

Digital divide or digital dividend?¹



Asha Kanwar

We firmly believe that the Commonwealth can contribute meaningfully to measures aimed at bridging and closing the digital divide and are resolved to do so. ICTs provide an opportunity for individuals to learn, to grow, to participate more actively in society and to compete more efficiently in markets.²

What is the digital divide? According to one definition, the digital divide consists of 'differences due to geography, race, economic status, gender and physical ability in access to information through the Internet, and other information technologies and services, as well as in the skills, knowledge and abilities to use information, the Internet and other technologies'.³ Contrary to the general impression, the digital divide is a complex of various social, economic, cultural and political factors; it can exist in low and high socio-economic areas; and is not limited only to developing countries.

If we look at the digital divide in geographical terms, in a country like Mozambique, its capital, Maputo, will provide high-speed connectivity comparable to that available anywhere in the world. Go further into Tete, the province headquarters, and you will find ten computers for 4,000 students in the largest secondary school. Go further still to the district headquarters, and amid the mud huts and the brick barracks in Angonia, the very existence of computers would seem ludicrous. The education authorities are not even thinking of providing computers but of equipping schools with the basic wherewithal to provide livelihoods training to an increasing number of unemployed youth through technical and vocational education and training (TVET). In Mozambique then, as in many developing countries, the digital divide assumes an urban-rural aspect.

Does the digital divide have a racial component? After independence, South Africa found itself with four education ministries based on racial elements. In order to redress this, a single ministry (Department of Education) was formed but it was found that many of the teachers in the racially segregated institutions were un/under-qualified. One of the first tasks then was to train 30,000 teachers in computer literacy.

Economic status is critical in determining where one is in the digital divide. In a developing country like Uganda with a per capita income of US\$310, how can schools afford to pay US\$250 per month for an Internet connection?⁴

The digital divide is also the gender divide. A World Links study shows that girls cannot stay behind after school hours to access computer labs in Ghana and Uganda.⁵ However, when provided equal access, girls can perform as well as, if not better than, boys, as has been demonstrated by the Hole in the Wall experiment in India.

It is clear then that the digital divide is not simply a matter of having access to computers and connectivity but is a wider development issue. It is located within larger geo-political trends and often coincides with a country's ranking on the Human Development Index.

Policy

Without policy, the ICT landscape is the modern equivalent of the Wild West and gunslingers abound fighting each other for power.

N. George

Enabling policies have a major role in integrating Information and Communications Technologies (ICTs) into the education sector. Increasingly, developing countries are beginning to invest in policy development as a systematic means of harnessing technology for improving and enhancing educational opportunities. A recent unpublished study, entitled *Survey of ICT and Education in Africa*,⁶ looks at ICT policy in 53 countries in Africa and is indicative of general trends in the global south. The past decade has witnessed a great deal of experimentation in ICTs in education, with financial support from donors and implementation support from NGOs. The focus is changing and increasingly governments are giving priority to policy development – of all 53 countries surveyed, 36 have an ICT policy in place, 12 countries are developing a policy, and only 5 have seen no development so far.⁷

What does the study indicate?

- 1) **National ICT policies act as a catalyst for ICT policy development in education.** Of the 48 countries that have a policy in place or are in the process of developing one, 39 have education sector ICT policies and plans in one form or another.
- 2) **Most policies have been developed in the last five years.** ICT policy development for education has always been a long and complicated process involving multiple stakeholders and years of consultation.



- 3) **Most ICT/education policies are comprehensive and include the sub-sectors of the education system.** For example, South Africa and Kenya focus particularly on the school sub-sector.
- 4) **All policies stress enhancing access to ICT tools and connectivity,** developing ICT skills and the importance of teacher training.
- 5) **Policies show differential implementation progress.** Countries higher along the development spectrum, such as the Maghreb nations and South Africa, have greater ability to implement their policies.
- 6) **Public-private partnerships are seen as critical in this respect.** Two excellent examples of such regional and continental partnership initiatives are the Information Society Partnership for Africa's Development (ISPAD) and the Kenya ICT Trust Fund.
- 7) **That the digital divide is also a gender divide is evident from the differential access to and use of ICTs.** Countries such as South Africa, Ghana, Zambia, Kenya, Tanzania and Uganda have some reference to gender equity and women's empowerment in their policies. But in some cases there is no implementation strategy.

What are the key lessons for us?

- 1) ICT/education policies must be firmly embedded within the overall development policy framework of each country. Such an approach will require liaison and collaboration among different ministries, such as education, telecommunications and finance.
- 2) National governments will have to negotiate appropriate policy frameworks and regulatory mechanisms that will inspire confidence in investors and ensure that their social responsibility is reflected in the establishment of partnerships for sustainable development
- 3) National ICT policies need to be able to underpin well-thought-out implementation plans that are realistic and sustainable.
- 4) A more proactive approach to gender mainstreaming within the ICT policy is required so that girls and women can be empowered to participate in ICT use and application.
- 5) It is important to have ICT in education policies that will provide access to quality education using flexible delivery mechanisms. This will enable larger numbers of people in the developing world to pursue education and training programmes of their choice.
- 6) There needs to be a coherent policy for the integration of technologies in education.

A new paradigm: open education resources

If you have an apple and I have an apple and we exchange these apples then you and I will still each have one apple. But if you have an idea and I have an idea and we exchange these ideas, then each of us will have two ideas.

G.B. Shaw

The pursuit of excellence has traditionally been an individual enterprise based on competition among academics and institutions. The Open Education Resource (OER) movement is turning the focus away from competition to collaboration and a search for collective excellence. OERs refer to open course content, open source software, and free course development and delivery tools. The OER movement has made a long journey in a very short time.

Educational communication in general, and didactic transactions in open and distance learning (ODL) systems in particular, reached a significant milestone with the appearance of the first on-line course in 1995. In just 35 years since 1969, when the UK Open University (UKOU) registered its first cohort of students, ODL leapfrogged from the second to the fourth generation. The advent of on-line courses marked a significant shift in the nature of the relationship between the content and the delivery of education/training.

In the mid-1970s, we made a distinction between technology *in* education and technology *for* education. The former referred to curricular and instructional design, while the latter referred to the applications of technology to the process of delivering education, as for example, the use of broadcasts, audio- and video-conferences. In the mid-1990s, we came to use tools like WebCT and others that simulate the function of instructional designers. It is here that technology comes in to serve education not only as a tool of delivering it, but also as a device for programming its content for easy and successful assimilation by learners – the *in* and the *for* functions of technology in relation to education/training merged for the first time. It is clear that there is a merger of two distinct functions: that of building the content of education/training that is efficiently manageable (from the institutional perspective) and easily assimilated (from the learner's perspective), and that of offering it with facility to anyone, anywhere, anytime. As this movement becomes universal, we move closer to the goals of equity and access.

The last five years have seen tectonic shifts in how technology is being used to close the digital divide. Pioneered by the Massachusetts Institute of Technology (MIT), the Open Courseware movement, based on the principle of knowledge-sharing, marks the first generation in which knowledge is seen as our common wealth. The online course materials of the UKOU make up the second generation, wherein existing self-instructional materials are being put into online format. The third generation is collaborative course development as exemplified by the wikiEducator, a course-authoring tool. The wikiEducator is emerging as a dynamic and collaborative tool of free content development. In this phase, the focus is shifting from 'this courseware is mine to this courseware is for (open) mining'.⁸ The OER movement is largely based on four principles:

1. Encouraging mass ownership rather than elitism.
2. Acknowledging faith in everyone's inherent capability to self-organise.
3. Enlisting amateurs as producers of content.
4. Promoting collaboration for the common good.

The Commonwealth of Learning (COL) has set up the Virtual University for Small States of the Commonwealth (VUSSC). This virtual institution is by, for and of the 32 small states of the Commonwealth. Course materials are being collaboratively



Science students in Brunei Darussalam



developed across the Commonwealth on the WikiEducator. Some of the key lessons of this initiative have been:

- 1) 'Ownership' is critical. Once the content has been developed collaboratively, who will use it? COL helped to develop STAMP 2000+ modules for teacher training by facilitating the training of 140 course writers in the Southern African Development Community (SADC) sub-region, but very few institutions in Africa have taken ownership of these materials. The 46 modules are available on the WorldSpace satellite and can be downloaded free, but to date have been put to limited use. It is important to develop a clear strategy not only for the development of free content, but also for the delivery of that content and the identification of its potential users.
- 2) It is important to develop and sustain an interface between the decision-makers and implementers. For the initiative to be sustainable, champions are needed in both the ministries and the implementing institutions. A clear agreement on roles and responsibilities for each participant within a consortium is a key success factor.

- 3) One of the founders of Wikipedia, Larry Sanger, learned that the democratisation of information can also degenerate into an egalitarianism that can corrode professional standards and creativity. He has set up an alternative model in the Citizendium, which seeks to balance 'public participation with gentle expert guidance'.⁹
- 4) There are several critical success factors that can contribute to the emergence of a collaborative community. These are: (a) the training of people in appropriate ICT skills, (b) the creation of a critical mass of trained people and (c) the existence of a policy that ensures that appropriate processes and frameworks are in place to co-ordinate, promote and integrate the applications of technologies with the education system.

In the developing world, collaborative content development is still in the nascent stages. The InfoDev/COL report indicates that there is a dearth of documented content in Africa and that content is available only in English rather than in the indigenous languages. The OER movement has the potential to create communities of practice and enhance capability at both the local and global levels



by bringing together different cultures, epistemological traditions and multiple perspectives.

However, the challenges are many. First, it is never going to be easy to get all the stakeholders on a common platform, since the interests are diverse and often in conflict. Second, ICT infrastructure is expensive, and education systems, perennially short of resources even for survival, find it impossible to make the necessary investments to create and develop their ICT infrastructure. And third, donor dependency has harmed rather than helped sustainability.

The new learner: a new teacher?

How much worse will it have to get for these clever chaps to change?

Hills

The nature of the 21st century student has changed. Today, half of the world's population of 6.5 billion is under 20. There are two billion teenagers in the developing world alone.

In today's developed world, it is difficult to imagine life without some kind of electronic appliances. The question no longer is whether or not ICT plays a part in the ordinary person's life, but to what extent it has become a part of daily existence.

Who is the new learner?

The 'new learner' is a 'digital native', a 20-something, who takes to technology as a fish to water. This is in contrast to the 'digital migrant',¹⁰ the adult who has adopted technology relatively later in life. The 'digital native' is a multi-tasker. The 'new learner' may be the adult who needs continuing professional development combined with full-time employment. He/she would have little time for synchronous instruction. Such an academic 'customer' is on the rise in both developed and developing contexts.

Then, there is the traditional young learner, who by virtue of her circumstances is forced into a job or a family. In a different situation, perhaps he/she is the out-of-school teenager, who chooses not to – or lacks the matriculation credentials to – join a traditional university. The 'new learner' belongs to a very diverse constituency and has a range of needs that the traditional institution thus far has never known.

Laptops

The 'new learner' in nine developing countries is expected to receive the One Laptop Per Child (OLPC). The current price of US\$185 will come down to US\$100 by 2009, and US\$50 by 2011. The OLPC initiative has some basic principles to which the receiving governments must agree: (i) the laptops are owned by the children; (ii) unlimited connectivity is provided; (iii) each village is saturated before moving to the next; (iv) open source software is used.

90% of all maintenance and repair will be done by the children themselves. Not only has OLPC made learning much more appealing but it also helps children to learn better. Nicholas Negroponte, founder of the OLPC association, has found that children who can write computer programmes understand learning and can learn better. By putting learning in the hands of the child and opening up the world, this initiative can become a major digital dividend.

Mobile phones

Mobile telephony is the fastest growing field in the developing world. By 2010, there will be 2.5 billion users in the developing world.¹¹ What implications does this have for the way we teach and learn?

The recent study at the University of Pretoria (UP) could be indicative. The Unit for Distance Education offers distance-learning programmes to about 14,000 teachers, mostly located in rural South Africa. While only 1% of these have access to email, 99% own mobile phones. The UP first began by using mobile phones to provide administrative support by sending SMS texts to remind students of important dates, such as contact classes and examination registration. This not only cut postal costs and saved time but had a positive impact on 58% of the students who registered for and attended contact classes in time, as opposed to the expected figure of 40%. Two years later, mobile phones were being used to send academic messages. These included an opportunity for students to pose their academic questions and receive feedback via SMS text or even to listen to mini-lectures via interactive-voice response technology. These UP students have become more motivated than before and are satisfied with both the administrative and academic support provided.¹²

Who is the new teacher?

The 'new teacher' will not be tenured faculty but associate staff from a range of professional backgrounds. Rather than deliverers of instruction, they will provide academic facilitation. Competent facilitation will require expertise in a particular subject/discipline, communication skills, and distance and on-line teaching techniques. The 'new teacher' must unlearn many of his/her existing practices. The focus now is on:

1. Creative and innovative thinking rather than memorisation.
2. Using different ICT tools rather than relying only on the printed text.
3. Encouraging multiple perspectives rather than the instructor-identified 'right' answers.
4. Helping learners construct knowledge for themselves.
5. Sharing best practice.

Technology has caused a revolution in the way we teach and learn but there can be no real revolution unless the faculty change how they teach.¹³ There is an urgent need to research the 'new learner' and to equip him/her to be an agent of change while transforming pedagogic practice.

Towards a digital dividend for all

- 1) The last ten years show that we have moved through three generations of technology development: the first generation was focused primarily on technology. The second generation placed its emphasis on sharing content, and the third generation currently places its emphasis on people and learning rather than technology and could be a more sustainable model. These far-reaching changes within a short span of a decade show how quickly paradigms change and



how responsive we need to be if the divide is to be converted into a dividend.

- 2) There have been many interventions in the last ten years to bridge the digital divide. But building bridges can only be a temporary solution, for the bridge does not eliminate the chasm. So we either need a new vocabulary or new strategies to close the gaps.
- 3) In a 2004 World Bank workshop on the digital divide in Africa, the key conclusion was 'training, training, training'. But training by itself is not enough. It must be situated within the macro-economic developments within a country and lead to job creation and empowerment.
- 4) The digital dividend will have to be achieved through partnerships and innovation. But whose responsibility is this? The government's? Development partners'? That of civil society?
- 5) Finally, there has been a great deal of South-South collaboration in recent times. How can the 'North' and the 'South' collaborate to complement each other's strengths to promote quality education for all? How can we convert, in concrete terms, the digital divide into a digital dividend?

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Dr. Kanwar's engagement with distance education began when she joined Indira Gandhi National Open University (IGNOU) as a Reader in 1988. In 1992, she was appointed Professor and in 1996 was designated Director of the School of Humanities. In 1999, she became Pro-Vice Chancellor of IGNOU. Professor Kanwar has over 30 years of experience in teaching, research and administration. In addition to the several books, research papers and articles to her credit, she has made significant contributions to gender studies, especially the impact of distance education on the lives of Asian women.