



# Technology: the Great Divider?

Technology that can be used for educational purposes is beginning to find its way into schools in developing countries. Good planning will ensure that students get the most from access to these devices.

*By Tim Unwin, Secretary-General, Commonwealth Telecommunications Organisation*

*Professor Tim Unwin is the Secretary-General of the Commonwealth Telecommunications Organisation ([www.cto.int](http://www.cto.int)), chair of the Commonwealth Scholarship Commission ([cscuk.dfid.gov.uk](http://cscuk.dfid.gov.uk)), UNESCO chair in ICT4D and emeritus professor of geography at the Royal Holloway, University of London.*

**T**echnology and education have always been closely intertwined. The development of printing transformed and disrupted the traditional medium of education in Europe; the written word similarly replaced oral histories across Africa. It is therefore scarcely surprising that the creation and rapid dissemination of new information and communication technology (ICT) has transformed education throughout the world. However, this is not merely a one-way influence. Education itself shapes and transforms technologies and the way that they are used in our societies.

In this 'modern' world of instant communication, with almost incomprehensible amounts of data available at the click of a button, it is now very difficult to imagine what education and learning were like a mere 20 years ago. While the 1970s saw the first real introduction of computers into schools, it was not until the end of the 1980s that computers became at all widespread in schools in the richer countries of the world. Subsequently, the development of Microsoft Office packages of software in the 1990s and the use of CD-Roms providing access to multimedia learning resources began to have a more dramatic impact on learning practices.

However, even by the early 2000s, the use of ICT in learning across most of the poorer countries in the world was very limited, prompting the launch of initiatives such as the UK Department for International Development's Imfundo: Partnership for Education in Africa, in 2001, which innovatively sought to integrate the expertise of private

sector companies with bilateral donor support to make the perceived benefits of ICT in education available to people living in poorer countries.

Rapid developments in technology over the last decade, associated with miniaturisation of hardware, increasingly ubiquitous access to the internet and dramatic expansion in the use of mobile telephony, have further transformed the potential for innovation and the effective use of technology in learning. Yet we still know surprisingly little about the real impact of the use of ICT in education. Insufficient effective monitoring and evaluation of new developments remains a real challenge. While it is essential for young people – the employees of the future – to have the digital skills to engage in the labour market, it is salutary to note that recent research casts some doubt on the usually automatic assumption that using computers of any kind necessarily improves educational outcomes, at least as measured by the OECD's Programme for International Student Assessment (PISA) tests.

It is time for a more realistic understanding of exactly how ICT can best be used to improve learning opportunities and achievements, especially in the poorer countries of the world. Intuitively, the potential of ICT devices is enormous. Smartphones connected to the internet offer immense opportunities for learners of all ages to gain information and understanding that will be of value to their careers; social media has similarly transformed the social lives of billions of people. Yet technology exacerbates differences and merely giving children tablets will not automatically transform their learning attainment. Those who can afford smartphones, and have access to the internet, are readily able to gain the benefits. The poorest and most marginalised, without access to any mobile network or the electricity to switch on a light, are being left further behind.

Much is now known about the effective use of ICT in learning and education, but all too often the simple lessons of previous initiatives are insufficiently learnt. ▶



▶ Attention to as many of issues outlined above as possible can help ensure that the use of ICT in poor countries is not only educationally valuable, but also sustainable and transformative. Such use can support the important shift from didactic to constructivist models of learning that place greater emphasis on the needs of individual learners and their interactive engagement in the learning process.

#### Ten important lessons for the effective use of ICT in education

1. It is the learning that matters and not the technology: Many e-learning and m-learning initiatives place the emphasis on the technology – be it laptops or mobile phones. Effective initiatives begin with identifying the learning objectives and then pinpointing the technologies that are best suited to delivering them.
2. Teachers must be closely involved in the implementation of ICT for education initiatives: Teachers need to be given effective pre- and in-service training in advance of the introduction of ICT in schools. This is absolutely crucial and goes far beyond the mere learning of Office packages of software.
3. Sustainability issues must be considered at the very beginning: Computers, laptops, tablets and mobile phones are expensive. While it can be affordable to purchase these as a one-off investment, careful thought must be given to the budget costs of maintaining this equipment and of how to provide it for the next generation of pupils. Computers do not last forever and a substantial budget stream must constantly be made available.
4. The supporting infrastructure must be in place: All too often, insufficient attention is paid to ensuring that there is sufficient reliable electricity and internet connectivity to enable the equipment to be used, and for teachers and students to gain access to the internet.
5. Appropriate content must be available to help deliver the curriculum and learning needs: Far too often, ICT initiatives merely provide access to internationally available content delivered in foreign languages. It is important that local content developers are involved in shaping learning content and that as much attention is focused on using ICT to provide new ways of communicating, and not just delivering information.
6. Ensure equality of access to all learners: ICT devices enhance inequality between those who have access to them and those who do not. It is essential, therefore, that attention is paid to ensuring that all learners are indeed able to access the benefits. Usually, ICT for education initiatives starts with those who are already privileged through their wealth or by living in urban environments with the necessary infrastructure. Enlightened initiatives actually begin with delivering learning solutions to the most marginalised people and those living in rural areas. It is also salient to remember that people with greater disabilities have far more to gain from learning ICT skills than do those with fewer disabilities.
7. Monitoring and evaluation must be undertaken from the very beginning: Evaluation ensures that learning objectives are indeed being achieved and that any initiative can be tweaked accordingly to improve its efficacy.
8. Appropriate maintenance contracts for equipment and networks need to be established: Training local people in the maintenance of learning technologies is essential to ensure that the equipment is used effectively. This can also provide a real boost to local economies.
9. Use equipment and networks in schools for as long as possible each day: ICT equipment and networks in schools should be used by local communities in out-of-school hours. This maximises the use of expensive equipment and can also provide a valuable source of income generation that can help defray the costs of its usage.
10. Think creatively in your own context: There are no best practices, only a range of good practices from which to choose. Learners and teachers should develop solutions that best fit their learning needs and then get on with implementing them!

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