenty of challenges for management. We shall concentrate today on just one hot issue: proprietary or open source? This is a strategic matter that is at the heart of management's core function of getting the best results with the available resources.

Australia's Northern Territory Government announced recently that it had been able to put 1,000 more terminals in schools by saving \$1 million through a move to open source software. This shows that significant sums are at stake. Institutions in developing countries do not have money to burn!

Managers must overcome their reluctance to challenge their technical specialists and engage with the issue themselves in a systematic way. Prescribing choices between open source and proprietary software is not appropriate because each institutional situation must be reviewed on its merits.

We make seven points:

First, IT departments should have standard procedures for making decisions about acquiring hardware and software. Senior management's task is to ensure that these procedures avoid sub-optimal choices by taking the bigger institutional picture into account. COL has developed a decision making aid for acquiring a Learning Management System. Determining which learning management system an institution should choose is not COL's role, but a management team can use this tool to work through the decision in a systematic way.

Second, decisions must be taken with a long-term perspective, looking beyond the present opportunity of a particular offer for a special licence-fee.

Third, the IT people must be able to assess what functions can be performed with open source software and be aware that not all open source software is free open source software. However, the term open source does mean that the code is available to institutions, which can usually make contributions and improvements to it.

Fourth, institutions need to balance the merits of specialisation with cross-training so that IT staff can work competently in both Linux and Windows environments. There are quite a few competent trainers in Africa and some of them will be at the eLearning Africa conference in Addis next May. Having cross-trained IT staff is the best way of ensuring that an institution gets the best out of both proprietary and open source solutions.

Fifth, remember that including Linux in an organisation does not mean having to change everyone's computer. The server room is likely to be the first place for FOSS applications to appear. Money saved by using a free product can be applied to applications where a free product is not an alternative.

Sixth, teaching institutions should aim for variety and specialisation in setting up computer labs. Teaching a particular application (e.g. Lotus) requires the systems for that task, but teaching generic concepts and skills, such as word processing, spreadsheets and presentations can use free systems like Linux and Open

Office, saving thousands of dollars in licence fees.

Seventh it is particularly important to encourage students in developing countries to write code for open source software so that they can join the worldwide community of code writers. Those who heard Professor Derek Keats from the University of the Western Cape in the last session will have heard about the empowerment this can create.

COL would be very pleased to hear from universities who are willing to have students contribute to the programme code of our Learning Object Repository, by creating features which everyone can benefit from. This is an open source LOR that can link a network of LORs together.

Conclusion

It is time to conclude. We encourage you all to harness your energies to the challenges of transforming the digital divide into a digital dividend for the developing world. There is enormous pent-up intellectual creativity among the billions of poor people in the world. Sadly, most existing means of learning and training have been too expensive and too inflexible to respond to their needs. Surely our aim must be to combine connectivity with learning resources so as to create a global intellectual commons accessible to the whole of humankind?

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