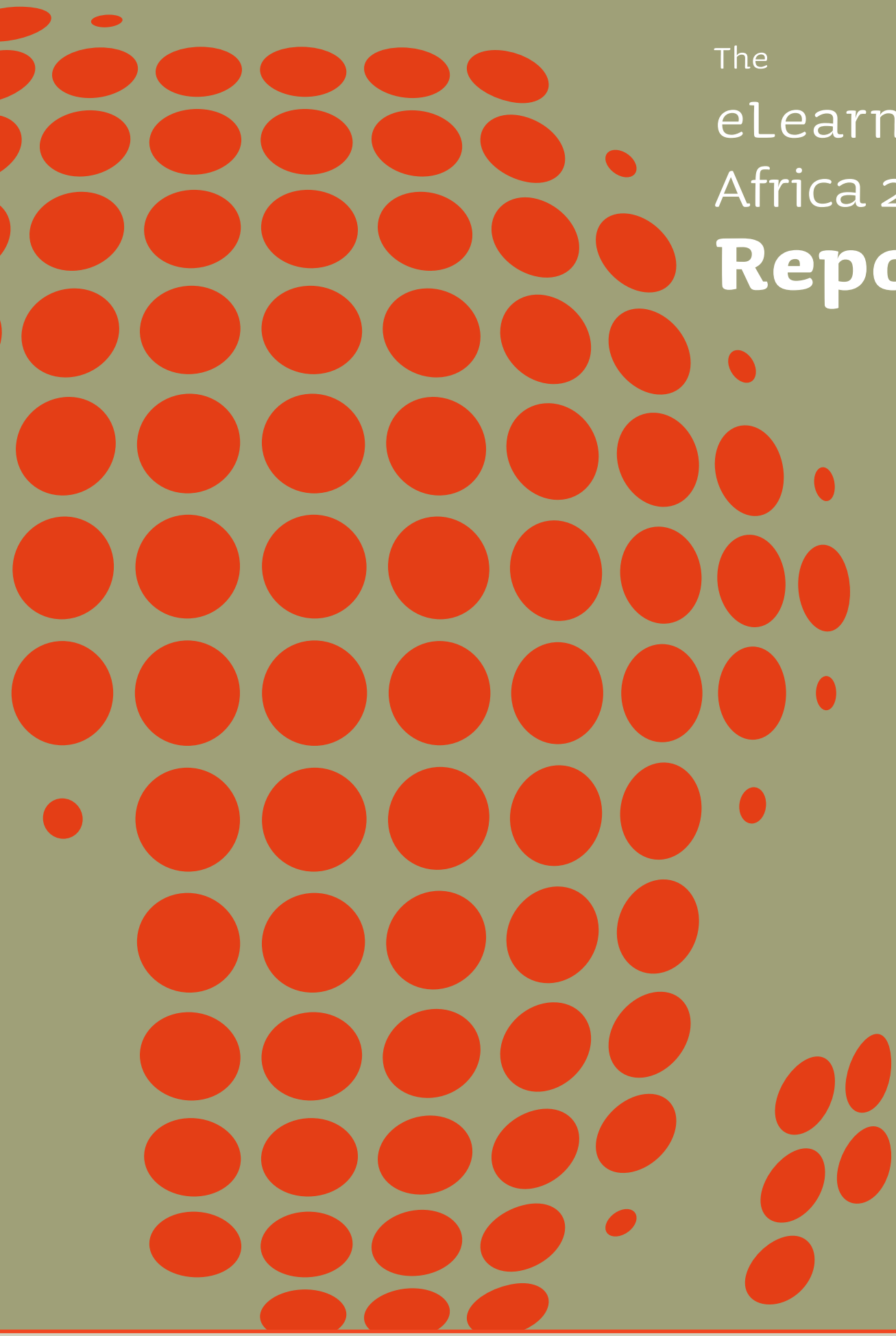

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The eLearning Africa 2012 Report

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When citing from the main body of the Report please use:
Isaacs, S. and Hollow, D., (eds) 2012. *The eLearning Africa 2012 Report*, ICWE: Germany.

When citing from one of the opinion pieces within the Report please reference the surname of the individual author, followed by the Report reference. For example:

Bappa, G.D., 2012. Africa's choice: digitise traditional knowledge or lose culture and development. In: Isaacs, S. and Hollow, D., (eds) 2012. *The eLearning Africa 2012 Report*, ICWE: Germany.

The word cloud inside the front cover depicts the combined answers to the question '*Looking forward over the next five years: what do you think will be the most significant change in the ICT-enhanced learning and training sector in the country where you work?*' from *The eLearning Africa 2012 Survey*. The word cloud on the back cover depicts the combined answers to the subsequent question '*Why do you think this will be the most significant change?*' from *The eLearning Africa 2012 Survey.*

Design and layout: Christina Sonnenberg-Westeson

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Acronyms

AULP	Association of Portuguese Language Universities
BBC	British Broadcasting Corporation
CCK	Communication Commission of Kenya
CFSK	Computers for Schools Kenya
EASSY	Eastern Africa Submarine Cable System
ECCE	Early Childhood Care and Education
EFA	Education for All
EMIS	Education Management Information System
FDI	Foreign Direct Investment
FTTH	Fibre to the Home
GCI	Global Competitiveness Index
GEI	Global Education Initiative
GMR	Global Monitoring Report
GSM	Global System for Mobile communications
IAI	Interactive Audio Instruction
ICT	Information Communication Technology
IFC	International Finance Corporation
IRI	Interactive Radio Instruction
ISP	Internet Service Provider
ITU	International Telecommunication Union
LMS	Learning Management System
MDG	Millennium Development Goal
MSME	Micro, Small and Medium Enterprise
NOFBI	National Optical Fibre Backbone Infrastructure
ODA	Official Development Assistance
SME	Small and Medium Enterprise
SRC	Shared Resource Computing
SSA	Sub Saharan Africa
TEAMS	The East African Marine Systems
TVET	Technical and Vocational Education and Training
UIS	UNESCO Institute for Statistics
UPE	Universal Primary Education
WEEE	Waste Electrical and Electronic Equipment
WEF	World Economic Forum
WHO	World Health Organisation

Foreword

The collective eLearning experience in Africa, premised on the voices of Africans, covering 41 African countries, has never been documented before. The richness of our divergent views, aspirations, critiques and insights have not yet been shared in this way. I am very proud to announce the launch of *The eLearning Africa 2012 Report* which makes a resounding contribution towards aggregating knowledge produced by Africans. It has constituted an Editorial Board which includes representatives from Cape Town to Marrakesh, Lusaka to Kampala, embracing the richness of our linguistic and cultural diversity. It has also provided space for polemic and debate based on issues that are close to the heart of eLearning in Africa. I was inspired to read the 15 opinion pieces, the cartoons and comics, and to observe photographs of women and children embracing the fascination of technologies. In this way, *The eLearning Africa 2012 Report* captures something of Africa's highly complex environment and shows that it is filled with unimaginable challenges and opportunities. It also shows how vibrant we are as Africans.

This Report marks an important milestone in the growth and development of the *eLearning Africa* network. I hope that it becomes a cog within a larger wheel of conscious and impactful eLearning interventions that can transform our education systems and make Education for All a living reality. I encourage everyone to read it, discuss it, challenge it and give ideas on how to improve it continuously.

Max Ahouèkè,
Minister of Communication and Information and Communication Technologies,
Government of Benin
May 2012

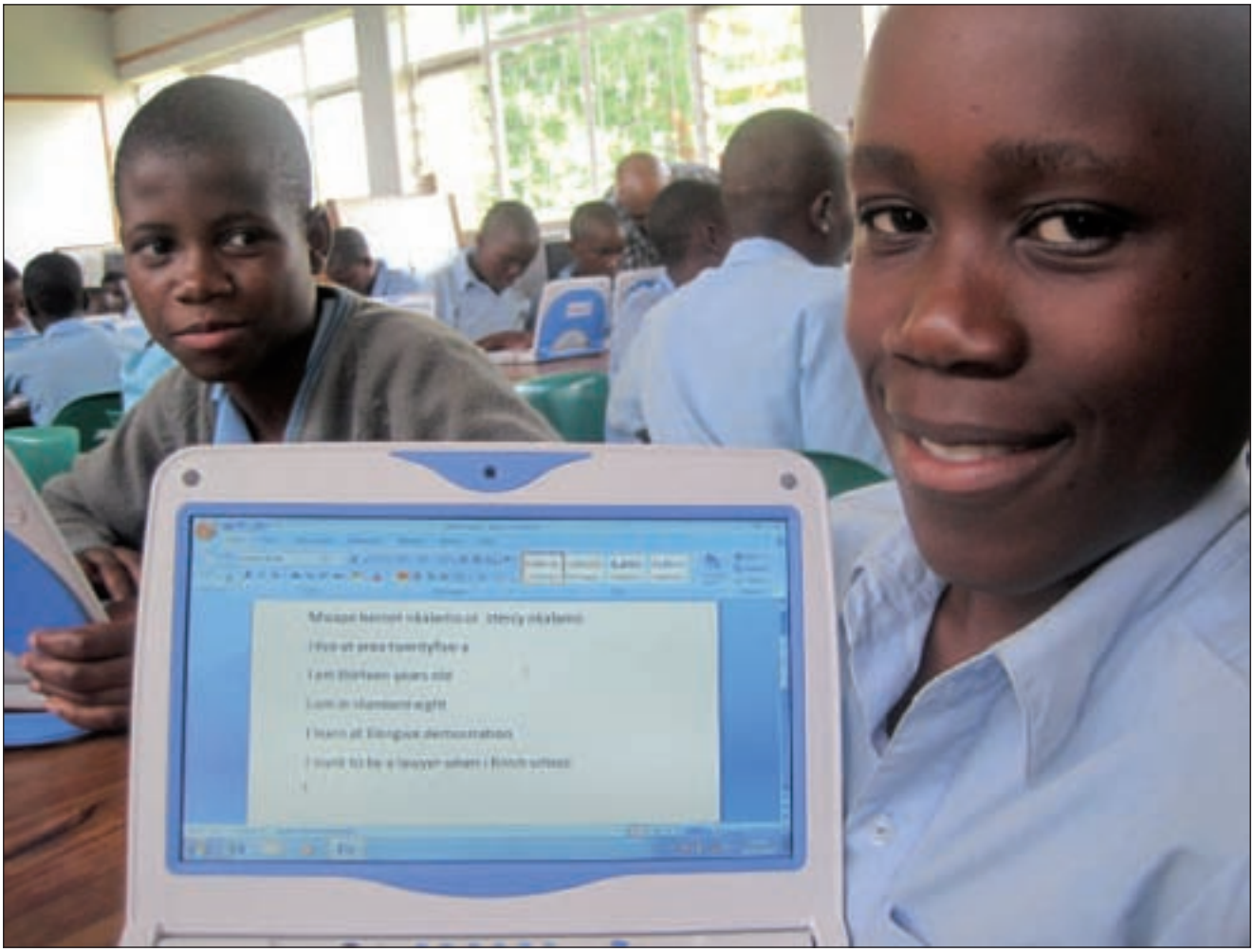


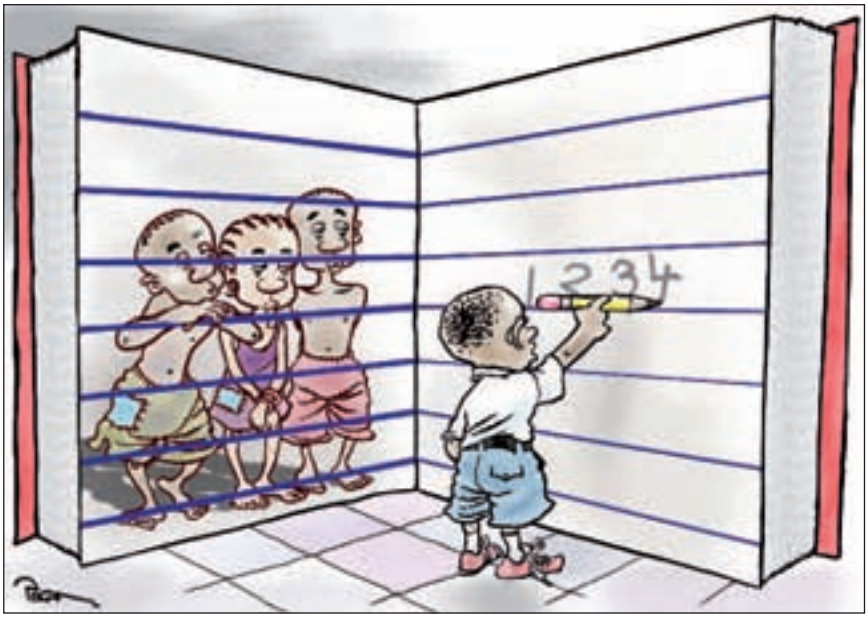
Photo: Wayan Vota - Inveneo / Empowering Dreams with ICT

Note from the editors

Africa has two faces: one of rising wealth and optimism, the other of unspeakable poverty and degradation. Africa is on the brink of major change: innovation, entrepreneurship and a lively, inspiring energy prevails. And for good reason: economic growth rates have been increasing amidst a global recession and the rate of foreign investment has soared tenfold in the past decade. Africa now has more children in primary school than ever before, more girls going to school, fewer children dying before their fifth birthday and more women who are literate. Some African countries have made notable progress towards the Millennium Development Goals (MDGs) (The Africa Report, 2012, UNESCO, 2011a, 2010).The latest economic outlook from the World Bank projects growth of more than 5% in Sub-Saharan Africa in 2012 and 2013. This is higher than the average growth rates of developing countries (excluding China), and substantially higher than those projected for high-income countries (World Bank, 2012). The growing optimism is reinforced by other informative projections for Africa's future. The Continent's middle class is growing fast. Around 60 million Africans have an annual income of USD 3,000 or above and it is anticipated that this will grow to reach 100 million in 2015 (The Economist, 2011). According to the African Development Bank, by 2060, life expectancy will reach 70.3 years, 99% of the population will have broadband Internet access and literacy will reach 97% (Ware, 2012).

However, this dynamism co-exists with a continuing, endemic crisis in social service delivery, debilitating poverty, corruption, wars and piracy. Across Sub-Saharan Africa around 10 million children drop out of primary school each year and the average 15-year-old is not in school (UNESCO, 2011a, 2010). More than 300 million people do not have access to clean water and only 36% of the population have adequate sanitation (Salami et al., 2011). Of every 1,000 African children, 118 will die before the age of five (The Economist, 2011). Lower rainfall levels, poor distribution and families displaced due to conflict have left an estimated 13 to 15 million people across Niger, Mali, Burkina Faso, Chad and Mauritania with minimal food security (World Bank, 2012). Finally, according to the 2010 *Corruption Perception Index*, Africa is considered to be the most corrupt region in the world (Transparency International, 2011).

Against this backdrop, what role do those involved in ICT-enhanced learning and training play in contributing to Africa's growth and development? Where and how do they work? Which technologies do they make use of and which world views and opinions inform their work? *The eLearning Africa 2012 Report* was designed to address these key questions. The
Report was inspired by the absence of comprehensive, consistent and coherent documentation on eLearning practice in Africa. The intention of *The eLearning Africa 2012 Report* is to help fill this gap.



'Education Rights' by Popa Matumula

One of the unique attributes of *The eLearning Africa 2012 Report* is its access to experts from across the Continent who have helped to shape the findings. This is an African-led report, and it draws upon the wisdom and experience of the *eLearning Africa* network. As editors, we have attempted to reflect the diversity of this network and have included contributions from investors, donors, academics, tribal chiefs, cartoonists, activists and civil servants.

The eLearning Africa 2012 Report is designed to be read by a diverse audience and has been written with a wide range of readers in mind. We hope that the Report will engage practitioners, policymakers, academics,

government officials and the interested general public across Africa and beyond. One consequence of engaging with this broad audience is that it does not fit into any conventional report category. Whilst it has some grounding in theory, this report has essentially been crafted to inform practice and policy, with an emphasis on actionable knowledge.

A range of experts have contributed to the Report by writing opinion pieces, being interviewed, serving on the Editorial Board and/or completing the Survey. Inevitably, readers will notice a variety of different perspectives, some of which contradict each other. This is particularly the case with the 15 opinion pieces which are interspersed throughout the Survey analysis. The authors of these pieces were asked to write from their personal perspectives rather than to present a unified message. Having chosen to adopt this approach, it should be noted that inclusion in *The eLearning Africa 2012 Report* does not mean that the views expressed are endorsed by *eLearning Africa*, the editors of the Report, or the Editorial Board. The reader should not be surprised to find material with which she or he disagrees. Indeed, we anticipate that no one will agree with everything.

We hope that readers will be challenged by engaging with multiple perspectives, sometimes from unexpected sources. *eLearning Africa* believes in the value of lifelong learning through participating in collaborative networks. The annual conference provides a context in which learning can take place through engaging with diverse points of view. It is our intention that *The eLearning Africa 2012 Report* should be an extension of this learning environment.

eLearning Africa has always been much more than a conference and the Report provides a milestone in the maturing of the network. The Report links with the *eLearning Africa* News Portal [www.ela-newsportal.com] which is designed to facilitate knowledge-sharing and the exchange of ideas throughout the year. Whilst *eLearning Africa* has previously published survey reports focusing on specific themes, this is the first report of its kind. There undoubtedly remains much room for improvement. The editors of *The eLearning Africa 2012 Report* welcome feedback and suggestions that will enhance future editions of the Report.

'High Goals' by Victor Ndula

ICT-enhanced learning and training in Africa is exciting, vibrant and with the potential to transform the face of Africa. This Report provides only a snapshot of this dynamic energy. It shows signs that the Continent is on the edge of a major shift. The power of technology to catalyse positive change is talked about a great deal. However, on its own, enthusiasm for innovation does not bring transformation. The benefits of technological innovation remain threatened by continuing, debilitating systemic failures which require urgent attention. The Report reflects this ambiguity and tension and seeks to promote positive change. The next five years provide an opportunity for the benefits of ICT-enhanced learning to be made increasingly available to the most marginalised, especially to those young people currently excluded from completing their basic education. This requires the empowerment of individuals, the promotion of partnerships and an increase in political will and leadership. The Report demonstrates that each of the key ingredients for change is alive and indeed thriving within the *eLearning Africa* network: they now need to be fully harnessed in order to achieve sustainable, equitable transformation.

Shafika Isaacs and David Hollow
May 2012

Executive summary

The average respondent to The eLearning Africa 2012 Survey *is based in Nigeria; works in higher education; predominantly uses ICT in urban areas within a classroom setting; is motivated by the potential of ICT to improve the quality of teaching; thinks government is the primary eLearning change agent and believes that Africa will achieve universal access to ICT in education over the next five years.*

These are some of the key findings of *The eLearning Africa 2012 Survey*, completed by 447 respondents. A detailed analysis of the Survey findings is provided in this, *The eLearning Africa 2012 Report*, which is the first of its kind, bringing together the views of eLearning professionals and a range of other stakeholders from across 41 African countries.

What role does the ICT-enhanced learning and training community play in contributing towards Africa's growth and development? This is the overarching question that frames *The eLearning Africa 2012 Report*. How do people define ICT-enhanced learning and training? What technologies are being used within the sector? In what contexts are they being used? What motivates people to use ICT and how do they make use of it? Each of these questions is explored through the Survey analysis.

The Report reviews the eLearning experience in Africa over the last five years and draws out the cross-cutting themes and features which have defined the sector so far. It also identifies key trends over the next five years, exploring the implications of increased access and connectivity across the Continent. Throughout, *The eLearning Africa 2012 Report* is designed to provoke and inspire, and be useful for all those involved in the sector: professionals, practitioners, policymakers, business leaders and teachers.

The Report was inspired by the absence of comprehensive, consistent and coherent documentation on eLearning practice in Africa. The intention of *The eLearning Africa 2012 Report* is to help fill this gap, provide thought leadership and shape policy and practice across the Continent in such a way that the transformative potential of technology in learning and training can be realised more fully.

The eLearning Africa 2012 Report has some unique attributes. Interspersed within the Survey analysis are 15 opinion pieces written by reputable eLearning experts including tribal chiefs, entrepreneurs and international investors. It is supplemented throughout with a range of cartoons, comics and photographs, each providing fresh and provocative perspectives on the hot topics that are defining the sector. In this way the Report provides a snapshot of the colourfulness and dynamism of the *eLearning Africa* network.

What role does the ICT-enhanced learning and training community play in contributing towards Africa's growth and development? This is the overarching question that frames The eLearning Africa 2012 Report.

Photo: Istvan Csakany / Virtual classroom between Kenya and Hungary

eLearning has promised a revolution in African education for more than a decade. This Report paints a picture of how this promise is understood and the way it is emerging. It locates this picture within the highly polarised and complex African context which is characterised by both accelerated economic growth and optimism on the one hand, and extreme poverty and despair on the other. Within these realities, the *eLearning Africa* network seeks to define its identity and role in achieving the vital objective of Education for All in Africa.

1. Introduction

Over the past seven years, the eLearning community in Africa has grown in leaps and bounds. This is evident from the growth in the number and variety of participants attending the *eLearning Africa* conferences each year and the growing number of eLearning programmes, research initiatives, partnerships and organisations in Africa. This numerical growth has also been accompanied by a maturing of conceptual understanding, thinking and learning by eLearning practitioners in Africa as is reflected in the development of the *eLearning Africa* conference programmes over the years.

Despite snapshots provided through *eLearning Africa* surveys undertaken in the past, there has never been a composite picture of this progress and how it is evolving. Capturing the thoughts, aspirations, activities and views of stakeholders within this growing network on a consistent basis, over time, is the main objective of the Survey and the Report.

The mission of *eLearning Africa* is to grow a learning and knowledgeable network of practitioners, investors, policymakers and partnerships that can enhance and improve eLearning practice, as part of the collective endeavour to support the Education For All and Millennium Development Goals in Africa. Tapping into the insights and knowledge of this learning network can inform our collective understanding of developments in order to make better decisions in ways that can benefit the Continent at large.

2. Methodology

The primary purpose of *The eLearning Africa 2012 Report* is to produce actionable knowledge (Argyris 1996). Actionable knowledge is context-specific and premised on problem-solving within given social realities. The focus of this Report is therefore on producing knowledge that is grounded in the experiences and realities of African practitioners, purposefully designed to influence practice and positive change. *The eLearning Africa 2012 Report* was conceived as a collaborative endeavour to enrich the conversation on eLearning in Africa. It has been produced as a resource that draws on the wisdom and experience of a wide range of stakeholders, using a variety of methods.

The primary research method was *The eLearning Africa 2012 Survey* and this is explained in detail below. In addition, a large part of the Report comprises thought-provoking opinion pieces from leading experts, investors and practitioners on topical issues and experiences in an attempt to reflect the spectrum of opinions and perspectives within Africa's eLearning network. These opinion pieces are intended to be polemical and catalyse conversation as well as add qualitative insights to the data provided by the Survey.

The Report is full of ideas communicated through words. Cartoons and comics provide a powerful alternative by which to communicate ideas, and they have been included to raise questions, challenge thinking, and ignite conversation. As the Cartoon Movement explains: '*A cartoon has the unique ability to explain problems immediately and clearly. Cartoons can poke, harass, jab, outrage, infuriate, tickle and enlighten. Cartoons attack arrogance and ignorance, corruption and abuse, expose those who need exposing, defend freedom and even bring about change.*' Similarly, the comic strip from Shujaaz highlights the innovative ways in which new media is being used for social transformation across Kenya. The Report also includes a range of photographs from the *eLearning Africa* Photo Competitions [which can be viewed at www.elearning-africa.com/photo_competition_home.php], illustrating a range of personal perspectives on how ICT is used across Africa.

Photo: Olufemi Olubodun / No age Barriers wirh ICTs

2.1 The eLearning Africa 2012 Survey

The core analysis of *The eLearning Africa 2012 Report* is based on the findings of *The eLearning Africa 2012 Survey*. This Survey was distributed by *eLearning Africa* and was open between 21st February and 13th March 2012. The Survey was distributed by email to the *eLearning Africa* mailing list. It was also promoted through Facebook, Twitter and Linkedin and could be filled in via an online survey form or an offline PDF. A total of 876 Survey responses were received, of which 447 were fully completed. 864 respondents filled in the Survey online, and 12 used the offline version.

Respondents had the option of completing the Survey in Portuguese, French or English. The Survey asked 37 questions of which 19 were closed questions and 18 were open questions. A detailed summary of the Survey can be viewed in Appendix 1. Responses came from 41 different countries in Africa, with 86% of the responses from people with an African nationality. A detailed breakdown of the backgrounds of the respondents is provided in the introduction to the analysis. The closed questions were processed using a simple quantitative analysis and presented as percentages that are used throughout.

2.1.1 Processing qualitative data from the Survey

The qualitative data are characterised by responses to open questions, as opposed to multiple-choice closed questions contained in the Survey. The open-ended questions dealt with respondents' understanding of ICT-enhanced learning; looking backwards, their views on the most significant eLearning developments in Africa over the past five years, and, looking towards the future, their views on the most significant developments over the coming five years. These responses were consolidated in a spreadsheet and were systematically coded in accordance with the country, type of organisation and level of education where the respondent's work is focused.

Those engaging with The eLearning Africa 2012 Survey *have received much more education than most.*

The codes were clustered based on the similarity of ideas and themes, leading to the emergence of core overarching and inter-related categories. The analysis provided in this Report addresses the interrelationship between these core categories. In an attempt to maintain the integrity of the qualitative data, the analysis includes references to the qualitative data provided by respondents in the form of verbatim quotes.

Obvious limitations apply regarding the processing of qualitative data from the Survey. The coding method through which the qualitative data was processed is subject to the researchers' interpretations. The resulting bias was minimised through triangulating data, engaging with literature and appointing an Editorial Board of ten expert representatives from diverse backgrounds.

2.1.2 Survey respondents

The eLearning Africa 2012 Survey was limited to people who had access to email. Conducting a pan-African survey via email limits the potential respondents to those who already have access to the Internet. This sampling strategy should be remembered when reading the Report and reflecting on the implications of its findings. It is important to highlight the fact that the demographics of the respondents are not in any way representative of the African population in general, nor necessarily of African educationalists. This can be exemplified by considering the educational qualifications of those who responded to the Survey, compared with the average across the Continent (World Bank 2012, UIS 2011). Of those who completed *The eLearning Africa 2012 Survey:*

- 99% of respondents indicated that they had completed their secondary education, whereas across Africa as a whole it is estimated that less than 20% of the total population complete secondary education;
- 85% of respondents indicated that they had completed at least one degree at tertiary level, whereas across Africa as a whole, it is estimated that less than 5% of the total population complete tertiary education; and
- 21% of respondents indicated that they had completed a PhD, whereas across Africa as a whole, it is estimated that less than 1% of the total population complete a doctoral education.

It is not surprising that those engaging with *The eLearning Africa 2012 Survey* have received much more education than most. Most of them are already involved in using ICT to enhance learning and training in a variety of ways, and many constitute what could be considered a niche 'professional elite'. Being transparent about this deliberate sampling strategy helps to avoid arriving at flawed conclusions regarding what is generalisable. The perspectives that form the foundation for the analysis of *The eLearning Africa 2012 Report* should not be interpreted as indicative of the general population. Rather, the strategy was considered justifiable as the objective of the Survey was to learn from those who are already actively engaged in eLearning across Africa, thereby harnessing experience and contributing thought leadership to the sector.

3. The Report findings

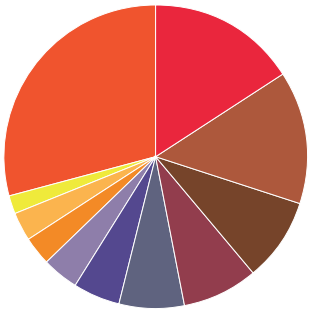
3.1 Introduction to the analysis

The findings of *The eLearning Africa 2012 Report* are presented in a narrative form, incorporating the various methods used. The qualitative and quantitative analysis from the Survey is presented with the opinion pieces interwoven alongside cartoons, key quotations, word clouds, and a comic. This provides both an overall picture of the ICT-enhanced learning and training sector in Africa, and details of current key topics and trends. The analysis begins with a top-line overview of the data to show what kind of people responded to the Survey, their backgrounds, sectors and focal areas of work. It then addresses three main questions from the Survey to provide an overall context. Following this, the substantive analysis is separated into key themes.

The 447 fully completed surveys were received from people working in 41 different countries across Africa. The top five countries with the most respondents are Nigeria (16%), South Africa (14%), Kenya (9%), Uganda (8%), and Zambia (7%).

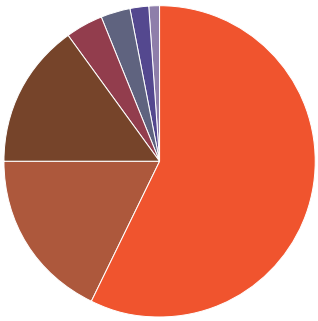
86% of the total responses come from African countries. Outside of Africa, the highest proportion of respondents are from the UK (4%) and the USA (3%). Of the 14% of respondents that are not of an African nationality, 100% are conducting work focused on an African country. More than half of the respondents (57%) work for a government or government-supported organisation. The next biggest category (18%) is working for a non-governmental organisation, followed by 15% working for a privately owned organisation. Some 43% of the respondents report that the main level of education their work is focused on is higher education.

What countries do respondents work in?



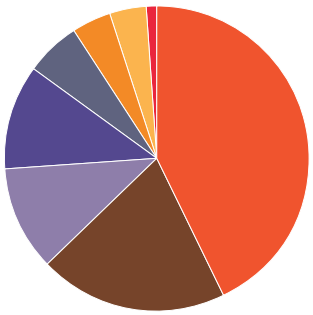
- Nigeria 16%
- South Africa 14%
- Kenya 9%
- Uganda 8%
- Zambia 7%
- Tanzania 5%
- Ghana 4%
- Cameroon 3%
- Benin 3%
- Tunisia 2%
- Other 29%

What type of organisations do respondents work in?



- A government/government-supported organisation 58%
- A non-governmental organisation 18%
- A privately owned organisation 15%
- I work independently of any organisation 4%
- An international government organisation 3%
- Not applicable 2%
- A donor organisation 1%

What level of education do respondents work in?



- Higher Education 43%
- Schools (primary, middle or secondary) 20%
- Technical Vocational Education and Training 11%
- Equally across all education levels 11%
- Other 6%
- Equally across all education levels 4%
- Informal Education 4%
- Early Childhood Development (pre-primary) 1%

Another 20% say that their work is focused on schools, and 12% say that their work is focused on TVET. The fourth most popular response, from 11% of respondents, is that they are working equally across all levels of education.

The average respondent to The eLearning Africa 2012 Survey… *works in higher education in Nigeria, and predominantly uses ICT in urban areas within the classroom setting. This person thinks that seeing progress around the use of ICT in education is primarily the responsibility of the government, and their own personal motivation for making use of ICT is to improve the quality of their teaching.*

3.2 Context and definitions

Combined answers to the Survey question: How do you define ICT-enhanced learning and training?

3.2.1 What do we mean by ICT-enhanced learning and training?

Respondents were asked how they choose to define ICT-enhanced learning and training. A wide range of responses were received, reflective of the diverse backgrounds and perspectives which constitute the *eLearning Africa* network. Throughout the responses, key terms that feature regularly within the definitions are '*flexible and personalised*' and '*knowledge enhancing*', alongside the centrality of '*innovation*' and '*integration*'. Several key threads also emerge from the responses, with different aspects offered as primary defining factors:

The practical nature of the sector is put forward by some as being the primary defining factor, explaining it as '*the combination of ICT training with real life projects*' that makes '*teaching and learning more fun and enjoyable so as to motivate the learner to want to acquire more information on his or her own*'. Other respondents define the term by emphasising forward-looking potential, suggesting that ICT-enhanced learning is where '*the learning is enabled seamlessly by technology - the participants use technology transparently without being aware that technology is present' and the fact that 'it makes learning easy*'.

Alongside this, economic priorities are also emphasised, with respondents defining ICT-enhanced learning and training in terms of the way it '*allows globalisation and raises the education system to the level of competition and the global economy*'. Others give more operational definitions, considering the speed implications to be the primary defining attribute, stating that '*it is an easy and fast way of learning, sharing and disseminating information*'.

This links to those for whom connectivity is the key defining factor, suggesting that ICT-enhanced learning is '*any kind of learning, training, knowledge-sharing, or knowledge-creation that we could not do if we did not have access to the Internet*'.

Above all, many respondents emphasise in their definitions that ultimately the sector is about education, learning and training, with technology as the enabling tool: '*ICT is a means to an end – to provide better teaching and learning*'. It is clear that any holistic understanding of how the ICT-enhanced learning and training sector is defined will draw on each of these emphases. Within the range of emphases, it is the final point which *The eLearning Africa 2012 Report* uses as its primary reference point, viewing all manner of ICTs as enabling tools to facilitate improvements in all aspects of learning and training.

Critical content and communication capabilities: foundational for African education in a digitally-mediated age

Laura Czerniewicz

What are the key capabilities required to navigate the 21st century? Virtually every commentary will highlight the need for information literacy or ICT literacy. Whilst still important, these injunctions are so commonplace they have almost become meaningless. Aside from the minefield about defining literacies themselves, it is commonly argued that the need for these capabilities is, in fact, not new, and that they have always been necessary to ensure an educated engaged citizenship. While this remains true, it is also the case that in digitally-mediated environments, the changing nature of content and communication renders them more complex than ever before. Considering the metamorphoses in the nature of content and communication online, it becomes a little clearer why negotiating them is the foundation for survival, success and opportunity in a digitally-mediated age. Indeed, the very nature of literacy is undergoing substantial change in the 21st century.

It is well known that we inhabit an age characterised by information abundance and that coping with this information explosion is a serious challenge. The scale of that challenge is staggering- there are currently nearly as many bits of information in the digital universe as stars in the physical universe (Gantz and Reinsel, 2011).

Content and communication in a digital age are increasingly hybrid. The diversity of forms which constantly mutate is underpinned by the concepts of networks, granularity, hyperlinks, disaggregation, aggregation, integration, and interoperability. In essence, components can be taken apart and reconstituted in multiple forms and across many platforms, and this can be achieved repeatedly and in innovative configurations. The implications are immense.

Content is no longer static. New tools and practices mean numerous versions, making the notion of a 'final version' old-fashioned. There are expectations that content can be changed, annotated, commented on and updated, challenging the idea of the 'authoritative version', and redefining the concept of publishing itself. Readers will need new skills and flexibility to cope with multiple versions and the new fluidities of publishing.

The nature of content itself is changing, requiring new ways of reading. In the schools' sector, new types of interactive multimodal textbooks are being developed, incorporating multimedia, simulations, educational games and the like, thus giving a new meaning to 'reading' a textbook. Likewise the scholarly domain, the traditional home of static two dimensional journal articles, is seeing the experimental emergence of 'enhanced publications' hyperlinking directly to data (in various forms), sources or references.

Integral to all this is the escalation of rich media: videos, podcasts, lecture-casts, animations, simulations and so on, all of which are evolving their own grammars and legibilities. In the academic world the advent of 'computational turn' in the digital humanities, and the concomitant deep mining of large data sets in sciences, often have their findings portrayed in deceptively simple visualisations which need specific interpretation abilities. These new forms of representation require new codes of decryption.

Another change taking place is the blurring or fusion of content and communication, as well as of content and process. Writing and talking become harder to distinguish online, and conversations and comments in turn become new forms of content. In the academic space, scholarly processes and conversations become shareable objects thus increasing the transparency of the education and research processes. Also, previously collegial sharing meant exchange, but with new forms of software, sharing now means exchange and distribution, broadening and rearticulating readership and audiences (Wittel, 2011).

It is possible to challenge and even change relations of power and authority in a read-write web where content creation tools are easy to use and freely available (see Bamboo DiRT http://dirt.projectbamboo.org). In an age characterised by mass self-communication (Castells, 2009), self-generated content can easily be widely made available by senders are who are 'globally distributed and globally interactive'. This offers the possibility of addressing the imbalances of global content production, with expanded opportunities for online contribution. Thus '21st century skills' must include the ability and confidence to create and contribute online content, both for social and educational reasons.

In the 21st century context, content is becoming more social, fluid, mobile, visual, dynamic and distributed, while being less scaffolded, and with authority and expertise likely to be less explicit. Therefore, in addition to literacies which include informed and conscious content-creation practices, there is an increasing premium on the ability to critically assess and evaluate content and communication online. Educators, students and scholars must therefore be able to negotiate new types of content and communication, while simultaneously interrogating the nature of the changes in the digitally–mediated educational terrain itself.

Laura Czerniewicz is Associate Professor at the Centre for Higher Education Development, University of Cape Town, South Africa.

Combined answers to the survey question: What is the educational technology that you make most use of?

3.2.2 What technologies are used, and in which context?

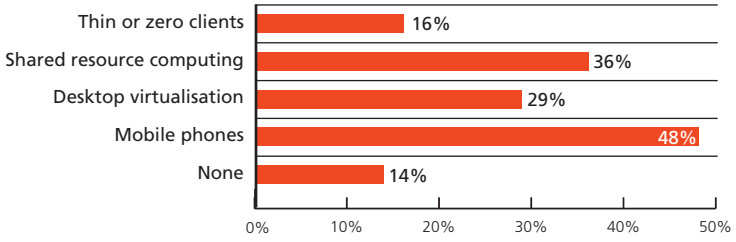
A wide range of different technologies are being utilised within the ICT-enhanced learning and training sector. In light of this, *The eLearning Africa 2012 Report* wanted to ascertain, of all the different technologies available, what it is that professionals in the sector actually make most frequent use of across the Continent. When asked this question, respondents most frequently note computers, the Internet, projectors and mobiles. Alongside these, many different pieces of software feature in the answers, with PowerPoint the most regularly referenced. Similarly, various Learning Management Systems (LMS) are noted, with Moodle being the most popular. The collated responses to the question are illustrated through the word cloud above.

In order to analyse usage trends in more detail, respondents were asked to list the alternatives to personal computers that their organisations make use of in educational projects. As is demonstrated in the chart below, 48% of respondents make use of mobile phones, 36% make use of Shared Resource Computing (SRC), 29% make use of desktop virtualisation, and 16% of thin or zero clients. Of the 415 people that answered this question, 15% have not used any at all. 18% report that their organisation has made use of at least three of these alternatives in education projects. Only 3% of the total report that all four of these alternatives have been used. Within those that have used at least three of the four, a wide range of different countries, sectors and educational levels are represented.

The large majority of people, 74%, make use of ICT within the classroom to aid teaching and learning.

Finally, respondents were asked about the contexts in their workplace in which they make use of ICT. As may be expected, the large majority of people, 74%, make use of ICT within the classroom to aid teaching and learning. Some 58% make use of ICT in order to access online resources for teachers, 52% of respondents use ICT for collaboration and networking, and 52% use ICT for their data collection and management information systems.

Which of the following alternatives to PC technology have been used by your organisation in educational projects?



Appropriate and sustainable technology solutions for education in Africa

David Angwin

Widening access to reliable information technology is key to how we can help our children develop educationally. This is especially true in the fast developing economies of Africa where the expectation for access to ICT in the school has increased as more citizens use information technology like mobile phones in their everyday lives.

However, in our view, the ambitious eLearning goals in Africa can only be achieved with classroom technology that is intrinsically sustainable. But, in the African context, what do I mean by sustainability? First of all this is not about ticking the box of some green IT policy set by a government. The reality of extending digital classrooms into urban or rural Africa is that IT provision must take account of the absence of reliable power supplies. Any interruptions can be managed with novel solutions around battery back-ups or solar energy to power a classroom in a remote setting.

Even when reliable power supplies are available, low power consumption is going to remain important in how schools manage their budgets. This makes thin or zero client computers very attractive as they typically only use between 3 and 15 watts of power.

Sustainability in African eLearning is much more than about energy efficiency. It also refers to how IT in schools needs to be easy to set up and manage because it is unrealistic to expect a school to always have access to IT management skills on the ground. As African educators plan their expansion of eLearning, they need to ensure the classroom technology is largely self-sufficient and simple to set up, manage and use in the classroom. The centralised management and robust plug-and-play functionality of classroom labs that use virtualisation technology answers this requirement, ensuring that investments in school classroom labs deliver the maximum educational benefit over a long period of time.

In investing in digital classrooms African educators are demonstrating incredible foresight in what new generations of Africans need to improve their lives. They need to guard against making ICT decisions that trap them in the past. While budgets are always going to be tight, African educators must be ambitious about ICT in education and take advantage of the latest 21st century thinking on virtualised and cloud computing.

Another important dimension of sustainability is the degree to which the ICT is future-proofed in how it can keep pace with future developments in applications and data. Educators are already using solutions like this to transform ICT in their schools and colleges. In South Africa more than 1.5 million students already have ICT access thanks to classroom labs that utilise Wyse cloud computing technology.

Sustainability in African eLearning is vitally important in making ICT widely accessible to students across the Continent. Indeed, African countries look set to trail-blaze other economies in their innovative use of cloud client computing on a massive scale.

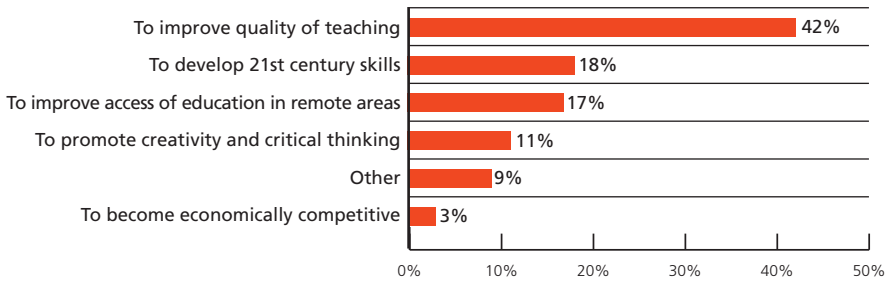
David Angwin is Vice President, Field Marketing for Wyse Technology, and based in the United Kingdom.

3.2.3 Why do people use ICT and how do they decide what to use?

The Survey also sought to establish what the biggest motivating factor is for respondents in using ICT-enhanced learning. The largest group at 42% say that improving the quality of teaching is the biggest motivating factor for them in choosing to use ICT-enhanced learning. Following this, an equal proportion of respondents (18%) state that the biggest motivations are developing 21st century skills and improving access to education in remote areas. The fourth most popular response with 12% is that the promotion of creativity and critical thinking is the biggest motivation.

The largest group at 42% say that improving the quality of teaching is the biggest motivating factor for them in choosing to use ICT-enhanced learning.

What is the biggest motivation to use ICT-enhanced learning and training?



Respondents were then asked what they consider to be the most important factors when deciding on a technology access model for the education stakeholders that their organisation works with. The most popular answers are 'educational value' and 'financial cost', both with 14% of responses. After this come 'simplicity, including ease of installation, use and maintenance' and 'technical support and maintenance', each with 13% of responses, followed by 'durability and robustness of the technology' with 12%.

Ali Faiz Boubaya / ICTs fostering innovation in professional development in Algeria

Africa's choice: digitise traditional knowledge or lose culture and development

Gaston Donnat Bappa

Gaston Donnat Bappa argues that African traditions and cultures, the foundations of the Continent's development, have been spoiled by five centuries of slavery and colonisation, so that their survival today is threatened by 'modern', drifting lifestyles. This leader of a rural community says the ancient, ancestral knowledge of Africa is still alive and the use of ICT is essential to protect and pass on identity-related knowledge for current and future generations.

External interference has alienated Africa over its long history

Immense disruption has been caused to the lives and development of African people by the slave trade between the 16th and 18th centuries, the resulting colonisation in the 19th and 20th centuries, and the neo-colonisation currently taking place. Today these things are more deep-rooted in Africans' lives than their own traditions and the structure of their ancestral societies. Yet these Africans are full of all the knowledge accumulated since man first appeared on planet earth in Africa several million years ago.

The alienation of African people is reinforced daily by an invasion of news and information from other cultures, particularly those of 'the West', which reach the population through the global media. This alienation is further exacerbated by an almost total lack of strategic national identity education programmes, which should be rooted in the culture and traditional, ancient knowledge of the people. Without such an identity, nations and their citizens are unable to distinguish what they should take from the other cultures' knowledge they receive.

Africa's culture and ancient, traditional knowledge are still alive

Africa today, more than ever before, is known for its traditions, which have stood the test of time. It is enriched by its ancestral customs and a unique myriad of languages, each of which contains specific ancient knowledge, which constitute a source of precious wealth for humanity. It is enriched by its indigenous peoples, its oral culture perpetuated by the 'griots' (story-tellers), its proverbs, myths and legends, its totems, sorcerers and patriarchs, and by its connections with the dead through funerary ceremonies and funerals. It is enriched by its animism at the source of its specific spirituality, its pharmacopoeia, whose proven effectiveness has been preserved by healers; by its unalterable, inexhaustible arts and crafts, its folklore, songs, dances, its communitarianism, and by the communicative 'joie de vivre' which characterises its people. Africa has so many assets and treasures for mankind, which still needs them today. It is imperative to protect them. African traditions are packed with provisions and laws for all stages of life: birth, adolescence, adulthood, old age, death and beyond, not to mention laws for women, men, marriage, work and many more. Since ancient times, these have helped all members of a community to live out their time in an acceptable manner and to preserve the species.

Advice on developing Africa through culture, tradition, ICT, science and technology

Africa must urgently seek ways to break into our globalising world as part of society and the information economy. Africa has the means necessary to steer its own development. In order to do this, traditional, cultural and historical knowledge must be given top priority in the education system, so that its citizens have the identity they need to organise and establish their lives in this 21st century. At the same time, intellectual development in all fields, particularly science and technology, must be pursued and strengthened. The true history of Africa, which has been distorted by those who have exploited it, must be restored.

The case of Africa's women illustrates this perfectly. Many people think African cultures are bad for women. This is wrong. African tradition is enriched by what women represent in communal life. Black African tradition is embodied in a woman, the Egyptian goddess Maat, who personifies order, truth, justice, equality, balance and righteousness. Women also play a key role as guardians of African culture and heritage. In African families, it is the woman who acts as the preserver of wealth, in addition to the fact that, in most traditional African civilisations, family relationships are matriarchal.

However, Africa's historic circumstances have put women in an extreme position. Slavery and colonisation meant that many males were either deported or killed as a result of forced labour. Women were thus in high demand for human procreation to give birth to more males. They were also sought after for many other tasks, such as agriculture, as men were no longer around to do it.

We must realise and understand all this today, in order gradually to reinstate African women in the central position they once held in community life and to give them back their independence. Africa's renaissance, which involves restoring this historic awareness, is an essential task, as argued so convincingly by Cheik Anta Diop, the legendary Senegalese anthropologist. To do this, Africa needs education on a vast scale, covering all levels. Only ICT can enable this to happen, so that Africans can find their way, no matter where in the world they live.

Traditional forms of communication, primarily oral transmission, tom-toms, human messengers or smoke signals, are disappearing. These methods of acquiring, passing on and preserving knowledge have enabled our culture and tradition to be carried down over millions of years. They are very closely related to the 'new' ICT in terms of the waves they use. It is imperative to protect them, and to use, on a large scale, modern media such as writing, radio, telephone, television, computers and, ultimately, the Internet.

To ensure technology is used effectively to promote and protect culture and traditions, and to give them a long-term future, creating local, digital content on a large scale is vital. It will be accessed by Africans themselves, as they are the main interested parties, and by the rest of the world. Without this local content, ICT tools will be nothing more than resonance chambers for foreign cultures seeking to perpetuate the alienation of African youth by gradually distancing them from their identity and creativity.

Implications of 21st-century technological progress for the perpetuation of traditional African cultures

Centres of education, development and expression of traditions and culture must be created in places where these traditions and culture exist, and enhanced with the appropriate ICT tools. In light of this, I close with two recommendations.

First, creation and development of radio-broadcasting and television receiving centres in rural communities is vital. A blend of mobile technology can enable a new era of rural community engagement in a variety of formats. Villages are the main places where ancestral knowledge is still alive. Rural populations can provide content themselves and transmit it in local languages. This can create great interest within communities, simply because the voice of one of their own can be heard on the radio, prompting discussions about important issues raised by a broadcast. Content can also be saved and reprocessed digitally, so that it can be retransmitted on the Internet for nationals living far away and for the rest of the world.

Second, production costs are falling, so that the creation, distribution and saving of local multimedia content is much easier. As writer Amadou Hampate Bâ so aptly put it, 'In Africa, when an old person dies, it is a library that burns down'. To ensure the living libraries that are the old patriarchs do not burn, the African states should encourage the establishment of real rural libraries in places where traditions are preserved, such as chieftainships, meeting places, patriarchates, cultural centres and museums. Computers will play a vital role in collecting and saving local content. In turn, wireless connections will enable rural libraries to be linked to regional and national centres, opened to anyone with Internet access, formulating and preserving a variety of content and facilitating education, research and innovation.

By firmly reconnecting with its traditions and culture through ICT, and by understanding science and technology, Africa will begin to emerge into the modern world more effectively.

Gaston Donnat Bappa is a traditional chief in Cameroon and an expert on rural communities. He is a senior software engineer and a consultant on ICT in education, as well as a bank executive.

3.3 What constrains ICT-enhanced learning and training at the country level?

The rapidly changing nature of the ICT-enhanced learning and training sector means that it is often defined by the factors constraining its growth and development. Of all the many challenges faced, the Survey sought to establish the most significant factors that are constraining ICT-enhanced learning in each country where respondents are working.

The most significant constraining factor is limited bandwidth (17%), followed by the lack of financial resources, inadequate human resource capacity and limited electricity, all with 11%. For the seven countries with more than 20 responses (Nigeria, South Africa, Kenya, Uganda, Zambia, Ghana and Tanzania) a country-specific analysis was conducted. The table below demonstrates which countries consider each constraining factor to be most significant or least significant. (This table should not be interpreted as showing what respondents from each country perceive to be the most significant constraint, but rather showing which country is most and least likely to identify this as a constraint compared to the other six countries.)

The most significant constraining factor is limited bandwidth (17%)

Key constraints to eLearning at a national level

Rank	Constraining factor	%	The country **most likely** to identify this as a constraint	The country **least likely** to identify this as a constraint
1	Bandwidth is limited	17	Zambia	Kenya
2	Financial resources are lacking	11	Zambia	Nigeria
2	Human resource capacity is inadequate	11	South Africa	Tanzania
2	Electricity is limited	11	Nigeria	South Africa
5	Appropriate training is lacking	8	Kenya	Uganda
6	Appropriate hardware is lacking	7	Tanzania	Ghana
7	Lack of trained teachers	6	South Africa	Nigeria
8	Appropriate software is lacking	6	Tanzania	Ghana
8	Political will is lacking	4	Nigeria	Uganda
8	Corruption and theft of resources	4	Uganda	Zambia
11	Lack of good quality educational content	4	Tanzania	Nigeria
12	Pressure of poverty	3	Kenya	Uganda
12	Sustainability is not prioritised	3	Kenya	Tanzania
12	Leadership is lacking	3	Nigeria	Uganda
15	Instability and lack of security	1	South Africa	Zambia
15	Other factors	1	N/A	N/A

Photo: Jan-Willem Loggers / Woman receiving health question

How the education sector produces eWaste in Kenya and why it should be responsible for eWaste management

Leonard Mware

There is a growing crisis in eWaste management in Kenya. Even though there are some emerging initiatives that show a potential route forward, these remain few and far between. What is needed, among other measures, is a concerted, systemic effort across the education community on the responsible and sustainable use and disposal of electronic products in Kenya.

A Study by UNEP (2009) estimates the current eWaste generated in Kenya at 11,400 tonnes from refrigerators, 2,800 tonnes from TVs, 2,500 tonnes from personal computers, 500 tonnes from printers and 150 tonnes from mobile phones. A second study commissioned by Kenya ICT Action Network (KICTANET) in 2007 estimated the eWaste generated in the Kenyan Capital Nairobi at 3,000 tonnes per year. The disparity in these estimates shows that the quantity of eWaste production in Kenya is unknown. This suggests that, in addition to the dumping of electronic waste, Africa in general, and Kenya in particular, also generates their own eWaste.

It is estimated that about 50% of Kenya's computer market is made up of second-hand computers used in schools, cybercafés, small and medium enterprises (SME) and homes. Electronic waste is openly disposed of in dump sites with no regard to the health and environmental risks these may cause. Initiatives, such as the Waste Electrical and Electronic Equipment (WEEE) Centre started by Computers for Schools Kenya (CFSK), are trying to address this problem. Presently their efforts are still not effective, mostly owing to a lack of general awareness about the detrimental consequences of rising eWaste. For example, most stakeholders and eWaste disposal workers are not aware of the harmful substances that are discharged from eWaste such as mercury, cadmium and polycyclic aromatic hydrocarbons (PAH).

In a report entitled 'Worldwide Market for Self-paced eLearning Products and Services: 2010-2015 Forecast and Analysis' Ambient Insight (2011) projects that eLearning will grow at a rate of 16% per annum in Africa. This rapid growth is coupled with what The Economist describes as 'Africa's enthusiasm for technology,' a reference to the rapid growth in mobile phone usage in Africa. This raises the added headache of disposal of end-of-life mobile phones as electronic waste.

With rapid technological change comes rapid obsolescence as older technologies give way to new ones. Obsolete technologies are designed for re-use, recycling or disposal. Hewlett Packard (HP) estimates that eWaste is the fastest growing waste stream in many parts of Africa (Fetzer, 2009). However, this can be turned into an opportunity.

eWaste disposal is viewed as an opportunity for the growth of Small and Medium Enterprise (SMEs) in Africa. It is perceived at this stage as part of the informal sector, which creates low-tech, low-income jobs. Education institutions are better placed to conduct research on safer methods of disposal, the impact of eWaste on their communities and also training provision.

With the goodwill that education institutions have within society, their involvement in setting the agenda for eWaste management is critical. In Kenya, Masinde Muliro University of Science and Technology (MMUST) has taken the lead, in partnership with Computers for Schools Kenya and Computer Aid International, in launching a training programme on eWaste management.

MMUST is currently offering diploma-level training on eWaste management, which is a first in this part of Africa. This is a very good practical approach taken by the university and should be replicated by other educational institutions.

In general, universities and other educational institutions have a role to pay in creating awareness among a wide range of stakeholders through the media, workshops and seminars and research. This can lay the basis for the establishment of appropriate legislation, the attainment of improved processing techniques, the development of better and safer methods of eWaste disposal, and the inculcation of entrepreneurship skills through training.

It is only by developing the human and financial capacity of stakeholders involved in eWaste management that this problem can be properly addressed. Although the examples shown above are from Kenya, other African countries without similar interventions can learn from Kenya's experience. Similarly good practice examples from other parts of the world should be considered when developing a comprehensive plan of action in Africa.

Leonard Mware is the Executive Director of ICWE Africa, based in Kenya. He has more than 25 years of experience in ICT in education, information systems consultancy, telecommunication engineering, and as a university lecturer.

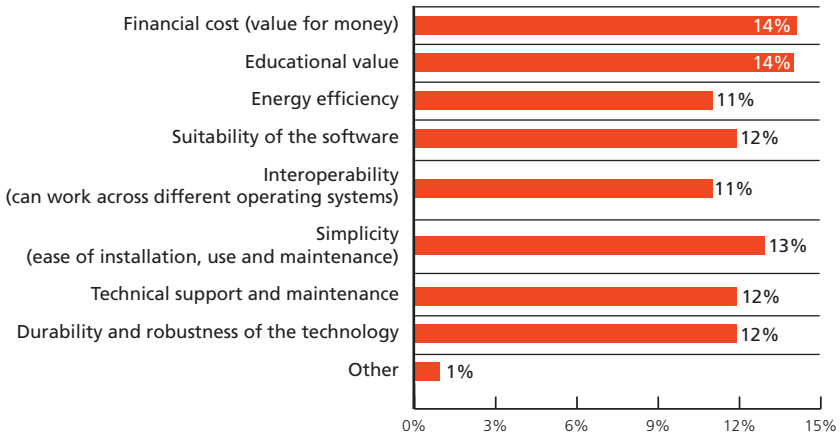
3.4 What determines ICT enhanced learning and training at the organisational level?

Respondents were asked to answer certain questions from the perspective of their organisation rather than their country as a whole. They were asked what the most influential factors are when delivering ICT-enhanced learning and training within their organisation. The following table ranks the answers showing the top priorities.

The most influential factors when delivering ICT enhanced learning and training – at an organisational level.

Rank	Factor	%
1	Access to appropriate content for ICT-enhanced learning and training	18
2	Infrastructure for ICT-enhanced learning and training: electricity, buildings, broadband	16
3	Professional development and training for ICT-enhanced learning and training	12
4	Access to affordable and reliable computers	11
5	Research on ICT-enhanced learning and training	7
6	ICT-enhanced learning and training in rural regions	5
6	Learning outcomes from ICT-enhanced learning and training	5
8	Sustainability of ICT-enhanced learning and training	4
8	The growth of mobile learning	4
8	Multi-stakeholder partnerships	4
11	Impact assessment	3
11	Monitoring and evaluation	3
11	Scalability	3
14	Social media	2
14	Profitability	2
14	Other	2

What is the most important factor when deciding on a technology access model?



As anticipated, different types of organisations emphasise different things as top priorities for delivering ICT-enhanced learning and training:

- NGOs are the most likely to identify rural regions, learning outcomes and scalability as top priorities;
- Government is the most likely to identify impact assessment and monitoring and evaluation as top priorities; and
- The private sector is the most likely to identify the growth of mobile learning, profitability and sustainability as top priorities.

Respondents were also asked what their organisations considered to be the most important factors when deciding on a technology access model. As demonstrated in the graph below there is a relatively even spread, with educational value (15%) being considered the most important factor across all sectors. This is followed closely by financial cost and value for money (14%).

There are slight differences between the priorities of each sector. When deciding on a technology access model:

- NGOs are the sector that most highly prioritises financial cost and energy efficiency;
- It is the government that most highly prioritises interoperability, durability and robustness of the technology; and
- It is the private sector that cares most about simplicity of use.

3.5 Key themes

3.5.1 Early learning is not (yet) a priority

The pie chart to the right shows the distribution of sectors where Survey respondents focus most of their work. It shows how the largest proportion of respondents (43%) works in higher education followed by the schooling sector (20%), compared to the early childhood development sector (1%).

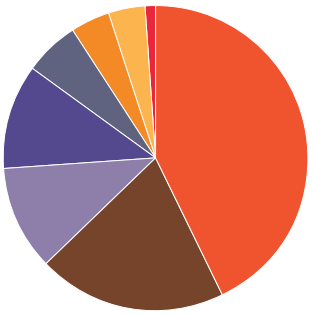
This suggests that the *eLearning Africa* network is more focused on work in higher education and schooling compared to Early Childhood Care and Education (ECCE). Out of the 447 respondents, only three indicated that they focus most of their work on ECCE and 18 said that they work across all sectors of education. The latter may also include the ECCE sector. The three respondents are from South Africa and Uganda, with one based in a government organisation, one in a NGO and one in a privately owned organisation.

The reason for the low score for ECCE could be attributed to the fact that the majority of respondents are based at public higher education institutions. It could also be a reflection of the emphasis on reaching Universal Primary Education (UPE) by African governments and their partners, as part of a drive to reach Education For All by 2015. This focus on reaching larger numbers of learners with UPE could well have been prioritised at the expense of other essential education sectors including ECCE.

This finding emerges against the backdrop of growing world attention on ECCE as an important priority for human development. In 2010, the first World Conference on Early Childhood Care and Education (WCECCE), held in Moscow, Russia, adopted a holistic view of ECCE with a focus on care, education, health, nutrition and security of children from zero to eight years of age. The conference discussed research evidence that confirmed how ECCE provides an indispensable foundation for lifelong learning, better health, improved educational efficiency, gender equity, employability and better quality of life (UNESCO 2011c).

The *eLearning Africa* 2012 conference in Cotonou, Benin had two dedicated sessions considering the integration of ICT including mobile phones in ECCE. This is hopefully a sign that ECCE is beginning to feature more prominently within the discourse of the *eLearning Africa* network. Furthermore, the international aid community appears to be increasing their investment in this sector, with support for projects and initiatives that focus on early reading in Africa. Integrating ECCE programmes effectively with ICT offers a stronger possibility for this first Education For All goal to be reached.

What level of education do respondents work in?



- Higher Education 43%
- Schools (primary, middle or secondary) 20%
- Technical Vocational Education and Training 11%
- Equally across all education levels 11%
- Other 6%
- Equally across all education levels 4%
- Informal Education 4%
- Early Childhood Development (pre-primary) 1%

Photo: Mohamed Adama Thiam / Boosting the education of girls through ICTs

Early reading acquisition using mobile learning in Africa: the case of Graphogame adaptations in Kenya

Carol Suzanne Adhiambo Otieno

With renewed global attention on the importance of enhancing early reading, few studies address the extent to which mobile phones can play a supportive role, especially in local language acquisition and the use of gaming platforms. This is the story of one such initiative in Kenya.

Graphogame was originally developed as a research tool to study reading acquisition by the Jyväskylä Longitudinal study of Dyslexia (JLD). It is based on the Finnish version, Ekapeli. Adaptations of this game have been developed for research use through mobile phone technology in Africa in several Bantu languages, namely Kiswahili, Kikuyu, Cinyanja and Tonga. The game is ideally designed for children who are six years of age and above because research shows that during this time the child should have developed phonological awareness ability. The game involves a child hearing sounds in good quality headphones and at the same time several items appear on the screen of the phone. The child is then required to choose the item that corresponds to the sound he/she hears. The game introduces first the spoken phonemes and then syllables which are eventually followed by words. The game is intended for children for whom reading acquisition is a real challenge and, therefore, making the game enjoyable is an important goal. This helps to keep children interested in playing and they are then motivated to learn by the success they experience in the game (Lyytinen et al., 2009).

In Kenya, research into the effectiveness of the Kikuyu and Kiswahili versions of Graphogame was completed in 2011. Both studies showed that the children using it significantly improved their spelling and orthographical knowledge after a minimum of 3 hours, involving playing the game for 10 minute periods several times a day for 4 days. In addition, teachers reported that the children who played the game had an increased attention span in task performance. For the purpose of this research, the children who participated were provided with mobile phones.

According to the Communication Commission of Kenya (CCK), Kenya had a total of 25.27 million mobile subscribers in 2011. However, the majority of users are located in urban areas. The situation in rural areas is different. A general survey around the two low income urban and rural areas where Graphogame research took place to determine the level of mobile phone penetration for future implementation of the game showed that fewer than 30% of the families in the rural area owned at least one phone and the parents who owned the phones were not willing to give them to their children, even under supervision. In the urban area, 50% of the families owned mobile phones but very few had phones that cost more than USD20 each and these phones did not have the software to support the Graphogame technology.

This research has shown that mobile learning can assist early reading, especially because children enjoy using mobile phones. Nonetheless, it is clear that more resources have to be invested in the accessibility of appropriate mobile phones and their maintenance, particularly in rural areas, for the vision of mobile learning for early reading in Kenya and Africa to be realised.

Carol Suzanne Adhiambo Otieno is from Kenya and is currently completing doctoral research in Neuropsychology on the topic 'Teaching early reading in local languages using mobile technology in Kenya' at the University of Jyvaskyla, Finland.

The challenges faced by Portuguese-speaking universities in Africa

Jorge Ferrão and Stephen Thompson

A common challenge faced by members of the Association of Portuguese Language Universities (AULP) and by other higher education institutions around the world is providing access to up-to-date and relevant academic literature. In an age where more research is being published than ever before, we need to move with the times and recognise that we should change our approach to tertiary education.

As a university, we have a duty to ensure that our students and staff are provided with the most relevant and recent scientific information, in order to teach, study and conduct research. Only 20 years ago, almost all literature was produced in hard copy, on the printed page. The purchase, delivery and constant renewal of books and journals is undisputedly expensive. The time lag between when something is printed and when it is available to students often compromises their education. In addition, conducting comprehensive research using paper systems is time-consuming and can prove to be a science in itself.

eLearning provides an opportunity to overcome some of these challenges and to level the global academic playing field. It presents us with a reality where a relatively young university in Northern Mozambique can offer students the same access to the most recent and relevant journal articles as a well-established institution in England with centuries of history in research.

Let us give an example. In Mozambique, one of Universidade Lúrio's four faculties, the Faculty of Health Science, is a member of the HINARI Access to Research in Health Programme Network. This Internet-based programme was developed by the World Health Organisation (WHO) together with major publishers. The objective is to provide health science students, teachers and researchers in countries such as Mozambique, with the access to the literature they require and deserve.

The portal provides access to more than 8,500 journals and 7,000 e-books in 30 different languages, all of which can be downloaded for free. Before the dawn of eLearning and the Internet, such a resource could only be dreamed about. The Faculty of Health Science is home to the courses of medicine, dentistry, nutrition, pharmacy, nursing and optometry. The beauty of the HINARI portal is that it provides information across all disciplines in health science. A journal article, published in New York, can be downloaded on the same day that it is made available by a student from any one of these courses, without having to pay a fee. The Internet reduces the barriers of time and cost, which previously restricted our students and staff from progressing.

Although eLearning is undoubtedly revolutionising the way in which we teach, learn and research, it does not come without its challenges. Universidade Lúrio and the other AULP members are only too aware of the importance of upgrading our information communication technology systems, to make the most of what this new age of Internet-based academia has to offer. This includes faster Internet connections, more computer facilities on campus and the professional expertise to make sure we are optimising the use of our ICT systems.

Any developments in ICT within a university should be sustainable. We must not implement systems we cannot sustain. All too often, when people think of sustainability, they think only of the infrastructure. At UniLurio we also believe that expertise and knowledge must also be sustainable. Through a programme called Primeiro Contacto, which means First Contact, our undergraduate students work with children in the city of Nampula to improve their computer skills. ICT competency is improved at the grass roots level. We believe that no child should be prevented from pursuing further education or employment because of a lack of ICT skills. By starting the eLearning process early, by the time children are ready to enrol in higher education, either at our own institution or another, they will be in a position to take full advantage of the ICT systems, thus making the process sustainable. In the modern world, knowledge of computers is as essential as any other subject. The power of computing should not be restricted to a select few. Knowledge transfer of ICT skills through programmes such as Primeiro Contacto ensures future progress in this field.

We will finish with a quote from the Irish poet W. B. Yeats, who said with great profundity, 'education is not the filling of a pail, but the lighting of a fire'. Although eLearning was a concept yet to be developed in the time of Yeats, we believe it is inspired by the sentiment of his remark, by providing the matches to light that fire.

HIRANI is available at www.who.int/hinari/en/

Prof. Jorge Ferrão is President of the Association of Portuguese Speaking Universities (AULP), Vice Chancellor of Universidade Lúrio.

Mr. Stephen Thompson is Project Manager for the Mozambique Eyecare Project, Optometry Course, Universidade Lúrio.

Financing and sustainability of ICT solutions in higher education in Benin

Raphael Darboux

Benin's universities face many challenges. The University of Abomey-Calavi (UAC), in particular, is faced with a growing student population, low teacher numbers, limited bandwidth and occasional power cuts. Alongside this, new university sites are being chosen in order to decentralise major institutions and establish training facilities in the most suitable locations; there is a lack of lecture theatres and other rooms capable of housing students at all sites, and Benin's decision to adopt the LMD ('Bachelors, Masters and Doctorate') system have all exacerbated the problems faced by universities.

However, the need to continue providing high-quality initial education and to enhance on-going training is imperative for our development. A sustainable response is urgently required.

One of the responses being considered is the use of ICT in conjunction with traditional methods of educational delivery. This decision will be determined by the opportunities offered by technologies, which are progressing and becoming increasingly accessible and simplified for users. The decreasing cost of technology is putting new solutions within our reach. Students have demonstrated their ability to handle all sorts of technological gadgets for learning, and a growing number of teachers are being trained in ICT and educative pedagogy. Combined with this, there is growing political will to build a digital network for higher education and scientific research. This has led to the imminent establishment of an exchange facility in Benin, alongside the development of partnerships with the private sector within higher education.

A special teacher-training programme has been devised to supervise and train students. This programme will train teachers to produce digital educational resources to ensure appropriate teaching and learning at universities without being dependent on permanent teachers. In the first phase of this initiative the teachers and courses are selected. The courses already approved for universities are listed. The scientific content may be enhanced by members of the Benin National Academy of Science, Arts and Letters and the contributions will be discussed with appropriate education officers.

Following this, phase two will focus on production and adaptation of digital resources. The target audience comprises teachers from schools, institutes and faculties addressed by this programme. Digital teaching resources for the courses will be produced as part of training and personalised monitoring workshops for each teacher involved in the programme. Each five-day session will give the 20 people, attending the training workshop access to fully or partially digital courses. Each teacher will have personalised supervision in the production of their teaching materials. Whenever necessary, the trained teacher will be able to create different courses directly, using technical equipment from the African Virtual Campus, benefitting from the existing, free resources.

The third phase of the initiative will focus on circulating content among students. An information leaflet will be compiled by the African Virtual Campus for the students, and documentation on the courses will also be made available. The products will be duplicated for the various teacher action sites involved in the programme. Basic IT and audiovisual equipment will be supplied at each site for course repeats as sufficient bandwidth becomes available.

The fourth phase will evaluate the initiative and consider how effective courses adapted to this new teaching method have been. It will be performed with the students and gradually develop an IT and Internet network on the campuses, to ensure the sites are provided with new resources.

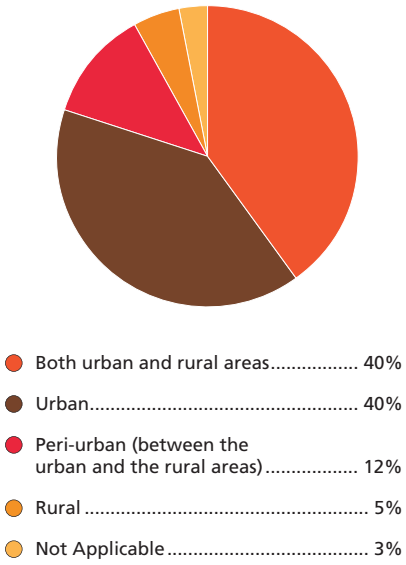
The overall vision is to create a digital network for higher education across Benin, beginning with local networks at a site level and ending with a national network. This national higher education network will be connected to the existing supranational network currently being modified by the government. Financing such an initiative requires a step-by-step policy. Good trainer training is a pre-requisite for supervising and monitoring students and its costs are shared between the ministry, the universities and the technical and financial partners. Creating this network involves the government, universities and the private sector operating in effective partnership, each contributing appropriate expertise, equipment and funding.

Dr Raphael Darboux is Professor of Histology-Embryology and Cytology in the Faculty of Health Sciences, Cotonou, University of Abomey, Benin. He is also Project Co-ordinator of the Digital Network of Higher Education and Scientific Research.

3.5.2 Urban bias, rural hope

When asked what is the main physical environment in which respondents are using ICT-enhanced learning and training, only 5% indicate that they work exclusively in rural areas. This compares with 40% who say that they work in urban areas and 40% who indicate that they work in both rural and urban areas.

What is the main environment in which respondents work?



The World Bank estimates that 70% of Africa's population lives in a predominantly rural environment (2011b). With this majority, and with poverty levels still very high in rural communities (IFAD, 2011), why is it that eLearning interventions remain limited in rural areas where they are needed most? Under conditions of poor infrastructure and a shortage of human, intellectual and financial resources which characterise many African rural communities, integrating technologies becomes significantly more challenging and complex. Perhaps for this reason, most interventions are focused on environments that can offer higher degrees of functionality, consistency and sustainability. Often these are urban and peri-urban environments in Africa.

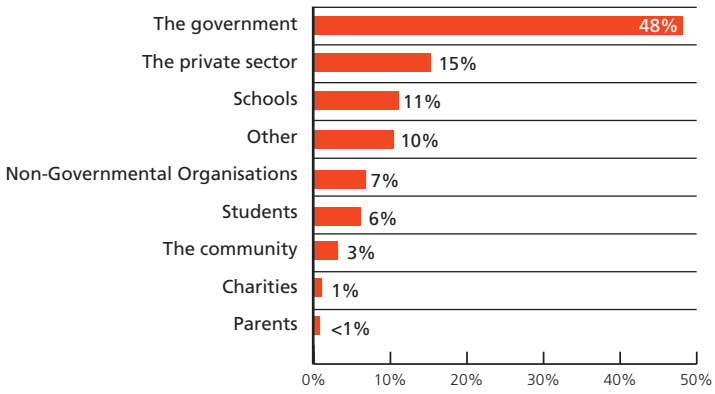
The emphasis may also demonstrate that technologies have not yet evolved to be more affordable and work more effectively and sustainably under the more challenging conditions of rural Africa. In her opinion piece, Otieno discusses how mobile phones had not reached the rural communities in Kenya where her research was located, and compared this with higher levels of access in urban areas of Kenya at the time. This may also be linked to the perception amongst those promoting ICT-based interventions that urban settings are more likely to provide successful programmes because of the levels of available infrastructure. This perception is flawed because urban-based initiatives are also known to experience infrastructural and technological challenges. Yet urban areas remain more attractive for new interventions than rural areas.

However, a number of Survey respondents also express the hope and anticipation that ICT access including Internet connectivity will expand their reach to rural communities over the next five years. This notion is explored in more detail in the opinion piece by Eric Osiakwan. If this is the case, then it opens up greater opportunities for expanding education access to African rural communities, including quality ECCE. Undoubtedly, this remains a crucial challenge for the *eLearning Africa* network in the next stage of its growth and development.

3.5.3 Government - the most important change agent

The Survey sought to establish what respondents consider to be the most important change agent for accelerating ICT-enhanced learning. The dominant response is that they consider the government to be the main accelerator of change in this sector. The reason for considering government as the leading accelerator of change could be because the majority of respondents are based in public education institutions. This suggests that respondents consider the roles that governments play to be important and influential in shaping the way technologies are produced and consumed in their countries. The 215 respondents who vote in support of governments as the most important change agent are mainly from Nigeria, South Africa, Kenya and Uganda. Many respondents consider government policy as being very

What is the most important change agent for accelerating ICT enhanced learning and training?



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www.Shujaaz.Fm

...MULTI-AWARD-WINNING SOCIAL COMMUNICATIONS

..FROM KENYA!

I'VE BUILT A PIRATE RADIO STATION IN MY BEDROOM AND I BROADCAST EVERY DAY ON **23 FM STATIONS**...

...AND EVERY MONTH I GIVE AWAY 500,000 **COMIC BOOKS**...

... I'M REALLY BIG ON SMS & **FACEBOOK** & TWITTER

... & I JUST LAUNCHED MY OWN **YOUTUBE** CHANNEL TOO!

BUT I'M NOT ALONE; SOME OF MY FANS FEATURE IN THE SHUJAAZ STORY EVERY MONTH AS WELL

THERE'S **MARIA KIM**. SHE'S AN ORPHAN FROM THE CITY SLUMS WHO'S STRUGGLING TO MAKE SURE HER LIFE WORKS OUT

THERE'S **CHARLIE PELE**. HE'S FROM A SMALL FARM IN RIFT VALLEY & HE KEEPS FINDING GREAT IDEAS THAT CAN BOOST HIS FAMILY'S HARVEST

(THAT'S WHEN HE'S NOT PLAYING FOOTBALL)

MALKIA IS FROM COAST. HER MUM IS IN LOCAL POLITICS & BUSINESS & IN FACT EVERYWHERE SHE CAN MAKE EASY MONEY. MALKIA'S A REBEL BUT SHE HATES IT WHEN PEOPLE GET RIPPED OFF!

EVERY MONTH WE FOLLOW 4 NEW STORIES

4 BIG NEW IDEAS.

BY MIXING SO MANY MEDIA, WE GET TO **BIG SCALE** QUICKLY:

SINCE WE LAUNCHED IN 2010:

WE'VE GIVEN OUT **13,000,000** COMIC BOOKS

INSIDE THE NATION NEWSPAPER & FROM MPESA KIOSKS & YOUTH CLUBS ALL OVER

AND WITH AT LEAST 10 READERS COUNTED PER COMIC BOOK (THEY'RE HIGHLY PRIZED HERE, COZ SUCH THINGS ARE RARE),

THIS MEANS **130 million** "READS" IN 2 YEARS

WE'VE AIRED **7,176** RADIO SHOWS

ON 23 PARTNER FM STATIONS

WE'VE HAD **750,000** VIEWS & COMMENTS

ON OUR FACEBOOK PAGE

NOW WE'RE PARTNERING WITH EXPERTS, ORGANISATIONS & COMPANIES FROM ALL OVER THE WORLD TO HELP BRING OUR KENYAN AUDIENCE PRACTICAL, INSPIRING IDEAS THEY CAN USE TO IMPROVE THEIR LIVES:

Entrepreneurism
Comedy
Banking
Acting against hate speech
Better safer schools
Writing a business plan
Talking to authority
Making money
Opportunity
Impunity
Starting a small business
Romance
Accessing finance
School councils
Budgeting
Hospital stock-outs
Saving money
Elections
Slum farming
Peace
Selecting good seeds
Getting heard by local Govt
Changing weather
Demanding accountability
New crop varieties
Getting better services
Good water supplies
Livestock vaccines
Organising for citizen agency
Priming seeds
ID cards
Action
Keeping livestock

AFTER TWO YEARS SHUJAAZ HAS NOW BECOME A TRUSTED SOURCE FOR **ENTERTAINMENT & EDUCATION**

36% OF FANS SAY THEY HAVE PUT INTO PRACTICE IDEAS THEY LEARNED IN SHUJAAZ

62% OF SECONDARY SCHOOL KIDS IN A RECENT KENYA-WIDE SURVEY SAY THEY FOLLOW SHUJAAZ **EVERY MONTH**

AND **32%** SAY THEY'VE TALKED TO OTHERS ABOUT WHAT THEY'VE LEARNED

WE'VE HAD FEEDBACK FROM FANS IN **100%** OF **KENYAN COUNTIES**

WE NO LONGER **PUSH** OUR STORIES; THE AUDIENCE **PULLS** THEM FROM OUR HANDS

SHUJAAZ IS PRODUCED IN KENYA BY:

well told story

www.welltoldstory.co.ke
www.shujaaz.fm

In 2011 Shujaaz was awarded the One World Media Special Award for outstanding media from the developing world

one world media

2012 WINNER INTERNATIONAL EMMY® AWARDS

In 2012 Shujaaz was awarded the International Emmy Award for global excellence in digital media for children and young people

important and this links with the later analysis regarding political will and national policies. For example, a government-based respondent focused on the schooling sector in Zambia stated: '*if the ICT in Education Policy is adopted by government, we shall see more schools and stakeholders participate in the provision of ICT access which hopefully will help the adoption of ICT-enhanced learning*'. Similarly, a respondent from an international organisation based in South Sudan focused on higher education noted: '*I think we shall progress if we adopt a clear policy of integration of ICT in education*'.

This strongly articulated view that policy really matters is reinforced by a recent African Development Bank report which premises optimistic projections about Africa's future growth and development on healthy and courageous policy decisions that can influence the pace and shape of progress (Ware, 2012). Significantly, 15% of respondents instead believe that it is the responsibility of the private sector to accelerate change. This could be attributed to the role private sector companies are playing in producing and promoting the technologies that influence the education, training and development landscape in Africa. Many private sector companies, both international corporations and small start-ups, are playing influential roles in supporting education institutions with technology solutions that can improve education delivery, management and administration.

Photo: Andabi Amangi-Edomo / Riverside

It is striking that more respondents attribute 'other' as the most important change agent than NGOs, students, community, or parents. When answering 'other', respondents refer to universities, university management or the vice chancellor. Some also note the role of teachers, lecturers, or individual champions whilst others state that everyone or the 'society at large' are the main change agents.

The reference to other stakeholders or 'everyone' suggests that respondents also consider the value added by partnerships and collaboration between different stakeholders in catalysing change. Here the Survey information does not elaborate further and it shows that it is an important area for consideration in future surveys. The reference to government as a leading change agent can also be interpreted as an understanding that leadership by government is considered to be very important. Leadership, linked to political will, is highlighted as a key factor that will emerge in the next five years. This is explored in more detail in the analysis about the most significant eLearning changes over the next five years.

Why invest in using ICT in education in Africa?

Mike Trucano

Creative and innovative applications of ICTs have long been seen as important potential tools to enable educational reform processes improving both access to education, and the quality of that education. That said, let's be honest: based on their use to date, there is very little compelling, rigorously gathered evidence that ICTs can provide positive, cost-effective impact on the way education is delivered and practiced across Africa – nor on the impact of this use on student learning. Does that mean we should simply wait until we have incontrovertible 'proof' before moving forward?

Data from the World Bank (2011) suggest that much of what is happening in many classrooms across Africa is not yielding much impact. Business as usual, then, is not working. Might ICTs catalyse and enable 'business unusual', helping usher in new approaches to meet some of the most pressing educational challenges being facing? At the same time they might help learners achieve not just minimal thresholds for acceptable results, but also to develop the knowledge, skills and attitudes that will help make them both globally competitive and informed, ethical citizens of their local communities. This is the hope of many.

More often than not, and despite rhetoric to the contrary, most initial educational technology programs across the Continent to date have focused largely on the technology itself. They have placed very little emphasis on the practical implications of the use of ICTs to meet broad educational and developmental objectives, instead engaging more narrowly and tackling issues related to basic 'ICT literacy'. This has been an understandable and perhaps necessary first step in many circumstances, but it is far from enough. As African communities become increasingly digitised the question should be asked: to what extent will Africans rely on ICT tools created by others that are engines for economic growth and which assume increasingly large roles in daily life, and to what extent will they innovate, evolve and create these technology tools themselves?

We need to ensure that African schools not only graduate future consumers of ICT-related goods and services developed and marketed by firms from the rest of the world but, more importantly, educate future generations of innovators and entrepreneurs who will export their products, services and ideas across the continent, and to the world.

It is often hoped that key decisions related to the use and potential of ICTs in education are based on dispassionate and rigorous scientific analysis. However, we must concede that cold political calculus – such as politicians cutting ribbons at school computer labs - often plays a more decisive role. Fear and faith play equally important roles. How well we harness such fears, and tap into the aspirational components of such faith, are the challenges before us. These challenges must be faced head on by those in the education community who believe in the promise and potentially transformative power of technologies for African learners in 2012 and beyond.

Mike Trucano is Senior ICT and Education Specialist at the Human Development Network (HDNED) which is part of The World Bank, in Washington DC, USA

Photo: Boukary Konaté/ Mobile Internet in rural schools, Mali

3.5.4 African learners can learn more, better and faster with technologies

Survey respondents say that with ICT, African learners can learn better, learn faster, learn more, learn differently, learn on their own, learn together, learn inside and outside the classroom, learn in greater variety of ways and learn to be creative. These are responses to the question: *If you are interacting with students in your work, what impact is ICT having on them, both in the ways that they are learning and the ways that they want to be taught?*

The learners referred to are mainly school or university students in African schools or higher education institutions and respondents are mainly commenting as lecturers, teachers, education experts and consultants based on their experience with their students.

Respondents commented on how a different learning culture is emerging among learners. Features of such an emerging culture include references to the following:

- learners learning more independently, provided they are guided appropriately by teachers;
- learners producing knowledge themselves;
- more content is available to them via the Internet;
- ICT motivates them to learn;
- ICT makes distance learning easier;
- through ICT learners are connected to experts and have access to resources globally;
- they have access to quality learning material;
- ICT makes learning more fun; and
- learners show a better understanding of topics under study.

An executive manager of a Kenyan NGO working in the schooling sector says: '*[ICT] enables them to learn independently, helps them develop multiple intelligences, and helps them develop critical thinking and creativity skills, and develop inter-school collaborations*'. Similarly, a programme manager working for an international NGO based in Egypt says: '*I see technology as encouraging more group participation, more sharing, less willingness to be afraid of change',* while an educational technologist working in higher education in Botswana notes:

'*There is actually a shift in the mindset: most of my students are now used to the fact that ICT bridges the distance between me and them. I am currently having students in the tele-education programme who are geographically distributed. Those within can attend live delivery sessions which we archive for those who have other obligations hindering them from attending. This is to say there is no lesson missed and they are used to the concept.*'

The above provides anecdotal evidence of how a shift in learning culture is understood by teachers, lecturers and education specialists who interact regularly with African learners and their use of technologies. The key observations are mainly positive: of how technologies have catalysed a positive shift in the learning behaviour of learners and how learners themselves are appropriating technologies to define the ways they learn; the shifts in pedagogies that are emergent and how different cognitive capabilities and skills are being acquired with the support of new technologies. Further exploration is required to explore whether these attributes are peculiar to different African contexts compared to other countries in the world.

Survey respondents particularly commented on the relationship that learners have with technology. Some say learners are comfortable with it, others that they are fascinated by it, and one eLearning specialist based in the Kenyan government aptly stated that youth and learners are fearless with technology: '*They are digital natives and hence want to participate in the creation and management of learning environments. Teachers have to change to accommodate this new change*'. In characterising this relationship with technology, an educational technologist based at a South African University stated:

'*Students are of a new generation where electronic communication and electronic access to materials become a habit and a way of living. It reduces the cost of textbooks. Furthermore students have difficulties looking after text books because of conditions at home. With electronic access, they can have access anywhere, any time and that makes learning much more accessible to them.*'

These comments resonate with the views expressed by Tanja Bosch in her opinion piece on youth and social media and they raise questions about whether the behaviour of African 'digital natives' is unique and different to their youth counterparts in other developing countries.

African youth, identity formation and social media

Tanja Bosch

While mobile phones were originally designed for Western business executives (Eagle, 2009), today the vast majority of mobile phone subscribers live in the developing world, with Africa showing growth rates faster than the rest of the world (Mensah, 2009). In most developing countries, and particularly countries in Africa, mobiles provide a solution to the challenge of poor access to fixed telecommunication infrastructure. Limited access to fixed broadband Internet across the Continent at 0.2 per 100 inhabitants is low compared to 25.8 in Europe and 15.5 in the Americas (ITU, 2011). But the widespread availability of mobile phone subscription increasing from 12.4 to 53 per 100 inhabitants (ITU, 2011) in less than half a decade provides an opportunity for mobile broadband access.

Social media use on mobile devices has also increased on the Continent (Essoungou, 2010). The rise of social media in Africa has probably been most documented with reference to the Arab Spring, and the use of online social networks for political activism. But what role have African youth played in these developments, and how do they use social media in the formation of their own social and political identities?

Discussions of young people's use of mobile phones or social media often stress the impact of mobile media, as it allows youth to escape the demands of existing social structures. There has been a subsequent rise of a global mobile youth culture based on peer-to-peer networks, with its own language of texting (Castells, 2007). This youth culture refers to the specific system of values and beliefs that inform behaviour in a given age group so that it shows distinctive features vis-a-vis other age groups in society. Increasingly, youth see mobile communication as an adequate form of expression and reinforcement of their collective culture (Castells et al., 2007).

In Africa, a wide range of social networks is used, with location-based programmes such as Foursquare increasing in popularity. However, it is Facebook, Twitter and mobile messaging service MXit (most prevalent in South Africa) that are among the most popular. Young people increasingly use social media for the management of their relationships, self-representation in the form of online personae, and personal identities. Facebook, for example, provides young women with a space for 'playing' in which they can expand real world conversations and share relationship dramas. In particular, they use it to expand friendships 'beyond the family gaze with the potential to host expressions of feelings or experiences which may be unacceptable elsewhere' (Davies, 2006 p.63). Young men and women use social media as virtual spaces in which they practice and 'perform' personal and collective identities, with particular reference to gender, sexuality, race and class. Performativity is not a singular act, but a reiteration of a set of norms. Online spaces such as Facebook become the scene for new discursive conceptualisations of identity.

African youth's use of social media has thus been predominantly social – and seemingly not overtly political. Besides the isolated incidents of protests mobilised by social media (and not primarily by youth), the general use of social media by African youth seems to be primarily focused on the development and maintenance of social networks. But perhaps the personal is indeed political. The double articulation of online and mobile social media for youth means that in the absence of physical spaces, these virtual spaces become communities of practice and meso-public spheres. However, the widespread use of mobile phones and social media in Africa indicates its potential for addressing pressing development issues. To some extent this has already been realised – for example, the M-PESA online banking payment system, which originated in Kenya, opening up new opportunities for small businesses and supporting person-to-person money transfers in an economy where a breadwinner often supports an extended family located miles away (Huges and Lonie, 2007). Similarly, in Zimbabwe citizens actively participate in election campaigns and monitoring processes (Moyo, 2010); while in other parts of the Continent, farmers use mobile phones to learn the prevailing prices for produce in major markets and obtain crucial information in negotiations with middlemen; and healthcare workers can summon ambulances to distant clinics via mobile phone, or access critical information using the Internet (LaFraniere, 2005). The use of cellphones and social media in Africa thus point to its potential to address key issues in education (for delivering content and learning), food security (through sharing of information and knowledge to farmers), and the environment (for improving adaptation to increasing climate variability), debates which youth should be a part of, through the formation of their identities and use of social media on mobile phones.

Dr Tanja Bosch is a Senior Lecturer at the Centre for Film and Media Studies, University of Cape Town, South Africa.

A few respondents also comment on the impact that ICT is having on the performance of learners in the classroom and in test scores, and the way in which it is increasing their motivation. A teacher at a girls' school in Kenya stated:

'It is motivating and exciting. It has improved class participation, students' content retention and retrieval shown by improved performance in exams. It has created a desire to learn even when the teacher is not present. It has brought the reality of the world closer to them. In fact, I am working on problem-based learning and multiple intelligences for the 21st century learner with my girls. Physics and chemistry are now fun.'

Interestingly an eLearning consultant working for a government organisation in Uganda commented on the impact ICT has had in his country: '*Research shows that a few rural Ugandan schools that use the most basic ICT-enhanced learning have experienced fewer drop-out rates. Students confirm that ICT-enhanced learning has enabled them do research. Sometimes if the teacher is not sure, they are able to look up the answer on the Internet henceforth; this makes learning an exciting process.'*

Respondents also commented on some perceived negative consequences and expressed concern with the continuing lack of access to technologies. An NGO representative from Benin stated that ICT makes learners lazy, while a lecturer from a Namibian university said that learners are still not optimally using technologies: '*They still are not using the resources like free journals enough. You still need to read and know how to use the content. Academic reading skills still remain an issue*'. Similarly, a lecturer from the University of Ibadan, Nigeria noted that *'mainly, I find that students are feeling left out because most do not have a computer or Internet access'*.

Thus, whilst those learners who have had access to ICT seem to demonstrate that the technologies are having a positive impact on the way they learn and their learning behaviour, teachers and lecturers are also aware that technology access remains a privilege and that many learners are still excluded from such access.

The Survey also provides contradictory evidence about the leading role of youth in eLearning. Respondents are overwhelmingly positive regarding the impact that eLearning is having on learners, suggesting that they are taking the lead in shaping the changes in the way they learn. When asked about the next five years, a few respondents also suggested that students and youth will lead the way on how and when they learn with ICT. However, when asked about the key change accelerators in ICT-enhanced learning, only 6% of respondents believe that students are the key change accelerators.

It would appear that the former reflects what is happening spontaneously among young people and the latter is in response to the question of who plays a leading role from a nation-wide, policy perspective, which is why governments feature more prominently. But governments are often also parents who have children in schools and colleges. The Survey also reveals that respondents think parents are not major players in accelerating change in eLearning in Africa. It is possible that this is because parents have tended to be more reactive to the use of technologies by their children.

Photo: Christelle Scharff / Learning Collaboratively with Mobile Phones in Kindergarten

Teaching Cape Flats ex-gangsters and moms how to tweet and blog for change

An interview with Marlon Parker

The eLearning Africa 2012 Report *(eLAR) speaks to the dynamic Marlon Parker, a young self-made leader, social entrepreneur and a founder of RLabs based in Cape Town, South Africa.*

eLAR: Marlon, what inspired you to initiate the RLabs initiative?

The journey of RLabs began in 2007 when I realised my home town was lacking a story of hope. I grew up on the Cape Flats, a vast sprawling flatland in Cape Town, which was a construction of the Apartheid era in the 1950s where 'non-whites' were placed after forced removals from 'white areas'. Since then, the Cape Flats developed and festered like a social sore on the body of beautiful Cape Town, and became associated with a 'criminal economy' and unacceptable impoverished communities.

The absence of hope here inspired me to work with Roger Petersen, who is now Chief Community Advisor to RLabs. We identified drug addiction (especially to Crystal Meth known as Tik), gang activity, the lack of education and unemployment as critical problems in our community. We started to train former drug addicts and gang members to use social media to share their stories. Since many of them had no formal education or exposure to technology, this emerged as an important catalyst to learning.

We offered basic web literacy training to community members, many of whom lead extremely difficult lives. They learned how the Internet can support their personal growth and well-being. Monique, a young participant who was addicted to drugs and was suicidal and unemployed, was introduced to RLabs through Impact Direct, a local organisation. She attended our first social media course in 2008 and after graduating, she joined RLabs as a full-time facilitator. She initiated her own social media start-up where she manages a blog (http://shesthegeek.co.za) that won the award for best technology blog in South Africa. She now writes reviews for a variety of mobile and other companies; she started a digital programme for vulnerable, abused women and she appeared on television and other media channels on a number of occasions. Today she is a World Economic Forum Global Shaper.

eLAR: Tell us more about the RLabs initiative and the communities it is targeting

RLabs have always targeted 'Communities in Tension (CiT)', communities that are affected by HIV/AIDS, substance abuse, unemployment, stress and depression. Our approach is based on Education, Empowerment and Equipping through our RLabs Academy, creating an environment for community members to change their lives and communities through new ideas and social enterprises.

Our Geeky Moms programme has grown explosively. Every week women, aged between 19 (young mothers) and 85 (grandmothers), of which some have experience of abuse and many have no formal education, gather to share their stories using social networks. Not only do they learn about blogging, Facebook and Twitter, but they also create a livelihood through using those skills to do work for smaller businesses through the RLabs employment project, the Social Media Factory. The Social Media Factory allows women to manage companies' social networks via their mobile phones and they generate an income based on the work they produce. These women leverage these tools for communication in order to improve their lives and the well-being of their families.

eLAR: What projects have worked well since you started and why have these worked well?

The RLabs Academy and our Mobile Counselling Service have been our most successful projects. The Academy offers 20 courses including social media courses such as the Geeky Moms programme.

Our Mobile Counselling Service has been a flagship project where counselling services are offered to people struggling with depression, drug addiction etc. It started as a project to support a local school which had students experimenting with drugs but who did not have access to appropriate counselling services. Many of the counselling centres could not accommodate them and had a waiting period of six months to a year. Our counselling service allows young people to communicate via a chat platform, with trained counsellors in the RLabs network.

Since starting this project, RLabs has served more than 2.5 million users through its mobile support services and has trained more than 200 people across South Africa in the use of the technology developed by RLabs and its partner JamiiX. One of the main reasons why this has worked is because we identified community champions to drive the projects and to be sustainable, and we train our champions to empower others.

eLAR: What are your future plans for RLabs?

We have already replicated the RLabs movement in other countries on the Continent such as Namibia, Kenya and Nigeria. Our plan is to grow into a global movement that has a presence on every continent and to empower more people to be the change in their communities through education and innovation. We plan to setup 100 RLabs hubs all over the world by 2015, growing a global innovation academy and social enterprise.

eLAR: What message do you have for budding African entrepreneurs??

They should never give up and always follow through with their ideas - the best way to change the world is to start changing one person's world.

For more information on RLabs, visit http://www.rlabs.org/

3.5.5 The place of radio

Less than 2% of all respondents say that radio is the educational technology that they make the most use of. In contrast, 25% say computers and 21% specify the Internet as their primary technology tool. Similarly, when asked how to define ICT-enhanced learning and training, only 2% of respondents use the word 'radio' within their definition. This absence of the radio amongst the ICT-enhanced education network is of note considering that radio is the most widely accessible ICT across the Continent. For those countries where data is available, the majority report weekly listening figures of more than 90% of the total population (BBC 2006 p.23). The following opinion piece from Kamlongera and Yasin explores the ongoing place of radio and the implications for the EFA goals. There is significant educational potential in the convergence of radio and mobile technology, with some smartphones now being built with radios embedded. Indeed, 'the recent explosion in mobile phone ownership and the ever increasing reach of GSM networks has been a significant advantage for radio in Africa' (Myers 2008 p.26).

Why radio still matters

Augustine Kamlongera and Said Yasin

Radio remains the most widely accessible ICT option across Africa. But this is often forgotten in an environment where headlines are dominated by the spread of mobile phones and the Internet. In this article, Kamlongera and Yasin argue that radio continues to play a vital role in the provision of good education.

Despite significant challenges, substantial gains have been made in providing universal access to basic education in many countries in Africa. Unfortunately, quality has often either suffered or has not improved as a direct result of scarce resources being directed to expansion. Therefore, there is an urgent need for an increased focus on quality measures.

One of the cheapest and most effective solutions to the challenge of providing quality is Interactive Radio Instruction (IRI), also known as Interactive Audio Instruction (IAI). IRI is a methodology and a tool that uses triangular teaching and learning processes, involving a radio or an MP3 player to deliver educational content to learners in an active learning mode that is facilitated by a teacher. Combining the reach of the radio with this pedagogical approach has been successful in many countries in all aspects of basic education and teacher training. Time and again, IRI has been shown to improve the quality of teaching and learning, whilst also increasing equality of opportunity by improving access for 'out-of-school' children and those in 'hard to reach' communities. Evaluations from Malawi have shown that the use of IRI results in significant learning gains, improved use of teaching and learning materials by teachers, increases in learners' participation and improved skills in the teaching of abstract concepts by teachers. Results from other studies in Zambia, South Sudan, Haiti, Somalia, and India have shown that children who were exposed to IRI literacy and numeracy instruction made significant gains over those who didn't participate in the programmes (Ho and Thukral, 2009). It seems that English language learners make a particularly dramatic improvement through using IRI, with learners in Zambia, Sudan, Pakistan and India outperforming their counterparts in control schools (Ho and Thukral, 2009).

Whilst IRI approaches alone will not solve access and quality issues, evidence has shown that IRI technology has successfully expanded access and improved quality by providing well-designed, pedagogically sound, learner-centered content to boys and girls in both rural and urban settings. Perhaps most importantly of all, this can be achieved at a cost of around USD 2-3 per student per year, a fraction of the cost of traditional approaches to education (Potashnik and Anzalone, 1999).

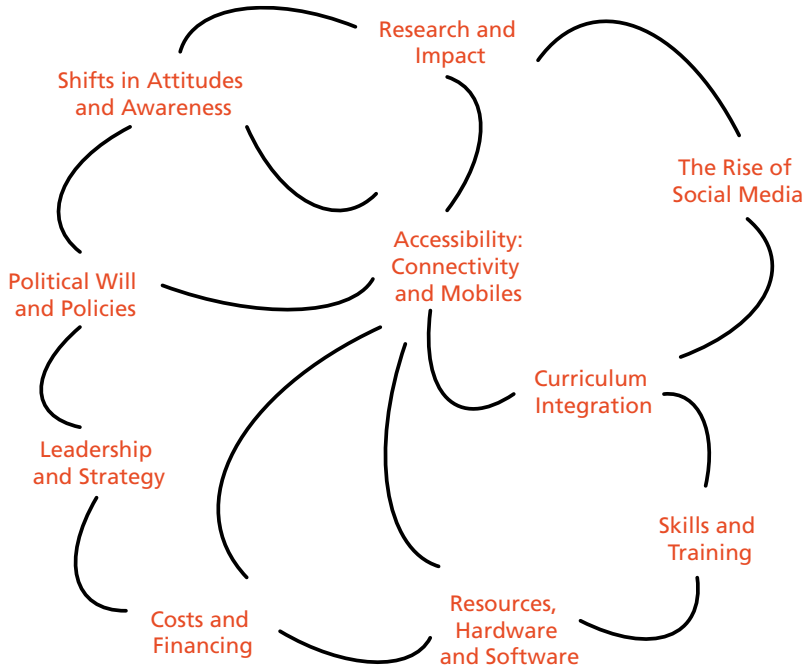
The strength of IRI lies in its versatility and reach. There are still many children in geographically inaccessible places and through the radio they can receive an education. Large numbers of learners can be reached quickly and simultaneously via IRI broadcasts. Of equal appeal is the fact that IRI provides a link between the school and the home. With IRI, what is broadcast to the classroom can easily be heard by those outside the school: parents at home and community members in cafes and streets – integrating schools into communities and communities into the learning process. IRI thus provides solutions for involving parents and communities who would otherwise have little or no awareness of the education that their children receive.

In the 21st century it is not just new and innovative ICT that have the potential to transform education: well established technologies such as radio can be utilised as well, to great effect (Ligaga et al., 2012). Indeed, perhaps the greatest educational potential of all lies in the increasing integration of different technologies across the Continent, especially the radio and the mobile phone.

Augustine Kamlongera is Chief of Party for IRI in Malawi.
Said Yasin is Chief of Party for education in Rwanda.

3.6 The last five years: defining features of eLearning in Africa

eLEARNING IN AFRICA OVER THE PAST 5 YEARS:
Ten Defining Features



The eLearning landscape has changed substantially over the last five years. However, as would be expected, the nature of that change is contested and at times contradictory. Respondents provided rich and varied data regarding what they consider to be the most significant changes and biggest missed opportunities over this time. Often, what some respondents would perceive to be the most significant positive change, others would view as the biggest missed opportunity. This is partially due to differences between countries and types of organisations, but also likely depends on the position, perspective and level of privilege of the respondent.

The diagram above highlights what respondents consider to have been the ten defining features of the sector over the last five years. They are included because of the regularity with which they feature in the answers, both in regard to the most significant changes and the biggest missed opportunities. Whilst a diagram is necessarily oversimplified, it presents all the main issues identified. Many of them are interrelated and cross-cutting, reflecting the multi-faceted nature of change and challenge within the sector. The quotations below illustrate aspects of the different factors.

'The most important failure was the inability to minimise regional inequalities in Internet access – we need policies to target the improvement of ICTs for the poorest, especially in rural communities and remote villages'.

The first relates to accessibility and connectivity. The last five years have witnessed markedly improved access to the Internet at increased speed and reduced cost, along with more reliable electricity. This has opened up new opportunities and made it more feasible to use and share online resources in the classroom and for training. As expressed by a donor organisation in Mozambique: '*access to the Internet is the most significant change - it is becoming increasingly affordable and this gives us access to a new world - now people can participate and contribute*'. However, many are still excluded from the benefits of the Internet because of cost, location and regulations. Indeed, the fact that this exclusion still exists was perceived by some to be the biggest missed opportunity of the last five years. A respondent from the government in Cape Verde noted: '*the most important failure was the inability to minimise regional inequalities in Internet access – we need policies to target the improvement of ICTs for the poorest, especially in rural communities and remote villages*'.

Photo: James Teicher, www.cybersmartafrica.org / World's first solar-low power interactive whiteboard

Broadband in Africa: giving innovation a chance?

Eric Osiakwan

Just over a decade ago, there were more landlines in Manhattan than the whole of Africa; today there are more mobile phones in Africa than the whole of the USA. There are currently approximately 430 million mobile phone subscriptions in Africa, and this number is growing fast (ITU, 2011). Mobile phone networks will be the catalyst for the imminent broadband explosion in Africa - extending the reach of broadband to rural communities. In this article, I argue that this explosion will have positive implications for economic development and education across the entire Continent.

The ICT sector in Africa has seen tremendous growth. Broadband in Africa is arriving through the mobile phone as opposed to copper in the advanced economies. Investments in submarine cables and terrestrial fibre are the fundamental driving force for this explosion through the mobile networks, gaining momentum as the price point for broadband dips. Three years ago, East Africa was the only region that did not have a submarine connection to the rest of the world and this necessitated rigorous action led by the Kenyan government in the form of The East African Marine Systems (TEAMS). Suddenly, like a gold rush, SEACOM and Eastern Africa Submarine Cable System (EASSy) also landed, with LION 2 expected soon.

The arrival of these submarine cables coincided with a master plan development of terrestrial fibre networks such as the National Optical Fibre Backbone Infrastructure (NOFBI) and other competitive options in Kenya. Such networks enabled the submarine capacity to travel from Mombasa to Nairobi, to Kisumu and neighbouring East African countries. This merged with the already competitive Internet Service Provider (ISP) market, and gradually the price point for 2Mbps connectivity dropped from around USD 7500 per month on satellite three years ago to USD 200 per month today: this is the East Africa miracle.

In contrast, West Africa has had the SAT3 submarine cable for more than ten years and though more submarine cables have landed over the last three years, these have not being complemented by competitive terrestrial fibre and hence the price reduction has not been as drastic. For example, a decade ago in Ghana, a 2Mbps cost around USD4500 per month and today with four submarine cables in operation, it has only reduced to USD 1000 per month.

In both settings, the pressing challenge now is how to drive this broadband capacity into semi urban and rural parts of Africa where the majority of the population lives. Infrastructure sharing and open access means of driving terrestrial fibre and wireless infrastructure takes centre stage, owing to the limitation of commercial viability and high cost to the consumer. One option is to use a Public Private Partnership (PPP) Open Access infrastructure where public funds are used to subsidise private capital to ensure reduction of the price point. Open Access should also ensure that everybody is treated equally and has the same level of access through the infrastructure.

There are three scenarios that can be considered in terms of how far the fibre infrastructure can get to the customer and where it is best complemented with wireless technology in order to achieve commercial viability. In the first, the fibre stops in the city or town because the downstream markets cannot justify investment in it. This is then complemented with wireless technology which means the speed is fast and can be afforded by the market. This scenario is currently predominant in many African countries but there are countries where there is no terrestrial fibre from the landing station, so wireless technology has to be used right away. In other cases, wireless technology is used to bridge the submarine and terrestrial fibre. In the second, the fibre extends from the urban areas into the semi-urban or rural regions. The speed experienced in this scenario is significantly higher than the first scenario, but the costs are likely to be higher. Ghana, Kenya, Angola are amongst those countries currently in this faster scenario (TechLoy 2012).

The third and fastest solution is the forward looking scenario where the fibre extends to the individual home or business premises. Fibre To The Home (FTTH) is premised on the commercial viability of the deployment all the way to the customer. In most cases this is a cluster of homes or businesses but, in the African case, it could also be a cluster of villages or small family settlements.

However, even if broadband access can be made available in rural areas, there remains a more fundamental question: is it really worth investing in broadband in rural areas when such high levels of poverty remain? The final part of the article argues that it is worthwhile because of the way broadband access can have positive transformative impact on illiteracy and all other spheres of human and economic development.

Research from the World Bank (2009) has demonstrated that access to broadband boosts economic growth in all countries but most especially in developing ones. The study showed that in developing countries, for every additional 10% of broadband penetration, an economy will grow by 1.38%. Broadband access leads to economic growth: Africans are seizing the opportunity that it offers to move their economies forward.

Combined with this is the effect that the mobile revolution is having on illiteracy. For the younger generation of today, technology adoption is at the speed of light: they are digital natives and there is no exception in the rural regions. The implications for literacy increase through the transition away from only voice and SMS phones towards more sophisticated smartphones where educational content can be accessed and learning achieved. Today, Massachusetts Institute of Technology and

other leading educational institutions have their entire curriculum and most of their content available online. There is now the potential for a young person in the remotest part of Africa, enabled by mobile broadband and a smartphone, to appropriate the same knowledge. There are many challenges and unanswered questions but the educational potential is undeniable. Getting broadband into the rural areas should be a top priority for Africa as an innovative contribution to solving the illiteracy problem: innovation should be given a chance!

Eric M.K Osiakwan is Director at Internet Research Ltd and is based in Accra, Ghana.

Photo: Mona Panwar / Women barefoot solar engineers of Africa

Indeed, cost and finances are recognised more widely as key factors. As noted by a respondent from the government in Cameroon: *'If bandwidth was more affordable, many academic institutions could forge partnerships with international institutions offering distance education. Due to the monopoly of the national telecommunication company, competition is excluded and access to bandwidth is kept at a high price*'. Numerous respondents are of the same opinion, noting that the lack of funds is causing the slow expansion of bandwidth and electricity to rural areas.

As noted in Osiakwan's opinion piece, mobile communication is having a revolutionary impact. However, the nature of this import is contested. Some respondents highlight the great new potential offered to the ICT-enhanced learning and training sector through smartphones, with a respondent from an NGO in Zimbabwe exemplifying this: *'the advance in mobile learning is the most significant change – because of the smartphone, students can now access course material in the field or on the job. It guarantees access to those who need it most*'. Others criticise the sector and see the biggest missed opportunity as a failure to utilise mobiles for effective education. A private sector representative from Ghana expresses the view that: *'the biggest failure has been the inability to understand and accommodate the current trend in mobile usage – educators are not taking full advantages of mobiles'*.

mLearning: a connection to opportunity

Lauren Dawes

Current figures show that despite the global objective to provide Education for All by 2015, 28.9 million children of school going age are out of school in Sub-Saharan Africa. This makes up more than half of the 69 million children currently out of school around the world. Beyond the quantitative metrics, it is widely acknowledged that many of the young people considered 'educated' have significant gaps in the quality of education received. This is especially true for the poor who have attended schools with low teaching standards and inadequate education resources. With mobile penetration rates frequently over 50% in much of Africa and growing at 30% per annum it is the second fastest growing in the world. This makes the mobile channel one of the most ubiquitous tools to access resources which help to enable prosperity and life betterment.

Via a small screen on an affordable device that fits into a pocket, mobile learning provides vast potential in the dissemination of transformative and life enhancing information. Whether it is training in financial literacy, language lessons or career development and entrepreneurship skills, mobile learning can provide an inclusive, safe and unbiased way to access information that was previously out of reach. It is not purely about traditional and formal education, but a connection to opportunity and social and economic reform.

Whilst mobile learning is not a new concept, it is still in its infancy in terms of large scale solutions. eBooks, tablets and apps have taken off in the developed world and show promise for continued sustainability, however it becomes more difficult to develop a robust business case for mobile learning in developing countries where lower end handsets and lesser incomes prevail. Content and the provision of it costs money and it is not yet clear who should pay – governments, local authorities, the consumer or other. Current initiatives such as Wikimedia Foundation and Orange's partnership to provide Wikipedia content for free over mobile are promising however still in their early days and the long term sustainability and impacts are yet to be proven.

Scaling mobile learning can prove challenging when there is a need for content to be locally specific and current. Most pilots that have taken place to date have been designed to test a mobile learning hypothesis but without scale or sustainability in mind. They have been limited to small control groups and have been implemented as a classroom 'experiment' or a research trial with the aim of testing a theory around usability.

We need to move away from launching services in this manner and consider the incentive and need of the learner. Without designing to meet these needs, mobile learning solutions will simply be pushed out, limiting the potential for uptake and scale. When planning solutions in developing countries, we need to consider the devices and technology that are already prevalent in the hands of learners. Learning and training occurs when there is a motivation to do so. The most successful mobile learning solutions have been designed with this in mind. For example, in South Africa where just 7% of libraries are considered functional, Yoza, an mNovel service rolled out over MXit had over 60,000 users in its first month of launch. We have an incredible opportunity to be able to deliver learning to millions who currently miss out. We need to ensure that we take advantage of this and create the best possible solutions for learners in order to offer them a connection to opportunity and a pathway to a better life.

In partnership with The MasterCard Foundation, the GSMA Development Fund's mLearning Programme is releasing a report on mobile learning for underserved youth in developing countries. This report focuses on the needs and aspirations of underserved youth, the barriers they face around education and employment, and how the existence of mobile technology in their lives can enable them to achieve their ambitions.

For more information, or to download this free report, please visit: http://mastercardfdn.org/ or www.gsma.com/development-fund/

Lauren Dawes is Head of mLearning, GSMA Development Fund.

Photo: Lwanga Herbert / Rural Women, Renewable Energy and ICTs

The increasing availability of appropriate hardware and software is also a key factor. A respondent from the government in Zambia said that they consider the most significant change over the last five years to be the '*the increase in the use of computers, with both high schools and basic schools setting up computer labs*'. They go on to note that this availability of hardware is leading to a shift in mentality: '*previously computers and ICT were regarded as something for the affluent society and this perception has now changed*'. Conversely, an independent worker in Madagascar identifies the way in which hardware has been used in schools as the biggest missed opportunity: '*the computer hardware which has been distributed in secondary schools - provided by foreign donors - is underutilised and unused*'.

'The biggest change has been the shift to web 2.0 – it has shifted the locus of power from the lecturer to the learner'

With regard to software, a Zambian government official notes, '*the most significant change is the explosion of availability of e-resources and platforms to enhance education and training, because it facilitates easy communication and the delivery of teaching material, and increases the availability of up-to-date information*'. Building on this, social media has a major role to play, as developed in the opinion piece by Bosch, and expressed by a respondent from the government in South Africa: '*The biggest change has been the shift to web 2.0 – it has shifted the locus of power from the lecturer to the learner*'. In addition, a private sector representative from South Africa stated that with the new software and overall adoption of ICT resources that are now available, *'there is no reason why every child in Africa should not have access to the best possible educational content*'.

Another type of response instead emphasises the enabling environment required in order for the sector to make use of the increasing technology that is available. They note the need for national policies, alongside training and skills development as the major changes or missed opportunities of the last five years. Those working in countries where national policies on ICT have been developed and are working effectively note what a difference they have made. A government worker from Botswana explained: '*the government established an ICT policy which later translated into ICT centres around the country where communities can access computers for daily use*'.

Other respondents are working in countries where they perceive there to be a lack of a functioning national policy and they note the damage it is causing. Despite the adoption of a national ICT policy by the Ugandan government, a government official from Uganda notes that 'the lack of a national ICT vision has resulted in haphazard methods of work'. This suggests that a national vision may exist, but some government officials may not agree with it or be aware of it. Linked to these responses is another aspect of creating an enabling environment, this time through the need for training. Some consider that significant progress has already been made, such as the government worker from Ghana who states: '*conscious efforts are being made to train students and workers in ICT: there is general acknowledgment of the rapid advancement of technology and the necessity to be part of it*'. However, a more pessimistic outlook is expressed by many and is encapsulated by a private sector worker from Kenya:

'*There has been a great misunderstanding with the training that has been used to introduce the integration of ICT in education and training: the methods used have created more fear among teachers than interest. Teachers in Kenya fear that ICT is meant to replace them. We need to introduce ICT through the teacher training colleges instead: if teachers are taught how to use ICT during their normal lessons, they will adopt it more. If you want to transform how learning happens, train the teachers.*'

It was widely noted that increased integration and partnership across the sector would maximise the efficiency of any training and skills development. One government worker from Kenya notes the main missed opportunity to be '*the slow response by the curriculum developers and examination board in integrating ICT in their routines and giving guidelines to the schools and teachers in this sector. If they had done this then teachers would have embraced the required change*'.

Finally, the most widely cited change factor of the last five years is the theme of attitudes and awareness regarding the potential of ICT within the learning and training sectors. A private sector representative from Zambia expresses the perceived shift, explaining that over the last five years '*everyone has come to know about ICT, what is involved, what is required and what it takes to implement*'. *A government official from the DRC expresses the same sentiment*, suggesting that the demystification of ICT across the Continent is the most important shift: '*every year ICT loses some of its mystery; everybody is interested and involved without necessarily being aware of it*'. A government official from Nigeria also expresses the same sentiment and notes poignantly that '*an increase in awareness about ICT has to be the first step in any change process*'.

Photo: Ernst Suur / Disability isn't inability

How African entrepreneurs are training for new opportunities

Monika Weber-Fahr

Today's African entrepreneurs are worth looking out for. More agile and more globally linked than their predecessors, more than a third of them female, and they offer the promise of a new era of growth on the Continent. Global investors have taken note. Multinationals from Brazil to China, from CocaCola to WalMart, look for and find local counterparts to deliver returns on their investments in minerals, agribusiness and services, but also increasingly in manufacturing and the like.

These changes are noted anecdotally but also, more concretely, in the figures on foreign direct investment (FDI). Despite the financial crisis, FDI in Africa has been growing strongly in recent years and, since 2005, exceeds official development assistance (ODA). Ernst and Young (2011) argue that more growth is on the way, predicting that FDI into Africa will reach USD 150 billion by 2015 from USD 84 billion in 2010. Significantly, the new investment projects are in a diverse range of sectors including telecoms, consumer goods and financials: a welcome diversification away from oil and minerals.

But are there enough African entrepreneurs to make these projections a reality? Are they agile, capable and globally linked enough? Or will these investment aspirations flounder for lack of good local partners? Can training, in particular e-based training, be a factor to make sure African entrepreneurs can avail themselves of the opportunities that are waiting for them?

These are questions that matter for us, in the International Finance Corporation (IFC). We have 30 years of experience of working with Micro, Small and Medium Enterprises (MSMEs). In Africa alone, at the end of 2011, our investment in MSMEs was valued at USD 1.8 billion. Most of this (USD 1.26 billion) is for long-term financing via banks, USD 220m is in funds that invest directly in MSMEs, and USD 342m is in trade finance. Alongside this, we help build markets for training and networking services for SMEs and we support local partners, who provide training as a business opportunity, through our SME-Toolkit and Business Edge programmes.

So we know many African entrepreneurs, and we know that their numbers are growing. There are 13.2 million formal MSMEs in Africa today, and many more in the informal sector. We have met the new brand of entrepreneurs: the agile ones who are linked in with the global economy, ready to invest where the next opportunity arises, savvy in betting on the next big trend. They are still the exception but it takes very little to unleash their growth.

The vital ingredients for an entrepreneur to grow a business are capital combined with specific knowledge. In this new world of growth in Africa, entrepreneurs need to know more than bookkeeping and the basics of the markets. Increasingly, it is vital also to understand the rapidly changing environment and social challenges. Today's entrepreneurs must know how to handle the consequences of heat waves and floods, how to save water and other scarce resources and how to access solar energy from the grid when regular grid based systems reach their limits.

Lighting Africa, a joint IFC and World Bank programme, is an example of how entrepreneurs can seize the green economy's opportunities. This programme builds markets for safe, affordable and modern off-grid lighting – such as solar lanterns – to communities that do not have access to electricity. The increasing involvement of entrepreneurs in this programme saw sales of quality off-grid lighting products grow by 450% in 2011, providing nearly 1.5 million people with better lighting and improved energy access.

So how does market knowledge and a sense for new opportunities get to these entrepreneurs? In our experience, it is not so much about what platform is used; it is really about who provides the knowledge to the entrepreneur. Is it a well meant development programme with some expatriates building a website – or is it a local entrepreneur who figures out a model of making money from providing training and networking services to other entrepreneurs? Through our Business Edge and SME Toolkit programmes, we are seeing how privately run partners from Egypt to South Africa successfully localise and tailor international content and ideas - in ways uniquely suitable for local markets. In almost all of these cases, our partners are leveraging the possibilities of multimedia and social media accessed cheaply and easily through mobile telecommunications. The content, in turn, becomes more compelling for MSME engagement and business management training. As a result, our African SME Toolkit sites attract nearly a million unique visitors every year.

So, will there be enough African entrepreneurs, ready to take on the challenges that international investors, as much as local politicians, would like to see them address? The answer will depend partly on the number of African entrepreneurs who find their way into the ICT based education and training sectors. And this is an area the IFC will continue to support.

Dr Monika Weber-Fahr is Global Business Line Leader,
Sustainable Business Advisory, International Finance Corporation

Attitudes and awareness are closely tied up with overall political will: leaders need to share the change in attitude and awareness in order to create an increasingly enabling environment. Many respondents express how the lack of this is the biggest missed opportunity of the last five years. A government worker from South Africa notes that '*it is possibly the lack of leadership, skills and sustainability - not enough thought has gone into the planning and roll-out of many projects*'. Another government worker from Nigeria emphasises the same sentiment more strongly: the key factor has been 'the lack of coordination and guidance, we have had no policy clarity and we certainly have no direction - most government interventions in ICT have been treated as spending opportunities, and many are simply corrupt gimmicks'.

The issue of changing attitudes and awareness, alongside the importance of political will, link to the final, frequently expressed perspective that the ICT-enhanced learning and training sector is missing out on its potential because of a lack of research and evaluation regarding the specific features in this changing environment. As expressed by a government worker in Mauritius '*there is a lack of proper follow-up and monitoring for sustaining ICT-based projects; failure to identify the weaknesses of projects at the appropriate time discourages stakeholders from embracing the paradigm shift*'. Similarly, a government worker from Botswana notes that the biggest missed opportunity is the fact that: '*we do not assess the impact of ICT on people's lives. The government implements projects without first analysing if they will be feasible in the long run*'.

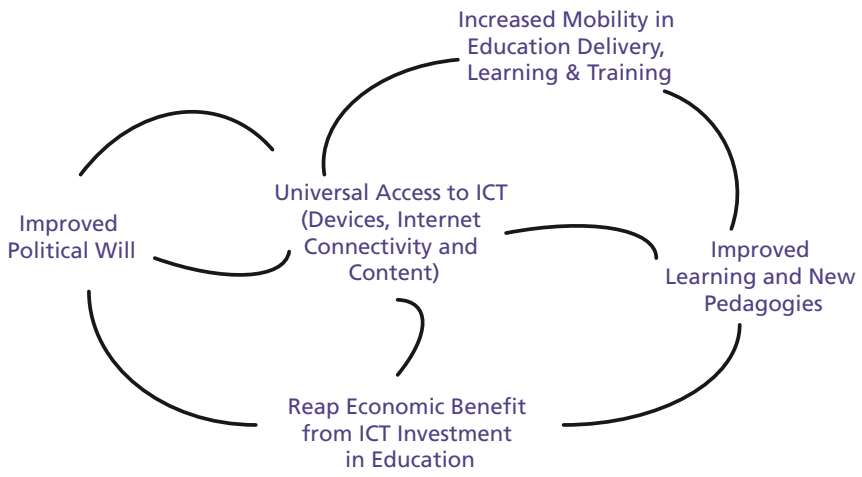
Each of these areas of change, challenge and missed opportunity demonstrate the dynamic nature of the ICT-enhanced learning and training sector in Africa. Having examined the past, the Report now turns to the future and analyses the way in which the sector is likely to shift again in the next five years.

3.7 The next five years: technology access will still matter

The figure below highlights what Survey respondents believe are the five most significant developments in African eLearning over the next five years.

Over the next five years, Africans will have more and better access to ICT, they will become even more mobile and will have created new ways to learn. We will witness the emergence of an improved leadership with stronger political will, and economies will reap the benefits of ICT investment. These are the dominant views of the Survey respondents regarding the future.

What African eLearning Will Achieve in the Next Five Years



Evidently, access to ICT remains the uppermost preoccupation for Africans involved in eLearning. Here access to durable and increasingly mobile computing devices; regular, consistent and stable access to electricity; affordable, sustainable, stable and 'quality' access to the Internet; and access to locally-relevant content are the dominant concerns.

Survey respondents are optimistic that access to more robust eLearning technology architecture will expand and will be available to more poor people who live in remote rural areas. 36% of respondents anticipate that over the next five years, there will be a systemic scaling up and expansion of ICT access to more African learners, schools and universities. In fact some believe that the Continent will reach universal access to ICT at all levels of education; more people will have low-cost computing devices, 'digital content will be avail-

able to all learners' and the 'digital divide will narrow'. Of the 36% optimists, 10% of respondents from 20 different African countries working mainly in government institutions believe that over the next five years, the cost of bandwidth will decrease. This is exemplified by a respondent from a higher education institution in South Africa: '*Connectivity will improve and small connected devices will play a big role. Tablets or similar will replace desktops, but small-screen mobile smartphones will increase social connection*'.

Respondents stated that better and more stable Internet access will become more widely available, even to the rural poor, and that this will be facilitated by the expanding network of undersea fiber-optic cables. Similarly, access to electricity will expand because alternative energy resources will be utilised more effectively. A Ghanaian representative from a privately owned organisation predicted: '*In less than five years mobile learning will be the most effective learning tool for all levels of education in this country*'.

12% of respondents believe that mobile technologies (including mobile phones, smartphones, tablets, the mobile Internet and social media) will be used to enhance both informal and formal learning. One respondent says that 3G and other offerings will create job opportunities and help to overcome tedious paper-based government processing platforms, and another believes that tablets will become more widely accessible which will help with access to education content and resources. A South African working in a private TVET institution noted: '*tablet technology will be used to overcome the logistical and cost inhibitors of large scale text book distribution*'.

For some, the implications are that content will need to be designed for mobile platforms. Together, these developments reflect a shift from eLearning in the way that Africans have understood and applied it, towards different and fluid forms of mobile learning which are only just beginning to take shape.

5% of respondents suggest that the next five years will see a shift towards improved ways of learning and new pedagogies. Here respondents emphasise that learners will increasingly drive their own learning; that classroom-based learning will improve; that teachers will become facilitators of learning and that improved models of distance learning will emerge.

2% of respondents make reference to national economic gains that will emerge over the next five years in certain country contexts. One suggests that Nigeria will reach its development objectives during this period whereas another believes that the Nigerian economy will become more 'IT-driven' because many more Nigerians will be IT-literate. Another from Uganda says that their country will be digitised over the next five years.

3% of respondents envisage that good leadership, political will and stronger advocacy by governments will emerge over the next five years. Some believe that more impactful policies will be developed by governments and that these lead to an increase in investment in eLearning interventions. A Nigerian NGO representative stated that a new ICT Minister in Nigeria will make a significant difference in providing leadership because he has experience with working in the private sector and that he will bring 'private sector ethics and standards' into the eLearning sector.

Whilst most of those who suggested that there will be better political leadership and political will were mainly optimistic, one respondent stated that political power will follow personal agendas, thereby reflecting a lack of trust in political leadership to direct eLearning in socially beneficial ways in their country.

These views are consistent with Survey responses that also identify governments as leading change agents in eLearning. This is linked to the view that, relative to other stakeholders, the onus is on governments to take the lead in driving effective ICT-enhanced learning policy and implementation. One respondent from a Nigerian university attributes this to the need to 'elect the right leaders' which he believes will emerge over the next five years. Respondents associate such leadership with clear demonstrations of political will. Mourshead et al. (2010) in their study of education systems in 20 countries also found that leadership at both institutional and national government levels has made a difference to improvements in educational performance. However, little work has been done on the winning attributes of good leadership within an African eLearning context and this is an issue that remains worthy of further exploration.

Evidently, the eLearning sector in Africa is characterised by forward-looking optimists. There is hope and confidence that economic benefits will become more visible imminently, that there will be better leadership and improved political will. However, this is somewhat ironic as, whilst there has been significant economic growth in a number of African countries, this has not yet translated into widespread job creation, lower levels of unemployment or improvements in the quality of life of Africans (World Bank, 2012). Whether eLearning can actually help catalyse such long-term benefits will need to be monitored and closely scrutinised.

Security and technology-assisted learning in Africa

Harold Elletson

A recent report by The Economist (11 January, 2011) made the bold prediction that, during the course of the next five years, the average African economy will grow faster than the average Asian economy. International perceptions of Africa have changed: after being patronised and pitied for so long, African economies are now widely viewed as some of the hottest investment prospects on the planet.

A key factor in changing perceptions has been a growing understanding of the role technology can play in enhancing African growth and development. This is particularly true in the key field of education and training. Growing economies need an educated, skilled workforce and technology-assisted training can help them to develop one quickly and effectively.

But perhaps the most important pre-condition for economic growth is a stable and secure political atmosphere. Without security, new businesses will be still-born and investment will disappear. Security is perhaps the biggest and most important challenge facing African economies today. The future of Africa and the opportunity for rapid and sustainable growth depends on it.

Today's positive newspaper stories about the potential of many African economies are often, unfortunately, buried beneath a continuing tide of coverage of such matters as piracy off the coast of Somalia, terrorist attacks in Nigeria, violent clashes on the border between Sudan and South Sudan, the kidnapping of tourists in Kenya and a coup in Mali, to name but a few of the many security-related problems that have seized the attention of the world's press in recent months.

'New Generals' by Rasha Mahdi

There are numerous threats to security in Africa, both big and small. Some involve actual or potential wars; others are confined to low-intensity conflicts. Some are security crises that arise out of an environmental catastrophe, such as a flood or a famine; others are the result of persistent problems that undermine confidence. Of these, terrorism, piracy and organised crime are perhaps the most significant.

A further complicating factor is that the nature of security itself has changed during the course of the last twenty years. This has not simply happened as a result of political changes, such as the fall of communist regimes or the end of Apartheid. It has been caused by more fundamental changes, which have had a profound influence on global society and have included privatisation, globalisation and the development of new forms of communication, such as the Internet, have led to fundamental changes. Most recently, the defence and security sector has been profoundly affected by the spread of social media. The consequences of these developments are contested and remain unclear.

What is clear, however, is that Africa has already been affected by them. The nature of security has changed in Africa, just as it has everywhere else in the world, and the process of change has involved profound consequences for the whole of society. There are new threats, new vulnerabilities, new people and organisations involved in the provision of security, new 'battlegrounds' and new technologies.

The combination of globalisation and new forms of communication means that the effects of a small incident in one part of the world are now soon felt in another. Africa is particularly vulnerable to this phenomenon as the outside world is often unwilling or unable to see the Continent as fifty four individual countries. This means in turn that some of Africa's most promising and important industries such as tourism or financial services, which are highly dependent on confidence, are extremely vulnerable.

Another fundamental change in world outlook has been the shift in many important areas from the nation state to the private sector. National governments are no longer always the final arbiters on questions of security and in many countries in Africa they are no longer even the biggest employers in the security sector. In Nigeria, between 1,500 and 2,000 security firms employ more than 100,000 people. In Kenya, the private security sector has grown rapidly in recent years and there are now at least 2,000 private security companies, which employ many more people than the Kenyan police. Furthermore, according to one report (Africa Renewal, 2009 p.10), 'security officers in private firms are often much better equipped than the national police, with vehicles, radio alarm systems and rapid response capacity'.

All of this means that there is a growing need for rapid and effective security training in everything from counter-terrorism to crisis management for critical infrastructure. The security sector will always be a highly intensive user of training. However, new technology has created exciting opportunities for the development of effective training packages. At least one global security company, with a large presence in East Africa, is planning to use smartphones as part of its ongoing training and awareness-raising programmes for its staff. As mobile telephony is increasingly becoming a part of education provision in Africa anyway, it surely will not be long before other security companies follow suit.

As the need for effective security to underpin economic growth in Africa increases, more sophisticated forms of training, such as simulation and virtual games, will be in demand. Over the next ten years, technology-assisted learning for security-related training is, therefore, likely to be a growth industry in Africa's rapidly developing markets.

Dr Harold Elletson is the Chairman of the New Security Foundation and the co-founder of the Africa Forum on Business and Security. A former Member of the UK Parliament, he is a member of the advisory board of eLearning Africa.

4. Conclusions and recommendations

The eLearning Africa 2012 Report provides an overview of technological advances and their influence on the education and training landscape in Africa. The Survey findings and opinion pieces make reference to the emergence of new technology access models which were previously unimagined. Five years ago, the eLearning community was still engaged in debates about the use of second-hand personal computers; today there is greater preoccupation with the prospects that new shared resource computing models, mobile phones and tablets may hold for expanding personalised access to technologies. Five years ago, Internet connectivity was a basic and widespread challenge. Yet today, more Africans can access broadband connectivity and the Survey responses anticipate increasing access over the next five years. The Report provides evidence of how greater awareness, understanding and experience of the integration of ICT in teaching and learning within African schools and universities have developed over the last five years.

The Report shows how teachers, lecturers, entrepreneurs, policymakers and eLearning practitioners have high expectations about the ability of new technologies to scaffold progressive change at both institutional and system-wide levels. Many have highlighted the different ways in which technology adds value to education by improving the way learners learn, expanding access to learning resources, obtaining new information rapidly and by enabling more efficient ways to administer and manage education institutions. The positive sense of the technology value proposition seems to override the concerns raised about constraints experienced within the sector in the past. Such positive energy has its benefits: it can encourage existing practitioners to soldier on in their endeavours to open the doors of quality learning to all across the Continent. The Survey reflects an understanding among eLearning practitioners that these 'doors' are both virtual and concrete. Here references have been made to the prospect of deepening and expanding virtual learning opportunities through open and distance learning (ODL) and the way existing institutions concretely acquire and integrate ICT into their education and training delivery systems.

Notably, a few growth areas in the eLearning sector were rarely mentioned. Very little reference was made to the growth of Open Education Resources (OER) in Africa and the potential this may hold for significantly expanding access to learning material and content. References to the benefits of assistive technologies for learners with disabilities in Africa and the value of cloud computing were also very sparse.

Many Survey respondents also reflected an uncritical sense of inevitability about the expansion of technology access and a naivety about how this will catalyse the provision of quality and equitable learning opportunities for larger numbers of historically-disadvantaged Africans. The anecdotes provided in the Report's qualitative data are at points idealistic, imbued with hope and aspiration that progress is inescapable. Less attention is given to the social and cultural complexities of the learning process and the contested location of technologies within this. Nor are there many references to the potential detrimental effects of technology use. Very little has been mentioned about the risks to the privacy, safety and security of users, especially young learners in Africa. Similarly, there is hardly any consideration of the threats posed by rising electronic waste in Africa and the damaging effect this is already having on the environment.

The eLearning Africa 2012 Report made use of mixed methods to obtain and analyse information, of which the Survey was a dominant method. The intention is to enhance the research methods in subsequent editions of the Report. Reviews of literature on ICT-enhanced learning and training in Africa as well as interviews and focus group discussions are planned for subsequent Reports as we endeavour to present richer feedback to the *eLearning Africa* network.

Whilst noting the positive energy revealed, *The eLearning Africa 2012 Report* also wants to caution against feeding exaggerated expectations about what is possible with technologies. The Report wishes to encourage more critical and open engagement with the messy complexity that technologies are also instilling within our systems. This requires ongoing exploration of those aspects that are beneficial, of which there are potentially many, and those that are a lot more challenging. In turn, this requires adopting a culture of openness regarding failures, the ways in which systems break down and whether technologies also play a role in precipitating further damage.

In 2012, the *eLearning Africa* conference began to host *The eLearning Africa Fail Faire* as part of efforts to facilitate a conversation regarding failure. Alongside this, the development of a culture of debate and healthy argument is also required. Here too, the *eLearning Africa* conference hosts a dedicated plenary session that debates controversial issues. In this way, *The eLearning Africa Report* and the *eLearning Africa* conference work alongside each other to reinforce the objective of creating a rich, reflective and knowledgeable African eLearning network.

The aspiration of *The eLearning Africa Report* is to provide regular, yearly snapshots of how perceptions and realities combine and collide over time, with particular reference to the eLearning experience in Africa. It is hoped that these will lead to richer, more nuanced conversations, healthier decision-making and more effective action-taking towards ensuring Education for All in Africa.

Photo: Jenny Sanborn / Karine - A Disabled Business Woman, Not a Beggar

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Appendices

Appendix 1: Summary of *The eLearning Africa 2012 Survey*

This is a summarised version of *The eLearning Africa 2012 Survey.* It lists the main questions that were asked that are of direct relevance to *The eLearning Africa 2012 Report* but does not list each of the options given in answering the questions. All questions were optional.

Section 1 – Background context

- What is your name?
- What is the name of your organisation/employer?
- What is your country of origin/birth?
- What is the country within Africa where you currently work in ICT-enhanced learning and training?
- Which one of these categories best describes your job function?
- What type of organisation do you work for?
- What level of education is your work most focused on?
- What is your highest formal educational qualification?
- Please provide a brief description of the job that you do and explain how it involves ICT-enhanced learning and training.
- What is the educational technology that you make most use of?
- How do you define ICT-enhanced learning and training?
- What is the main physical environment in which you are using ICT-enhanced learning and training?
- How would you like us to use your responses in this survey?

Section 2 – Trends, challenges and opportunities in ICT-enhanced learning and training

- In the organisation where you work at the moment, what are the three most significant factors influencing the delivery of ICT-enhanced learning and training? (Respondents were given a list of 15 different factors to choose from, or could select 'other'.) Why do you think these are the most significant factors?
- In the country where you work at the moment, what are the three most significant factors influencing the delivery of ICT-enhanced learning and training? (Respondents were given a list of 15 different factors to choose from, or could select 'other'.) Why do you think these are the most significant factors?
- In the country where you work at the moment, what do you think are the three most significant factors constraining ICT-enhanced learning and training? (Respondents were given a list of 16 different factors to choose from, or could select 'other'.) Why do you think these are the most significant factors?
- Looking back over the last five years: what do you think has been the most significant change in the ICT-enhanced learning and training sector in the country where you work? Why do you think this has been the most significant change?
- Looking back over the last five years: what do you think has been the most significant failure or missed opportunity in the ICT-enhanced learning and training sector in the country where you work? Why do you think this has been the most significant failure or missed opportunity?
- Looking forward over the next five years: what do you think will be the most significant change in the ICT-enhanced learning and training sector in the country where you work? Why do you think this will be the most significant change?
- If you are interacting with students in your work, what impact is ICT having on them both in the ways that they are learning and the ways that they want to be taught?
- Which of the following alternatives to PC technology have been used by your organisation in educational projects? (Respondents were given five options to choose from, including 'none', and asked to select all that they had used.)
- What technology access solutions have proven to be most educationally beneficial to the stakeholders that your organisation works with?
- How would you rate the following factors on a scale of 1 - 5 when deciding on a technology access model for the education stakeholders that your organisation works with? (5 as a very important factor, 1 as a very unimportant factor; respondents were asked to rate 9 factors, including 'other'.)
- In what contexts do you use ICT technologies in education? (Respondents were given five options to choose from, including 'other', and asked to select all that they had used.)
- What is the biggest motivation for you to use ICT-enhanced learning and training? (Respondents were asked to select one from six options, including 'other'.)
- Who do you view as the most important agent for accelerating ICT-enhanced learning and training in the country where you work? (Respondents were asked to select 1 from 9 options, including 'other'.)

Appendix 2: Biographies of the Editorial Board

Maureen Agena is a new media enthusiast, trainer and a trained citizen journalist. She has been working in Information Technology and Rural Community Development for three years and specifically on the socio-economic empowerment of women and youth in Uganda. She holds a BSc in Information Technology and MSc in Information Systems. Maureen has conducted a number of trainings and implemented projects around Uganda on the use and application of ICT for education, health, entrepreneurship and agriculture. Alongside this she advocates for gender-sensitive ICT policies in Uganda, and works especially in Northern Uganda. Maureen currently works as a programme manager at Text to Change, a mobile for development organisation in Uganda. Prior to this, she worked at Women of Uganda Network (WOUGNET) for 3 years as an information and communications officer.

Ben Akoh is an expert on media and technology policy, Internet governance processes, research and capacity building on the development and deployment of ICTs and the Internet, in Africa and globally. Mr Akoh is a facilitator and sessional instructor for the Extended Education faculty of the University of Manitoba, delivering distance education, blended, face to face, and fully online learning courses on emerging Internet technologies, Open Education Resources and digital literacy. He is also a graduate student at the University. Alongside this he works for the International Institute for Sustainable Development, a policy think tank based in Canada, and has worked with the Open Society Initiative for West Africa, UNECA, and in the private sector.

Mohammed Bougroum is Professor of Economics at the University Cadi Ayyad, Marrakesh, Morocco, where he has been since 1990. He has carried out extensive research on education and labour market issues in Africa over the past 20 years. He has worked with UNESCO on several occasions including, during 2011, being the co-ordinator of the education sector analysis team of UNESCO/BREDA, Dakar. He is currently carrying out an action-based research project on ICT and education for blind people.

Enala Mwase holds a PhD in Medical Parasitology from the London School of Hygiene and Tropical Medicine, University of London. She has been working at the University of Zambia for the past 24 years and is currently an Associate Professor in Veterinary Parasitology. Enala is also engaged in eLearning and from 1999 to 2004 she was an active team member of the Southern African Network for Training and Research on the Environment (SANTREN), participating in the transformation of face to face short courses to eLearning. She is a member of the National eLearning Committee of Zambia which was constituted by the Ministry of Education in 2007 to assist the government to mainstream eLearning in its education system.

Elizabeth Akua Ohene is a writer and political analyst. She worked as a journalist with the Daily Graphic and became editor during a most tumultuous time in Ghana's history. She went into exile after the 31 December 1981 coup d'état and established and edited 'Talking Drums' news magazine in London. She joined the BBC World Service and reported from around the African continent. She left the BBC to go back to Ghana in the year 2000 and served as a Minister of State in the Ghanaian government between 2001 and January 2009. She currently writes a regular 'Letter from Africa' for the BBC World Service and retains a vigorous interest in the politics of Ghana and Africa as a whole.

Simeon Oriko is the Executive Director of The Kuyu Project. He is a digital native and is passionate about using digital technology to respond to real world challenges and opportunities, to effect social change and to achieve personal objectives. This led him to establish The Kuyu Project, a digital literacy initiative aimed at teaching African high school students the value of digital technology and the opportunities it accords them. Simeon is also the co-founder of StorySpaces, a digital storytelling platform in which he serves in the capacity of Innovation and Strategy Lead. He also serves as the Tech and Community Lead at iHub.

Mor Seck is the President of the Association of African Distance Learning Centre (AADLC) and the Manager/Director of the Senegal Distance Learning Centre. He is also a lecturer in the University of Dakar and other higher education training institutions in Senegal. He has been working for the public sector at a senior level for more than 20 years. He has occupied several senior positions within the Ministry of Youth and Sports, the Ministry of Modernisation of the State and he has been working for the Delegation of Public Management of the President Office as a Senior Public Management Adviser. Mor holds a PhD in Management Sciences from the University of Manchester in the UK and he also holds three Masters degrees. He was awarded the Senegal Highest National Distinction of Lion and he is member of the GDLN Board as the Africa region representative.

Charles Senkondo is the Executive Director of the Tanzania Global Development Learning Centre (TGDLC). Mr Senkondo is a member of Knowledge Utilisation through Learning Technologies (KULT), the Asian Institute of Management and the Alumni International Society for Improving Training Quality (isitQ). He is the Chairman of Sharing With Other People Network (SWOPnet), an association fostering information networking. He is also a founding member of the World Education Council and the Secretary General of the Association of African Distance Learning Centres. Before joining TGDLC, Mr Senkondo worked as a Business Manager of the African Virtual University. He holds a MBA from City University, London and a BSc in Engineering.

Thomson Sinkala is Chairman of the eLearning Zambia Development Committee, a member of the *eLearning Africa* Organising Committee, as well as Chairman of the Biofuels Association of Zambia. He was Head of eLearning for the Southern African Network for Training and Research in Environment (SANTREN), from 1999 - 2004. He is also the former Chairperson of the IT@AB (Information Technology in African Business). He has applied eLearning in various initiatives with international donors across Africa and in the USA. In the last few years, he has promoted the use of renewable energy sources to power eLearning infrastructure, undertaking consultancy work for clients including the International Labour Organisation, UNECA, and the World Bank.

Rebecca Stromeyer is the Executive Director of ICWE and Founder of eLearning Africa. Her main focus is connecting people to enhance the educational process. Raised multilingually, she studied Slavonic Studies, Comparative Literature, Business Administration and Media Studies in Berlin, Moscow and the UK. Rebecca has run successful exhibition series across Europe since 1988 and in 1995 her organisation launched ONLINE EDUCA Berlin. The annual conference is regarded as the key networking event of the international eLearning industry with over 2,000 delegates from over 90 countries attending each year. In 2006 she founded *eLearning Africa*, an annual international conference on ICT for development, education and training that is attended by over 1,700 delegates from all sectors and ministers from many African nations. Rebecca is also an advisory member to ELIG, the European Learning Industry Group, Chairperson of the East Trust, and a board member of the Drucker Society.

Photo: Caleb Kemboi / eLearning for Peace and Stability

Appendix 3: The Cartoon Movement

A good editorial cartoon has the power to make you see things in a different light, to make you laugh or think, often both. A cartoon has the unique ability to explain problems immediately and clearly. Cartoons can poke, harass, jab, outrage, infuriate, tickle and enlighten. Cartoons attack arrogance and ignorance, corruption and abuse, expose those who need exposing, defend freedom and even bring about change. The editorial cartoonist is one of the most avid defenders of freedom of expression, because editorial cartoons cannot exist where and when this freedom is not present.

Freedom of expression is the core business of the Cartoon Movement, an international online community of editorial cartoonists. With over 140 cartoonists from more than 80 countries, it is the mission of the Cartoon Movement is to bring different perspectives on the world we live in to a global audience. The Cartoon Movement provides a professional journalistic network for the free exchange of all views, without editorial constraint, but with an emphasis on integrity, accuracy, and involvement. www.cartoonmovement.com

Appendix 4: Biographies of the cartoonists

Rasha Mahdi graduated from the Faculty of Fine Arts, Graphic Section, in 1997. She is a member of the Organisation of Egyptian cartoonists, and a member of the syndicate of Egyptian Fine Artists. Rasha established the idea of having the first organisation for Arab women cartoonists. She is based in Cairo, Egypt, and works as a freelance cartoonist, storyboard illustrator, graphic designer and provides creative input for advertising campaigns. Her work has been published in most of the famous Arab newspapers, magazines and websites. Rasha established the campaign of Islamic cartoons supporting Prophet Muhammad (pbuh) and has had exhibitions in Egypt, Kuwait, Lebanon, Jordan and Morocco.

Popa Matumula is a cartoonist, illustrator, comic artist and designer, born in Tanzania and living in Dar es Salaam. He started his career as a freelance book illustrator and a cartoonist for a number of local publications in 1987. Popa, also known as Kamtu, after his creation of a famous local cartoon character, Kamtu, has been in this field since then. His works have published in a number of publications in Tanzania and abroad. The publications include New African, Newsweek, the Los Angeles Times, The African, The Citizen, Business Times and a short-lived Macho, the tabloid that was published by his own firm, Kamtu Ltd. His works have been exhibited in various exhibitions around the world and he has won numerous awards.

Victor Ndula has worked professionally for eight years, four of those freelancing and four as a full-time editorial cartoonist for the Star. He is based in Nairobi, Kenya. Doodling early in his school books, Victor's career path was firmly on course. Passionate about telling the African story through his cartoons, every morning he is tasked with the responsibility of reminding, persuading, cajoling his readers to pay close attention to issues affecting them. As a cartoonist, Victor hopes his work will bring humour to our breakfast tables as he articulates pertinent issues without fear or favour.

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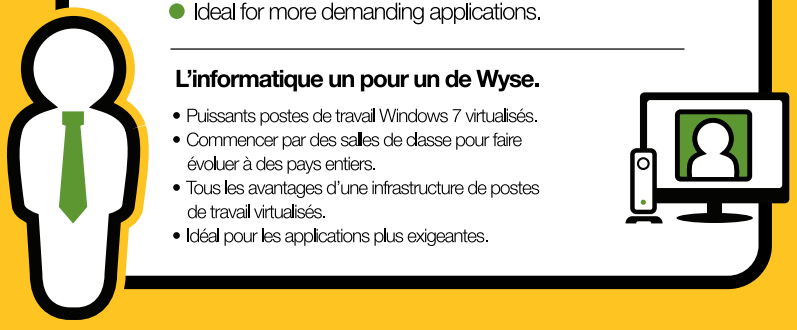

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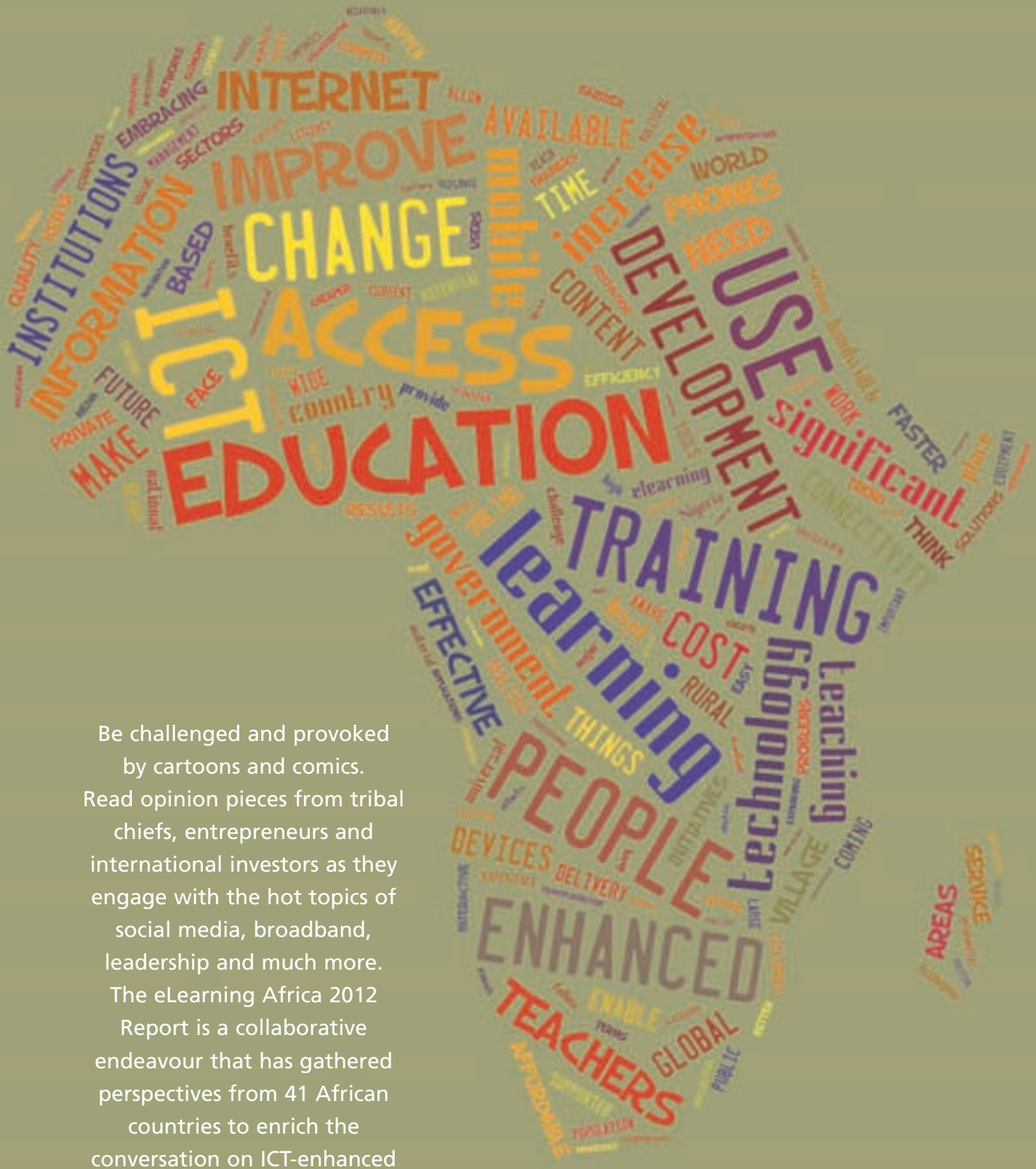

Be challenged and provoked by cartoons and comics. Read opinion pieces from tribal chiefs, entrepreneurs and international investors as they engage with the hot topics of social media, broadband, leadership and much more. The eLearning Africa 2012 Report is a collaborative endeavour that has gathered perspectives from 41 African countries to enrich the conversation on ICT-enhanced learning and training in Africa. It seeks to inform and inspire, providing thought leadership and shaping policy and practice across the Continent.

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