

Upgrading development

Can technology alleviate poverty?



2011 Cambridge International Development report: ICT4D



Author

Emma Jackson Stuart

Editorial Board

Richard Carter

Steve Jones

Anna-Joy Rickard

Charlotte Sankey

Geoff Walsham

Copy editor

Charlotte Sankey

Graphic Designer

Dmitriy Myelnikov

Project Director

Amy Mokady

Project Manager

Anne Radl

Research Editors

Kristine Albrektsen

Becky Qin Chen

Emma Cooper

Elke Matthaei

Contributors

Ineke Buskins

Agnes Kukulska-Hulme

Tim Unwin

Geoff Walsham

We are grateful to the following organisations who have generously sponsored the Humanitarian Centre 2010-11 ICT4D year and this report:

**Primary sponsor:**

ARM is an international technology company with headquarters in Cambridge. ARM processors are in over 95% of phones, including the most basic and the most complex, as well as almost all tablet computers and now servers and desktops too. Most people in developing countries will have their first experience of mobile technology by using an ARM-powered phone and, increasingly, people's first interaction with the Internet is coming from an ARM-based smartphone.

ARM has already played a vital role in ICT4D by enabling its customers to design products for developing countries that are appropriately priced and energy efficient. ARM is working with international organisations, NGOs and its electronics industry partners to explore new ways to catalyse appropriate technology design for developing countries. ARM has commissioned a major research project on ICT4D with the International Business Leaders Forum and, as a LEAD member of the UN Global Compact, is exploring a variety of partnership programmes relating to ICT4D and energy efficient technologies.

Dominic Vergine

Director of Sustainable Development
ARM



Specialists in communicating Cambridge ideas

**Sponsors of this report:**

- ARM
- Cambridge University Press
- Creative Warehouse
- Liongrey
- Tribal Group
- Catherine Squire, Consultant
- St John's Innovation Centre

Sponsors of the 2010-11 ICT4D year:

- ARM
- Emmanuel College
- Computer Laboratory, University of Cambridge
- Education Services
- Netsquared
- Cambridge Wireless
- Red Gate



ST JOHN'S INNOVATION CENTRE

Foreword



Anna-Joy Rickard
Director,
Humanitarian Centre

Steve Jones
Chair of Trustees,
Humanitarian Centre

The Humanitarian Centre is delighted to launch this 2011 report, 'Upgrading Development', the second annual *Cambridge International Development* report¹.

Its launch marks the end of a full and exciting year of events and activities on the theme of information and communication technology (ICT) for development (ICT4D) to understand how their use has contributed to the alleviation of global poverty and inequality.

This report explores ICT4D through the lens of Cambridge, UK, referring to a range of initiatives by the many NGOs, academics, businesses and entrepreneurs based in or near the city who are working with partners across the globe. These range from the international company ARM - who developed the processor used in 95% of the world's mobile phones - to small charities working with remote communities to improve health and education using the latest communications tools. While the content of this report is linked with Cambridge, we believe that the successes, challenges and lessons learnt from the projects we cover will have relevance well beyond this city.

We hope that this report inspires, encourages critical reflection and contributes to the continuing dialogue on this important aspect of development.

¹ The 2010 Cambridge International Development report was on the theme of innovation and international development

Ten key findings of this report

This report covers a wide range of examples of digital technologies transforming communications and the transfer of information in the developing world. From these the following ten observations have emerged, which we hope can help inform future policy and practice.

- 1** Unlike past trends in international development, ICT4D initiatives have been driven for the most part by the **private sector** – by commercial ventures and social enterprise – rather than by governments, multilateral agencies or NGOs. The latter groups have an important role in ensuring that those currently excluded from the benefits of ICTs are able to gain access to them, and helped to use them.
- 2** Technologies should **complement, not replace, face-to-face communication**. Online and offline communication used together can produce powerful results, shown for example in disaster responses and health support programmes. The anonymity that ICTs can provide is an added benefit, useful, for example, in reporting systems in sensitive contexts.
- 3** Using ICTs in the facilitation of information-sharing, communication or participation is about making a contribution to alleviating the symptoms of poverty. It does not primarily address long-term, **systemic causes of poverty** and inequality, such as a lack of government capacity, absence of good governance, conflict, deep-rooted prejudices or unjust global systems. These underlying root causes must not be ignored.
- 4** The vast majority of rural communities in the Global South still **lack the necessary infrastructure** to enable access to computers and the Internet, increasing inequality and exclusion. Access to mobile phones is much better, however. Programmes that work to provide mobile and Internet connectivity, electricity and ICT equipment in rural communities are particularly valuable. They should be accompanied by participative approaches to local use.
- 5** ICTs are proving to be an effective tool in allowing the excluded to become included, and in overcoming traditional barriers to equality and participation. Although by themselves they cannot change deep-rooted cultural behaviour, they can be an excellent **means of empowering people** and communities to become agents of change, challenging limitations imposed by gender, disability, ethnicity, geography and so on. ICTs can also provide a platform to explore taboo subjects.

ICTs provide new opportunities for people to share information easily, cheaply, quickly and efficiently. The transformative potential of mobile phone technology, and SMS in particular, is striking. Although it cannot cater for everyone (the illiterate for example), **text messaging is popular and effective** due to its widespread accessibility and relatively low cost.

6

ICTs can play a key role in increasing **financial inclusion**. New mobile money services offer the opportunity for poor people without a bank account to make simple money transactions. m-Banking has great potential in countries where fixed banking infrastructure is limited, and where the poor tend not to be customers of the fixed banking system.

7

A key factor in achieving positive development outcomes is to design **ICTs that are appropriate** – appropriate for the needs and aspirations of poor and disadvantaged people, families and communities. This means making technologies accessible and adaptable. Participative approaches to design and implementation are essential to understand how technology can be of real help to communities.

8

The translation of successful small pilots into large-scale programmes remains a challenge. **Funding, sustainability and scalability** must all be considered, and solutions found, if a pilot is to scale up and impact the lives of a greater number of people.

9

ICTs must be judged by the impact they make, rather than by the methods they use, as they are a **means, not an end**, in the fight against poverty. They have great potential as enablers in reducing poverty and inequality in countries across the globe. But technology has not changed the development goals of education, health, food security and so forth. Combatting poverty still requires vigorous and long-term efforts on the part of all those concerned to raise the levels of economic and social development of the poor, including governments, NGOs, multilateral agencies and community members themselves.

10

Introduction

As we all know from the experience of our daily lives, the world has seen unprecedented growth in the use of information and communication technologies (ICTs). For better or worse, our lives have been transformed.

In particular there has been a global explosion in the use of mobile phones, with over 5 billion subscriptions now covering more than three quarters of the world's population. And since 2005 the number of Internet users has doubled, reaching nearly one third of the population².

But has this technological revolution been a help or a hindrance for the developing world? In the context of international development – the reduction of poverty and inequality in the Global South³ – the potential impact of ICTs is equally, if not more, profound. They provide exciting new opportunities to address the needs of people living in poverty and exclusion.

However ICTs also create new difficulties and inequalities.

ICTs are not in themselves intrinsically beneficial. They are neutral tools that are only as good as the intentions of their users. A text message can be used equally to send information that is criminal or pornographic, as educational or life-saving.

One thing is clear, however: ICTs do address two essential human needs – the need to gain information, and the need to communicate with one another. They allow us to meet these needs more quickly, effectively and cheaply, at a greater distance and on a larger scale. Technologies can expand our horizons both geographically and conceptually.

ICT for Development (ICT4D) is a relatively new field, and one that is growing rapidly. It encompasses a dynamic mix of innovative projects across sectors and specialities. It draws and impacts on skills, knowledge and agendas in the private, public and

What are ICTs?

We use **information and communication technologies (ICTs)** to access information and to interact with one another. ICTs include **radio, television, computers, the Internet and mobile phones**, as well as the software, services and applications that go with them.

This report looks at how the use of ICTs can affect and improve the lives of poor and marginalised people in the developing world. The most widely used ICTs in developing countries are **mobile phones** and **radio**:

- In developing countries, for every 100 people there are 70 mobile phone subscriptions, compared to just 20 Internet users and 12 fixed telephone lines.
- 80% of the population in Africa has access to a radio⁴

² International Telecommunication Union, http://www.itu.int/ITU-D/ict/statistics/at_glance/KeyTelecom2010.html, accessed on 01.07.2010.

³ **Global South** is an alternative term for 'developing countries', used by critics of the word 'development' as a western agenda of progress.

⁴ International Telecommunication Union; see also, Richard Heeks, 'Beyond Subscriptions: Actual Ownership, Use and Non-Use of Mobiles in Developing Countries', <http://ict4dblog.wordpress.com/2009/03/22/beyond-subscriptions-actual-ownership-use-and-non-use-of-mobiles-in-developing-countries>

humanitarian spheres, in every area from agriculture to water and finance to security.

ICTs can help tackle multiple challenges faced by developing countries: reducing poverty, improving healthcare and education, building infrastructures, tackling social inequalities, promoting good governance and responding to humanitarian emergencies caused by conflict, famine or natural disasters.

What sets ICT4D apart from former initiatives in tackling poverty and inequality is that it has been driven for the most part by the private sector – by commercial ventures and social enterprises, by large corporations and creative individuals – rather than by governments, multilateral agencies or NGOs (non-governmental organisations). The multi-disciplinary nature of ICT4D and this convergence of commercial with humanitarian interests make it an exciting but

It is now almost universally accepted that a country's success or an individual's well-being cannot be evaluated by money alone ...we must also gauge whether people can lead long and healthy lives, whether they have the opportunity to be educated and whether they are free to use their knowledge to shape their own destinies.

UNDP Development Report 2010

challenging area.

This report tackles ICT4D under three key headings: information, communication and participation. While not ignoring negatives, the report primarily explores, through the lens of Cambridge activities in ICT4D, the positive impacts and ongoing challenges of ICT4D: its ability to provide access to valuable information, to create meaningful two-way dialogues, to reach remote and excluded communities, and to empower the excluded to participate in their own development and societies. <

What is international development?

This report focuses on **international development**: the reduction of poverty and inequality by, with and on behalf of people in the developing world⁵.

The **Millennium Development Goals** are eight international development goals that were adopted by all 193 United Nations member states in 2000. They highlight as key priorities eradicating extreme poverty and hunger, achieving universal primary education, improving child and maternal health and combating widespread infectious diseases, promoting gender equality, ensuring environmental sustainability and developing global partnerships.

The case studies in this report relate to **international relief as well as development** – responding to natural disasters and humanitarian crises (relief), as well as addressing the long-term, systemic causes and symptoms of poverty and inequality (development).

⁵ **Developing world** is a term for lower and middle income countries. Broadly speaking, developing regions are Africa, Asia (excluding Japan) and Central and South America. See the UN Human Development Index 2010 rankings: <http://hdr.undp.org/en/statistics>.

ICT for development: who are the winners and who are the losers?



Tim Unwin is the CEO of Commonwealth Telecommunications Organisation and Emeritus Professor at Royal Holloway, University of London

Hype still surrounds the use of information and communication technologies (ICTs) in delivering development solutions. Many are looking for the latest new technology that can transform poorer people's lives, or a digital 'silver bullet' that will win the fight against poverty. First it was school classrooms being fitted with desktop computers, then solutions such as the One Laptop Per Child initiative, and now we are bombarded with mobile projects in the fields of 'm-health', 'm-learning', and 'm-agriculture'.

Many projects have not lived up to expectations; they fail to 'go to scale' or become 'sustainable'. Often this is because they are externally driven, technology focused, top-down and supply-led. They fail to address the needs of those for whom they were intended. This, though, need not always be the case. ICTs can transform the lives of poor and marginalised people, but we need to craft initiatives that are explicitly designed to serve their needs.

> Between 2000 and 2011 the number of Internet users per 100 people in the developed world rose from around 25 to over 70, whereas in the least developed countries the figure stands at around 3%

The market will take care of the majority. For those who cannot afford the technologies, do not know how to use them, or are prevented from accessing them for social and cultural reasons, there is a real danger that the introduction of ICTs may lead to them becoming increasingly marginalised. Rather than creating digital inclusion, many ICT4D initiatives are actually leading to digital exclusion.

A recent ITU (2011) report, *The role of ICT in advancing growth in least developed countries*, highlights the stark reality of the global distribution of ICT use. Some three-quarters of the world's population now have

a mobile phone subscription, but the one-quarter who do not are not yet benefiting from the perceived advantages that mobile telephony brings. Between 2000 and 2011, the number of Internet users per 100 people in the developed world rose from around 25 to over 70, whereas in the least developed countries the figure stands at around 3%. Technology has accentuated the differences, rather than reduced them. Such differences are not only apparent between wealthy and poor countries, but also apply within countries between urban and rural areas, and different social and cultural groups.

> There is a real danger that the introduction of ICTs may lead to those who cannot afford the technologies becoming increasingly marginalised

In responding to such inequalities, three key actions are necessary. First, we need to understand that development is not just about economic growth, but is also concerned with social, cultural and political change. Recent events in North Africa, for example, illustrate the power of mobile technologies in helping to bring together disaffected people in protest movements, but those without access to such technologies are still left 'outside'.

Second, we need a more sophisticated approach to implementing ICT4D partnerships, so that they are designed specifically to address development agendas, rather than to enhance the spread of technologies for the financial benefit of the companies producing them.

Finally, governments, regulatory authorities and civil society organisations must focus even greater attention on ensuring that the poorest and most marginalised have an equal chance to benefit from access to ICTs. The lives of those with disabilities, for example, can be transformed far more by ICTs than can the lives of those without.

A critical issue: the global digital divide

The 'global digital divide' is the disparity in access to ICTs between the world's richest and poorest countries. There is a particular disparity between rich and poor countries in their access to Internet connectivity (see graph, right). This shows that, while more than 94% of people in Norway can access the web, a mere 0.5% in Ethiopia do. The divide also includes the difference in people's chances of getting training and skills that will enable them to use ICTs effectively.

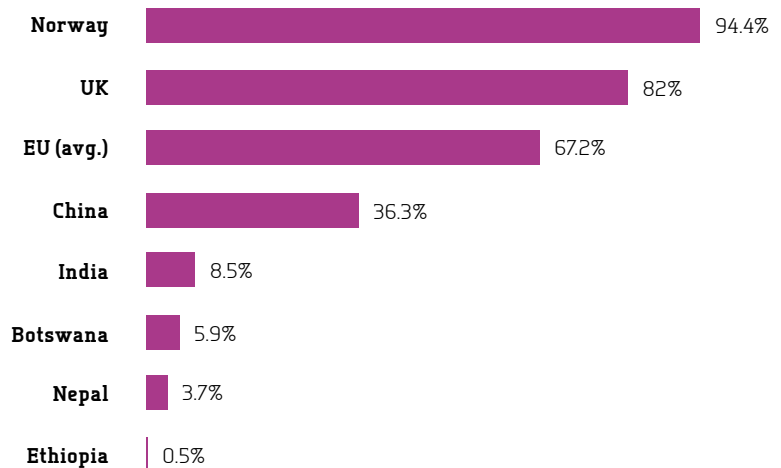
One of the most disadvantaged groups are rural communities in the Global South, most of whom still lack access to computers and the Internet. In Africa, for example, an estimated 90% of the rural population remain without electricity.⁷ Where they do have the Internet, it is unreliable and has a low bandwidth (capacity), which means it can process only small volumes of data at limited speeds.

In Cambridge, two Humanitarian Centre member organisations work to bridge the digital divide by improving access to ICTs:

Afrinspire is a charity that supports grassroots development initiatives in Uganda, Rwanda, Burundi, Ethiopia, South Sudan and Tanzania. One way in which Afrinspire supports rural communities where access to electricity is available is by sending them refurbished computers and providing relevant training for local people to use and maintain the computer networks.

Aptivate is a not-for-profit organisation that provides IT services for international development, including web development to visualise the monitoring and evaluating of data, and sharing information across and outside organisations. It works with clients and partners to provide people in developing countries with technologies that are appropriate, cost-effective and sustainable, requiring low power and low bandwidth.

Aptivate collaborated with development NGO Camfed International to set up an IT centre for young women in Samfya, Zambia. Aptivate trained a group of women to set up and run the computer network, encouraging them to participate fully in the process and



The great digital divide: the percentage of population online in the least and the most connected countries in the world.⁶

make decisions about what they wanted to learn. They are now running the IT centre independently and successfully.

Aptivate encourages everyone to make their websites accessible to users in the developing world with low bandwidth Internet connections. Aptivate provides a number of free resources and tools, including low bandwidth web design guidelines and loband.org, an online tool that strips down web pages to load faster on slow connections.

Many of the case studies in this report show that access to ICTs can benefit people in developing countries in numerous ways: it is therefore important that we continue working to provide mobile and Internet connectivity, electricity, low-cost ICTs and relevant training for poor people in rural communities. If people are able to access technology and develop the skills to adapt it to their own needs, it will represent a new and powerful means by which they can improve their lives and societies.

Agile and participative approaches to design and implementation are an essential part of this goal. Continuous feedback from users is vital to ensure that the project will be relevant and useful, and so be adopted by the community.

⁶ Internet Usage Statistics, *International Telecommunication Union: World Internet Users*, ITU.

⁷ Buskens & Webb, 'African Women and ICTs: Investigating Technology, Gender and Empowerment' (2009): 34.

⁸ Available at <http://www.apptivate.org/webguidelines/Home.html>



> Mother with child in Ving Ving, Ghana, using a **Talking Book** to learn about best farming practices and maternal and child health.

1

When information is power

Put simply, good quality information can save time and money, and even lives: knowing which day to harvest your crop before the rains come, or finding out about new treatments for a patient with a life-threatening disease. If new technology can get you the information more quickly and more cheaply than before, then more time, money and lives can be saved.

Information is a vital resource, and has even greater value in the developing world where other resources (human, financial, physical) may be limited or lacking. Good quality information that is free or relatively low cost can very directly enhance people's lives – as these examples show:

How can a simple audio device double the size of the local harvest?

Cambridge-based technology company **ARM** is supporting an ICT4D project by the charity **Literacy Bridge**, which works to provide information for people who could not otherwise access it, due to either illiteracy, disability or poor infrastructure. Literacy Bridge investigated the best means for local organisations to deliver information on health and agricultural practices to rural communities using existing technologies – including laptops, mobile phones and radio, but found these were all limited. So they created the '**Talking Book**': a low cost, durable, battery-powered audio device. It can be used to record, play back and share information about a range of crucial topics in local languages. In classrooms, the device can encourage interactive learning and improve literacy.

Literacy Bridge ran a pilot of their Talking Book in the remote village of Ving-Ving, north-west Ghana, where literacy rates are under 5% and less than 2% of villagers own a mobile phone. Supported by Literacy Bridge, local organisations and experts recorded relevant information about effective farming methods and healthcare. The Talking Books containing these recordings were then distributed among the community, with

impressive results: more than 90% of users applied a new health or agricultural practice. Farmers using the device had an average increase in crop production of 48% on the previous year, while non-users' production dropped by 5%.

Literacy Bridge attributes the success of its pilot to several factors, including the low cost and usability of the Talking Book, and a positive reception by the local community. Leaders supporting the project and users of the Talking Book trusted the information they heard because they respected the local experts who had recorded it. For Literacy Bridge, another successful element is their iterative, user-centric design process, informed by collecting regular feedback.

> Farmers using the device had an average increase in crop production of 48% on the previous year. More than 90% of users applied a new health or agriculture practice.

Cliff Schmidt, Executive Director of Literacy Bridge, says: "Users from the field inform changes made to the Talking Book to ensure ease of use, content relevancy, usage and effectiveness." There will be future challenges in taking the project to scale: developing successful funding models, and balancing system scalability with the need to tailor content to local languages and contexts, among others. Nonetheless, the Talking Book has great potential to provide access to valuable information for illiterate and visually impaired people in remote communities.

Can ICTs improve public health in developing countries?



Geoff Walsham is the Emeritus Professor of Management Studies at the Judge Business School, University of Cambridge

In our daily working lives, most of us see the need for data to support our activities. Work in health is no exception: data is needed for the planning, monitoring and evaluation of health activities at all levels – from primary health centres through to national health planning.

It is, however, widely recognised that public health data in developing countries is often of poor quality. Why? The reasons include unintended mistakes such as arithmetic errors, under-reporting due to time pressures on health staff, and deliberate misreporting to present a distorted picture of health achievements.

Is there anything information and communication technologies (ICTs) do to help? What they cannot do, of course, is affect deep-rooted cultural behaviour – they cannot produce motivated and knowledgeable health workers, eliminate 'perverse incentives' in the health system to misrepresent the facts, or instantly produce an 'information culture' which places value on the power of information for action.

> ICTs in general, and health management information systems in particular, need to be viewed as only one element of heterogeneous networks composed of people, technology, standards, processes and institutions. Programmes which aim to produce improved health outcomes need to address all of these elements together, and over extended time periods.

What they can do is to start to encourage an information culture by making things easier for people: health workers can capture data more effectively through the use of mobile phones, or process data more quickly and accurately on computers, as well as access this information better as it is displayed in a more user-friendly and

adaptable way.

What we need are health initiatives that tackle all these elements simultaneously. A good example is the Health Information Systems Programme (HISP) which provides a computer-based district health information system for health planning and management (see www.hisp.org). HISP started in South Africa in the mid-1990s and has since been extended to a wide range of other countries in Africa and Asia, including India (see <http://hispindia.org>).

The technology is based on open source software, the latest version being DHIS2. But the programme is about much more than software and hardware. Great emphasis is placed on the education and training of health professionals at all levels, from local health workers through to senior health staff. This aims to develop the 'information culture' referred to above, and to support change in processes and institutions towards the use of information for improved action at all levels. There is no doubt that it has achieved some success in South Africa and elsewhere, but much remains to be done.

So what is the answer to the question of whether ICTs can support improved public health outcomes in developing countries? In my view, the answer is a qualified 'yes'. Yes, because ICTs can be an important part of efforts to collect and analyse health data more effectively and thus to generate improved information for action in the public health arena.

But the yes is qualified. This is because ICTs in general, and health management information systems in particular, need to be viewed as only one element of heterogeneous networks composed of people, technology, standards, processes and institutions. Programmes which aim to produce improved health outcomes need to address all of these elements together, and over extended time periods.

How can texting secure small farmers fairer prices for their produce?

When text messaging was invented in the 1980s little could those involved have envisaged that 20 years later their invention would be helping small farmers in Sri Lanka earn a better living. Texting enables them to get information in advance about weather and market prices, saving them from making the long journey to the market in vain. Today there are a growing number of such 'm-agriculture' initiatives around the world that help give farmers opportunities to maximise their income.

Cambridge-based development consultant and Chair of the Humanitarian Centre, Steve Jones, remembers how things were in Bangladesh 30 years ago before the advent of new technologies: "Agricultural labourers would migrate from the poorer north looking for work in the harvest. They would waste days waiting for farmers to employ them. Now they can phone ahead on mobile phones and only come when needed, saving them time and money".

An m-agriculture initiative with Cambridge links is **FarmerNet** (www.farmernet.lk), a mobile and online trading platform to support small farmers in rural Sri Lanka. It was developed by Sarvodaya-Fusion, an ICT4D movement led by Sarvodaya, Sri Lanka's biggest charity, which has volunteer and trustee links with Cambridge.

The FarmerNet application allows farmers to communicate their prices directly with their customers by text, rather than losing money to middlemen. They do this by texting into an online system, which matches compatible buyers and sellers. This allows the farmers to make more money from their produce, and creates an efficient marketplace. It has the potential to make a real impact in Sri Lanka, where 72% of the population is engaged in small scale farming⁹.

Despite these improvements, Sri Lankan farmers are disadvantaged by more powerful market forces: the government's focus on creating an export-oriented agricultural economy has had a negative effect on domestic food prices. Enabling farmers to access information about market prices is an important first step, but making more significant and lasting increases in their incomes is a wider challenge requiring deeper structural changes.

How can ICTs help organisations in the developing world access expensive scientific information?

There has long been an information gap in the developing world: organisations in poorer countries have frequently not had the resources to subscribe to the latest health or agricultural journals or books. But thanks to the global nature of the Internet, the 'open access' movement – a social movement in academia, dedicated to the principle of information-sharing for the common good – has been able to make huge leaps forward.

This means that those who need it in developing countries are increasingly able to get affordable access to valuable research. This can help them improve healthcare, agriculture and all kinds of other areas of

>> There were certain crops that whenever I grew them they didn't do well at all, but due to this device, I've learnt the efficient way to plant them and increase my harvest.¹¹

Anthony Dery

Farmer, Ving-Ving, Ghana



human activity¹⁰. Technology also provides new spaces for experts across the North and South to collaborate. Two Cambridge-based organisations have been key players in this:

Cambridge-based NGO **Aptivate** has been working in collaboration with UN agencies, the World Health Organisation (WHO), the Food and Agriculture Organisation (FAO) and United Nations Environment Programme (UNEP), to provide organisations in developing countries with free or low-cost access to academic research online. The collective programme, called **Research4Life**, is a partnership between these UN agencies and leading medical and scientific publishers.

The most established programme, focussed on health, is called **HINARI** (the **Health InterNetwork Access to Research Initiative**). A urologist from Dakar, Senegal, Dr Mahammoud Jaro, describes the impact of HINARI: "In medical work information is crucial...We need to know what is done elsewhere. Before we knew about Hinari finding information was very difficult. Hinari [helps] us to have the data we need in real

⁹ War on Want, www.waronwant.org/overseas-work/food-justice/small-scale-farmers-in-sri-lanka, accessed on 02.08.11.

¹⁰ Research4Life, www.research4life.org/about.html, accessed on 01.08.11.

¹¹ Literacy Bridge, <http://vimeo.com/14276706>. See also, www.slideshare.net/cliffschmidt/talking-book-results-ving-ving-2009, slide 21.



> **Aptivate** experiments with solar panels to make email communication possible through a low-cost, low-power computer in Addis Ababa, Ethiopia.

time. We just have to go to the website and download the resources that are there. It [helps] in treating patients.”¹²

The **Public Library of Science (PLOS)**, with offices in Cambridge and the US, is a publisher of a series of online open access medical and scientific journals. The articles are free to read, download and copy (as long as the original authors and source are attributed). By publishing open access journals, PLOS aims to make medical and scientific research ‘a global public resource’ and to ‘close the information gap between rich and poor nations’¹³. However, there are issues of language barriers and limited Internet connectivity to overcome. PLOS is considering adapting content and making it accessible via low bandwidths and mobile phones.

There are two PLOS projects that are particularly relevant to international relief and development. **PLOS Neglected Tropical Diseases**, launched in 2007 with funding from the Gates Foundation, addresses diseases that are most prevalent in the Global South. Mark Patterson, Director of Publishing (UK) at PLOS, says: “*PLOS Neglected Tropical Diseases* was launched to raise awareness of these diseases, build research capacity and encourage collaboration between well-funded scientists in richer nations with the countries where these diseases are actually endemic.” The project not only makes information available, but also encourages new research and collaborations in neglected areas.

Another of PLOS’s initiatives is based on an innovative rapid publishing platform and is called **PLOS Currents**. One particular section of this, PLOS Currents: Disasters aims to publish online urgent information that is relevant in disasters. PLOS is launching PLOS Currents: Disasters, which includes articles on all aspects of disaster prevention and response, in 2011 after seeing the need for information to be shared and acted on rapidly in disaster situations. PLOS Currents uses an accelerated publishing process that allows authors to submit articles online for immediate review, quality control and publication. The review board includes specialists from around the world, including the WHO and Médecins Sans Frontières (MSF). Virginia Barbour, Chief Editor of PLOS Medicine, says: “Information sharing is a really critical issue which is hampering response to disasters because one does not adequately learn the lessons of

one disaster before moving on to the next. Talking to the experts in the field has made me aware that there is an absolute need for better accumulation of data and for it to be freely available and accessible.”

Disaster zones: how can ICTs save lives during disasters such as earthquakes?

In emergencies and natural disasters, the stakes are raised when it comes to obtaining and sharing information. Lives and livelihoods are at risk. Information about the location, scale and impact of the disaster must be spread and acted on quickly, in order to minimise damage and provide immediate relief.

Information is also crucial for planning reconstruction after a disaster. A team of researchers from **Cambridge Architectural Research (CAR)**, **ImageCat** and the University of Cambridge recognised the need for a systematic approach to monitoring disaster recovery in order to improve reconstruction efforts. Together, they created **ReBuilDD** (Remote sensing for Built environment Disasters and Development), which uses satellite image analysis and geospatial information systems (GIS) to monitor disaster recovery and evaluate the best way of proceeding – balancing cost of rebuilding against urgency, for example.

Nearly two years after the earthquake, ReBuilDD is working in Port-au-Prince Haiti, alongside the British Red Cross, on the Integrated Reconstruction Project to track the progress of reconstruction of a site where 3-400 buildings were decimated. Most importantly their work will help to understand realistic budget and time constraints for reconstruction, “because it is so hectic, people tend to prioritise speed of recovery and reconstruction over quality,” says Daniel Brown of ReBuilDD.

While technology is a vital ingredient in ReBuilDD’s monitoring, it is by no means the only one. Satellite imagery is a relatively cost-effective and unobtrusive way of monitoring large areas. But this is best when combined with other techniques, including on-the-ground fieldwork such as interviews, surveys and focus groups. ICTs can combine, analyse and visualise information gathered via different methods. The ReBuilDD team is now working with the Humanitarian Centre on the next stage of the project, which is to partner with governments and relief organisations to improve the quality of disaster recovery.

¹² Research4Life, <http://www.research4life.org/testimonials.html>, accessed on 01.08.11.

¹³ PLOS Medicine, <http://www.plosmedicine.org/static/faq.action>, accessed on 08.07.11.



> A Tanzanian woman uses a mobile device for electronic data collection in her local school after receiving training through a joint project of **Aptivate & Camfed International**.



© Digital Globe & Geoeye

The village of Ban Nam Khem, Thailand:

- 1) in June 2002, before the December 26, 2004 tsunami
- 2) totally destroyed following the tsunami
- 3) in July 2005, the fishing village has just begun to recover
- 4) five years later, there is significant progress in the rebuilding.

How can ICTs make development projects more effective overall?

We have seen how ICTs can be an excellent tool for monitoring and evaluation (M&E) during recovery from a disaster. But this is not limited to such situations, as they are being used for evaluation purposes across the whole spectrum of development. ICTs can make it easier and more efficient to gather, store and make sense of information, allowing the people and organisations delivering projects to self-evaluate and keep track of progress, and therefore improve processes and outcomes.

If M&E information is made available to the community being served, as well as funders and the wider public (including journalists, campaigners and policy-makers), it can lead to increased transparency and accountability. This can lead, in turn, to increased trust in

development organisations and continued investment in development, as well as greater, and more sustainable, impact.

Camfed International empowers its community partners with technology such as personal digital assistants (PDAs) and mobile phones to collect data about its projects supporting disadvantaged young women in sub-Saharan Africa to gain education and employment. Camfed found this use of ICTs made data collection quicker and more accurate. The organisation is able to collate and then share M&E information with the local communities, donors and government partners.

Ultimately, this makes Camfed more accountable to the girls and women it supports, and puts information – a powerful resource – in the hands of communities. <



> **Above:** the chief midwife tests the **FrontlineSMS** pre- and post- natal survey using a mobile phone, for **Safe Motherhood Project**, Phillipines.

> **Left:** a participant in the Safe Motherhood project receives a text from the midwife.



2

Communication: being free to speak and be heard

A timely conversation with a woman suffering complications in pregnancy or an exchange of text messages to report abuse in a displaced persons camp: these are the interventions that make a real difference. This section gives a sample of the large numbers of innovative communications projects in which Cambridge organisations are involved.

Communication – the two-way exchange of information, thoughts or opinions – is an essential part of life.

Some forms of communication can never be improved by new technology: no-one would advocate we replace the subtleties of a face to face conversation with a digital substitute. And digital communications can harm as well as help human relationships – witness the rise of certain forms of privacy invasion through social networking, or worse, the serious exploitation and bullying of young and vulnerable people online.

However, many types of communication are dramatically enhanced by technology. It is significantly faster and cheaper to reach hundreds of people with news of a new health development by email, compared to by post or fax.

Mobile phones are a particularly powerful tool for two-way communication. They are cheap, portable and accessible to a large and growing number of people in the Global South. When people in rural areas begin to have access to mobile telephony appropriate to their needs, they can access markets, education, healthcare, banking – even participate in political processes. Indeed Mr R Swaminathan, Vice-President of **Reliance Communications**, India, describes mobile telephones as “a major driver of rapid economic growth and poverty reduction in India”. In 2010, there were an estimated 5.3 billion mobile handsets in the world, 3.8 billion of them in developing countries¹⁴, which account for 80% of all new mobile subscriptions worldwide¹⁵.



As demand grows over time, mobile phone prices drop and their functionality improves, allowing more people to have access to mobile services (Mr R Swaminathan).

How can we harness the power of the mobile phone for social good?

FrontlineSMS is innovative software that has made two-way communication with wide groups of people possible for non-profit organisations. It was developed by Ken Banks of **kiwanja.net**, a Humanitarian Centre member organisation based in St Ives, Cambridgeshire, who recognised the need for a simple two-way communications solution for developing countries, using the popularity of mobile phones in developing countries.

He created FrontlineSMS: free, open-source software that converts a computer and a mobile phone into a two-way group messaging hub. It makes the sending and

¹⁴ International Telecommunication Union (2010). http://www.itu.int/ITU-D/ict/statistics/at_glance/KeyTelecom2010.html, accessed 01.07.2011.

¹⁵ World Economic Forum, *The Global Information Technology Report 2010–2011*, 2011, p.xiv.

Development is a freedom song: ICT to empower women



Ineke Buskens is the project leader and research director of the Grace Network (Gender Research in Africa and Arab Countries into ICTs for Empowerment)

Development, according to Nobel laureate economist Amartya Sen, is enhancing people's individual freedoms to lead the lives they have reason to value.

Information and Communication Technology (ICT) does indeed have the potential to enhance women's individual freedoms: Senegalese fishmongers use their mobiles to cope with being breadwinners and running a household at the same time; textile traders in Cameroon use the Internet to develop and expand their international business ventures.

But I have also seen how a hairdresser in Tanzania had to save two years for a mobile phone so she could become independent and earn a liveable wage; how women in Uganda had to choose between a successful village phone operation and a happy marriage; how women all over Africa would have to make a choice between investing in ICT in their business and in their children's health and education.

The severest limitations to freedom that women in the developing world face are located in their countries' dire financial situation and in male-dominated norms and attitudes. And whilst these two factors limit the degree to which women can use ICT, at the same time women also employ ICT to challenge these limitations: women

in Zambia use their mobiles to mobilise and advocate for gender justice; Moroccan women use the Internet to report gender-based violence and break their isolation and seclusion... and everywhere women are using ICT to strengthen themselves, their families and communities economically.

The recent freedom fight in Egypt has been called 'The Facebook Revolution' and for good reason. Whilst it undoubtedly was a revolt of people standing up to a totalitarian ruler and a fight for the inalienable rights to life, liberty and the pursuit of happiness', the particular form it took was shaped by ICT, and social media in particular. In the micro sphere of the home, all over the world, many freedom fights are taking place. ICT enables women to draw the world into their private space, connect with that world often unsupervised and make their personal reality part of global knowledge. It increases their awareness of what is possible, and enhances their choices.

Where women have access to ICT - and having access is indeed the crucial issue in the developing world - ICT is liberating women: socially, politically and economically and, most important of all, in the choices they think they can make and the realities they can create. When development is a freedom song, ICT is a good instrument for women to play it with.

receiving of text messages to and from large groups of people easy without the need for an Internet connection – just a mobile signal.

This makes it ideal for use in communities with poor Internet access, but where the majority of people have access to a mobile phone – ideal for running awareness raising campaigns, education projects, surveys or keeping in touch with fieldworkers.

The impact and reach of FrontlineSMS has been considerable. It has been downloaded over 17,000 times since its launch in 2005, and the software is now being used in over 70 countries across the world, in a broad range of sectors. To offer a few examples, FrontlineSMS has been used:

- for election monitoring in Nigeria, Burundi and the Philippines;
- in an agricultural information system in Uganda;
- by Egyptian organisation **HarassMap** to collect reports of harassment, which are then published using the crowd-sourced mapping tool Ushahidi;
- to support healthcare communications systems, for example, **Medic Mobile** have introduced FrontlineSMS in rural Malawi. Community healthcare workers use mobile phones to send appointment reminders, status updates and medical reports from the field. This has resulted in huge efficiency savings – of an estimated 900 hours in transportation time and £2,750 in fuel costs in the first six months¹⁶.

FrontlineSMS have also adapted the software to tailor and optimise its use in specific sectors, including finance, media, education and law.

FrontlineSMS:Radio is the newest of these sector specific projects to emerge and was first presented at the October 2010 launch of the Humanitarian Centre's ICT4D year. Radio is the predominant media source for many in the developing world; however this type of communication remains mostly one way. By introducing FrontlineSMS technology, an increasing number of stations have been able to send, receive and manage SMS messages.

FrontlineSMS:Radio is being developed in 2011 to support the two-way communication channel between radio stations and their listeners via SMS. The new software is being optimised for radio DJs while they are live-on-air by helping to capture and represent incoming data in real time.

Different ways FrontlineSMS is being used

One of the keys to FrontlineSMS's success is the fact that it is highly adaptable. Below we can see how the adaptability of the software is key: it allows texting to be combined with voice and in-person interaction, adding enormously to its reach:

To interact with radio audiences: texting is being used effectively to gather and spread news on pressing issues by a Zambian radio station. Breeze FM, based in Chipata, uses FrontlineSMS to manage messages on issues affecting the community on their programme *Issue of the Day*. DJs invite listeners to text in their views on issues such as poor health, farmers failing to pay back loans for buying fertilizer and early marriages.

>> In rural areas [the challenge] is to develop low cost, low power, zero maintenance systems suited to the large areas of India with poor roads and other infrastructure and to develop e-health, e-learning and e-banking products for rural markets.

Mr R Swaminathan

Vice-President,
Reliance Communications, India



As an alternative media channel:

one of the first users of FrontlineSMS was **Kubatana**, a civil society organisation in Zimbabwe that promotes human rights and good governance. Kubatana provides an alternative to the country's government-controlled media by sharing information through various channels, including a website, emails, SMS and printed media.

Kubatana has 14,000 subscribers to their SMS service which shares news headlines and notifications of events, compared to their 10,000 email subscribers¹⁷. Bev Clark, co-founder of Kubatana, Zimbabwe, says: "We use SMS to pose questions on social justice issues and ask our subscribers to respond with their views. We extend the conversation to people living on the margins of access to information." Kubatana also launched a service called Freedom Fone, which allows callers to access pre-recorded audio information in their local language. This combination of communication methods is crucial, allowing

¹⁶ Ken Banks et al. 'Mobile Technology and the Last Mile', *Innovations*, vol. 6, issue 1 (2011): 11–12.

<http://www.kiwanja.net/media/docs/Innovations-Last-Mile.pdf>

¹⁷ 'Mobile Technology gives Zimbabweans a voice', *National Geographic* (December 2010), accessed on 07.07.11.

http://newswatch.nationalgeographic.com/2010/12/21/mobile_technology_gives_zimbabwe_a_voice/



> A metal worker in Zambia manufacturing more cost-effective rocket stoves after technical support from **ManufacturingChange.org** volunteers.

a maximum number of people to benefit and participate.

To support pregnant women with limited access to healthcare: the **Molave Development Foundation** uses FrontlineSMS to communicate with pregnant women about key health topics, as part of their 'Mobile e-Health System for Safe Motherhood' programme. Rebecca, who was seven months pregnant and experiencing vaginal pain and swelling, sent a text message to ask if her symptoms were normal. The midwife replied advising Rebecca to go to the hospital and this initial SMS exchange helped to protect the well-being of Rebecca and her baby. Rebecca was lucky to live in a part of the Philippines where the pilot project took place: an area with a population of 50,000 that is served by only two doctors, one nurse and eight midwives, plus 140 village health volunteers. For pregnant women with very limited access to medical professionals, being able to ask questions and receive answers via text message has been hugely beneficial to their health and wellbeing. Irma Saligumba of the Foundation says: "We receive messages back from the mothers. They feel assured someone is concerned about their welfare."¹⁸

Molave Development Foundation are now looking at the potential of extending the 'Safe Motherhood' programme to other parts of the Philippines, to provide life-saving, meaningful support to pregnant women who would not otherwise receive it.

To protect people from abuse and exploitation: the **Ajiti SMS Sekou helpline** in Haiti allows people to report incidents of violence and missing persons in the aftermath of the 2010 earthquake. Reports are sent by text messages, as well as via email and its website. NGOs process messages, and summaries of cases are published on a crowd map, allowing tracking and identification of problem areas. The aim of the project is to collect information about violent incidents, measure the magnitude of violence, encourage reporting, and stimulate a reflex to respond by referral network. It is a joint project by Haitian

>> *FrontlineSMS has made it easier and cheaper for us to communicate.*

Orphent Kawonga
Headteacher
Zombwe School, Malawi



© Plan-ed project, Plan UK

NGO **KOFAVIV, FNJD** and **Survivors Connect**, an international NGO whose founder and CEO, Aashika Damodar, recently completed an MPhil in Development Studies at the University of Cambridge.

In Haiti, over 1.5 million people are living in internally displaced person (IDP) camps as a result of the earthquake that struck in January 2010. Sadly rates of gender-based violence, child abuse and human trafficking have increased since then. KOFAVIV, FNJD and Survivors Connect aim to tackle these problems by encouraging people to report incidents and by supporting those affected. The SMS helpline is one element of a wider programme of outreach and support, including face-to-face meetings, information sessions, training and discussion groups.

One of the problems identified by Survivors Connect is that law enforcement has often been slow or unresponsive. By encouraging people to speak out about violence and abuse, Survivors Connect highlights the needs of victims. While information sharing, using both online and offline methods, cannot guarantee positive, preventative action, it is a necessary first step for change. <

One to watch

ManufacturingChange.org, a Humanitarian Centre member organisation based in Cambridge, is a micro-volunteering website that supports organisations in the Global South that use manufacturing to create social change. Its founder, Daniel James Paterson, visited 20 manufacturing-based social enterprises in Africa and found that they all had small 'bottleneck' manufacturing issues that could be solved remotely. So he launched the ManufacturingChange.org website in May 2011 to allow online volunteers to improve the manufacturing capabilities of the organisations so that their social benefit also grows.

¹⁸ FrontlineSMS, 'Safe Motherhood: mobile healthcare in the Philippines,' (May 2011), accessed on 04.08.11.
<http://www.frontlinesms.com/2011/05/10/safe-motherhood-mobile-healthcare-in-the-philippines/>

> Grade 7 students from Pula Difate School in Pretoria, South Africa, participate in an interactive lesson, designed by their teacher, on their mobile phones.



3

Participation: the power of ICTs to include the excluded

A deaf child feels more involved in school when she is able to send text messages, a man unable to have a bank account can send money to his family, and a child in the remote hills of Nepal hears lessons by radio. One of the greatest benefits of ICTs is their power to include those excluded from the rest of society in the decisions that affect their lives.

One of the fundamental aims of development is to include the poorest and most disadvantaged people in society – people who may be excluded by relative and extreme poverty, by gender, class or ethnic inequalities, by illness or disability, or by geographical isolation – and have a share in its benefits.

ICTs' special characteristics – cheapness, speed and global nature – give them a unique role to play in reaching such people, and breaking down barriers to equality, inclusion and participation. Never before have channels of communication existed that can so cheaply and quickly reach the excluded.

In addition it is widely recognised in development that when the very people who will benefit from the development projects are involved in the projects' design and delivery, the projects will be more effective, long-lasting and successful.

This is 'participation' – 'bottom-up' rather than 'top-down' development – that uses the knowledge, opinions and priorities of the people themselves, so they take part in the decision-making, in their own development and that of their communities.

The projects in this chapter harness the potential of film, radio and mobile phones to enable excluded people to take part in their communities, education and the economy.

How can ICTs help voiceless women speak out and get involved?

When a video camera was put into the hands of uneducated women in Zambia whose whose families had been affected by HIV/AIDS, the results were powerful.

Penelope Machipi was one of those who had been orphaned and who told her moving story

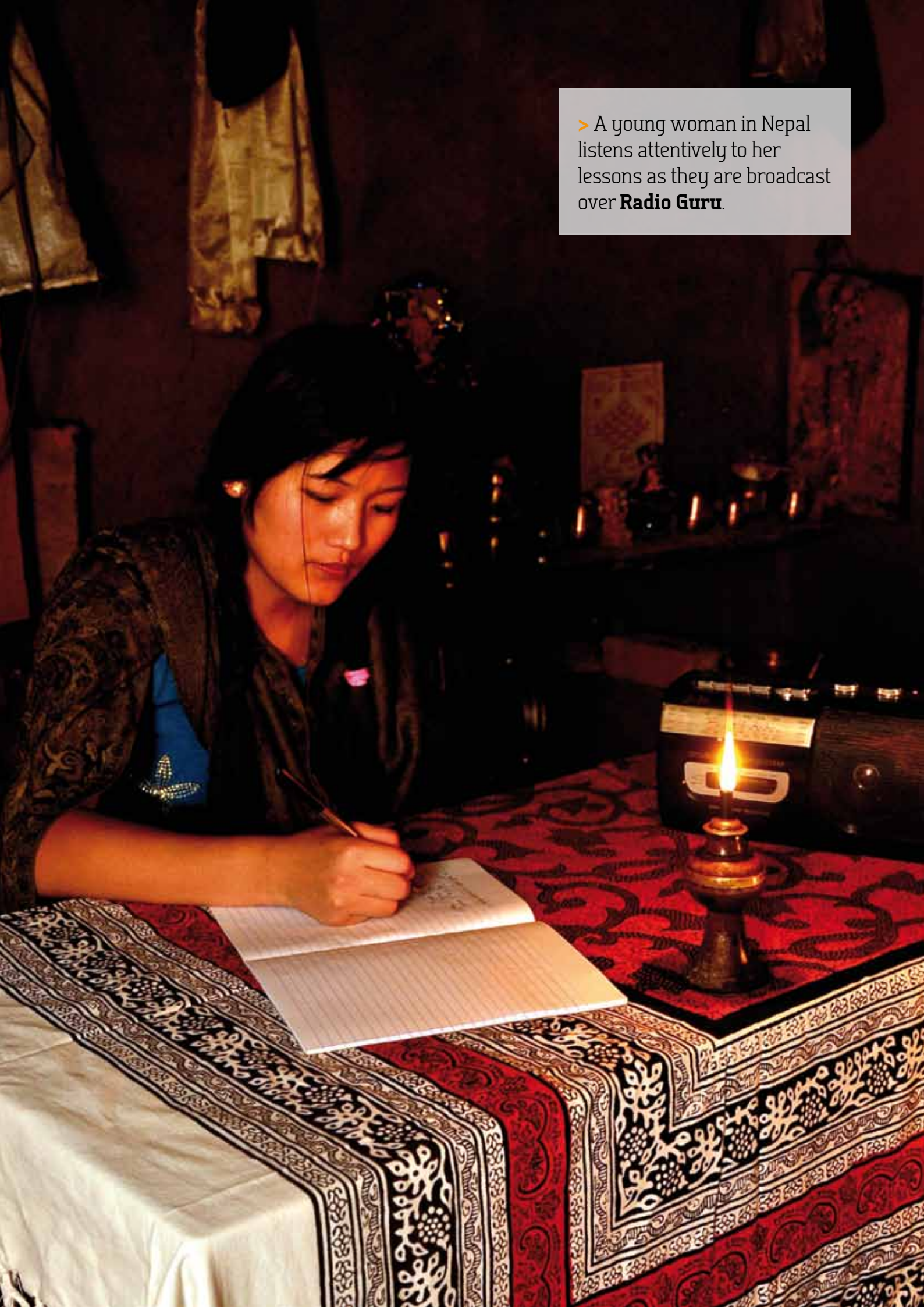
through film: "By telling other people how I lived, I felt I was helping them. I was strong so other people could learn."

The project was made possible by **Camfed International**, an NGO based in Cambridge that supports women and girls in sub-Saharan Africa. The programme enables women to tell their stories through film and start community-wide conversations about taboo subjects such as AIDS and domestic violence. 45 women have been trained in film-making in Ghana and Zambia, and so far they have produced 155 films and radio broadcasts. These have been screened to community groups and stimulated powerful discussions which have helped change attitudes to subjects about which people are usually silent.

Catherine Boyce, Head of Enterprise and Leadership at Camfed International, emphasises young women's leadership in the whole process, not just filmmaking: "Young women choose the subject they feel it's important to explore, shoot the footage and play a leading role in editing, distribution and organising screenings. Camfed trains and supports young women to realise their goals.

Why is this? It's about putting power and influence in the hands of young women, and equipping them with the skills they need to lead change. Young women filmmakers benefit from increased self-esteem, technical and team-working skills. There is also a positive impact on community attitudes. Penelope, for example, has many aspirations: "I want to establish a powerful business and employ more women. I want to go to college so I can become a school teacher. I want to help girls have more self-esteem, and of course I want to make sure the children in my family go to school".

> A young woman in Nepal listens attentively to her lessons as they are broadcast over **Radio Guru**.



How can ICT help excluded communities get access to education?

Nepal is the poorest country in South Asia and 16th poorest in the world. Not surprisingly there are major financial, social and geographical obstacles to its disadvantaged people accessing quality education. These include families not having enough funds to pay for schooling, schools being under-resourced, teachers being poorly trained, and the caste system which disadvantages and excludes certain groups. And if that were not bad enough, there are also significant gender inequalities, long distances to reach school, and a poor transport infrastructure.

A Cambridge-based charity **Mountain Trust** has developed an excellent solution that makes the most of the one medium that is available to 75% of the Nepali population, and does not need its audience to be literate: radio.

Every evening **Radio Guru** broadcasts lessons to mid-western Nepal via FM radio to excluded children. Lessons are 30 minutes long and based on the mainstream syllabus. Local teachers, who might be semi-literate themselves, also benefit. The Mountain Trust is aiming to scale up the project, to broadcast more widely, for longer periods and to extend content to all ages, including adults.

Of course, Radio Guru cannot improve the root causes of the failures of Nepal's education system. But it can provide a way for excluded communities to access information and participate in education. Radio lessons can "level the playing field of opportunity within Nepal," as Charles Malcolm-Brown of the Mountain Trust puts it.

The Humanitarian Centre supports a number of small charities around Cambridge which are all using the tools of digital communication to facilitate learning, known as 'm-education' projects. In some cases technology is improving and easing the educational experience. In other projects, like those run by the Mountain Trust and Cambridge to Africa, new technologies are doing something more radical: giving people for whom any kind of education would have been a distant dream, a chance to learn.

These organisations came together in March 2011, at a Humanitarian Centre panel discussion 'Mobile Technologies for Education'¹⁹. Their m-education projects are featured below:

Are tablets, laptops and netbooks appropriate in schools in developing countries?

ANTSIT (Appropriate New Technologies to Support Interactive Teaching in Zambian schools), investigated the best ways for portable ICTs (tablets, netbooks and laptops) to be used in schools with limited resources. This was a joint project between Cambridge-based NGO **Aptivate**, **Cambridge University's Centre for Commonwealth Education**, and the **iSchool** project in Zambia.

Their report found that ICTs can have very positive impacts but that they are not without their limitations. Teachers were very positive and said that the portable ICTs facilitated collaboration, student learning, motivation and independent working. However they also identified barriers to successful classroom use which included: "devices being difficult to use; insufficient equipment; insufficient support (Internet access, online resources, etc.); power issues; language/culture barriers; and time constraints"²⁰.

>> *What came out of the Humanitarian Centre's panel discussion on m-education is that technology has not changed the goals of education. The question is first and foremost whether schools are able to deliver quality education.*

Keith Ricketts

Education and Media Consultant
Cambridge, UK



The ANTSIT study also found that non-technological tools, such as small whiteboards, were effective in supporting interactive learning. This suggests that ICTs may encourage and enable participatory teaching and learning but that they should be used to complement, rather than replace, existing methods and tools.

How can texting help deaf children?

Communicating with your school friends when you are deaf has its own particular challenges, ones that a Cambridge NGO has been successfully helping tackle. NGO **Cambridge to Africa** gave mobile phones

¹⁹ Read a review of the event at <http://www.humanitariancentre.org/2011/04/mobile-technologies-for-education/>

²⁰ ANTSIT, 'An investigation of appropriate new technologies to support interactive teaching in Zambian schools' (March 2011): 60. http://www.educ.cam.ac.uk/centres/cce/initiatives/projects/antsit/DfIDANTSITReport_FINAL_2Mb-2.pdf

Learning a language from your mobile phone – a good idea?



Agnes Kukulska-Hulme is Professor of Learning Technology and Communication in the Institute of Educational Technology at The Open University, UK, and President of the International Association for Mobile Learning.

One of the great advances emerging from new technologies over the last ten years is a revolution in education and the way we learn. 'Mobile-assisted' learning is an ever-expanding territory that is calling old ways of learning into question. It involves portable devices – cell phones, smartphones, audio players, tablets, e-book readers or games consoles – being used as educational tools in an unprecedented range of settings. One niche within this, the learning of languages, has taken huge steps forward; the number of language learning materials accessible on mobile devices is mushrooming, creating an economy of mobile apps and games, mobile-friendly online communities and open educational resources. Newly empowered learners are beginning to act as change agents, and are starting to question the currency of traditional language learning.

> Language lessons delivered en masse to mobiles can seem like the height of innovation yet this does not guarantee the content will offer value

The question is: do mobile technology users really benefit from these changes?

The benefits of mobile learning are many. Its flexibility allows it to reach individuals, communities and countries too remote for other educational initiatives. It addresses inadequacies in classrooms and contributes to the empowerment of underprivileged and marginalized groups of potential learners. It opens up access to global information, conversation, analysis, critique; it can also be tailored to the individual's personal profile and needs. Perhaps more fundamentally, mobile learning can awaken a desire for education where it did not exist before.

Mobile learning also has a huge range in scope: from training hundreds of language teachers in Bangladesh to an individual taxi driver in India using pockets of 'dead time' for learning a language. And it encompasses a wide spectrum of activities: from mobile

translation tools helping in emergencies such as earthquakes, to learners with physical conditions who cannot sit upright for long periods of time using a mobile device in a range of positions.

It can be argued that if a person uses a cell phone, the world is at their fingertips.

However, on the ground, there are reasons why this is not so. When mobile-assisted language learning emerged ten years ago it focused on vocabulary and grammar, still popular choices today. But multifunctional devices now enable a greater repertoire: conversation, reading, and sharing learner-created resources such as photographs and recordings. The more interesting functions can, however, cost more as they may demand connectivity and some use of a desktop computer. The owner of a cell phone may feel privileged to have access, yet unknowingly miss out on more motivating or relevant learning. Even the best dictionaries and grammar tools for mobile devices are not all widely available and free. Language lessons delivered en masse to mobiles across continents can seem like the height of innovation yet this does not guarantee that the content will offer real value above what could be obtained in another way.

And how inspiring is it to learn off a screen rather than from a human being, with the ability to empathise and communicate? Overall, mobile communication can damage, as well as enhance, human relationships, and loss of privacy and attacks on personal security are growing concerns. Furthermore, mobile language instruction is likely to be subsidised by advertising directed at people in the developing world who may lack discernment if they have little experience of the medium.

Despite these caveats, the overall benefits of mobile learning are now very clear, and the enormous popularity of language learning is helping to carry those benefits to diverse populations of learners, across all sectors of society, in all corners of the world.

²¹ Agnes Kukulska-Hulme, 'Will mobile learning change language learning?' *ReCALL*, 21(2), 157–165 (2009).

²² John Traxler, 'Mobile Learning: Starting in the Right Place, Going in the Right Direction?' *IJMBL*, 3(2), 57–67 (2011)

²³ English in Action (2011). <http://www.eiabd.com/eia/>

²⁴ Subrata Dey, 'English via Mobiles: Potential M-Learners Amongst Indian Students and Drivers'. In *Proceedings of 8th World Conference on Mobile and Contextual Learning* (Gainesville: University Press of Florida, 2009), 174–178

to deaf and hearing students at a school in Kabale, Uganda, training them to use the phones and send text messages to each other. This was highly successful: the deaf students integrated much better with their school and community.

One student, Carolina Kembabazi, was delighted: “Those who used to laugh at me in the village now see me as a star because most of the rural community members do not know how to use sign language or mobile phone SMS facility.”

Cambridge to Africa reports how the project gave the deaf students increased self-esteem and encouraged them to be more involved in the classroom and in autonomous learning.

Can ICTs help change school culture?

In South Africa the concepts of interactive learning, or learning outside the classroom, are less common than in the UK. But **m-Ubuntu** is a collaborative project that is changing this: it uses mobile technology to help teachers in under-served schools adopt more creative teaching techniques, and thus lead their own professional development.

m-Ubuntu gives them the means: it delivers inexpensive ‘mobile labs’ to the schools – simply a hard suitcase with 20 simple smart phones, web, flip and video cameras, a laptop, a wireless router and a decent Internet connection for the school. Teachers use these for projects such as field trips where they can record their ideas on their mobile phones, and later share them. m-Ubuntu also provides the method: encouraging teachers to collaborate with their peers, and build new methods of teaching, stimulated by the new tools. With these basic ingredients the project is helping transform the culture of education in South African schools, and has already caught eye of South Africa’s education department. The technological resources and support are provided by **Tribal Group**, an educational access company based in Cambridge.

Like any m-education project, m-Ubuntu faces a challenge of how to sustain itself. Unlike many others, it has managed to thrive and grow on minimal funding in a number of ways: accessing networks of volunteers to support teaching staff, building communities to share best practices, and by helping teachers learn new teaching skills which they will keep long after the current technologies have been replaced.

One to watch

FrontlineSMS:Radio is being developed and deployed in collaboration with **Cambridge University’s Centre for Governance and Human Rights (CG+HR)**, a partnership which was first nurtured through their mutual Cambridge and Humanitarian Centre connections. The collaboration has led to an exciting research project entitled, “New communications technologies and citizen-led governance in Africa: Investigating the Socio-Political Implications of New Technologies.” The Centre’s research is investigating how new communication technologies such as mobile phones are transforming radio in Africa – particularly in Kenya, Zambia and Sierra Leone – and how these new uses may have the potential to affect governance processes and participation.

How have mobiles revolutionised financial services for the poor?

Not having a bank account, or any hope of getting one, puts poor people at a major disadvantage the world over. Saving is insecure, and sending money to others is difficult and expensive.

A range of simple-to-use mobile money services is making a great difference across Africa – and enabling financial inclusion – by giving poor people without a bank account the means to send and receive money quickly, cheaply and securely. Mobile banking, or ‘m-banking’, is a service for people who are already participating in the economy by earning and spending, but it facilitates that participation, giving people greater control over their money²⁵.

>> *Those who used to laugh at me in the village now see me as a star because most of the rural community do not know how to use sign language or mobile phone SMS facility.*

Carolina Kembabazi

Deaf pupil now using text messaging

One example is **M-PESA**, a mobile money application that was developed for Vodafone and Safaricom (a Kenyan mobile network operator) by a team at Sagentia who have since formed their own company called Icenii Mobile, both based in Cambridge. Before M-PESA’s launch in Kenya in 2007, it was



²⁵ Follow the Money: mobile banking research in Afghanistan, *National Geographic* (January 2011), accessed 01.08.11. http://newswatch.nationalgeographic.com/2011/01/04/mobile_banking_research_in_afghanistan/



> Without the money for their bus fares, these women would have been unable to make it to the hospital for crucial treatment. Thanks to mobile cash transfer via **M-PESA**, funded by **CBM-UK**, which covered their fares, these women are now recovering.

difficult, expensive and unsafe for people without a bank account to keep, send and receive funds. The application allows people to transfer money using their mobile phones; they can also withdraw cash or credit their account at a local M-PESA agent. These can be small shops, supermarkets or stall-holders.

M-PESA has been a great success. In Kenya, the number of customers reached two million in the first year and is now over 13 million²⁶. The service has also been launched in Afghanistan (where it is called M-Paisa), in Tanzania and South Africa. The M-Paisa service in Afghanistan, provided by mobile operator Roshan, includes an Interactive Voice Response (IVR) system in Dari, Pashto and English. Providing voice- as well as text-based services is important in Afghanistan, where 70% of the population is illiterate²⁷. This makes M-Paisa a good example of technology that is tailored to the needs of its users, ensuring the inclusion and participation of those at a disadvantage.

For poor families relying on money sent by a main breadwinner working away from home, mobile banking has made a real impact: it saves the time, risk and expense of sending funds by other means. According to Icen Mobile, incomes in rural households using M-PESA have increased by 5-30%²⁸. In 2010, the Afghan National Police began using M-Paisa to pay salaries, which meant



An M-PESA advertisement from Kenya sells the benefits of mobile transfer of funds from city to rural areas - a lifeline for those without access to a bank account.

that corrupt officials were no longer able to take a cut and police officers received their salaries in full for the first time. Here technology is a powerful weapon in the fight against corruption; it may also help improve Afghanistan's economy and prevent defections to the Taliban. People who feel empowered to control their own money are in a stronger position to participate in the economy and the governance of their societies. <

Mobile money pays the bus fare to hospital

Getting to hospital for a critical operation is beyond the means of many women in rural Tanzania, even when the operation is provided free of charge.

A Tanzanian NGO, Comprehensive Community-Based Rehabilitation in Tanzania (CCBRT), provides free treatment to women affected by obstetric fistula, a hole in the birth canal caused by difficult childbirth, particularly common in countries with limited health services. Without treatment, it causes severe incontinence and leads to social stigma and exclusion. In Tanzania, about 3,000 women develop obstetric fistula each year.

However many women who live in remote villages cannot afford to travel to hospital for the simple operation to cure the condition. A Cambridge charity **CBM-UK** supports CCBRT in the use of M-PESA to pay for the bus fares upfront. It does this by transferring money to 'ambassadors' across the country so that they can pay patients' bus fares. The results have been dramatic: since their scheme was launched in 2009, the number of women arriving for fistula treatment has increased by 40%.²⁹ In the first six months of 2011 M-PESA was used to pay the transport costs of 93 out of 174 patients treated.

²⁶ 'What you don't know about M-PESA', Olga Morawczynski (14 July 2009), accessed 04.08.11.

<http://technology.cgap.org/2009/07/14/what-you-dont-know-about-m-pesa/>

²⁷ Roshan, <http://www.roshan.af/Roshan/M-Paisa.aspx>, accessed on 04.08.11.

²⁸ Icen Mobile, <http://www.icenimobile.com/m-pesa.html>, accessed on 04.08.11.

²⁹ 'M-Paisa: Ending Afghan Corruption, one Text at a Time', Monty Munford (October 2010), accessed 01.08.11.

<http://techcrunch.com/2010/10/17/m-paisa-ending-afghan-corruption-one-text-at-a-time/>



> Mobile phone subscriptions in Uganda grew at a rapid pace in the last few years, reaching 10 million mobile subscribers in 2010 – about a third of the country's population.

Final word

There is no "magic recipe" for successful ICT4D initiatives.

ICT4D is still a young field, growing organically, dynamically and unpredictably. It plays both an active and a passive role: at times it leads major change in the way we communicate and receive information; at others it reacts to shifts in our needs and cultural habits. New possibilities and insights will continue to emerge. Nonetheless, it is important for the future of ICT4D to be informed by the successes, failures and ongoing challenges of existing projects (see key findings on pp. 4-5).

There are still significant barriers preventing people in the Global South from accessing ICTs. But with the ongoing, rapid growth in mobile phone use and network connectivity across the world, the parameters are changing. We need to keep adapting to this environment in order to succeed. We must also ensure that the poorest and most disadvantaged are not left behind.

Through the projects featured in this report, we have seen that ICTs can be used in many ways to benefit and empower marginalised people in developing countries. When technologies are accessible, appropriate and answer the needs of the poor, they can inform, educate, give people a voice, and enable dialogue, inclusion and participation.

We have also seen challenges and progress that still need to be made in harnessing ICTs to achieve positive and lasting development outcomes. Technology can only ever be one ingredient in this process, but it can be a potent one. A key strength of ICT4D lies in the potential for participation, especially as technologies become more and more interactive.

We hope and believe that the combination of participatory methodologies in development with the vast potential of ICTs in assisting the fight against poverty could lead to revolutionary changes in the lives of the poor.

Humanitarian Centre member organisations

There are currently forty-four Humanitarian Centre member organisations, ranging from small volunteer run start-ups to large globally recognised charities. All are local to Cambridge. Organisations mentioned in the report are highlighted in **orange**.

Addenbrooke's Abroad

www.addenbrookesabroad.org.uk

Exchanging skills and experience with hospitals abroad.

Afrinspire

www.afrinspire.org.uk

Supporting indigenous African initiatives in development.

Aiducation

www.aiducation.org

Giving bright students in developing countries access to education.

Aptivate

www.aptivate.org

IT services for International Development.

Bridges to Belarus

www.bridgestobelarus.org.uk

Supporting children and families affected by the Chernobyl disaster.

Cambridge Fairtrade Steering Group

<http://fairtradecambridge.wordpress.com>

Promoting and encouraging fairtrade.

Cambridge to Africa

www.cambridgetoafrica.org

A collaborative network.

Cambridge StopAids Society

www.srcf.ucam.org/camaids

Raising awareness of HIV and related international development challenges.

CAMVOL

www.camvol.org

Developing volunteer opportunities in India for Cambridge students.

CB3 Communications

www.cb3communications.co.uk

Specialists in crisis communication management and public diplomacy.

Canon Collins Trust: Cambridge Branch

www.canoncollins.org.uk

Education for Africa's future leaders.

CBM-UK

www.cbmuk.org.uk

Improving the quality of life of persons with physical and mental disabilities.

Concordis International

<http://www.concordis-international.org>

Building relationships for sustainable peace.

CUiD

www.cuid.org

Raising awareness on international development issues.

CUSAFE

www.cusafe.org.uk

Fundraising for education projects for development in Sub-Saharan Africa.

Engineers without Borders

Cambridge

www.ewb-uk.org

Removing barriers to development through engineering (Cambridge Group).

Engineers without Borders UK

www.ewb-uk.org

Removing barriers to development through engineering.

Cambridge University English Language Studies for Tibetans Society (CU-ELST Society)

www.srcf.ucam.org/himalayan

Facilitating volunteering projects, mainly in north and south India and Nepal.

English Language Studies for Tibetans (ELST)

www.elstcam.org

Advancing education among Tibetan and Himalayan communities.

Global Poverty Project, Cambridge

www.globalpovertyproject.com

Catalysing the movement to end extreme poverty.

Global Thinking

www.global-thinking.org.uk

Supporting the global dimension in education within East England.

Hoveraid

www.hoveraid.org

Reaching the unreachable: using hovercraft to enable development in inaccessible areas.

Kenya Education Partnerships

www.kep.org.uk

Investing for opportunities for young people in Kenya.

FrontlineSMS/kiwanja.net

<http://www.frontlinesms.com>

www.kiwanja.net

Supporting mobile-enabled social change throughout the developing world.

Latin American Foundation for the Future

www.laffcharity.org.uk

Supporting street children in Latin America.

Cambridge University Lawyers without Borders

www.srcf.ucam.org/lwob

Enforcing global human rights regardless of geographical or political borders.

ManufacturingChange.org

<http://manufacturingchange.org>

Online-volunteers supporting organisations that use manufacturing to create social change.

MedSIN Cambridge

www.srcf.ucam.org/~medsin

Student society campaigning for political change towards equality in global health.

Menelik Education

<http://www.menelikpartnership.org>

Providing a brighter future for people in DRC through education.

Momentum Arts

<http://momentumarts.org.uk>

Engaging artists and diverse communities to create innovative art projects.

Mountain Trust

www.mountain-trust.org

Innovative interventions in education and health provision in Nepal.

Nakuru Environmental and Conservation Trust

www.nectuk.org

Engaging UK and Kenyan Youth with their environment.

About the Humanitarian Centre



The Humanitarian Centre is a thriving Cambridge-based network for international relief and development. We bring together researchers, consultants, NGOs, academics, students, private sector leaders and others who work to reduce global poverty and inequality. By connecting local, national and international expertise – sharing knowledge across sectors and disciplines – we aim to significantly increase our potential to contribute to global change.

The Humanitarian Centre exists to support the sharing of best practice and to facilitate collaborative, innovative partnerships, as well as to build the capacity of smaller NGOs. We provide a platform for dialogue on key development issues, as well as an access point for individuals interested in participating in development-related work and activities. Please visit our website at www.humanitariancentre.org to find out about upcoming events, training and networking opportunities.

Oxfam Cambridge

<http://cambridgeoxfam.wordpress.com>

A global movement to overcome poverty and suffering.

PLoS (Public Library of Science)

www.plos.org

Committed to making the world's scientific and medical literature a freely available resource.

Rama Foundation

www.ramafoundation.org.uk

Grass-roots initiatives for change in disadvantaged communities in Rishikesh, India.

RedR Cambridge Group

www.ewb-uk.org/RedR-Cambridge

Preparation for applying engineering in development & disaster relief work

Seed Project

www.seed-project.org

Facilitating holistic community development in Southern Africa.

Shelter Centre

<http://sheltercentre.org>

Supporting the humanitarian community in post-conflict and disaster shelter and housing.

SOS Children's Villages

www.soschildren.org

Building families for children in need.

Students Supporting Street Kids (SSSK)

www.sssk.org.uk

Raising money and awareness for grassroots NGOs and projects supporting street kids worldwide.

Transforming Business

www.transformingbusiness.net

Analysing and catalysing enterprise solutions to poverty.

Village Ways Partnership

www.villageways.com

Sustainable community-based responsible tourism benefiting local communities.

VSO Cambridge

www.vso.org.uk/act/supporter-groups/cambridge.asp

Working through volunteers to fight poverty in developing countries.

World Development Movement Cambridge

<http://groups.wdm.org.uk/cambridge>

Campaigns and lobbying against the underlying causes of poverty.

Organisations which appear in this report

Afrinspire

www.afrinspire.org.uk

Supporting indigenous African initiatives in development.

Aptivate

www.aptivate.org

IT services for International Development.

Architecture Department, Cambridge University

www.arct.cam.ac.uk

ARM

www.arm.com

Leader in microprocessor Intellectual Property.

Ajiti SMS Sekou

www.smssekou.org

Combating violence against women and children, human trafficking and other human rights violations.

Cambridge Architectural Research

www.carltd.com

Independent consultancy providing specialist advice for the construction industry, design professions and policy-making institutions.

Cambridge to Africa

www.cambridgetoafrica.org

A collaborative network.

Camfed International

uk.camfed.org

Working to break the cycle of poverty and disease in Africa through girls' education.

CBM-UK

www.cbmuk.org.uk

Improving the quality of life of persons with physical and mental disabilities.

Centre for Commonwealth Education

www.educ.cam.ac.uk/centres/cce

Serving educational needs across the Commonwealth.

Centre of Governance and Human Rights

www.polis.cam.ac.uk/cghr

Draws together expert thinkers to critically analyse governance and human rights issues around the world.

Comprehensive Community-Based Rehabilitation in Tanzania (CCBRT)

<http://www.ccbtr.or.tz>

The largest indigenous provider of disability and rehabilitation services in Tanzania

FarmerNet

www.farmer.lk

Mobile SMS text-based trading application.

Fédération Nationale de la Jeunesse pour le Development (FNJD)

<http://fnjd.org>

To organise and unify Haiti's youth; to develop the capacity of young people.

Freedom Fone

www.freedomfone.org

Making it easy to build interactive, two way, phone based information services.

FrontlineSMS

www.frontlinesms.com

Supporting mobile-enabled social change throughout the developing world.

HarrassMap

harassmap.org

Ending the social acceptability of sexual harassment.

Iceni Mobile

www.icenimobile.com

A turn-key creator of new businesses for mobile.

ImageCat

www.imagecatinc.com

International risk management innovation company.

Komisyon Fanm Viktim Pou Victim (KOFAVIV)

Haitian women survivors of rape providing support, advocacy and justice for rape victims.

Kubatana

www.kubatana.net

Improving access to human rights and civic information in Zimbabwe through the web.

Literacy Bridge

www.literacybridge.org/talking-book

Accessible Knowledge for all.

ManufacturingChange.org

<http://ManufacturingChange.org>

Online-volunteers supporting organisations that use manufacturing to create social change.

M-ubuntu

<http://www.m-ubuntu.org>

Literacy through mobile phones.

Molave Development Foundation

www.molave.org

Empowering the Filipino through health and knowledge.

Mountain Trust

www.mountain-trust.org

Innovative interventions in education and health provision in Nepal.

PLoS (Public Library of Science) PLoS Neglected Tropical Diseases PLoS Currents: Disasters

www.plos.org

www.plosntds.org

currents.plos.org

Committed to making the world's scientific and medical literature a freely available resource.

RebuildDD

www.rebuilddd.org

Remote sensing for Built environment Disasters and Development.

Research4Life

www.research4life.org

Developing World Access to Leading Research.

Sagentia

www.sagentia.com

A technology management and product development company.

Sarvodaya-Fusion

<http://www.fusion.lk>

e-Empowerment of the communities.

Survivors Connect

www.survivorsconnect.org

Advancing grassroots anti-trafficking service networks in vulnerable communities.

Tribal Foundation

<http://www.tribalgroup.com/aboutus/TribalFoundation>

Supports sustainable projects that reflect Tribal's expertise in education.

Tribal Group

<http://www.tribalgroup.com>

Transforming the world's public services.

Ushahidi

www.ushahidi.com

Developing free and open source software for information collection, visualization and interactive.mapping.

The Humanitarian Centre's year on ICT4D 2011: highlights

The Humanitarian Centre's 2010-2011 themed year on information and communication technology for development (ICT4D) was sponsored by ARM. A dozen highly successful and lively events were held in Cambridge:

Global Poverty and ICTs: October 2010

The launch event of the ICT4D themed year explored the transformative power of ICTs on international development.

Speakers and participants:

- David Edelstein, Director of the Grameen Technology Centre and Vice President of the Grameen Foundation.
- Aptivate
- Camfed
- Centre for Commonwealth Education
- Centre for Governance and Human Rights
- FrontlineSMS
- Icen Mobile

Telecoms as a Catalyst for Development in Afghanistan: November 2010

Mr Khoja drew on his personal experience to discuss how telecommunications can spark economic growth and social development.

Speaker: Karim Khoja, CEO of the largest Telecoms Company in Afghanistan, Roshan

Partners: MPhil in Technology Policy, Judge Business School, University of Cambridge

Training session. Social Media for Non-Profits: November 2010

Netsquared trained Cambridge-based NGOs on the opportunities provided to them through social media

Trainer: Claire Sale, Netsquared

Mobile Technology and Social Change: November 2010

A networking opportunity for development practitioners and technology experts.

Speaker: Ken Banks, founder of Kiwanja.net and FrontlineSMS

Sponsor: Netsquared

Training session. Website Tips for Small NGOs: November 2010

Training on the effective use of websites for small, not-for-profit organisations.

Speaker: Mark Skipper, Aptivate

ICT4D networking event: December 2010

An informal networking opportunity for professionals interested or engaged in the field of ICT4D.

E health for Development: using technology to improve healthcare for the world's poor: January 2011

A panel discussion to raise awareness of initiatives in e-health and the importance of recognising local contexts in e-health projects.

Speakers:

- Professor Geoff Walsham, Judge Business School, University of Cambridge
- Dr Ian Leslie, Cambridge University Computer Lab
- Dr Peter Gough, Khandel Light
- Dr John Seakgosing, Minister of Health from Botswana

Partner: Centre for Health Leadership & Enterprise

Computers Mobiles and Internet: can they make a difference to the lives of poor people?: March 2011

The UNESCO Chair for ICT4D spoke about the importance of making ICT4D projects pro-poor. This event was part of the Cambridge Science Festival.

Speaker: Professor Tim Unwin, UNESCO chair in ICT4D

Partner: Cambridge Science Festival

Mobile Technologies as Tools for Education: The experience in the developing world: March 2011

Panelists from the private sector, NGOs and academia discussed the potential of mobile education (m-education).

Speakers:

- Dr Niall Winters (Chair), London Knowledge Lab, Institute of Education, University of London
- Dr Sacha DeVelle, Cambridge to Africa
- Dr Bjoern Hassler & Dr Sara Hennessy, Centre for Commonwealth Education, Faculty of Education, University of Cambridge
- Geoff Stead, Tribal Group

Partners: Centre for Commonwealth Education

Sponsor: Cambridge Education Services

Workshop. Social Network Analysis (SNA): April 2011

This workshop explored the use of social network visualisation and analysis tools in evaluating social development projects.

Trainer: Rick Davies, Monitoring and Evaluation News

Wireless communication and poverty reduction in India - Where do we go from here?: June 2011

Bangalore-based ICT leaders shared their expertise with the Cambridge ICT4D community.

Speakers:

- Mr R Swaminathan, Senior Vice-President from Reliance Communications Ltd, the largest mobile provider in India
- Mr Shiv Kumar Narayan, Catalyst Management Services, development consultancy in Bangalore

Sponsor: Cambridge Wireless

ICT4D Finale. Participation, Technology and Development: Interactive discussion with Professor Robert Chambers and Dr Alistair Cockburn: September 2011

A ground-breaking meeting between two participation gurus: one in international development and one in software development.

Speakers:

- Professor Robert Chambers, The Institute for Development Studies
- Dr Alistair Cockburn, Agile

Sponsor: Red Gate

About this report

You can find the case studies that feature in this report in full at www.humanitariancentre.org/publications.



This is the second *Cambridge International Development* report published by the Humanitarian Centre. The 2010 report was on the theme of innovation and international development. The 2012 report will focus on Global Health. If you have comments about this report, please send feedback to developmentreport@humanitariancentre.org.

Creative Commons: except where otherwise noted, this work is licensed under the Creative Commons Attribution-NonCommercial 3.0 Unported License.

To view a copy of this licence, visit <http://creativecommons.org/licenses/by-nc/3.0>



You are free:

- to share – to copy, distribute and transmit the work
- to remix – to adapt the work

Under the following conditions:

- Attribution – you must attribute the work as follows:
Humanitarian Centre, 'Upgrading Development: Can technology alleviate poverty? ICT4D.' *Cambridge International Development report*, 2011 (but not in any way that suggests that the Humanitarian Centre endorses you or your use of the work)
- Noncommercial – you may not use this work for commercial purposes

Five ways to get involved with the Humanitarian Centre

We hope this report will inspire you to find out more about ICT4D and wider development issues. Here are five ways that you can make a contribution to the reduction of global poverty and inequality:

1. Join the Humanitarian Centre's Special Interest Group on ICT4D

We have set up a Special Interest Group on ICT4D following from our themed year and welcome new members. Please contact us at info@humanitariancentre.org if you are interested.

2. Sign up for regular updates for development-related events and activities in Cambridge, including the Humanitarian Centre's training, networking, and learning events. Visit <http://groupspaces.com/humanitariancentre/external/subscribe>

3. Volunteer or donate

Many of the organisations in this report are keen for your help as a volunteer or donor. There are many ways in which you can contribute! Do contact them and enquire; their details are on the listing pages. The Humanitarian Centre also welcomes volunteers and supporters. Contact info@humanitariancentre.org for more information.

4. Get involved in the year of Global Health

In 2011-12, the Humanitarian Centre has planned an exciting programme of events and activities which explore current issues in Global Health. If you or your organisation would like to get involved, please contact info@humanitariancentre.org.

5. Become a member or affiliate of the Humanitarian Centre

If you are interested in becoming a member or affiliate of the Humanitarian Centre, please visit www.humanitariancentre.org for more information or contact info@humanitariancentre.org.

The Humanitarian Centre

c/o Fenner's, Gresham Road, Cambridge CB1 2ES, UK.

Tel: 01223 760885

info@humanitariancentre.org

The Humanitarian Centre is a Company Limited by Guarantee in England and Wales. Company number 6080896. Registered Charity number 1121067

Cover image:

Deaf and hearing children learn together through mobile lessons

Courtesy of Cambridge to Africa